City of Fowler

Buford Oil Company Travel Center (Conditional Use Permit 17-03)

Draft Environmental Impact Report

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Fowler, CA

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Acronyms and Abbreviations

AF	Acre Feet/Foot
APN	Assessor's Parcel Number
AST	Aboveground Storage Tank
BE	Biological Evaluation
BMP	Best Management Practices
BPS	Best Performance Standards
CAA	Clean Air Act
CalEEMod	California Emissions Estimator Model
CalEPA	California Environmental Protection Agency
Caltrans	California Department of Transportation
CARB	California Air Resources Board
CAAQS	California Ambient Air Quality Standards
CCAA	California Clean Air Act
CCR	California Code of Regulations
CDFW	California Department of Fish and Wildlife
CEC	California Energy Commission
CEQA	California Environmental Quality Act
CFR	U.S. Code of Federal Regulations
CH4	Methane
CNDDB	California Department of Fish and Wildlife Natural Diversity Database
CNPS	California Native Plant Service
CPUC	California Public Utilities Commission
CO	Carbon Monoxide
CRHR	California Register of Historical Resources
CUPA	Certified Unified Program Agency
CWA	Clean Water Act
EIR	Environmental Impact Report
EPA	United States Environmental Protection Agency
FEMA	Federal Emergency Management Agency
FIRM	Flood Insurance Rate Maps
GHG	Greenhouse Gases
H2S	Hydrogen Sulfide

HMRRP...Hazardous Materials Release Response Plans and Inventory Program
IS ....Initial Study
IS/MND...Initial Study/Mitigated Negative Declaration
MMRP ....Mitigation Monitoring and Reporting Program
MMT ....Million Metric Tons
MND..Mitigated Negative Declaration
NAHC ....Native American Heritage Commission
NAAQS ....National Ambient Air Quality Standards
ND ....Negative Declaration
NO2 ....Nitrogen Dioxide
NOX ....Nitrogen Oxide
NPDES...National Pollutant Discharge Elimination System
NRCS ....Natural Resources Conservation Service
O3 .... Ozone
OSHA .... Occupational and Safety Health Act
Pb ....Lead
PM10...Particulate Matter less than 10 microns in diameter
Project...Buford Oil Company Travel Center
RCRA...Resource Conservation and Recovery Act
SB ....Senate Bill
SJVAPCD.. San Joaquin Valley Air Pollution Control District
SO2 .... Sulfur Dioxide
SSJVIC...Southern San Joaquin Valley Information Center
SWRCB...State Water Resources Control Board
SWPPP.. Storm Water Pollution Prevention Plan
USFWS .... United States Fish and Wildlife Service
USGS .... United States Geological Survey

Executive Summary

ES-1: Summary of the EIR

An Initial Study and Draft Environmental Impact Report (DEIR) were prepared to evaluate the potential impacts resulting from the expansion of the existing Fowler Shell Truck Stop at 2747 E. Manning Avenue, Fowler, CA 93625 (APN 345-180-30). The site of the existing Truck Stop is the site of the proposed Project. The Project site is approximately 19 acres, but only about 10 acres is currently developed with the existing Truck Stop; the area remaining being vacant, undeveloped/ruderal.

Buford Oil Co., owner of the site and operator of the Truck Stop, proposes to remove the existing use and replace it with a new, more modern facility to be called the Buford Oil Co. Travel Center. The proposed expansion will utilize the entire 19 acres and in addition to a newer diesel truck fueling and automobile gas fueling facility, weigh station, and convenience store, the expanded development will also include a hotel, two quick-serve and one sit-down family style dining options, and a truck wash, tire and lube center. A Travel Center building will also offer a variety of traveling amenities for truck drivers including a lounge, game room, ATMs, Western Union Check Cashing, and wi-fi and restroom facilities with showers and laundry.

This DEIR identified potentially significant adverse environmental impacts requiring mitigation measures in the topical areas of

- *Biological Resources,*
- *Cultural Resources,*
- *Greenhouse Gas Emissions,*
- *Hydrology and Water Quality. and*
- *Traffic*

The remaining topical areas of impact evaluation listed below were determined either in the Initial Study (contained in **Appendix A**) or by further analysis in this EIR to have less than significant or no impacts, and therefore requiring no mitigation measures:

- *Aesthetics*
- *Agricultural/Forestry Resources*
- *Air Quality*
- *Hazards & Hazardous Materials*
- *Land Use/Planning*
- *Mineral Resources*
- *Noise*
- *Population/Housing*
- *Public Services*
- *Recreation*
- *Tribal Cultural Resources*

Based on the further evaluation of this DEIR the Project will have potentially significant impacts requiring mitigation for all of the above listed five topics, except Hydrology and Water Quality. These results are set forth in Chapter 3 Impact Analysis and Chapter 6 Mitigation Monitoring and Reporting Program.

Table ES-1 below lists the five topical impact areas (listed above) which this EIR determined will have potentially significant adverse environmental impacts. It then shows a summary of the impact, and for identified potentially significant adverse impacts, it shows mitigation measures to avoid or reduce the impact to a less than significant level or to the greatest degree feasible. Following identification of mitigation measures, the table indicates the status of the resulting impact with mitigation measures incorporated. The identified levels of significance also assume implementation of all permit and approval requirements of Federal, State and local regulations applicable to the proposed Project, City of Fowler standard conditions of approval, and construction best management practices as discussed in the DEIR.

Summary of Proposed Actions and Consequences

Table ES-1. Summary of Potential Environmental Impacts

Summary of Potential Environmental Impacts		
Environmental Impact	**Mitigation Measures**	**Level of Impact After Mitigation**
Air Quality		
Impact III-a: The SJVAPCD has prepared attainment plans for the SJVAB in order to demonstrate achievement of the state and federal ambient air quality standards for ozone, PM10, and PM2.5. The attainment plans are based on, among other things, future growth in the SJVAB based on adopted general plans. Since the proposed project is consistent with the City's general plan, it would not conflict with or obstruct implementation of the SJVAPCD's attainment plans.	None	Less Than Significant Impact
Impact III-b: The difference between the existing emissions and the proposed Project emissions shows that the emissions do not exceed the SJVAPCD thresholds of significance. With no emissions exceeding any SJVAPCD thresholds, no mitigation measures are warranted. The Project would not violate any air quality standard or contribute substantially to an existing or projected air quality violation.	None	Less Than Significant Impact
Impact III-c: The City of Fowler and Fresno County is non-attainment for Ozone (1 hour and 8 hour) and PM_{10} (State standards) and $PM_{2.5}$. The SJVAPCD has prepared the 2013 Plan for the Revoked 1-Hour Ozone Standard[1], 2007 PM_{10} Maintenance Plan, and 2012 $PM_{2.5}$ Plan to achieve Federal and State standards for improved air quality in the SJVAB	None	Less Than Significant Impact

[1] San Joaquin Valley Unified Air Pollution Control District. 2013 Plan for the Revoked 1-Hour Ozone Standard. http://valleyair.org/Air_Quality_Plans/OzoneOneHourPlan2013/AdoptedPlan.pdf

Summary of Potential Environmental Impacts		
Environmental Impact	**Mitigation Measures**	**Level of Impact After Mitigation**
regarding ozone and PM. Inconsistency with any of the plans would be considered a cumulatively adverse air quality impact. As discussed in III-a, the Project is consistent with the currently adopted General Plan for the City of Fowler and is therefore consistent with the population growth.		
Impact III-e: The Project will not generate odorous emissions, but will attract people to its site for fuel, truck repair, food services and overnight hotel stays. There are no definitive sensitive receptors, such as schools, playgrounds, daycare facilities, elderly housing, convalescent homes, or medical facilities within one mile of the Project site. The Project is not located within the recommended separation distances for sensitive land uses, the Project is not anticipated to expose sensitive receptors to air pollution emissions or adversely impact these sensitive receptors.	None	Less Than Significant Impact
Biological Resources		
Impact IV-a: Ruderal habitats are characterized by a high level of human disturbance and absence of vegetation or dominated by non-native plant species. Ruderal areas within the Project vicinity have minimal value to wildlife due to the frequent human disturbance, presence of domestic dogs and cats, and the absence of vegetative cover. However, some disturbance-tolerant species may make incidental use of these ruderal lands. The occurrence of a special status species onsite would be unlikely; however, in order to ensure protection of any special status		Less Than Significant Impact

Summary of Potential Environmental Impacts		
Environmental Impact	**Mitigation Measures**	**Level of Impact After Mitigation**
species with potential to occur onsite, the mitigation measures shall be implemented	BIO-1 (WEAP Training): Prior to initiating construction activities (including staging and mobilization), all personnel associated with Project construction shall attend mandatory Worker Environmental Awareness Program (WEAP) training, conducted by a qualified biologist, to aid workers in identifying special status resources that may occur in the Project area. The specifics of this program shall include identification of the sensitive species and suitable habitats, a description of the regulatory status and general ecological characteristics of sensitive resources, and review of the limits of construction and mitigation measures required to reduce impacts to biological resources within the work area. A fact sheet conveying this information, along with photographs or illustrations of sensitive species with potential to occur onsite, shall also be prepared for distribution to all contractors, their employees, and all other personnel involved with construction of the Project. All employees shall sign a form documenting that they have attended WEAP training and understand the information presented to them. BIO-2 (General Pre-construction Survey): A pre-construction survey for special status species shall be conducted by a qualified biologist within 30 days prior to the beginning of construction activities. If sensitive biological resources are present onsite, the biologist shall establish an appropriate buffer zone and label sensitive resources or areas of avoidance with flagging, fencing, or other easily visible means. If avoidance is not feasible, CDFW and/or USFWS shall be consulted to determine the best course of action.	Less Than Significant Impact

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BIO-3 (Construction Operational Hours): Construction shall be conducted during daylight hours to reduce disturbance to wildlife that could be foraging within work areas.
BIO-4a (Avoidance): The Project’s construction activities shall occur, if feasible, between September 16 and January 31 (outside of nesting bird season) in an effort to avoid impacts to nesting birds.
BIO-4b (Pre-construction Nesting Bird Survey): If activities must occur within nesting bird season (February 1 to September 15), a qualified biologist shall conduct pre-construction surveys for active nests within 30 days prior to the start of construction. The survey shall include the proposed work area and surrounding lands within 0.5 mile. If no active nests are observed, no further mitigation is required. Active nests are generally defined by the presence of eggs or young; however, raptor nests are considered “active” upon the nest-building stage.
BIO-4c (Establish Buffers): On discovery of any active nests near work areas, the biologist shall determine appropriate construction setback distances based on applicable CDFW and/or USFWS guidelines and/or the biology of the species in question. Construction buffers shall be identified with flagging, fencing, or other easily visible means, and shall be maintained until the biologist has determined that the nestlings have fledged.
BIO-5a (Pre-construction Take Avoidance Survey): A take avoidance survey will be conducted by a qualified biologist for burrowing owls within 30 days prior to initiating ground disturbance activities. This survey will be conducted according to methods described in CDFW’s 2012 Staff Report on Burrowing Owl Mitigation[2].
BIO-5b (Avoidance): If an active burrowing owl burrow is detected, the occurrence shall be reported to the local CDFW office and the CNDDB, and disturbance-free buffers shall be implemented in accordance with CDFW’s 2012 Staff Report on Burrowing Owl Mitigation, as outlined in the table below:
<table>
<tr><td rowspan="2">Location</td><td rowspan="2">Time of Year</td><td colspan="3">Level of Disturbance</td></tr>
<tr><td>Low</td><td>Medium</td><td>High</td></tr>
<tr><td>Nesting sites</td><td>April 1 – August 15</td><td>200 meters</td><td>500 meters</td><td>500 meters</td></tr>
<tr><td>Nesting sites</td><td>August 16 – October 15</td><td>200 meters</td><td>200 meters</td><td>500 meters</td></tr>
<tr><td>Nesting sites</td><td>October 16 – March 31</td><td>50 meters</td><td>100 meters</td><td>500 meters</td></tr>
</table>
</td>
<td>Less Than Significant Impact</td>
</tr>
</table>

Summary of Potential Environmental Impacts		
Environmental Impact	**Mitigation Measures**	**Level of Impact After Mitigation**
	BIO-5c (Consultation with CDFW and Passive Relocation): If avoidance of an active burrowing owl burrow is not feasible, CDFW shall be immediately consulted to determine the best course of action, which may include passive relocation during non-breeding season. Passive relocation and/or burrow exclusion shall not take place without coordination with CDFW and preparation of an approved exclusion and relocation plan. BIO-6a (Pre-construction SJKF Burrow Survey): Within 30 days prior to the start of construction, a pre-construction survey for San Joaquin kit fox individuals and suitable burrows shall be conducted on and within 200 feet of proposed work areas. Any burrows within the survey area that are determined to be suitable for use by the SJKF shall be monitored for a period of three days using tracking medium and/or remotely triggered cameras. If an active kit fox den is detected within or adjacent to the Project area, construction will be delayed, and CDFW and USFWS shall be consulted to determine the best course of action. BIO-6b (Minimization): The Project shall observe all minimization and protective measures from the Construction and On-Going Operational Requirements of the USFWS 2011 Standardized Recommendations, including, but not limited to: construction speed limits, covering of pipes, installation of escape structures, restriction of herbicide and rodenticide use, proper disposal of food items and trash, prohibition of pets and firearms, and completion of an employee education program. BIO-6c (Mortality Reporting): The Sacramento Field Office of USFWS and the Fresno Field Office of CDFW will be notified in writing within three working days in the case of the accidental death or injury to a San Joaquin kit fox during construction. Notification must include the date, time, and location of the incident and any other pertinent information.	
Cultural Resources		
Impact V-a-c: The SSJVIC records search reported that no cultural resource studies have occurred within the Project area and there are no previously recorded sites in the Project area. However, there is one cultural resource that occurs in the Project area. The Project proposes ground-disturbing activities and therefore archaeological materials could be encountered during construction.	***Mitigation Measure CUL-1 (Archaeological Remains)*** In the event that archaeological remains are encountered at any time during development or ground-moving activities within the entire project area, all work in the vicinity of the find shall halt until a qualified archaeologist can assess the discovery.	Less Than Significant Impact

[2] CDFW. Staff Report on Burrowing Owl Mitigation. https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=83843&inline=true Accessed 27 March 2019.

Summary of Potential Environmental Impacts		
Environmental Impact	**Mitigation Measures**	**Level of Impact After Mitigation**
Impact V-d: Although, no formal cemeteries or other places of human internment are known to exist on the Project site; the Project has the potential to uncover human remains.	***Mitigation Measure CUL-2 (Human Remains)*** If human remains are uncovered, or in any other case when human remains are discovered during construction, the Fresno County Coroner is to be notified to arrange their proper treatment and disposition. If the remains are identified—on the basis of archaeological context, age, cultural associations, or biological traits—as those of a Native American, California Health and Safety Code 7050.5 and Public Resource Code 5097.98 require that the coroner notify the NAHC within 24 hours of discovery. The NAHC will then identify the Most Likely Descendent who will determine the manner in which the remains are treated.	Less Than Significant Impact
Greenhouse Gas Emissions		
Impact VII-a-b: The SJVAPCD's Interim GHG Emission Reductions Calculator[3] and the *Appendix J: GHG Emission Reduction Measures – Development Projects*, from CAPCOA[4], contain BPS as measures to reduce GHG emissions. The measures from the CAPCOA are GHG reductions specifically related to energy usage, water usage, and vehicle miles traveled. Several of these measures, listed below, are proposed by the Project, and other measures are recommended as further mitigation for this Project. Project-proposed BPS that will reduce GHG emissions: 1. The entire project is located within one-half mile of an existing/planned Class I/Class II bike lane on Golden State Boulevard, and	***Mitigation Measure GHG-1***: Site design and building placement shall minimize barriers to pedestrian access and interconnectivity. Physical barriers such as walls, berms, landscaping, and slopes between residential and nonresidential uses that impede bicycle or pedestrian circulation are eliminated. Estimated GHG reduction: 1 – 10% ***Mitigation Measure GHG-2***: The Project shall install Energy Star labeled roof materials. Estimated GHG reduction: 0.5 – 1% ***Mitigation Measure GHG-3:*** The Project shall optimize building's thermal distribution by separating ventilation and thermal conditioning systems. Estimated GHG reduction: 1 – 10%	Less Than Significant

[3] Interim GHG Emission Reductions Calculator. Interim GHG Emission Reductions Calculator.
[4] CAPCOA Appendix B Listing. https://www.rocklin.ca.us/sites/main/files/file-attachments/appendix_b_capcoa_ceqa_and_climate_change.pdf

Summary of Potential Environmental Impacts		
Environmental Impact	**Mitigation Measures**	**Level of Impact After Mitigation**
project design accommodates safe bicycle connection to the existing offsite facilities. 2. The project provides safe connections to external pedestrian pathways and access points via the internal street and sidewalk system. Implementation of the proposed Project could improve the job-to-housing ratio and; therefore, could contribute to shortening the average trip distance of residents to their jobs and to the reduction of total vehicle miles traveled in the City of Fowler, resulting in a per capita reduction in GHG emissions in the Project area.		
Hazards and Hazardous Materials		
Impact VIII-a-b: The Project proposes installation of eight 12,000-gallon aboveground fuel storage tanks, a 12-stall commercial truck fueling station, development of a commercial truck service facility for use of truck repair/maintenance, lube/oil services, and a washing bay. Operation of the Project would require the use, transport, and dispersal of hazardous materials such as fuels, lubricants, oils, and cleaning solvents. Fuel trucks delivering fuels onsite for storage in aboveground tanks will occur on a regular basis. Throughout the construction phase and operational phase, the Project shall comply with all State, federal, and County legislative requirements by preparing a Hazardous Materials Management/ Spill Prevention Plan, a Health and Safety Plan, and a Hazardous Materials Business plan.	None	Less Than Significant Impact

Summary of Potential Environmental Impacts		
Environmental Impact	**Mitigation Measures**	**Level of Impact After Mitigation**
Hydrology and Water Quality		
Impact IX-a: The construction phase of the Project would require the use and transport of fuels, oils and other chemicals (paints, adhesives, solvents, lubricants, etc.) typically associated with construction activities. If spilled or handled improperly, these materials could potentially enter the surface water or groundwater supplies. The Project also involves the removal of all existing underground and aboveground storage tanks and the installation of eight new 12,000-gallon aboveground fuel storage tanks. According to the EPA, "gasoline, leaking from service stations, is one of the most common sources of groundwater pollution." Furthermore, the Project must obtain a permit from Fresno County Department of Public Health prior to removing the USTs onsite, and construction activities must be conducted in accordance with Underground Storage Tank Closure Guidelines which require samples of soil and/or groundwater under the direction of Fresno County Department of Public Health. The operational phase of the Project will include a truck fueling station, truck service facility for truck repair/maintenance, lube/oil services, and a washing bay. The travel center will also include a 120-room hotel, several restaurants, and additional amenities typically associated with truck stops such as restrooms, showers, and laundry facilities. These will all be connected to the sewer services as provided to the City by SKF, and any stormwater runoff will be	None	Less Than Significant Impact

Summary of Potential Environmental Impacts		
Environmental Impact	**Mitigation Measures**	**Level of Impact After Mitigation**
directed to the approximately 1.57-acre stormwater basin that will be built on site.		
Impact IX-b: The City currently uses groundwater pumped from the Kings Subbasin to meet all of its water demand. It is anticipated that groundwater supplies will be adequate to meet construction water demands generated by the Project without depleting the underlying aquifer or lowering the local groundwater table. Therefore, Project construction would not deplete groundwater supplies and impacts would be less than significant.	None	Less Than Significant Impact
Impact IX-c, d, e: The Project will not alter the course of a waterway because there are no rivers or streams onsite or in the vicinity. Development of the Project will include excavation, grading, and the addition of impervious surfaces which will intentionally alter the drainage pattern onsite. Stormwater from the new impervious surfaces in the form of buildings, driveways, parking lots, and other paved areas would drain into drainage conveyance facilities and be transported to the proposed stormwater detention basin onsite. The stormwater would flow over paved or asphalt surfaces characteristic of a commercial development into a City-approved onsite stormwater detention basin and will not cause erosion or siltation. The proposed detention basin will control runoff from the Project and prevent increases in peak flow at all downstream locations.	None	Less Than Significant Impact
Impact IX-f: See Impact IX-a	None	Less Than Significant Impact

Summary of Potential Environmental Impacts		
Environmental Impact	**Mitigation Measures**	**Level of Impact After Mitigation**
Transportation and Traffic		
Impact XVI-a-b: An important goal is to maintain acceptable levels of service (LOS) along the highway, street, and road network within the City of Fowler and on the adjacent Caltrans facilities. The results of the Traffic Impact Study indicated that the Project is expected to cause a significant impact at the intersection of Manning Avenue and the SR 99 northbound off ramp. The Project will cause the LOS on the northbound approach to drop from D to E during the a.m. peak hour and the Project will cause the average delay associated with the existing LOS F to increase by approximately 50 seconds per vehicle during the p.m. peak hour. The other study intersections are expected to continue to operate at acceptable levels of service. The Manning Avenue/ SR 99 interchange has been determined by Fresno COG to be deficient. However, since complete reconstruction of the interchange is not considered a feasible mitigation measure for a single development project because it is cost prohibitive (estimated at more than $11 million in the *Fresno-Madera Metropolitan Freeway/Interchange Deficiency Study Phase II* dated November 24, 2008), the reconstruction of the entire interchange (discussed above) is not recommended as a feasible mitigation measure. However, signalization of the intersection of the northbound off ramp and Manning Avenue in its current configuration would function as a feasible mitigation measure. The improvement may be	***Mitigation Measure TRA-1 (Manning Avenue/SR99)*** The Project applicant shall provide a signalized intersection with a design life of at least 10-years or convert the northbound off ramp intersection to a two-lane roundabout. ***Mitigation Measure TRA-2 (Golden State Boulevard/Valley Drive)*** To mitigate the significant cumulative impact at the intersection of Golden State Boulevard and Valley Drive, the intersection, the City shall either modify the design to prevent left turns from eastbound Valley Drive to northbound Golden State Boulevard or signalize the intersection. Prior to construction of Phase I, the Project applicant shall work with the City to agree on the amount and terms of payment of its equitable fair share of the intersection improvements which are estimated to be 2.21 percent of the actual cost. ***Mitigation Measure TRA-3 (Manning Avenue/SR 99)*** As discussed above, the interchange will require a major reconstruction to function at acceptable LOS. This will require the City to advocate for and the Fresno COG and Caltrans to program the intersection to receive the funding for the needed improvements through the next round of Regional Transportation Improvement Plan and/or Statewide Transportation Improvement Plan. Prior to construction of Phase I, the Project applicant shall work with the City and Caltrans to agree on the amount and terms of payment of its equitable fair share of the interchange improvements which are estimated to be $1.4 million. ***Mitigation Measure TRA-4 (Manning Avenue/SR 99)*** As discussed above, the interchange will require a major reconstruction to function at acceptable LOS. This will require the City to advocate for and the Fresno COG and	Significant and Unavoidable

Summary of Potential Environmental Impacts		
Environmental Impact	**Mitigation Measures**	**Level of Impact After Mitigation**
considered as an interim measure as other funding sources for interchange reconstruction should be explored by the City of Fowler, County of Fresno, Caltrans, and other agencies responsible for approving projects that contribute trips to the intersection. Project (Phase I) will cause a significant impact at the intersection of Manning Avenue and SR 99 northbound off ramp by causing the LOS to drop from D to E during the a.m. peak hour and the Project will cause the average delay associated with the existing LOS F to increase by approximately 50 seconds per vehicle during the p.m. peak hour.	Caltrans to program the intersection to receive the funding for the needed improvements through the next round of Regional Transportation Improvement Plan and/or Statewide Transportation Improvement Plan. Prior to construction of Phase I, the Project applicant shall work with the City and Caltrans to agree on the amount and terms of payment of its equitable fair share of the interchange improvements which are estimated to be $1.4 million. ***Mitigation Measure TRA-5 (Manning Avenue/Golden State Boulevard)*** To mitigate the significant cumulative impact at the intersection of Manning Avenue and Golden State Boulevard, the City shall modify the design of the intersection widening it to provide two left-turn lanes, two through lanes, and one dedicated right-turn lane on all four approaches to the intersection. Prior to construction of Phase I, the Project applicant shall work with the City to agree on the amount and terms of payment of its equitable fair share of the intersection improvements which are estimated to be 3.14 percent of the actual cost of widening the intersection.	
Utilities and Service Systems		
Impact XVII-d: The Project would connect to City water. Currently the site uses approximately 1,740 gallon per day and the projected use for the proposed Project would be a maximum daily demand of 33,000 gallons per day. DWR requires that the City analyze projected water usage on a 2.0 daily peak factor, which would be a maximum daily demand of 66,000 gallons of water per day. City staff has evaluated the capacity of the City water system and determined that there is sufficient capacity to serve the proposed Project at the 2.0 daily peak factor rate.	None	Less Than Significant Impact

Summary of Potential Environmental Impacts		
Environmental Impact	**Mitigation Measures**	**Level of Impact After Mitigation**
Additionally, the Project will be required to provide an on-site distribution system capable of delivering fire flows throughout the proposed Project area.		

ES-1.2 Areas of Controversy Known to the Lead Agency

The proposed Project is consistent with the City General Plan's general commercial land use designation and seeks the required Condition Use Permit (CUP) approval required by the City-adopted implementing zoning district of "C-3, General Commercial District". Golden State Boulevard and Manning Avenue are named by the City General Plan as "designated truck routes".

This EIR and its determination of impacts potentially resulting from the Project is required to be considered by the City of Fowler Planning Commission prior to taking action on the discretionary CUP. This EIR recommends the above-listed mitigation measures be adopted by the Planning Commission for the Project in order to avoid or reduce impacts to "Less than Significant", or in the case of significant unavoidable impacts, to the greatest extent reasonably and feasibly possible, as required by the California Environmental Quality Act (CEQA).

Of the potential significant impacts summarized in Table ES-1, above, the area of most potential controversy known to the City of Fowler is the change in the traffic environment that would result from the Project specifically at the northbound SR 99 off-ramp intersection with Manning Avenue, as fully described in the Traffic Impact Study prepared by Peters Engineering Group, a qualified sub-consultant, contained in **Appendix H** of the EIR. The TIS determines that Traffic volumes at this location are operating as Level of Service F, indicating reasonably acceptable traffic delays at peak hours. The Project, however, will generate sufficiently more traffic at peak hour to increase Level of Service delays significantly such that mitigation is recommended. The TIS and EIR indicate that the optimal long-term mitigation would be to re-construct the SR 99 north bound off-ramp intersection with Manning Avenue. The cost of such an improvement is estimated to be approximately $3,110,000.00.

The City does not currently have an adopted Traffic Impact Fee program, a funding mechanism allowed by State law that would be enacted by ordinance as a means to collect "fair-share" contributions from area development to fund optimal long-term mitigation traffic improvements at locations identified and prioritized by the City and as adopted by the Fresno County Council of Government's (FCOG) Regional Transportation Plans which is updated every three years. Therefore, to place such a financial burden on a single project (this Project) would make the Project financially infeasible.

Therefore, the EIR identifies a reasonable and feasible mitigation measure that the Project pay to signalize the SR 99 north bound off ramp intersection at Manning Avenue. Based upon the Traffic Impact Study this mitigation measure will reduce Project-generated impacts to less that significant during the next 10-15-year period. This provides the City a period of time to develop and adopt a Traffic Impact Fee program under which "fair share" funds from all future development in the area can contribute to the long-term mitigation.
The City conducted a "Public Scoping Meeting" on June 20. 2018 at which a one member of the public, Julie Woods, owner and operator of Sunny Truck Wash, of Fowler, asked the following list of questions about the Project. The EIR contains information in response to these questions as indicated by the references in parenthesis after each question.

- Can Mr. Buford add to or change the Project after Project approval? (see **Section 2.1**)
- Will the Project affect nearby businesses' water use? (see **Section 3.7.4, Impact Analysis V-III-a-b**)
- Will there be hazards associated with the removal of existing underground fuel tanks? (see **Section 3.6.4, Impact Analysis V-III-a-b**)
- How much truck traffic will there be and how will it be handled? (see **Appendix H - Traffic Impact Study** and **Section 3.8**)

- Can the trucks make the turns indicated by the circulation pattern on the site plan? (see **Section 2.4**)
- Will there be RV hookups? (see **Section 2.3 and 2.3.1**)
- Will there be propane available to the public? (see **Section 2.3.1**)

ES-1.3 Issues to be Resolved Including Choice among Alternatives and Mitigating Significant Effects

Other than the "No Project" Alternative, or a "Reduced Scale of Development" Alternative (see Chapter 4 for detailed discussion of Alternatives) there are no other reasonable or feasible alternatives to consider for the proposed Project that would enable a reduction of Project impacts, and that would achieve most of the identified objectives of the project, as required by CEQA

The Project is proposed by the current property owner and existing Fowler Shell Truck Stop operator, Buford Oil Company/Tom Buford (applicant and proponent). The impacts identified for the Project are those that result from the incremental change from baseline conditions (the existing truck stop use on a portion of the site) to expansion of the use over the entire parcel. Alternative sites not currently containing an existing truck stop operation would likely result in more or greater impacts if the site was vacant or required demolition of another use.

The applicant does not own other lands in Fowler with similar general plan/zoning compliance, and size to accommodate the proposed use (Buford Oil Co. Travel Center). This means, he does not have control over other lands that could reasonably provide a suitable alternative location for the proposed site. Even if he did own another site of suitable size, if it did not have the necessary general plan and zoning designations allowing the proposed use, amendments to these policies and regulations could result in new impacts related to land use conflicts that the current project site does not generate.

With the exception of the potential controversy related to project generated traffic, and generated traffic, project impacts, project impacts can be reduced to less than significant at this site. The use will generate direct and indirect benefits resulting from additional jobs and revenue for the City and its residents.

1 Introduction

The City of Fowler has received a Conditional Use Permit Application No. 17-03 for the establishment of the proposed Buford Oil Company Travel Center Project (Project). A conditional use permit is considered a discretionary land use permit and is therefore subject to evaluation under the California Environmental Quality Act. The City of Fowler is the CEQA lead agency for this proposed Project.

Provost & Pritchard Consulting Group (Provost & Pritchard) was hired by the City to prepare an CEQA Initial Study (see **Appendix A**) to determine the potential significant environmental effects that could result from the proposed Project.

The impact analyses contained in the Initial Study determined that the Project may have Potentially Significant Impacts or Less than Significant Impacts with Mitigation Incorporated on the following list of topics. These topics, therefore, are further analyzed in **Chapter 3** of this focused EIR.

- *Air Quality: a) - c), and e)*
- *Biological Resources: a)*
- *Cultural Resources: all*
- *Greenhouse Gas Emissions: all*
- *Hazards and Hazardous Materials: a) & b)*
- *Hydrology and Water Quality: a) – f)*
- *Transportation/Traffic: a) & b)*
- *Utilities and Service Systems: d)*
- *Mandatory Findings of Significance: a) – c)*

The Initial Study determined that the Project would have No Impacts or Less than Significant Impacts on the following topics which, therefore, will not be further analyzed in this EIR:

- *Aesthetics: all*
- *Agriculture and Forestry Resources: all*
- *Air Quality: d)*
- *Biological Resources: b) – f)*
- *Geology and Soils: all*
- *Hazards and Hazardous Materials: c) – h)*
- *Hydrology and Water Quality: g) – j)*
- *Land Use and Planning: all*
- *Mineral Resources: all*
- *Noise: all*
- *Population and Housing: all*
- *Public Services: all*
- *Recreation: all*
- *Transportation/Traffic: c) – f)*
- *Tribal Cultural Resources: all*
- *Utilities and Service Systems: a) – c), and e) – g)*

This document has been prepared in accordance with the California Environmental Quality Act (CEQA), Public Resources Code Section 21000 et seq. and the State CEQA Guidelines implementing the Act, Government Code Section 15000 et seq.

The site and the proposed Project are described in detail in **Chapter 2 Project Description**.

1.1 CEQA Regulatory Information

An Initial Study (IS) is a document prepared by a lead agency to determine whether a project may have a significant effect on the environment. In accordance with California Code of Regulations Title 14 (Chapter 3, Section 15000, *et seq*.)-- also known as the CEQA Guidelines-- Section 15064 (a)(1) states that an environmental impact report (EIR) must be prepared if there is substantial evidence in light of the whole record that the proposed Project under review may have a significant effect on the environment and should be further analyzed to determine mitigation measures or project alternatives that might avoid or reduce project impacts to less than significant levels. A negative declaration (ND) may be prepared instead if the lead agency finds that there is *no* substantial evidence in light of the whole record that the project may have a significant effect on the environment. An ND is a written statement describing the reasons why a proposed Project, not otherwise exempt from CEQA, would not have a significant effect on the environment and, therefore, why it would not require the preparation of an EIR (CEQA Guidelines Section 15371). According to CEQA Guidelines Section 15070, a ND or *mitigated* ND shall be prepared for a project subject to CEQA when either:

- The IS shows there is no substantial evidence, in light of the whole record before the agency, that the proposed Project may have a significant effect on the environment, or
- The IS identified potentially significant effects, but:
    - Revisions in the project plans or proposals made by or agreed to by the applicant before the proposed MND is released for public review would avoid the effects or mitigate the effects to a point where clearly no significant effects would occur is prepared, and
    - There is no substantial evidence, in light of the whole record before the agency, that the proposed Project *as revised* may have a significant effect on the environment.

1.2 Document Format

This EIR contains the following chapters and technical appendices:

Executive Summary – provides a brief summary of the proposed Project and its consequences in a tabular format. The summary also identifies the potential areas of controversy about the Project known to the City of Fowler and briefly addresses issues relating to Alternatives to the Project that could potentially reduce impacts.

Chapter 1 – *Introduction,* explains the purpose of an EIR, its content, and the environmental review process.

Chapter 2 – *Project Description,* provides a detailed description of proposed Project objectives and construction and operational components.

Chapter 3 – *Impact Analysis,* further analyzes in more detail those potentially significant impacts resulting from the Project as determined by the Initial Study (Appendix A). If the further analysis determines that the Project does not have the potential to result in a significant impact on the specific environmental issue area, the topical section provides substantial evidence and an analytical discussion of the reasons why no impacts are expected or why the impact would be Less than Significant. If analyses in this chapter determine that the Project could have a potentially significant impact on a resource, the issue area discussion provides a description of potential extent and magnitude of the impacts, and reasonable and feasible mitigation measures and/or regulatory requirements that would reduce those impacts to a less than significant level. If, following the analysis, it is determined that the impact would remain significant even with incorporation of reasonable and feasible mitigation, the impact will be considered unavoidable and will be identified and discussed further in Chapter 6. Each topical impact analysis also evaluates the potential for *cumulative* impacts. Cumulative impacts refer to two or more individual effects which, when considered together are considerable or which compound or increase other environmental impacts. Cumulative impacts can also result from incremental project impacts added to other closely related past, present and reasonably foreseeable probable future projects. Cumulative impacts can result from individually minor but collectively significant projects taking place over a period of time.

Chapter 4 – *Analysis of Alternatives,* describes and evaluates a reasonable range of alternatives to the Project, including the "No Project" Alternative. The range of Alternatives are those which would reasonably attain most of the basic objectives of the Project, but which would avoid or substantially lessen any of the significant effects of the Project. This EIR evaluates the No Project Alternative and a Reduced Development Alternative. The Project is compared to each alternative qualitatively, and the environmental ramifications of each alternative are identified and compared.

Chapter 1 - *Other Impact Considerations,* describes several other categories of impacts required to be considered by CEQA that are not considered in the above-listed chapters:

- Unavoidable Impacts (significant environmental effects which cannot be avoided if the project is implemented,
- Significant Irreversible Environmental Changes if the Project is implemented, and
- Growth Inducing Impacts.

Chapter 6 – *Mitigation Monitoring and Reporting Program,* contains a table that summarizes the environmental issues, the mitigation measures, and the agency or agencies responsible for monitoring and reporting, the timing and frequency of mitigation monitoring, completion timeline, and the person/agency responsible for verifying implementation and completion of the mitigation measures.

Chapter 7 – *List of Preparers and Organizations Consulted,* provides a list of key Lead Agency and consultant personnel involved in the preparation of the EIR and agencies, organizations and other interested parties who may have been consulted, formally or informally regarding the project and its potential impacts and mitigation measures.

APPENDICES: Following the body of this EIR, several appendices and technical studies have been included to support and facilitate environmental analysis of the Project.

a) Initial Study
b) CEQA Notices
c) CalEEMod Output files
d) Biological Resources Evaluation
e) Cultural Resources Evaluation
f) Geo-Technical Evaluation
g) Water Usage Calculations
h) Traffic Impact Study
i) NRCS Soils Report

1.3 Public Involvement

Pursuant to the CEQA Guidelines, the procedures for the preparation of an EIR are designed to involve the public and other potentially affected parties and agencies in the decision-making process. The CEQA process encourages open discussion and interaction with the public and requires the publication and circulation of a Notice of Preparation to help determine the scope of a proposed project and environmental topics that are of potential concern to the public. The following sections identify the public processes that have been undertaken for the Project.

1.3.1 Notice of Preparation of the Draft EIR/Notice of Public Scoping Meeting

In accordance with CEQA, the City circulated a Notice of Preparation (NOP) of an EIR for the required 30-day public comment period beginning on June 11, 2018 and ending on July 11, 2018 (**Appendix B**). As encouraged by CEQA, this NOP also combined with a Notice of Scoping (NOS) Meeting. The purpose of the NOP was to inform the affected public agencies and the general public of the City's intention to prepare an EIR for the Project and to invite submittal of written comments during the announced 30-day comment period regarding environmental concerns about the Project. The joint NOP/NOS also provided an invitation to agencies and the public to participate in a Public Scoping Meeting that was held at Fowler City Hall, on June 20, 2018 starting at 6:30pm. The purpose of the Public Scoping Meeting was to allow an additional opportunity for the public to hear a brief presentation about the Project and enable them to provide oral or written comments regarding their environmental concerns about the Project they felt should to be evaluated in the EIR. The public was also welcomed and encouraged to identify potential reasonable and feasible mitigation for such impacts or alternatives that would avoid or reduce impacts.

The NOP/NOS was also published in the Fresno Business Journal, a newspaper of general circulation in the Project area. The notice appeared in the newspaper on June 11, 2018. As required by CEQA. The NOP/NOS was sent via certified mail to the Responsible, Trustee, and other interested Agencies, and to property owners within a 300-foot radius of the Project boundary. The NOP/NOS was also circulated through the State Clearinghouse of the Governor's Office of Planning and Research announcing the same 30-day comment period and inviting Responsible and Trustee agencies to comment on the potential environmental impacts of concerns to their areas of authority and/or to participate in the Public Scoping Meeting. A copy of the NOP/NOS and SCH transmittal cover sheet are included in Appendix B.

The only written comment to the NOP/NOS was received from Caltrans, in a letter dated July 3, 2018. The letter acknowledged Caltrans' understanding of the project description and that a traffic study was to be prepared by a qualified subconsultant. Caltrans requested to remain involved in project and offered to provide the traffic subconsultant with any needed traffic data available to assist with the Traffic Impact Study and analysis section of EIR. As requested by Caltrans, the subconsultant provided a proposed scope of work for the Traffic Impact Study which was reviewed and acknowledged by Caltrans to be appropriate for the Project and surrounding area of potential impact.

Of the five citizens who attended the Public Scoping meeting, the only oral commentary came in the form of the following questions asked by a Julie Woods, representing Sunny Truck Wash, of Fowler:

- Can Mr. Buford add to or change the Project after Project approval? (see **Section 2.1**)
- Will the Project affect nearby businesses' water use? (see **Section 3.8.4**, Impact Analysis IX-b)
- Will there be hazards associated with the removal of existing underground fuel tanks? (see **Section 3.7.4**, Impact Analysis V-III-a-b)
- How much truck traffic will there be and how will it be handled? (see **Appendix H** - Traffic Impact Study and **Section 3.8**)
- Can the trucks make the turns indicated by the circulation pattern on the site plan? (see **Section 2.4**)
- Will there be RV hookups? (see **Section 2.3** and **2.3.1**)
- Will there be propane available to the public? (see **Section 2.3.1**)

City Staff thanked the speaker for her questions and indicated that responses to them would be included the EIR.

1.4 Notice of Availability and Distribution of the Draft EIR

On July 19, 2019, a Notice of Availability (NOA) was published in the Fresno Business Journal and also mailed to interested agencies and individuals that had previously requested such notice in writing, as required by CEQA. The NOA initiated a 45-day DEIR public review period indicating that the City would accept written comments on this Draft EIR starting July 19, 2019 and ending 5:00 pm on September 3, 2019.

In addition to the NOA, a Notice of Completion (NOC) transmittal form,the required 15 copies of the DEIR in electronic form via CD ROM, and the Summary for Electronic Document Submittal were received by the State Clearinghouse (SCH) in the Governor's Office of Planning and Research on July 19, 2019. The SCH is responsible to transmit the 15 copies to State Agencies who may have Responsible or Trustee authority over resources potentially affected by the Project.

2 Project Description

2.1 Project Background and Objectives

Buford Oil Co. currently operates the Fowler Shell Truck Stop at 2747 E. Manning Avenue, Fowler, CA 93625 (APN 345-180-30) which is the site of the proposed Project. The Project parcel is approximately 19 acres, of which about 10 acres are developed with the existing truck stop, with the remainder being vacant/undeveloped/ruderal.

Existing conditions at the site include:

a. 14-dispenser diesel truck fueling island covered by an approximate 3,500 square foot canopy
b. 8-gasoline dispenser fueling island covered by an approximate 2,900 square foot canopy
c. Two 20,000-gallon underground tanks and three 20,000-gallon above ground tanks
d. An above-ground propane tank that was been removed
e. A truck weighing station consisting of two scales
f. One approximately 2,600 square foot convenience store (Star Mart)
g. An approximately 3,900 square foot restaurant (Port-of-Subs)
h. Area designated for overnight truck parking of approximately 50 stalls
i. An approximately 1-acre drainage basin

Tom Buford, applicant and owner of Buford Oil Company, has applied to the City of Fowler for approval of Conditional Use Permit 17-03 to expand the existing Fowler Shell Truck Stop and establish a larger Buford Oil Company Travel Center. The proposed Project will utilize the entire approximately 19-acre site and provide modernized truck and automobile fueling stations as well as expanded dining and hotel accommodations (see Section 2.3.1 for a full project description). The City Zoning Ordinance Section 9-5.25.04 requires the Planning Commission approval of a Conditional Use Permit subject to findings to protect the public health, safety, and general welfare of the City of Fowler. Once this Conditional Use Permit is approved, the applicant is required, for the life of the Project, to comply with all conditions of approval and environmental impact mitigation measures adopted by the Planning Commission. Revisions or modifications to the use over time would be subject to further review by the City, and may include formal amendments to Conditional Use Permit 17-03 (new public hearing process), possible other ministerial or discretionary permits pursuant to requirements of State law, the City Municipal Code and City Zoning Ordinance, and possible subsequent environmental review pursuant to CEQA.

The purpose and objectives of the Project are to:

- Promote economic activity and job growth within the City of Fowler.
- Maximize the utilization of land the applicant (Buford Oil Company) already owns.
- Provide a modernized and safe place for commercial truck drivers and vehicles to stop and rest
- Provide additional services and facilities needed to accommodate the expanded traveling public within the San Joaquin Valley along the SR 99.

Additional Project details are provided below in **2.3 Description of Project**.

2.2 Project Location and General Setting

The Project is located within the incorporated City of Fowler on the Central Valley floor portion of Fresno County (**see Figure 2-1. Regional Location Map**). Fowler is one of many small cities located along and bisected by the State Route (SR) 99 that stretches the length of the Valley from the Tehachapi mountain range south of Bakersfield at the southern end to Red Bluff in Northern California.

The Central Valley of California, with its relatively mild Mediterranean climate and rich agricultural soils, is known for its intensive and extensive seasonal crop, orchard, vineyard, and animal-raising agricultural operations that surround the many incorporated urbanized cities and the more moderately urbanized and rural unincorporated communities, towns, and small hamlets. Agriculture is the mainstay of the region's economy, supporting many landowners and residents as their primary source of income and supporting a wide variety of agricultural related processing, packaging, and transporting businesses. Nearly all agricultural products are transported directly to processing and packaging operations by large trucks. After packaging they are transported again by large trucks to local intra- and inter-state wholesale and retail businesses, or delivered to rail, shipping and airport facilities for broader world-wide distribution.

SR 99 forms the transportation spine through the Central Valley accommodating millions of commuter, business, recreational/tourist, and logistics/commerce trips per year. It is a vital component of economic prosperity of Central Valley communities, like Fowler. The many on- and off-ramps provide not only direct access to adjacent and proximal communities, but the interchange locations provide abundant opportunities for commerce for the cities through which SR 99 traverses.

The Project site is located on the north side of East Manning Avenue at 2747 East Manning Avenue, Fowler, CA 93625. Specifically, the site lies within Section 23, Township 15 South, Range 21 East, MDB&M and is identified as Assessor Parcel No. (APN) 345-180-03. The centroid of the parcels is Latitude 36˚36'23.1" N, and Longitude 119˚39'29.8" W.

The site lies immediately east of SR 99 and west of Golden State Boulevard, the major arterial serving the City's industrial corridor. The Project site designated for general commercial use by the City's general plan and zoning (**see Figure 2-2. Aerial Map, Figure 2-3. General Plan Map and Figure 2-4. Zoning Map**).

Properties surrounding the site are also designated by the City General Plan and zoned for commercial and industrial uses (**See Figure 2-3 and Figure 2-4)**. West of the Project site are parcels that are designated by the General Plan as Light Industrial and zoned as M-1 (Light Industrial). To the north, is East Valley Drive and two parcels designated by the General Plan as Light Industrial and General Commercial and zoned as M-1 (Light Industrial) and C-3 (General Commercial), respectively. To the east, is a 1.9-acre parcel, developed with an operating commercial use, planned for Community Commercial and zoned C-2 (Community Commercial), South Golden State Boulevard and a 25-acre parcel designated as Light Industrial by the General Plan and zoned as M-1 (Light Industrial). South of the Project are East Manning Avenue and several parcels that are designated by the General Plan as General Commercial and zoned C-3 (General Commercial).

The Project is near the easterly edge of the City limits of Fowler and is therefore in close proximity of properties southwest and northeast within Fresno County jurisdiction. Those properties in the County are currently operating as agricultural uses, in conformance to the Fresno County General Plan Land Use Designation and Zoning.

2.3 Description of Project

The proposed Buford Oil Company Travel Center Project will consist of the demolition of the existing truck stop (existing convenience store, fueling facilities, and a weighing station consisting of two truck scales) and replacing them with a more modern truck stop facility including a new hotel, additional restaurants, and additional parking and travel center amenities for commercial truck operators and traveling public. The site plan layout is depicted in **Figure 2-6** and is more fully described below in **Section 2.3.1.**

Construction will begin with the new convenience store, gas and diesel fueling facilities. Once operational, the existing convenience store, gas and diesel fueling facilities will be removed. We plan to minimize any downtime in this manner. The pads for other businesses will be prepared following the completion of removal of existing structures.

Energy efficient design to include solar power generation, efficient lighting, cooling and other efficiencies. Backup power generation is not being considered at this time.

Operations would function 24 hours a day, 365 days a year, consistent with the current operation.

Employment at each site will be determined by the individual businesses. Based on industry averages, the three restaurants would employ a total of approximately 45. The convenience store is expected to employ approximately 18, the hotel is estimated to employ 20 people, and the repair and lube center is expected to employ 8. Total employment is estimated to approximately 91.

Annual service and delivery vehicles are estimated as follows:

Convenience store/Quick Serve:	1,258
Truck tire shop:	150
Restaurants:	312
Hotel:	104
Total:	**1,824**

On-site parking will accommodate a total of 97 trucks, 339 automobiles, and 8 RVs. There will be no RV hookups provided and no RV waste-disposal facilities.

Fuel dispensing nozzles will accommodate a maximum of 8 trucks at a time and 12 automobiles at a time. The weigh station will be able to accommodate 1 truck at a time.

2.3.1 Proposed Uses and Phasing

Phase 1

Phase 1 of the Project is a 7.96-acre travel center (sometimes referred to as a "travel stop") located between Buford Drive and Golden State Boulevard containing the following:

1.) *Eight diesel fueling dispensers (includes diesel, diesel exhaust fluid, and bio diesel) with a 3,280-square-foot diesel fuel canopy*
2.) *Six gas fueling dispensers (12 fueling positions) for automobiles with a 3,440-square- foot gas canopy*
3.) *A propane gas tank not exceeding 1,000 gal., available to the public.*
4.) *A weigh station consisting of one truck scale*
5.) *97 total truck parking stalls: 89 uncovered and 8 under canopy*
6.) *63 total auto parking stalls; 51 uncovered and 12 under canopy*
7.) *One 9,000-square-foot building that will include:*

    1. *A driver's lounge, game room, ATMs, Western Union Check Cashing, and wi-fi*

2. *Restroom facilities that include showers and laundry*
3. *Two quick service restaurants*

8.) *Construction of Buford Drive*

9.) *Access via an entrance-only driveway from westbound Manning Avenue, five driveways connecting to Buford Drive, and one driveway connecting to Golden State Boulevard.*

10.) *This phase also includes construction of a stormwater ponding (retention) basin on Outlot A, approximately 1.57 acres.*

Phase 2

Phase 2 of the Project is a 0.98-acre lot on the east side of Buford Drive that will have a 10,000-square-foot truck tire repair, lube, and wash building. Access will be shared with the Phase 1 driveways. In addition to the 3 vehicle bays inside the shop, there will be 11 automobile parking stalls outside the building in this Phase.

Phase 3

Phase 3 of the Project is a 0.88-acre lot that will have a 4,627-square-foot dine-in restaurant. Access will be via one driveway connecting to Manning Avenue and connectivity to adjacent Phases 4, 5, and 6. A total of 58 automobile parking stalls will be provided in this Phase.

Phase 4

Phase 4 of the Project is a 0.91-acre lot that will have a 4,378-square-foot restaurant with a drive through. Access will be via one driveway connecting to Buford Drive and connectivity to adjacent Phases 3 and 5. A total of 51 automobile parking stalls will be provided in this Phase.

Phase 5

Phase 5 of the Project is a 0.63-acre lot that will have a 3,116-square-foot restaurant with a drive through. Access will be via one driveway connecting to Buford Drive and connectivity to adjacent Phases 3 and 4. A total of 35 automobile parking stalls will be provided in this phase.

Phase 6

Phase 6 of the Project is a 2.23-acre lot that will have a four-story, 120-room hotel in a building with a total area of approximately 40,000 square feet. Access will be via two driveways connecting to Buford Drive and connectivity to adjacent Phase 3. There will be 118 automobile parking stalls and 8 stalls for RV parking. The RV Parking will not provide hook-ups.

Once the Project is approved to go forward, and Mr. Buford has secured tenants for the proposed uses, he intends to file a land division application to create lots for sale or lease to the tenants per their specifications and needs in accordance with the California Subdivision Map Act.

2.4 Project Access and Circulation

The project would attract automobiles and truck traffic from State Route 99 to the project site via the Manning Avenue exit.

Primary site access is proposed at 3 locations (see **Figure 2-5**):

- A new signalized intersection at East Manning Avenue and Vineyard Place,
- A major right-in/right-out driveway connecting to Golden State Boulevard, and
- A major street, Buford Drive, that will be constructed extending north/south through the site from East Manning Avenue frontage on the south and connecting to East Valley Drive frontage on the north and providing internal access to all of the proposed uses.

Secondary access points will be provided at two locations:

- A right-in/right-out driveway west of the intersection at E. Manning and Vineyard Place, and

- A right-in only driveway immediately east of the E. Manning and Vineyard Place intersection (similar to the existing condition).

The northern access along Valley Drive is intended for use by both general automobile and truck traffic. The eastern entrance along Golden State Boulevard is intended for truck traffic access. The southwestern access point along Manning Avenue is restricted to right in/right out and intended for general automobile traffic. The southern middle access point is at Vineyard Drive and is intended for general automobile traffic from the west or east. The entrance at Vineyard Drive is also intended for east bound truck traffic. The southeastern access point along Manning Avenue is primarily for west bound truck traffic access to the diesel fueling area and is needed since the signalized entrance at Vineyard Drive is too narrow for west bound truck use.

Buford Street (proposed private street) will be a curvilinear arterial street that runs north-south through the Project site. Buford Drive will allow for circulation throughout the entire project site. The proposed street is 103 feet at its maximum to allow for the maneuverability of commercial truck and trailers and automobiles to have access to the site access points are #1 and #4.

Sidewalk and public right-of-way improvements will take place along the northern, eastern and southern Project boundaries. All access points will be constructed concurrently with Phases 1 and 2. Access point #4 will be the primary point of ingress and egress during the construction phase. Access to the site from East Manning Avenue will remain during all construction phases as the primary point of ingress and egress.

The site design, including roadway lane alignments and drive approaches, was developed using industry standard truck-turning templates for large tractor & trailer trucks meeting California limits, to assure adequate room for safe maneuverability and interface with automobiles within the site as well as entering and leaving the site.

2.5 Infrastructure Improvements

The construction of onsite and offsite infrastructure improvements would be required to accommodate development of the proposed project. Public sewer and water are existing along Golden State, Manning and Valley Drive, but we intend on reusing the existing onsite sewer and water lines. An onsite stormwater ponding (retention) basin is proposed to handle storm water.

2.6 Construction

The following construction parameters were assumed for this project:
Start: Nov. 2019
Complete: May 13, 2021

2.7 Operation and Maintenance

Once constructed, the site will be fully operational, and any parcels created for sale or lease will be maintained by individual tenants. Buford Drive and other common areas will either be cooperatively maintained or maintained by the truck stop owner if the street is fully incorporated into that development parcel. The hotel, truck stop/wash, and convenience store are expected to be operational 24/7 although this will not be known

with certainty until tenants are secured. Restaurant and drive-throughs food service operations may also be operational on a 24/7 basis.

2.8 Cumulative Projects Considered

The *CEQA Guidelines* require that all EIRs contain an analysis of cumulative impacts for the Project. An EIR must discuss the "cumulative impacts" of a project when its incremental effect will be cumulatively considerable. Section 15355 defines cumulative impacts as *"two or more individual effects which, when considered together, are considerable or which compound or increase other environmental impacts."* A cumulative impact *"consists of an impact which is created as a result of the combination of the project evaluated in the EIR together with other projects causing related impacts"* [§15130(a)(1)]. The discussions of cumulative impacts *"shall reflect the severity of the impacts and their likelihood of occurrence, but the discussion need not provide as great detail as is provided for the effects attributable to the project alone"* [§ 15130(b)].

The Guidelines provide further direction regarding cumulative impacts analysis. They state that "Lead agencies shall define the geographic scope of the area affected by the cumulative effect and provide a reasonable explanation for the geographic limitation used" [§15130(b)(3)]. The cumulative impact analysis "shall examine reasonable, feasible options for mitigating or avoiding the project's contribution to any significant cumulative effects" [§15130(b)(5)]. With some projects, "the only feasible mitigation for cumulative impacts may involve the adoption of ordinances or regulations rather than the imposition of conditions on a project-by-project basis" [§15130(c)]. For purposes of this EIR, the geographic scope of the area analyzed for cumulative effects is the area of the proposed Project and the area described in the General Plan.

CEQA Guidelines §15130(b)(1) permits a lead agency to rely on either: "(A) A list of closely related past, present, and reasonably foreseeable probable future projects producing related or cumulative impacts, including, if necessary, those projects outside the control of the agency, or (B) A summary of projections contained in an adopted general plan or related planning document, or in a prior environmental document which has been adopted or certified, which described or evaluated regional or area-wide conditions contributing to the cumulative impact. Any such planning document shall be referenced and made available to the public at a location specified by the lead agency."

According to the City of Fowler, the following were identified as the closely related past, present, and reasonably foreseeable probable future projects:

1.) Maxco Packaging, a recently approved 295,380-square foot cardboard box manufacturing facility and 12,519-square foot office building on approximately 26 acres at the northeast corner of East Manning Avenue and Golden State Boulevard.

2.) Three Crowns Industrial, Tract 6027, proposed division of 14.6 gross acres into 10 parcels ranging in size from 0.80 acres to 2.2.8 acres for M-1 industrial development immediately west of the Project site.

3.) The funded Golden State Corridor project will construct a second left-turn lane on northbound Golden State Boulevard onto East Manning Avenue. (See Figure 13 of the Traffic Impact Study in **Appendix**)

The County of Fresno was requested but did not identify any similar projects for cumulative consideration in the neighboring Fresno County jurisdiction.

Each of the topical impact assessment sections in Chapter 3 contains an evaluation of the cumulative impacts generated by the Project or from the implementation of the proposed Project considered in conjunction with the development of other projects identified above.

2.9 Use of the EIR

If found adequate pursuant to CEQA, the Planning Commission of Fowler will take an action at a public hearing to certify the EIR and approve the Project together with adoption of conditions of approval and the mitigation measures found reasonable and feasible to avoid or reduce potential impacts to less than significant.

Once certified the EIR may also be used by various other public Responsible Agencies when considering the issuance of their own separate permits or approvals for the Project. The following Agencies may utilize the EIR in the issuance of any subsequent discretionary permits or approvals prior to construction of the Project:

- City of Fowler Tentative and Final Parcel Map; to create parcels for sale to or lease by future truck stop, hotel, convenience store, and food service tenants.
- San Joaquin Valley Air Pollution Control District –Regulation VIII – Fugitive Dust Control, Rule 9510 – Indirect Source Review Air Impact Assessment, to fulfill the District's emission reduction commitments for development projects.
- County of Fresno, Environmental Health, Hazardous Materials Certified Unified Program Agency (CUPA), underground storage tank removal.
- State Water Resources Control Board – NPDES Construction General Permit; limits the "pollutants" discharged into surface waters.
- Regional Water Quality Control Board, Central Valley Region – Waste Discharge Requirements, to regulate treatment, storages, processing, or disposal of solid waste.
- County of Fresno, Environmental Health, Hazardous Materials Certified Unified Program Agency (CUPA), Aboveground storage tanks; compliance with Federal Spill Prevention, Control and Countermeasure (SPCC) Plan.

Ministerial approvals and agreements that may be required include:

- City of Fowler – Encroachment Permit; in order to construction improvements within City right-of-way.
- Caltrans – Encroachment Permit to perform construction within State right-of-way.
- City of Fowler – Grading Permit; to allow proper on-site drainage.
- City of Fowler –Building Permits; to construct the development as proposed.

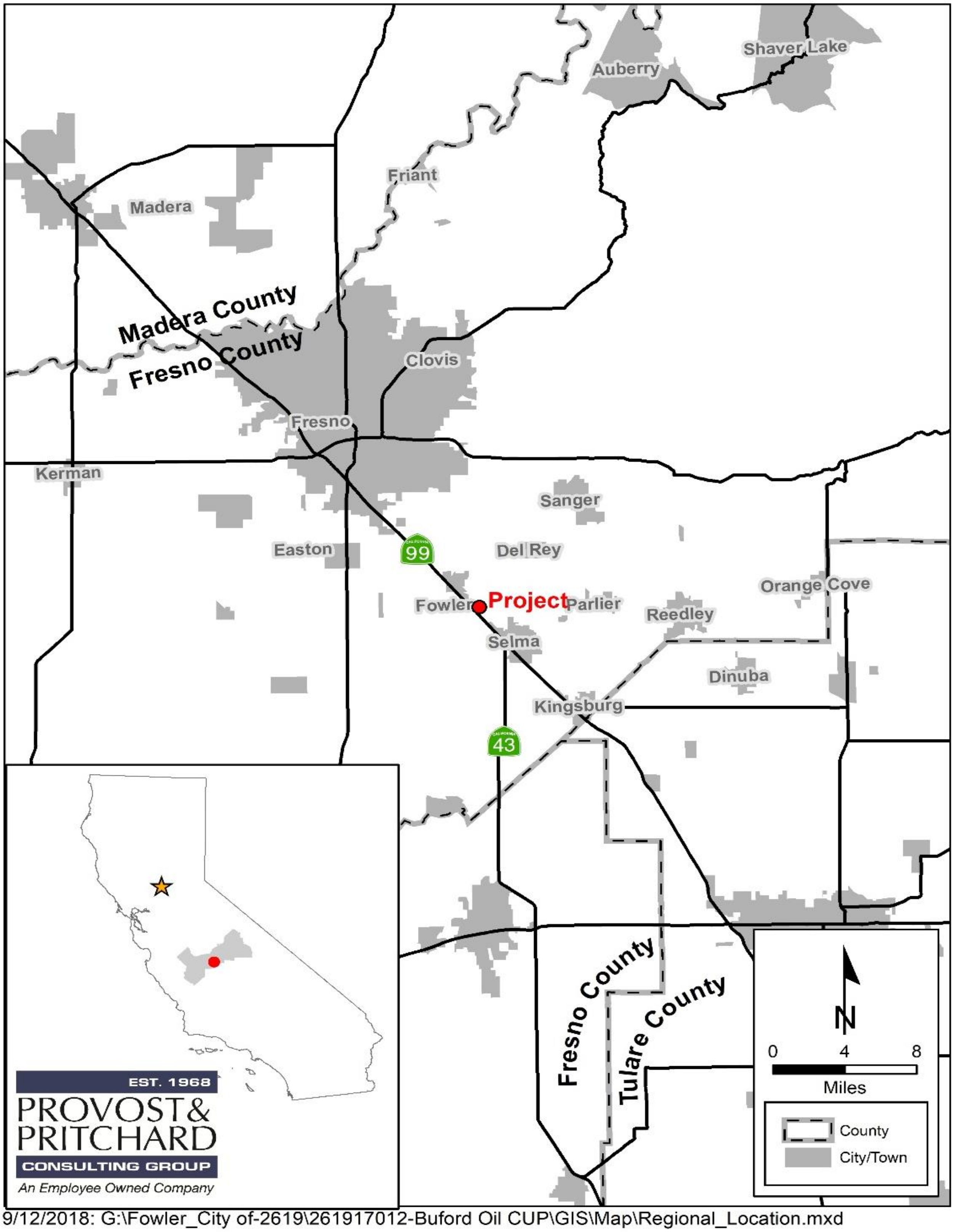
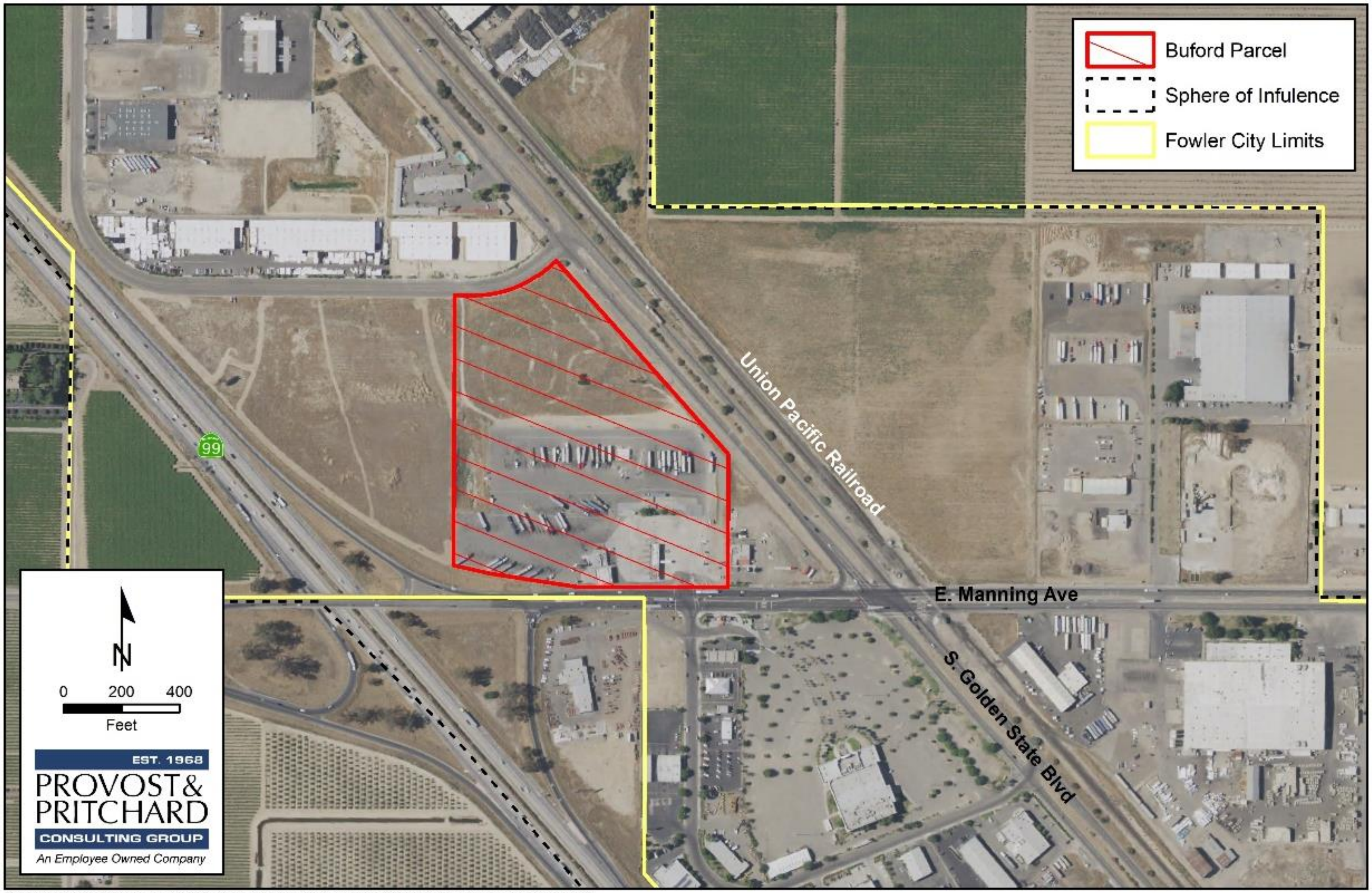
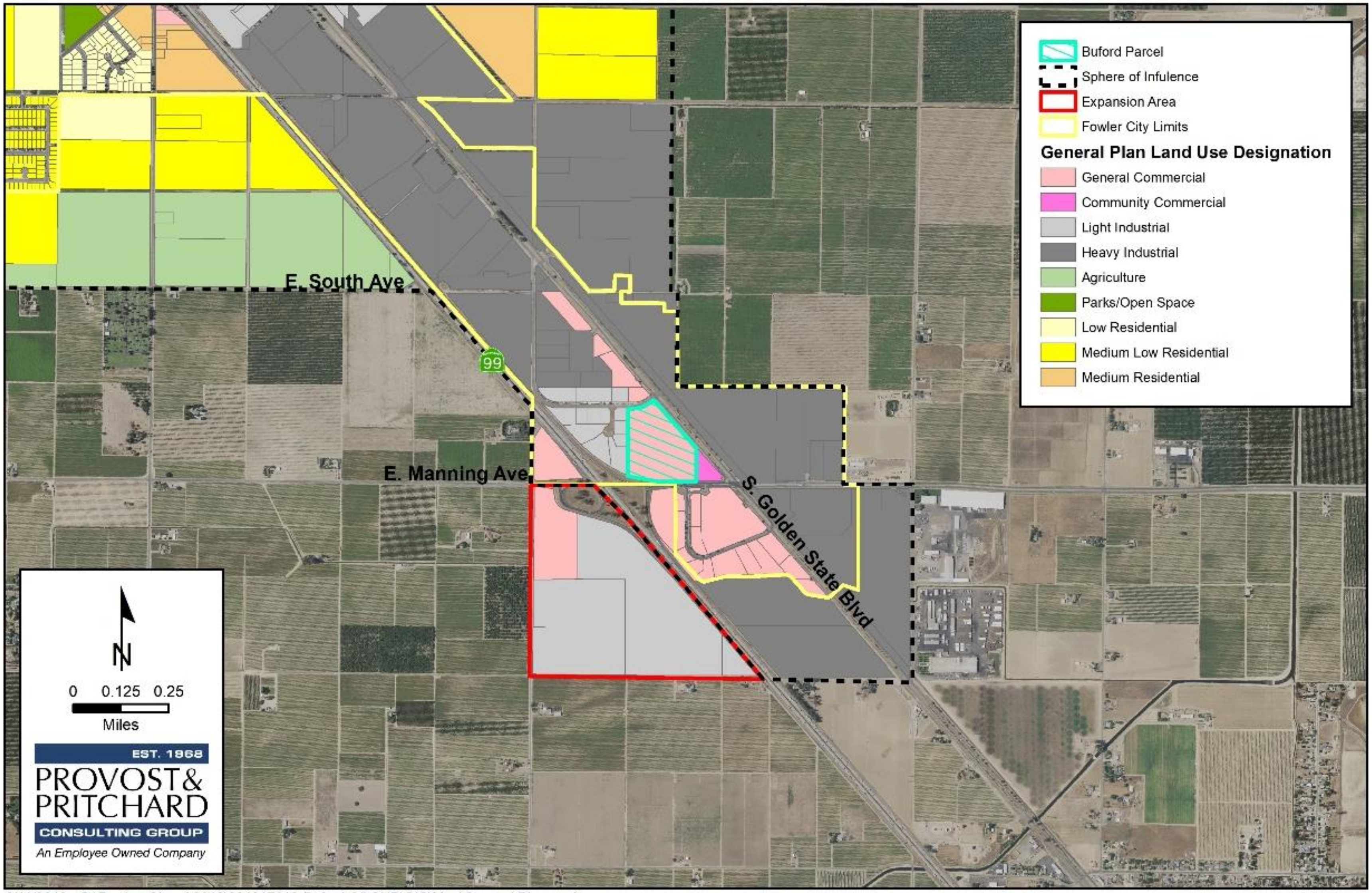


Figure 2-1. Regional Location Map



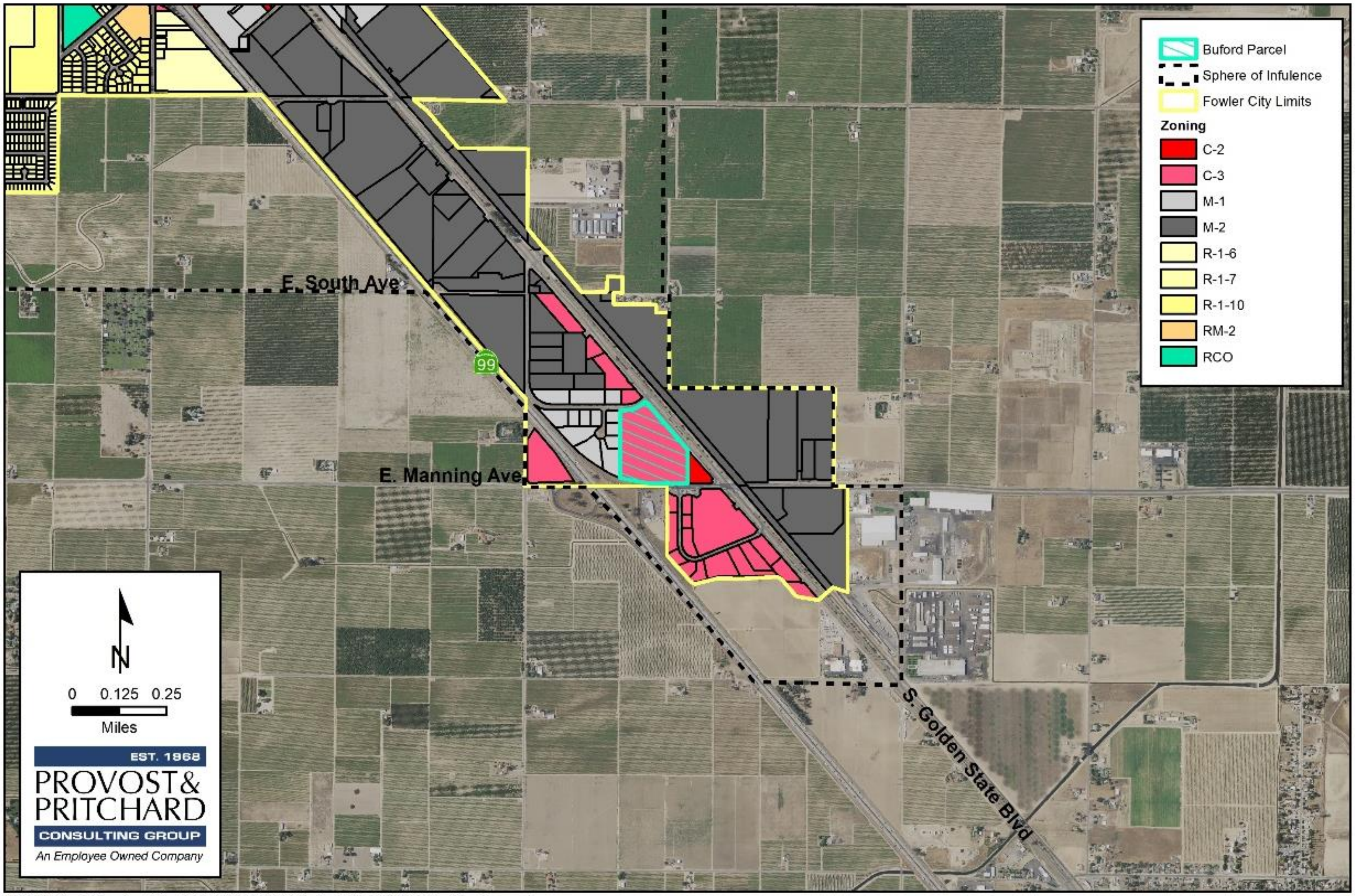
7/17/2018 : G:\Fowler_City of-2619\261917012-Buford Oil CUP\GIS\Map\Aerial(zoomed).mxd

Figure 2-2. Aerial Map



6/11/2018 : G:\Fowler_City of-2619\261917012-Buford Oil CUP\GIS\Map\General Plan.mxd

Figure 2-3. General Plan



6/11/2018 : G:\Fowler_City of-2619\261917012-Buford Oil CUP\GIS\Map\Zoning.mxd

Figure 2-4. Zoning Map

Figure 2-5. Access Points Map

Figure 2-6. Site Plan

3 Impact Analysis

3.1 Environmental Factors Potentially Affected

The environmental topics checked below were determined by the Initial Study (see Appendix A) to have potentially significant impacts resulting from the Project that require further analysis. These checked topics are evaluated in Chapter 3.

☐ Aesthetics	☐ Agriculture Resources	☒ Air Quality
☒ Biological Resources	☒ Cultural Resources	☐ Geology/Soils
☒ Greenhouse Gas Emissions	☒ Hazards & Hazardous Materials	☒ Hydrology/Water Quality
☐ Land Use/Planning	☐ Mineral Resources	☐ Noise
☐ Population/Housing	☐ Public Services	☐ Recreation
☒ Transportation/Traffic	☐ Tribal Cultural Resources	☒ Utilities/Service Systems
☒ Mandatory Findings of significance		

The analyses of environmental impacts here in **Chapter 3** are separated into the following categories:

Potentially Significant Impact. This category is applicable if there is substantial evidence that an effect may be significant, and no feasible mitigation measures can be identified to reduce impacts to a less than significant level. If there are one or more "Potentially Significant Impact" entries when the determination is made, an EIR is required.

Less than Significant with Mitigation Incorporated. This category applies where the incorporation of mitigation measures would reduce an effect from a "Potentially Significant Impact" to a "Less Than Significant Impact." The lead agency must describe the mitigation measure(s), and briefly explain how they would reduce the effect to a less than significant level (mitigation measures from earlier analyses may be cross-referenced).

Less Than Significant Impact. This category is identified when the proposed Project would result in impacts below the threshold of significance, and no mitigation measures are required.

No Impact. This category applies when a project would not create an impact in the specific environmental issue area. "No Impact" answers do not require a detailed explanation if they are adequately supported by the information sources cited by the lead agency, which show that the impact does not apply to the specific project (e.g. the project falls outside a fault rupture zone). A "No Impact" answer should be explained where it is based on project-specific factors as well as general standards (e.g. the project will not expose sensitive receptors to pollutants, based on a project-specific screening analysis).

3.2 Air Quality

Table 3-1. Air Quality Topics

Air Quality				
Would the project:	**Potentially Significant Impact**	**Less than Significant with Mitigation Incorporated**	**Less than Significant Impact**	**No Impact**
a) Conflict with or obstruct implementation of the applicable air quality plan?	☐	☐	☒	☐
b) Violate any air quality standard or contribute substantially to an existing or projected air quality violation?	☐	☐	☒	☐
c) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?	☐	☐	☒	☐
d) Expose sensitive receptors to substantial pollutant concentrations?	☐	☐	☒ See Initial Study (Appendix A)	☐
e) Create objectionable odors affecting a substantial number of people?	☐	☐	☒	☐

3.2.1 Introduction

This section of the Draft EIR evaluates potential Project-related impacts associated with air quality. The Initial Study evaluated the Project's impacts on air quality and found that the Project could potentially create a significant impact to an air quality plan, an air quality standard or existing or projected air quality violation, a cumulatively considerable net increase of a criteria pollutant for the project region that is under non-attainment. Additionally, it could potentially create objectionable odors affecting a substantial number of people, therefore, these issues will be further analyzed below.

The Initial Study found no impacts would be associated with schools or wildland fires, and the Project is not located on a list of hazardous materials sites. Furthermore, the Initial Study concluded that impacts to airports and private airstrips would be less than significant and the Project would not interfere with an emergency response plan or evacuation plan. These issues were discussed in detail in the Initial Study and therefore, do not require further analysis. Therefore, Impact question d is not further analyzed below.

3.2.2 Environmental Setting

The Project lies within the eight-county San Joaquin Valley Air Basin (SJVAB), which is managed by the San Joaquin Valley Air Pollution Control District (SJVAPCD). Air quality in the SJVAB is influenced by a variety of factors, including topography, local and regional meteorology. National Ambient Air Quality Standards (NAAQS) and California Ambient Air Quality Standards (CAAQS) have been established for the following criteria pollutants: carbon monoxide (CO), ozone (O_3), sulfur dioxide (SO_2), nitrogen dioxide (NO_2), particulate matter (PM_{10} and $PM_{2.5}$), and lead (Pb). The CAAQS also set standards for sulfates (SO_4^{-2}), hydrogen sulfide (H_2S), vinyl chloride (C_2H_3Cl) and visibility.

Air quality plans or attainment plans are used to bring the applicable air basin into attainment with all State and Federal ambient air quality standards designed to protect the health and safety of residents within that air basin. Areas are classified under the Federal Clean Air Act as either "attainment", "nonattainment", or "extreme nonattainment" areas for each criteria pollutant based on whether the NAAQS have been achieved or not. Attainment relative to the State standards is determined by the California Air Resources Board (CARB). The San Joaquin Valley is designated as a State and Federal nonattainment area for O_3, a State and Federal nonattainment area for $PM_{2.5}$, a State nonattainment area for PM_{10}, a Federal and State attainment area for CO, SO_2, and NO_2, and a State attainment area for sulfates, vinyl chloride and Pb[5].

3.2.2.1 Thresholds of Significance

To assist local jurisdictions in the evaluation of air quality impacts, the SJVAPCD has published the *Guide for Assessing and Mitigating Air Quality Impacts*. This guidance document includes recommended thresholds of significance to be used for the evaluation of short-term construction, long-term operational, odor, toxic air contaminant, and cumulative air quality impacts. Accordingly, the SJVAPCD-recommended thresholds of significance are used to determine whether implementation of the Project would result in a significant air quality impact. Projects that exceed these recommended thresholds would be considered to have a potentially significant impact to human health and welfare. The thresholds of significance are summarized, as follows:

Short-Term Emissions of Particulate Matter (PM10): Construction impacts associated with the Project would be considered significant if the feasible control measures for construction in compliance with Regulation VIII as listed in the SJVAPCD guidelines are not incorporated or implemented, or if project-generated emissions would exceed 15 tons per year (TPY).

Short-Term Emissions of Ozone Precursors (ROG and NOx): Construction impacts associated with the Project would be considered significant if the project generates emissions of Reactive Organic Gases (ROG) or NO_X that exceeds 10 TPY.

Long-Term Emissions of Particulate Matter (PM10): Operational impacts associated with the Project would be considered significant if the project generates emissions of PM_{10} that exceed 15 TPY.

Long-Term Emissions of Ozone Precursors (ROG and NOx): Operational impacts associated with the Project would be considered significant if the project generates emissions of ROG or NO_X that exceeds 10 TPY.

Conflict with or Obstruct Implementation of Applicable Air Quality Plan: Due to the region's nonattainment status for ozone, $PM_{2.5}$, and PM_{10}, if the project-generated emissions of either of the ozone precursor pollutants (i.e., ROG and NO_x) or PM_{10} would exceed the SJVAPCD's significance thresholds, then the project would be considered to conflict with the attainment plans. In addition, if the project would result in a change in land use and corresponding increases in vehicle miles traveled, the project may result in an increase in vehicle miles traveled that is unaccounted for in regional emissions inventories contained in regional air quality control plans.

Local Mobile-Source CO Concentrations: Local mobile source impacts associated with the Project would be considered significant if the project contributes to CO concentrations at receptor locations in excess of the CAAQS (i.e. 9.0 ppm for 8 hours or 20 ppm for 1 hour).

[5] San Joaquin Valley Air Pollution Control District. Ambient Air Quality Standards and Valley Attainment Status. http://www.valleyair.org/aqinfo/attainment.htm. Accessed 14 August 2018.

Exposure to toxic air contaminants (TAC) would be considered significant if the probability of contracting cancer for the Maximally Exposed Individual (i.e., maximum individual risk) would exceed 10 in 1 million or would result in a Hazard Index greater than 1.

Odor impacts associated with the Project would be considered significant if the project has the potential to frequently expose members of the public to objectionable odors.

3.2.3 Regulatory Setting

3.2.3.1 Federal

U.S. Environmental Protection Agency: At the Federal level, the U.S. EPA has been charged with implementing national air quality programs. The U.S. EPA's air quality mandates are drawn primarily from the Clean Air Act (CAA), which was signed into law in 1970. Congress substantially amended the CAA in 1977 and again in 1990.

Federal Clean Air Act: The CAA required the U.S. EPA to establish National Ambient Air Quality Standards (NAAQS), and also set deadlines for their attainment. Two types of NAAQS have been established: primary standards, which protect public health, and secondary standards, which protect public welfare from non-health-related adverse effects, such as visibility restrictions.

The CAA also required each State to prepare an air quality control plan referred to as a State Implementation Plan (SIP). The CAA Amendments of 1990 added requirements for States with nonattainment areas to revise their SIPs to incorporate additional control measures to reduce air pollution. The SIP is periodically modified to reflect the latest emissions inventories, planning documents, and rules and regulations of the air basins as reported by their jurisdictional agencies. The U.S. EPA has responsibility to review all State SIPs to determine conformance with the mandates of the CAA, and the amendments thereof, and determine if implementation will achieve air quality goals. If the U.S. EPA determines a SIP to be inadequate, a Federal Implementation Plan (FIP) may be prepared for the nonattainment area that imposes additional control measures.

Toxic Substances Control Act: The Toxic Substances Control Act (TSCA) first authorized the U.S. EPA to regulate asbestos in schools and Public and Commercial buildings under Title II of the law, which is also known as the Asbestos Hazard Emergency Response Act (AHERA). AHERA requires Local Education Agencies (LEAs) to inspect their schools for ACBM and prepare management plans to reduce the asbestos hazard. The Act also established a program for the training and accreditation of individuals performing certain types of asbestos work.

National Emission Standards for Hazardous Air Pollutants: Pursuant to the CAA of 1970, the U.S. EPA established the National Emission Standards for Hazardous Air Pollutants (NESHAP). These are technology-based source-specific regulations that limit allowable emissions of HAPs.

3.2.3.2 State

California Air Resources Board: The California Air Resources Board (CARB) is the agency responsible for coordination and oversight of State and local air pollution control programs in California and for implementing the California Clean Air Act of 1988. Other CARB duties include monitoring air quality (in conjunction with air monitoring networks maintained by air pollution control districts and air quality management districts, establishing California Ambient Air Quality Standards (CAAQS), which in many cases are more stringent than the NAAQS, and setting emissions standards for new motor vehicles. The emission standards established for motor vehicles differ depending on various factors including the model year, and the type of vehicle, fuel and engine used.

California Clean Air Act: The California Clean Air Act (CCAA) requires that all air districts in the State endeavor to achieve and maintain CAAQS for ozone, CO, SO_2, and NO_2 by the earliest practical date. The CCAA specifies that districts focus particular attention on reducing the emissions from transportation and area-wide emission sources, and the act provides districts with authority to regulate indirect sources. Each district plan is required to either (1) achieve a five percent annual reduction, averaged over consecutive 3-year periods, in district-wide emissions of each nonattainment pollutant or its precursors, or (2) to provide for implementation of all feasible measures to reduce emissions. Any planning effort for air quality attainment would thus need to consider both State and Federal planning requirements.

Table 3-2. Summary of Ambient Air Quality Standard & Attainment Designation

Summary of Ambient Air Quality Standards & Attainment Designation					
Pollutant	Averaging Time	California Standards*		National Standards*	
		Concentration*	Attainment Status	Primary	Attainment Status
Ozone (O_3)	1-hour	0.09 ppm	Nonattainment/ Severe	–	No Federal Standard
	8-hour	0.070 ppm	Nonattainment	0.075 ppm	Nonattainment (Extreme)**
Particulate Matter (PM_{10})	AAM	20 µg/m³	Nonattainment	–	Attainment
	24-hour	50 µg/m³		150 µg/m³	
Fine Particulate Matter ($PM_{2.5}$)	AAM	12 µg/m³	Nonattainment	12 µg/m³	Nonattainment
	24-hour	No Standard		35 µg/m³	
Carbon Monoxide (CO)	1-hour	20 ppm	Attainment/ Unclassified	35 ppm	Attainment/ Unclassified
	8-hour	9 ppm		9 ppm	
	8-hour (Lake Tahoe)	6 ppm		–	
Nitrogen Dioxide (NO_2)	AAM	0.030 ppm	Attainment	53 ppb	Attainment/ Unclassified
	1-hour	0.18 ppm		100 ppb	
Sulfur Dioxide (SO_2)	AAM	–	Attainment	--	Attainment/ Unclassified
	24-hour	0.04 ppm		--	
	3-hour	–		0.5 ppm	
	1-hour	0.25 ppm		75 ppb	
Lead (Pb)	30-day Average	1.5 µg/m³	Attainment	–	No Designation/ Classification
	Calendar Quarter	–		--	
	Rolling 3-Month Average	–		0.15 µg/m³	
Sulfates (SO_4^{-2})	24-hour	25 µg/m³	Attainment	No Federal Standards	
Hydrogen Sulfide (H_2S)	1-hour	0.03 ppm (42 µg/m³)	Unclassified		
Vinyl Chloride (C_2H_3Cl)	24-hour	0.01 ppm (26 µg/m³)	Attainment		
Visibility-Reducing Particle Matter	8-hour	Extinction coefficient: 0.23/km-visibility of 10 miles or more due to particles when the relative humidity is less than 70%.	Unclassified		

** For more information on standards visit: http//www.arb.ca.gov.research/aaqs/aaqs2.pdf*
*** No Federal 1-hour standard. Reclassified extreme nonattainment for the Federal 8-hour standard May 5, 2010.*
****Secondary Standard*
Source: CARB 2015; SJVAPCD 2015

California Assembly Bill 170: Assembly Bill 170, Reyes (AB 170), was adopted by State lawmakers in 2003 creating Government Code Section 65302.1 which requires cities and counties in the San Joaquin Valley to amend their general plans to include data and analysis, comprehensive goals, policies and feasible implementation strategies designed to improve air quality.

Assembly Bills 1807 & 2588 - Toxic Air Contaminants: Within California, TACs are regulated primarily through AB 1807 (Tanner Air Toxics Act) and AB 2588 (Air Toxics Hot Spots Information and Assessment Act of 1987). The Tanner Air Toxics Act sets forth a formal procedure for CARB to designate substances as TACs. This includes research, public participation, and scientific peer review before CARB designates a substance as a TAC. Existing sources of TACs that are subject to the Air Toxics Hot Spots Information and Assessment Act are required to: (1) prepare a toxic emissions inventory; (2) prepare a risk assessment if emissions are significant; (3) notify the public of significant risk levels; and (4) prepare and implement risk reduction measures.

3.2.3.3 Local

Fowler 2025 General Plan Update: The City of Fowler 2025 General Plan Update Circulation Element contains the following goals and policies that relate to air quality, and which have potential relevance to the Project's California Environmental Quality Act (CEQA) review:

- *Design, construct, and operate the transportation system in a manner that maintains a high level of environmental quality.*
- *Control dust and mitigate other environmental impacts during all stages of roadway construction.*
- *Encourage the use of non-polluting vehicles for both public and private uses.*

San Joaquin Valley Air Pollution Control District: The SJVAPCD is the agency primarily responsible for ensuring that NAAQS and CAAQS are not exceeded and that air quality conditions are maintained in the SJVAB, within which the Project is located. Responsibilities of the SJVAPCD include, but are not limited to, preparing plans for the attainment of ambient air quality standards, adopting and enforcing rules and regulations concerning sources of air pollution, issuing permits for stationary sources of air pollution, inspecting stationary sources of air pollution and responding to citizen complaints, monitoring ambient air quality and meteorological conditions, and implementing programs and regulations required by the CAA and the CCAA.

The SJVAPCD Rules and Regulations that are applicable to the Project include, but are not limited to, the following:

Regulation VIII (Fugitive Dust Prohibitions), Regulation VIII (Rules 8011-8081): This regulation is a series of rules designed to reduce particulate emissions generated by human activity, including construction and demolition activities, carry-out and track-out, paved and unpaved roads, bulk material handling and storage, unpaved vehicle/traffic areas, open space areas, etc. If a non-residential area is 5.0 or more acres in area, a Dust Control Plan must be submitted as specified in Section 6.3.1 of Rule 8021. Additional requirements may apply, depending on total area of disturbance.

San Joaquin Valley Air Pollution Control District Thresholds of Significance. Projects that produce emissions that exceed the following thresholds shall be considered significant for a project level and/or cumulatively considerable impact to air quality. The following thresholds are defined for purposes of determining cumulative effects as the baseline for "considerable". Projects located within the SJVAPCD will be subject to the following significance thresholds identified in tons per year (TPY):

Table 3-3. SJVAPCD Air Quality Thresholds of Significance- Criteria Pollutants

SJVAPCD Air Quality Thresholds of Significance – Criteria Pollutants			
Pollutant/Precursor	Construction Emissions	Operational Emissions	
		Permitted Equipment & Activities	Non-Permitted Equipment & Activities
	Emissions (tpy)	Emissions (tpy)	Emissions (tpy)
CO	100	100	100
NO_X	10	10	10
ROG	10	10	10
SO_X	27	27	27
PM_{10}	15	15	15
$PM_{2.5}$	15	15	15

Regulatory Attainment Designations

Under the CCAA, the CARB is required to designate areas of the State as attainment, nonattainment, or unclassified with respect to applicable standards. An "attainment" designation for an area signifies that pollutant concentrations did not violate the applicable standard in that area. A "nonattainment" designation indicates that a pollutant concentration violated the applicable standard at least once, excluding those occasions when a violation was caused by an exceptional event, as defined in the criteria. Depending on the frequency and severity of pollutants exceeding applicable standards, the nonattainment designation can be further classified as serious nonattainment, severe nonattainment, or extreme nonattainment, with extreme nonattainment being the most severe of the classifications. An "unclassified" designation signifies that the data does not support either an attainment or nonattainment designation. The CCAA divides districts into moderate, serious, and severe air pollution categories, with increasingly stringent control requirements mandated for each category.

The U.S. EPA designates areas for ozone, CO, and NO_2 as "does not meet the primary standards," "cannot be classified," or "better than national standards." For SO_2, areas are designated as "does not meet the primary standards," "does not meet the secondary standards," "cannot be classified," or "better than national standards." However, the CARB terminology of attainment, nonattainment, and unclassified is more frequently used. The U.S. EPA uses the same sub-categories for nonattainment status: serious, severe, and extreme. In 1991, U.S. EPA assigned new nonattainment designations to areas that had previously been classified as Group I, II, or III for PM_{10} based on the likelihood that they would violate national PM_{10} standards. All other areas are designated "unclassified."

The State and national attainment status designations pertaining to the SJVAB are summarized in **Table 3-2**. The SJVAB is currently designated as a nonattainment area with respect to the State PM_{10} standard, ozone, and $PM_{2.5}$ standards. The SJVAB is designated nonattainment for the NAAQS 8-hour ozone and $PM_{2.5}$ standards. On September 25, 2008, the U.S. EPA re-designated the San Joaquin Valley to attainment status for the PM_{10} NAAQS and approved the PM_{10} Maintenance Plan.

3.2.4 Impact Assessment

III-a) Conflict with or obstruct implementation of the applicable air quality plan?

Less Than Significant Impact. The City's general plan designates the Project site as General Commercial, which is established for commercial areas with a wide range of retail and service activities along major traffic corridors. As noted on the City's zoning map, the site was zoned C-3 (General Commercial) with a Highway Beautification overlay. The C-3 zone district is intended to provide commercial location that due to space requirements are not compatible within the downtown business district. The proposed development would not require a general plan amendment, or a zone change. The SJVAPCD has prepared attainment plans for the SJVAB in order to demonstrate achievement of the state and federal ambient air quality standards for ozone, PM10, and PM2.5. The attainment plans are based on, among other things, future growth in the SJVAB based on adopted general plans. Since the proposed project is consistent with the City's general plan, it would not conflict with or obstruct implementation of the SJVAPCD's attainment plans. Therefore, any impacts will be less than significant.

III-b) Violate any air quality standard or contribute substantially to an existing or projected air quality violation?

Short-Term Impacts

The annual emissions from the construction phase of , 2, 3, 4, 5, and 6 of the Project will be less than the applicable SJVAPCD emission thresholds for criteria pollutants as shown in **Table 3-4.** Construction is anticipated to occur over approximately 19 months. The construction emissions are therefore considered less than significant with the compliance to the SJVAPCD applicable Regulation VIII control measures, which are provided below.

1. All disturbed areas, including storage piles, which are not being actively utilized for construction purposes, shall be effectively stabilized of dust emissions using water, chemical stabilizer/suppressant, covered with a tarp or other suitable cover or vegetative ground cover.

2. All on-site unpaved roads and off-site unpaved access roads shall be effectively stabilized of dust emissions using water or chemical stabilizer/suppressant.

3. All land clearing, grubbing, scraping, excavation, land leveling, grading, cut & fill, and demolition activities shall be effectively controlled of fugitive dust emissions utilizing application of water or by presoaking.

4. When materials are transported off-site, all material shall be covered, or effectively wetted to limit visible dust emissions, and at least six inches of freeboard space from the top of the container shall be maintained.

5. All operations shall limit or expeditiously remove the accumulation of mud or dirt from adjacent public streets at the end of each workday. The use of dry rotary brushes is expressly prohibited except where preceded or accompanied by sufficient wetting to limit the visible dust emissions. Use of blower devices is expressly forbidden.

6. Following the addition of materials to, or the removal of materials from, the surface of outdoor storage piles, said piles shall be effectively stabilized of fugitive dust emissions utilizing sufficient water or chemical stabilizer/suppressant.

7. Within urban areas, track out shall be immediately removed when it extends 50 or more feet from the site and at the end of each workday.

Naturally Occurring Asbestos (NOA)

The proposed Project's construction phase may cause asbestos to become airborne due to the construction activities that will occur on site. In order to control naturally occurring asbestos dust, the Project will be required to submit a Dust Control Plan under the SJVAPCD's Rule 8021. The Dust Control Plan may include the following measures:

1. Water wetting of road surfaces

2. Rinse vehicles and equipment

3. Wet loads of excavated material, and

4. Cover loads of excavated material

Long-Term Impacts

Long-Term emissions from the Project are generated primarily by mobile source (vehicle) emissions from the Project site. In order to establish baseline operational emissions that are currently taking place on site the CalEEMod software was run twice, once for the existing fuel station and services that are operating on site. This establishes what the emissions are that the site is already generating. The second time the CalEEMod was run was to show what the emissions will be from the site with its expanded uses. As shown in **Table 3-5**, emissions from long-term operations generally represent a project's most substantial air quality impact. However, the difference between the existing emissions and the proposed Project emissions shows that the emissions do not exceed the SJVAPCD thresholds of significance. Therefore, the Project's long-term emissions are considered less than significant.

Construction-Related Emissions

Table 3-4. Maximum Unmitigated Proposed Project Construction Related Emissions

Short-Term Construction-Generated Emissions of Criteria Air Pollutants					
	Annual Emissions (Tons/Year) (1)				
Source	ROG	NO_X	CO	PM_{10}	$PM_{2.5}$
2019	0.0895	0.9458	0.5600	0.2211	0.1188
2020	0.4402	4.0437	3.2128	0.5153	0.2536
2021	0.6870	0.8831	0.8104	0.0978	0.0499
Maximum Annual Proposed Project Emissions:	0.6870	4.0437	3.2128	0.5153	0.2536
SJVAPCD Significance Thresholds:	*10*	*10*	*100*	*15*	*15*
Exceed SJVAPCD Thresholds?	*No*	*No*	*No*	*No*	*No*

- *Emissions were quantified using CalEEmod Output Files Version 2016.3.2. Refer to Appendix A for modeling results and assumptions. Totals may not sum due to rounding.*

Table 3-5. Maximum Unmitigated Operation-Related Emissions

Long-Term Operational Emissions of Criteria Air Pollutants					
	Annual Emissions (Tons/Year) (1)				
Source	ROG	NO_X	CO	PM_{10}	$PM_{2.5}$
Baseline Annual Project Emissions:	1.8348	20.9210	12.2681	2.5152	0.7129
Annual Project Operational Emissions	2.5208	29.2385	16.6778	3.2829	0.9390
Total New Annual Operational Emissions	**0.6932**	**8.3175**	**4.4097**	**0.7677**	**0.2261**
SJVAPCD Significance Thresholds:	*10*	*10*	*100*	*15*	*15*
Exceed SJVAPCD Thresholds?	*No*	*No*	*No*	*No*	*No*

- *Emissions were quantified using CalEEmod Output Files Version 2016.3.2. Refer to Appendix A for modeling results and assumptions. Totals may not sum due to rounding.*

With no emissions exceeding any SJVAPCD thresholds, no mitigation measures are warranted. The impact would be less than significant.

III-c) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?

III-c) Less Than Significant Impact. The City of Fowler and Fresno County is non-attainment for Ozone (1 hour and 8 hour) and PM_{10} (State standards) and $PM_{2.5}$. The SJVAPCD has prepared the 2013 Plan for the Revoked 1-Hour Ozone Standard[6], 2007 PM_{10} Maintenance Plan, and 2012 $PM_{2.5}$ Plan to achieve Federal and State standards for improved air quality in the SJVAB regarding ozone and PM. Inconsistency with any of the plans would be considered a cumulatively adverse air quality impact. As discussed in III-a, the Project is consistent with the currently adopted General Plan for the City of Fowler and is therefore consistent with the population growth. Therefore, the Project is consistent with the growth assumptions used in the 2013 Ozone Plan, 2007 PM_{10} Maintenance Plan, and 2012 $PM_{2.5}$ Plan.

As described in III-b above, impacts related to construction and operational emissions would be less than significant. The Project will not result in a cumulatively considerable net increase of any criteria pollutant for which the Project region is non-attainment under an applicable federal or state ambient air quality standard. Therefore, any impacts would be less than significant.

III-e) Create objectionable odors affecting a substantial number of people?

III-e) Less Than Significant Impact. The SJVAPCD requires that an analysis of potential odor impacts be conducted for the following two situations:

1. Generators – projects that would potentially generate odorous emissions proposed to be located near existing sensitive receptors or other land uses where people may congregate, and
2. Receivers – residential or other sensitive receptor projects or other projects built for the intent of attracting people located near existing odor sources.

The proposed Project will not generate odorous emissions, but will attract people to its site for fuel, truck repair, food services and overnight hotel stays. As discussed in the Initial Study, in III-d, there are no definitive sensitive receptors, such as schools, playgrounds, daycare facilities, elderly housing, convalescent homes, or medical facilities within one mile of the Project site. Because the Project is not located within the recommended separation distances for sensitive land uses, the Project is not anticipated to expose sensitive receptors to air pollution emissions or adversely impact these sensitive receptors. As a result, the Project will not be evaluated for its potential to place sensitive receptors near existing odor sources.

The intensity of an odor source's operations and its proximity to sensitive receptors influences the potential significance of odor emissions. The SJVAPCD has identified some common types of facilities that have been known to produce odors in the SJV Air Basin. The types of facilities that are known to produce odors are shown in **Table 3-6** along with a reasonable distance from the source within which, the degree of odors could possibly be significant. None of the facilities shown in **Table 3-6** fit the characteristics of the Project.
Based on the assessment above, the Project will not generate potential odorous emissions or attract receivers and other sensitive receptors near existing odor sources. Therefore, any impacts would be less than significant.

Table 3-6. Screening Levels for Potential Odor Sources

[6] San Joaquin Valley Unified Air Pollution Control District. 2013 Plan for the Revoked 1-Hour Ozone Standard. http://valleyair.org/Air_Quality_Plans/OzoneOneHourPlan2013/AdoptedPlan.pdf

Screening Levels for Potential Odor Sources	
Type of Facility	**Distance**
Wastewater Treatment Facilities	2 miles
Sanitary Landfill	1 mile
Transfer Station	1 mile
Compositing Facility	1 mile
Petroleum Refinery	2 miles
Asphalt Batch Plant	1 mile
Chemical Manufacturing	1 mile
Fiberglass Manufacturing	1 mile
Painting/Coating Operations (e.g. auto body shops)	1 mile
Food Processing Facility	1 mile
Feed Lot/Dairy	1 mile
Rendering Plant	1 mile

SJVAPCD, 2015.

3.2.5 Discussion of Cumulative Impacts

Less Than Significant Impact. Automobiles, trucks, buses and other vehicles using hydrocarbon fuels release exhaust products into the air. Each vehicle by itself does not release large quantities; however, when considered as a group, the cumulative effect can be significant. The Project would not result in significant construction air quality impacts including nonattainment criteria pollutants. Therefore, the Project's contribution to regional pollutant concentrations would not be cumulatively considerable.

3.3 Biological Resources

Table 3-7. Biological Resources Topics

Biological Resources				
Would the project:	**Potentially Significant Impact**	**Less than Significant with Mitigation Incorporated**	**Less than Significant Impact**	**No Impact**
a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?	☐	☒	☐	☐
b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?	☐	☐	☐	☒ See Appendix A
c) Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	☐	☐	☐	☒ See Appendix A
d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?	☐	☐	☐	☒ See Appendix A
e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	☐	☐	☐	☒ See Appendix A
f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?	☐	☐	☐	☒ See Appendix A

3.3.1 Introduction

This section of the Draft EIR evaluates potential Project-related impacts associated with biological resources. The Initial Study evaluated the Project's impacts on biological resources and found that the Project could potentially adversely affect a special status species and these issues will be further analyzed below.

The Initial Study found the Project would have no impact to riparian habitat, sensitive natural communities, or federally protected wetlands, and the Project would not interfere with the movement of migratory wildlife species. Furthermore, the Initial Study concluded that the Project is consistent with local policies and ordinances protecting biological resources and does not conflict with any existing habitat conservation plans. These issues were discussed in detail in the Initial Study and therefore, do not require further analysis. For this reason, impact questions b through f are not further analyzed below.

3.3.2 Environmental Setting

A site-specific biological evaluation was prepared by Alphabiota Environmental Consulting, LLC, on behalf of the applicant in order to adequately analyze all potential Project-related impacts to biological resources. The biological evaluation consists of reports which summarize desktop research and the findings of two field surveys of the Project site. The initial survey was performed on December 18, 2017 and the findings are reflected in a report dated January 12, 2018. The results of the subsequent survey conducted on October 16, 2018 are summarized in an addendum dated October 30, 2018. The contents of the biological evaluation report and subsequent addendum, attached as **Appendix D**, are the primary source for the description of the environmental setting and the impact assessment below.

The Project site is located between State Route 99 and Golden State Boulevard in a corridor dominated by Commercial and Industrial uses in the southeastern portion of the City of Fowler, California. The City of Fowler is a small agricultural community, located in the eastern San Joaquin Valley, part of the Great Valley of California. The Valley is bordered by the Sierra Nevada Mountain Range to the east, the Coast Ranges to the west, the Klamath Mountains and Cascade Range to the north, and the Transverse Ranges and Mojave Desert to the south.

Like most of California, the San Joaquin Valley experiences a Mediterranean climate. Warm, dry summers are followed by cool, moist winters. Summer temperatures often reach above 90 degrees Fahrenheit, and the humidity is generally low. Winter temperatures are often below 60 degrees Fahrenheit during the day and rarely exceed 70 degrees.

Approximately half of the 19-acre parcel is currently developed with automobile and diesel fueling islands, commercial truck parking, and traveler's amenities. The developed lands of the travel center are not considered suitable as habitat and were not included in the biological survey report. The remaining undeveloped area of the site is a visually flat, open, vacant, consisting of annual grasses, forbs, and four trees. This habitat is best described as ruderal or disturbed annual grassland habitat characterized as fallowed agricultural land use regularly altered by routine maintenance for weed abatement.

A single detention basin is located near the southwest property bounds just west of the existing parking lot. The basin is surrounded by dilapidated chain link fence and littered trash. The basin's slopes and general integrity appear to be in poor shape, according to the biological reconnaissance survey. Litter and oil sheened water were observed in the basin. The northern portions of the site are vacant, fallow land with make-shift dirt roads, and annual weedy species of vegetation dominating most of the undeveloped areas. This habitat is classified as ruderal disturbed grassland. Observations of the surface soils indicate the site is disked at least once a year. Rutting and furrows consistent with disking activities were present. Soils of the site consist of a mix of sands and loams where one or the other is the parent material. The northern portion of the site is developed lands with pavement and buildings covering all the surfaces currently in use for the as built travel center.

Two remnant Chinaberry trees (*Melia azedarach*) occupy this area and were observed to be stressed and nearly dead as evidenced by the reconnaissance survey. Two very old olive trees located near the south-eastern bounds of the undeveloped open space also appear to be barely alive as evidenced by the biological reconnaissance survey. Naturalized non-native grasses of bromes (*Bromus diandrus* and *Bromus madritensis ssp. rubens*), and wild oats (*Avena sp.*) appear to have been the dominant grasses, while mustard (*Hirschfeldia incana*), tumbleweed / Russian thistle (*Salsola tragus*), and yarrow (*Achillea millefolium*) were also plentifully extant. At the time of the first survey on December 18, 2017 most annual plants had already fulfilled their lifecycle and were well past fruiting. At the time of the second survey on October 16, 2018 the same plant species were observed, although invasive mustard, tumbleweed / Russian thistle, and yarrow now dominated percent cover. The biologist also notes in his report that most of the site had been cleared of vegetation and debris by use of heavy equipment by the time of the second survey. No special status plant or animal species were observed during either survey.

House finches (*Haemorhous mexicanus*) and mourning doves (*Zenaida macroura*) were observed during the biological reconnaissance survey. Cottontail rabbit (*Sylvilagus audubonii*) scat was observed throughout the site. Ground squirrel (*Spermophilus beecheyi*) burrows and pocket gopher (*Thomomys bottae*) burrows were extremely dominant and were observed in most locations throughout the site. Mice burrows were observed but little evidence was available to indicate the genus or species occurring at the site. Other species utilizing the site and identified by the presence of scat, tracks, burrow, or other indications include pocket gophers, domestic cats (*Felis catus*) and domestic dogs (*Canis lupus familiaris*).

As part of a desktop analysis of potential Project-related impacts to biological resources, on March 26, 2019, a thorough search of the California Department of Fish and Wildlife (CDFW) California Natural Diversity Database (CNDDB) for published accounts of special status plant and animal species was conducted for the *Conejo* 7.5-minute quadrangle that contains the Project site in its entirety, and for the 8 surrounding quadrangles: *Fresno South, Malaga, Sanger, Caruthers, Selma, Riverdale, Laton,* and *Burris Park*. These species, and a discussion regarding their potential to occur within the Project area are listed in **Table 3-8** and **Table 3-9** on the following pages. Raw data obtained from CNDDB is available in **Appendix D** at the end of this document. Other sources of information utilized in the preparation of this analysis includes, but is not limited to: the California Native Plant Society (CNPS) Online Inventory of Rare and Endangered Vascular Plants of California, CalFlora's online database of California native plants, the Jepson Herbarium online database (Jepson eFlora), U.S. Fish and Wildlife Service (USFWS) Environmental Conservation Online System (ECOS), the NatureServe Explorer online database, the United States Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) Plants Database, CDFW California Wildlife Habitat Relationships (CWHR) database, ebird.org, and the California Herps online database. As part of the biological evaluation, Alphabiota Environmental Consulting obtained an official species list from the U.S. Fish and Wildlife Service (USFWS) Information for Planning and Consultation (IPaC) dated November 1, 2018. These species have been added to **Table 3-8** and **Table 3-9**, and discussion of the likelihood of their occurrence onsite follows. The IPaC list is available in **Appendix D** at the end of this document.

Table 3-8. List of Special Status Animals with Potential to Occur Onsite and/or in the Vicinity

Species	Status	Habitat	Discussion
blunt-nosed leopard lizard (*Gambelia silus*)	FE, CE, CFP	Inhabits semi-arid grasslands, alkali flats, low foothills, canyon floors, large washes, and arroyos, usually on sandy, gravelly, or loamy substrate, sometimes on hardpan. Often found where there are abundant rodent burrows in dense vegetation or tall grass. Cannot survive on lands under cultivation. Known to bask on kangaroo rat mounds and often seeks shelter at the base of shrubs, in small mammal burrows, or in rock piles. Adults may excavate shallow burrows but rely on deeper pre-existing rodent burrows for hibernation and reproduction.	There are no recorded observations of this species within the vicinity of the Project. Habitats of the Project site are marginal, at best for this species. Burrows are abundant onsite, but vegetation is inconsistent with typical habitat for this species. Frequent ground-disturbance, such as disking, further makes this habitat unsuitable for this species. According to the biological evaluation report, any marginally suitable habitat is isolated due to roads and infrastructure and "regional development has likely extirpated the species from this general region."

Species	Status	Habitat	Discussion
burrowing owl (*Athene cunicularia*)	CSC	Resides in open, dry annual or perennial grasslands, deserts, and scrublands with low growing vegetation. Nests underground in existing burrows created by burrowing mammals, most often ground squirrels.	There have been two recorded observations of this species in the vicinity of the Project, both within grazed grassland pasture. The nearest observation occurred approximately 15 miles southwest of the Project site in 2006. According to the biological evaluation report, marginal nesting and foraging habitat is present onsite and, in the vicinity, but this species would likely be discouraged from using the site due to frequent disturbance.
California glossy snake (*Arizona elegans occidentalis*)	CSC	Inhabits arid scrub, rocky washes, grasslands, and chaparral. Prefers open areas with loose soil for easy burrowing.	The disturbed habitats of the Project area are unsuitable for this species. Furthermore, the Project area is outside of the known range of this species. There have been two recorded observations of this species in the Project's vicinity: one observation was made in 1893 at an unknown location near Fresno, and the other was made approximately 8 miles southwest of the Project site in 1939.
California red-legged frog (*Rana draytonii*)	FT	Inhabits perennial rivers, creeks, and stock ponds with vegetative cover within the Coast Range and northern Sierra foothills.	There are no recorded observations of this species within the vicinity of the Project. According to the biological evaluation report, suitable habitat for this species is absent from the site and surrounding areas.
California tiger salamander (*Ambystoma californiense*)	FT, CT, CWL	Requires vernal pools or seasonal ponds for breeding and small mammal burrows for aestivation. Generally found in grassland and oak savannah plant communities in central California from sea level to 1500 feet in elevation.	The disturbed habitats of the Project area and surrounding lands are generally unsuitable for this species. Vernal pool habitat suitable for breeding is absent from the Project site. According to the biological evaluation report, marginal upland habitat and burrows are present. However, the site is isolated from any breeding habitat.
coast horned lizard (*Phrynosoma blainvillii*)	CSC	Found in grasslands, coniferous forests, woodlands, and chaparral, primarily in open areas with patches of loose, sandy soil and low-lying vegetation in valleys, foothills, and semi-arid mountains. Frequently found near ant hills and along dirt roads in lowlands along sandy washes with scattered shrubs.	The disturbed habitats of the Project site are generally unsuitable for this species. The only recorded occurrences of this species in the vicinity of the Project are historic collection records from an unknown location near Fresno over 100 years ago.
Delta smelt (*Hypomesus transpacificus*)	FT, CE	This pelagic and euryhaline species is Endemic to the Sacramento-San Joaquin River Delta, upstream through Contra Costa, Sacramento, San Joaquin, and Solano Counties.	Suitable habitat is absent from the Project site and surrounding areas. The Project area is outside of the known range of this species.

Species	Status	Habitat	Discussion
Fresno kangaroo rat (*Dipodomys nitratoides exilis*)	FE, CE	Burrows in soil. Often found in grassland and shrubland.	The highly disturbed habitats of the Project site and surrounding lands are generally unsuitable for this species. There are no recorded observations of this species in the vicinity of the Project.
giant garter snake (*Thamnophis gigas*)	FT, CT	Occurs in marshes, sloughs, drainage canals, irrigation ditches, rice fields, and adjacent uplands. Prefers locations with emergent vegetation for cover and open areas for basking. This species uses small mammal burrows adjacent to aquatic habitats for hibernation in the winter and to escape from excessive heat in the summer.	Suitable habitat is absent from the Project site and surrounding areas.
northern California legless lizard (*Anniella pulchra*)	CSC	Found primarily underground, burrowing in loose, sandy soil. Forages in loose soil and leaf litter during the day. Occasionally observed on the surface at dusk and night. Prefers soil with a high moisture content.	The disturbed habitats of the Project site are unsuitable for this species. The only recorded occurrences of this species in the vicinity of the Project are historic collection records from an unknown location near Fresno over 100 years ago.
pallid bat (*Antrozous pallidus*)	CSC	Found in grasslands, chaparral, and woodlands, where it feeds on ground- and vegetation-dwelling arthropods, and occasionally takes insects in flight. Prefers to roost in rock crevices, but may also use tree cavities, caves, bridges, and other man-made structures.	Structures and crevices in buildings could provide roosting habitat, but this species would likely be deterred by the frequent disturbance onsite. Foraging habitat is marginal, at best. The only recorded occurrence of this species in the vicinity of the Project is from an unknown location near Fresno over 100 years ago.
San Joaquin kit fox (*Vulpes macrotis mutica*)	FE, CT	Underground dens with multiple entrances in alkali sink, valley grassland, and woodland in valleys and adjacent foothills.	This nearest known occurrence of this species was recorded in the 1980s approximately 7 miles northeast of the Project site. The highly disturbed habitats of the Project area and fragmentation of the surrounding lands are generally unsuitable for this species. The Project is located approximately 60 miles east of the nearest known core population in Ciervo-Panoche Natural Area. Although some populations of San Joaquin Kit Fox in other parts of California have adapted to an urbanized environment, modern kit fox occurrences are locally scarce. At most, this species could pass through the Project area during dispersal movements.

Species	Status	Habitat	Discussion
Swainson's hawk (*Buteo swainsoni*)	CT	Nests in large trees in open areas adjacent to grasslands, grain or alfalfa fields, or livestock pastures suitable for supporting rodent populations.	There are known Swainson's hawk nest trees within 5 miles of the Project site. However, nesting habitat is absent onsite and foraging habitat is marginal, at best. Frequent disturbance in the vicinity of the Project would generally deter this species from nesting within the few adjacent trees large enough to support a raptor nest.
valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*)	FT	Lives in mature elderberry shrubs of the Central Valley and foothills. Adults are active March to June.	Suitable elderberry habitat is absent from the Project site.
vernal pool fairy shrimp (*Branchinecta lynchi*)	FT	Occupies vernal pools, clear to tea-colored water, in grass or mud-bottomed swales, and basalt depression pools.	Suitable vernal pool habitat for this species is absent from the Project area and surrounding lands. Soils onsite (well-drained and excessively drained sandy loam and loamy sand) are not conducive to pooling and therefore unsuitable for this species.
vernal pool tadpole shrimp *(Lepidurus packardi)*	FE	Occurs in vernal pools, clear to tea-colored water, in grass or mud-bottomed swales, and basalt depression pools.	Suitable vernal pool habitat for this species is absent from the Project area and surrounding lands. Soils onsite (well-drained and excessively drained sandy loam and loamy sand) are not conducive to pooling and therefore unsuitable for this species.
western mastiff bat (*Eumops perotis californicus*)	CSC	Found in open, arid to semi-arid habitats, including dry desert washes, flood plains, chaparral, oak woodland, open ponderosa pine forest, grassland, and agricultural areas, where it feeds on insects in flight. Roosts most commonly in crevices in cliff faces but may also use high buildings and tunnels.	Roosting and breeding habitat are absent from the Project area and foraging habitat is marginal, at best. The nearest known occurrence of this species was recorded approximately 8 miles northwest of the Project area in 1958.
western spadefoot (*Spea hammondii*)	CSC	Prefers open areas with sandy or gravelly soils, in a variety of habitats including mixed woodlands, grasslands, coastal sage scrub, chaparral, sandy washes, lowlands, river floodplains, alluvial fans, playas, alkali flats, foothills, and mountains. Vernal pools or temporary wetlands, lasting a minimum of three weeks, which do not contain bullfrogs, fish, or crayfish are necessary for breeding.	The highly disturbed habitats of the Project area and surrounding lands are generally unsuitable for this species. Wetland habitat suitable for breeding is absent from the Project site and potential aestivation habitat is marginal due to frequent ground-disturbance

Species	Status	Habitat	Discussion
western yellow-billed cuckoo (*Coccyzus americanus occidentalis*)	FT, CE	Suitable nesting habitat in California includes dense riparian willow-cottonwood and mesquite habitats along a perennial river. Once a common breeding species in riparian habitats of lowland California, this species currently breeds consistently in only two locations in the State: along the Sacramento and South Fork Kern Rivers.	Suitable nesting habitat for this species is absent from the Project area and surrounding lands. All of the local observations were recorded over 100 years ago, and the populations are presumed extirpated. It is believed this species no longer occurs within Fresno County.

Table 3-9. List of Special Status Plants with Potential to Occur Onsite and/or in the Vicinity

Species	Status	Habitat	Discussion
brittlescale (*Atriplex depressa*)	CNPS 1B	Found in the San Joaquin Valley and Sacramento Valley in alkali or clay soils in shadescale scrub, valley grassland, alkali sink, and riparian communities at elevations below 1050 feet. Equally likely to occur in wetlands and non-wetlands. Blooms June – October.	The disturbed habitat and sandy soils onsite are generally unsuitable for this species. The only CNDDB record of this species in the Project vicinity is undated and mapped as "best guess" near Laton, which is approximately 12 miles south of the Project site.
California alkali grass (*Puccinellia simplex*)	CNPS 1B	Found in the San Joaquin Valley and other parts of California in saline flats and mineral springs within valley grassland and wetland-riparian communities at elevations below 3000 feet. Blooms March – May.	Typical habitat for this species is absent from the Project site and frequent ground-disturbance makes the site unsuitable. The only CNDDB record of this species in the Project vicinity was made in 1935 at a location approximately 15 miles southwest of the Project site. The status of this population has since been updated to "possibly extirpated" due to agriculture.
California jewelflower (*Caulanthus californicus*)	FE, CE, CNPS 1B	Found in the San Joaquin Valley and Western Traverse Ranges. Occurs on flats and slopes, generally in non-alkaline grassland at elevations between 230 feet and 3280 feet. Blooms February – April.	According to the biological evaluation report, marginal habitat and soils required by this species are present, but regular ground-disturbance activities experienced onsite likely inhibit the chances of a successful population. The only CNDDB record of this species in the Project vicinity is undated but thought to be from a historic collection made over 100 years ago in the vicinity of Fresno. The population has since been updated to "extirpated" since all habitat in the vicinity has been eliminated by urbanization and agriculture.
California satintail (*Imperata brevifolia*)	CNPS 2B	Although this facultative species is equally likely to occur in wetlands and non-wetlands, it is often found in wet springs, meadows, streambanks, and floodplains at elevations below 1600 feet. Blooms September – May.	Typical habitat for this species is absent from the Project site and vicinity, and regular ground-disturbance further makes the site unsuitable. The nearest observation of this species was recorded in the vicinity of Fresno in the 1890s.
caper-fruited tropidocarpum	CNPS 1B	Found in alkaline soils in low hills and valleys, often within Valley Grassland communities,	The disturbed habitat and sandy soils onsite are generally unsuitable for this species. The nearest observation of this

Species	Status	Habitat	Discussion
(*Tropidocarpum capparideum*)		at elevations below 1300 feet. Blooms March – April.	species was recorded in the vicinity of Fresno in 1930.
Greene's tuctoria (*Tuctoria greenei)*	FE, CR, CNPS 1B	Found in the San Joaquin Valley and other parts of California in vernal pools within valley grassland, wetland, and riparian communities at elevations below 3500 feet. Blooms May – September.	Suitable habitat is absent from the Project area.
lesser saltscale (*Atriplex minuscula*)	CNPS 1B	Found in the San Joaquin Valley in playas; sandy, alkaline soils in shadescale scrub, valley grassland, and alkali sink communities at elevations below 300 feet. Blooms April – October.	The disturbed habitat of the Project site is generally unsuitable for this species. The only recorded observation of this species in the Project's vicinity was made in 2016 within alkali vernal pools in an undisturbed grassland community near Cross Creek, approximately 17 miles south of the Project site.
Madera leptosiphon (*Leptosiphon serrulatus*)	CNPS 1B	Found in openings in foothill woodland, often yellow-pine forest, and chaparral at elevations between 1000 feet and 4300 feet. Blooms April – May.	The Project area is outside of the elevational range of this species.
Panoche pepper-grass (*Lepidium jaredii ssp. album*)	CNPS 1B	Found on steep slopes, washes, alluvial-fans, and clay, sometimes alkaline, within Valley and Foothill Grassland communities in western Fresno County at elevations between 600 feet and 2400 feet. Blooms February – June.	The Project area is outside of the elevational range of this species.

STATUS CODES

FE	Federally Endangered	CE	California Endangered
FT	Federally Threatened	CT	California Threatened
FPE	Federally Endangered (Proposed)	CCT	California Threatened (Candidate)
FPT	Federally Threatened (Proposed)	CFP	California Fully Protected
FC	Federal Candidate	CSC	California Species of Concern
		CWL	California Watch List
		CCE	California Endangered (Candidate)
		CR	California Rare

CNPS LISTING

1A	Plants Presumed Extinct in California	2	Plants Rare, Threatened, or Endangered in California, but more common elsewhere
1B	Plants Rare, Threatened, or Endangered in California and elsewhere		

3.3.3 Regulatory Setting

3.3.3.1 Federal & State

Threatened and Endangered Species: State and federal "endangered species" legislation has provided the California Department of Fish and Wildlife (CDFW) and the U.S. Fish and Wildlife Service (USFWS) with a mechanism for conserving and protecting plant and animal species of limited distribution and/or low or declining populations. Permits may be required from both CDFW and USFWS if activities associated with the Project will result in the "take" of a listed species. "Take" is defined by the State of California as "to hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture or kill" (Fish and Game Code Section 86). "Take" is more broadly defined by the federal Endangered Species Act to include "harm" (16 USC, Section 1532(19), 50 CFR, Section 17.3). Furthermore, CDFW and USFWS are responsible agencies under CEQA. Both agencies review CEQA documents in order to determine the adequacy of their treatment of endangered species issues and to make project-specific recommendations for their conservation.

3.3.3.2 Migratory Birds

State and federal laws also protect most birds. The federal Migratory Bird Treaty Act (MBTA; 16 U.S.C., sec. 703, Supp. I, 1989) prohibits killing, possessing, or trading in migratory birds, except in accordance with regulations prescribed by the Secretary of the Interior. This act encompasses whole birds, parts of birds, and bird nests and eggs.

3.3.3.3 Birds of Prey

Birds of prey are also protected in California under provisions of Fish and Game Code Section 3503.5, which states that it is "unlawful to take, possess, or destroy any birds in the order *Falconiformes* or *Strigiformes* (birds of prey) or to take, possess, or destroy the nest or eggs of any such bird except as otherwise provided by this code or any regulation adopted pursuant thereto." Construction disturbance during the breeding season could result in the incidental loss of fertile eggs or nestlings, or otherwise lead to nest abandonment. Disturbance that causes nest abandonment and/or loss of reproductive effort is considered "taking" by the CDFW.

3.3.3.4 California Fully Protected Species

The classification of certain animal species as "fully protected" was the State of California's initial effort in the 1960s, prior to the passage of the California Endangered Species Act, to identify and provide additional protection to those species that were rare or faced possible extinction. Following CESA enactment in 1970, many fully protected species were also listed as California threatened or endangered. The fully protected species are identified, and their protections stipulated, in Fish and Game Code Sections 3511 (birds), 4700 (mammals), 5050 (reptiles and amphibians), and 5515 (fish). Fully protected species may not be taken or possessed at any time and no licenses or permits may be issued for their take, except in conjunction with necessary scientific research and protection of livestock.

3.3.3.5 Local

City of Fowler General Plan (1976, & 2025): The City of Fowler General Plan (1976) and the City of Fowler 2025 General Plan Update do not contain any goals or policies regarding biological resources that are relevant to the Project or the Project's CEQA review.

3.3.4 Impact Assessment

IV-a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?

IV-a) Less Than Significant with Mitigation Incorporated. Ruderal habitats are characterized by a high level of human disturbance and absence of vegetation or dominated by non-native plant species. Ruderal areas within the Project vicinity have minimal value to wildlife due to the frequent human disturbance, presence of domestic dogs and cats, and the absence of vegetative cover. However, some disturbance-tolerant species may make incidental use of these ruderal lands. As discussed in **Table 3-8** and **Table 3-9** above, occurrence of a special status species onsite would be unlikely; however, in order to ensure protection of any special status species with potential to occur onsite, the following general mitigation measures shall be implemented:

General Mitigation Measures

BIO-1 (WEAP Training): Prior to initiating construction activities (including staging and mobilization), all personnel associated with Project construction shall attend mandatory Worker Environmental Awareness Program (WEAP) training, conducted by a qualified biologist, to aid workers in identifying special status resources that may occur in the Project area. The specifics of this program shall include identification of the sensitive species and suitable habitats, a description of the regulatory status and general ecological characteristics of sensitive resources, and review of the limits of construction and mitigation measures required to reduce impacts to biological resources within the work area. A fact sheet conveying this information, along with photographs or illustrations of sensitive species with potential to occur onsite, shall also be prepared for distribution to all contractors, their employees, and all other personnel involved with construction of the Project. All employees shall sign a form documenting that they have attended WEAP training and understand the information presented to them.

BIO-2 (General Pre-construction Survey): A pre-construction survey for special status species shall be conducted by a qualified biologist within 30 days prior to the beginning of construction activities. If sensitive biological resources are present onsite, the biologist shall establish an appropriate buffer zone and label sensitive resources or areas of avoidance with flagging, fencing, or other easily visible means. If avoidance is not feasible, CDFW and/or USFWS shall be consulted to determine the best course of action.

BIO-3 (Construction Operational Hours): Construction shall be conducted during daylight hours to reduce disturbance to wildlife that could be foraging within work areas.

Implementation of mitigation measures BIO-1 through BIO-3 will ensure protection of any special status species and reduce potential impacts to several species to a less than significant level. Sensitive species warranting additional protective measures will be further discussed below.

Nesting Raptors, Migratory Birds, and Special Status Birds (Including Swainson's Hawk)

Although trees, shrubs, and herbaceous cover are scarce, some disturbance-tolerant avian species may find suitable nesting habitat within the Project site. For instance, a black phoebe or mourning dove could nest on a small structure, such as an irrigation standpipe and a killdeer could nest on the bare ground. Neighboring eucalyptus trees could provide suitable nesting habitat for a raptor or a variety of passerines. Birds nesting onsite could be killed or injured by Project activities, and construction could disturb birds nesting adjacent to work areas, resulting in nest abandonment. In order to protect nesting birds, the Project shall implement mitigation measures BIO-4a, BIO-4b, and BIO-4c, listed below.

Nesting bird season is generally accepted as February 1 through August 31; however, Swainson's hawk nesting season is generally accepted as March 1 through September 15. For simplicity, these timeframes have been combined.

BIO-4a (Avoidance): The Project's construction activities shall occur, if feasible, between September 16 and January 31 (outside of nesting bird season) in an effort to avoid impacts to nesting birds.

BIO-4b (Pre-construction Nesting Bird Survey): If activities must occur within nesting bird season (February 1 to September 15), a qualified biologist shall conduct pre-construction surveys for active nests within 30 days prior to the start of construction. The survey shall include the proposed work area and surrounding lands within 0.5 mile. If no active nests are observed, no further mitigation is required. Active nests are generally defined by the presence of eggs or young; however, raptor nests are considered "active" upon the nest-building stage.

BIO-4c (Establish Buffers): On discovery of any active nests near work areas, the biologist shall determine appropriate construction setback distances based on applicable CDFW and/or USFWS guidelines and/or the biology of the species in question. Construction buffers shall be identified with flagging, fencing, or other easily visible means, and shall be maintained until the biologist has determined that the nestlings have fledged.

Implementation of mitigation measures BIO-4a through BIO-4c will ensure protection of nesting birds and reduce potential impacts to a less than significant level.

Burrowing Owl

Mitigation measures BIO-4a through BIO-4c provide protection to nesting birds, including burrowing owl by requiring a pre-construction nesting bird survey prior to construction activities. However, due to their elusive burrowing nature, especially while overwintering, an active burrow could be missed on a general pre-construction survey. Project activities affecting reproductive success, such as the collapse of an active burrow or disturbance causing an individual to abandon a nest would be considered a significant impact, as would injury or mortality to an individual burrowing owl. In order to reduce potential impacts to this species to a less than significant level, the following additional mitigation measures will be employed.

BIO-5a (Pre-construction Take Avoidance Survey): A take avoidance survey will be conducted by a qualified biologist for burrowing owls within 30 days prior to initiating ground disturbance activities. This survey will be conducted according to methods described in CDFW's 2012 *Staff Report on Burrowing Owl Mitigation*[7].

BIO-5b (Avoidance): If an active burrowing owl burrow is detected, the occurrence shall be reported to the local CDFW office and the CNDDB, and disturbance-free buffers shall be implemented in accordance with CDFW's 2012 *Staff Report on Burrowing Owl Mitigation,* as outlined in the table below:

Table 3-10. CDFW's 2012 Staff Report on Burrowing Owl Mitigation

[7] CDFW. Staff Report on Burrowing Owl Mitigation. https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=83843&inline=true Accessed 27 March 2019.

Location	Time of Year	Level of Disturbance		
		Low	Medium	High
Nesting sites	April 1 – August 15	200 meters	500 meters	500 meters
Nesting sites	August 16 – October 15	200 meters	200 meters	500 meters
Nesting sites	October 16 – March 31	50 meters	100 meters	500 meters

BIO-5c (Consultation with CDFW and Passive Relocation): If avoidance of an active burrowing owl burrow is not feasible, CDFW shall be immediately consulted to determine the best course of action, which may include passive relocation during non-breeding season. Passive relocation and/or burrow exclusion shall not take place without coordination with CDFW and preparation of an approved exclusion and relocation plan.

Implementation of mitigation measures BIO-5a through BIO-5c ensures protection of the burrowing owl and reduces potential impacts to a less than significant level.

San Joaquin Kit Fox

General mitigation measure BIO-1 (WEAP Training) requires all construction personnel to attend a mandatory education program, which will include a detailed description of the San Joaquin kit fox and habitat requirements, color photographs or illustrations, an explanation of the conservation status of this species and its coverage under State and federal regulations, penalties for violating said regulations, and a list of required measures to reduce impacts to the species during construction. General mitigation measure BIO-3 (Construction Operational Hours) limits construction activities to daylight hours which would reduce the likelihood of encountering a kit fox onsite.

Implementation of the following measures, derived from the USFWS 2011 *Standardized Recommendations for Protection of the San Joaquin Kit Fox Prior to or During Ground Disturbance,* will further reduce potential impacts to the San Joaquin kit fox to a less than significant level, and will ensure compliance with State and federal laws protecting this species.

BIO-6a (Pre-construction SJKF Burrow Survey): Within 30 days prior to the start of construction, a pre-construction survey for San Joaquin kit fox individuals and suitable burrows shall be conducted on and within 200 feet of proposed work areas. Any burrows within the survey area that are determined to be suitable for use by the SJKF shall be monitored for a period of three days using tracking medium and/or remotely triggered cameras. If an active kit fox den is detected within or adjacent to the Project area, construction will be delayed, and CDFW and USFWS shall be consulted to determine the best course of action.

BIO-6b (Minimization): The Project shall observe all minimization and protective measures from the Construction and On-Going Operational Requirements of the USFWS 2011 *Standardized Recommendations*, including, but not limited to: construction speed limits, covering of pipes, installation of escape structures, restriction of herbicide and rodenticide use, proper disposal of food items and trash, prohibition of pets and firearms, and completion of an employee education program.

BIO-6c (Mortality Reporting): The Sacramento Field Office of USFWS and the Fresno Field Office of CDFW will be notified in writing within three working days in the case of the accidental death or injury to a San Joaquin kit fox during construction. Notification must include the date, time, and location of the incident and any other pertinent information.

Implementation of mitigation measures BIO-6a through BIO-6c ensures protection of the San Joaquin kit fox and reduces potential impacts to a less than significant level.

Species Requiring Additional Discussion

Fresno Kangaroo Rat

The CNDDB 9-quad search, which covers approximately 500 square miles around the Project site, returned no recorded observations of this species. The biological evaluation report references the Henderson Road observation of this species near Raisin City, but that population was determined to be extirpated by 1984[8]. This species is thought to be extirpated due to habitat loss and fragmentation. The last capture of this species occurred in 1992, and no Fresno kangaroo rat populations have been found in more than 25 years[9]. Neither of the biological survey reports mention the presence of burrow precincts indicative of this species; however, the biological evaluation concludes that suitable habitat for this species is present. It is highly unlikely this species will be encountered onsite, and therefore no further mitigation measures are warranted for this species.

Special Status Animal Species Absent from or Unlikely to Occur Onsite

As indicated in **Table 3-8** above, the following special status animal species have been determined to be absent from or unlikely to occur onsite due to past or ongoing disturbance and/or absence of suitable habitat: blunt-nosed leopard lizard, California glossy snake, California red-legged frog, California tiger salamander, coast horned lizard, Delta smelt, giant gartersnake, northern California legless lizard, pallid bat, valley elderberry longhorn beetle, vernal pool fairy shrimp, vernal pool tadpole shrimp, western mastiff bat, western spadefoot, and western yellow-billed cuckoo. Of these species, the pallid bat and the western mastiff bat could potentially forage over the undeveloped portions of the site or roost within structures, although frequent disturbance would likely discourage these activities. In the unlikely event that these species were foraging onsite, general mitigation measure BIO-3 (Construction Operational Hours) will reduce impacts to foraging nocturnal species, such as these species status bats, to a less than significant level by limiting construction operational activities to daylight hours. Furthermore, mitigation measure BIO-1 provides additional protection by educating all construction personnel on special status species with potential to occur onsite, and BIO-2 requires a qualified biologist perform a general pre-construction survey for sensitive resources. Although these special status animals are unlikely to occur onsite, implementation of mitigation measures BIO-1 through BIO-3 reduces potential impacts to a less than significant level. No further mitigation is warranted.

Special Status Plants

As indicated in **Table 3-9** above, the highly-disturbed nature of the Project site does not provide suitable habitat for any sensitive plant species. However, mitigation measure BIO-2 requires a qualified biologist conduct a general pre-construction survey for sensitive biological resources, including special status plants. Although occurrence of a special status plant onsite is highly unlikely, implementation of mitigation measure BIO-2 reduces potential impacts to a less than significant level. No further mitigation is warranted.

3.3.5 Discussion of Cumulative Impacts

Less than Significant with Mitigation Incorporated. There is a total of three projects of notable size that have been proposed or approved within 4 miles of the Project site. When considered cumulatively, projects resulting in the development of previously undeveloped land contribute to the incremental loss of wildlife habitat in the vicinity. All of the land proposed for development has been consistently disturbed, and the projects are commercial, industrial, or transportation related. For these reasons, the lands proposed for development are generally of low value to most native and/or special status wildlife species and therefore implementation of these projects are less likely to impact special status plants and animals with potential to occur in the vicinity. Although occurrence of a special status species onsite would be unlikely, any project-related activity affecting reproductive success of native wildlife species, either directly or indirectly, would be considered a significant impact. Furthermore, any project-related activity resulting in the injury or mortality of a special status species would be considered significant. When considered cumulatively, the likelihood of encountering or disturbing a

[8] USFWS. Fresno Kangaroo Rat. 5-year Review. https://ecos.fws.gov/docs/five_year_review/doc3214.pdf Accessed 27 March 2019.
[9] Ibid.

special status species increases. If construction on multiple projects commences concurrently, native wildlife fleeing disturbance will have fewer options for dispersal and refugia. For instance, an animal could flee one construction site only to immediately encounter another project's site, resulting in injury or mortality. However, this Project and all other cumulative projects would be required to implement appropriate mitigation measures to reduce impacts to biological resources to a less than significant level. The mitigation measures identified in **Section 3.3** discuss ways in which the Project will reduce impacts to special status species with potential to occur onsite or in the vicinity. Other cumulative projects would also be required to conduct a thorough review of potential impacts to biological resources and would likely have similar mitigation measures to this Project. Therefore, cumulative impacts to biological resources would be less than significant with mitigation incorporated.

3.4 Cultural Resources

Table 3-11. Cultural Resources Topics

Cultural Resources					
Would the project:		**Potentially Significant Impact**	**Less than Significant with Mitigation Incorporated**	**Less than Significant Impact**	**No Impact**
a)	Cause a substantial adverse change in the significance of a historical resource as defined in §15064.5?	☐	☒	☐	☐
b)	Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?	☐	☒	☐	☐
c)	Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	☐	☒	☐	☐
d)	Disturb any human remains, including those interred outside of dedicated cemeteries?	☐	☒	☐	☐

3.4.1 Introduction

This section of the Draft EIR evaluates potential Project-related impacts associated with cultural resources. The Initial Study evaluated the Project's impacts on cultural resources and found that the Project could potentially adversely affect a historical, archaeological, or paleontological resource and/or disturb human remains. These issues, as outlined in impact questions a through d, are analyzed below.

3.4.2 Environmental Setting

According to the Cultural Resource Inventory Study, prepared by Applied EarthWorks (AE), the Project is near the eastern periphery of the San Joaquin Valley near the base of the Sierra Nevada foothills, approximately 12 miles west of the Kings River. The San Joaquin Valley is the southern half of an elongated trough called the Great Valley, a 50-mile-wide lowland that extends approximately 500 miles south from the Cascade Range to the Tehachapi Mountains. The San Joaquin Valley parallels the 400-mile stretch of the Sierra Nevada geomorphic province, which encompasses a 40- to 100-mile-wide area ranging in elevation from 400 feet above mean sea level (amsl) along the western boundary to more than 14,000 feet amsl in the east (Norris and Webb 1990:63)[**Appendix E**].

The Project site is partially developed. The undeveloped land onsite has been classified as fallow and ruderal in nature. Most of the ground cover consists of tall grasses and weeds. The topography is predominately flat, with the exception of a large flat-topped earthen mound, littered with modern refuse. Concrete irrigation pipes and a water pump were observed among unidentified ornamental trees and two olive trees.

On January 12, 2018 Applied EarthWorks, Inc. (AE), a qualified cultural resources consultant, conducted literature and field cultural resource inventory of the Project area. AE's inventory included a general cultural records search and a Sacred Lands File search at the regional information center of the California Historical Resources Information System (CHRIS) at California State University, Bakersfield, and outreach with local tribes and individuals. This purpose of this research and outreach was to identify previously recorded cultural resources in and around the proposed development and a better understanding of historical land use in the Project area and likelihood for significant buried cultural deposits. Between two pedestrian surveys performed on January 4, 2018 and October 11, 2018, the approximate 19-acre Project area was surveyed in its entirety, utilizing 15 to 20-meter/foot transects. Additionally, AE evaluated the eligibility of one historic-era archaeological site in the Project area for inclusion in the California Register of Historical Resources (CRHR).

3.4.2.1 Records Search

On December 27, 2017, AE requested a records search from the Southern San Joaquin Valley Information Center (SSJVIC) of the CHRIS at California State University, Bakersfield. The records search encompassed the 19-acre Project area plus all land within a half- mile radius of the Project area. SSJVIC staff consulted cultural resource location and survey base maps, reports of previous investigations, cultural resource records, the listings of the Office of Historic Preservation Historic Properties Directory, Archaeological Determinations of Eligibility, and the California Inventory of Historic Resources.

In addition to the SSJVIC records search, AE consulted General Land Office land patent records and survey plats available online and reviewed a series of historical atlases dating between 1891 and 1935 as well as aerial photographs of the Project area dating between 1937 and 1999 from the online collection maintained by the Henry Madden Library at California State University, Fresno. AE also reviewed online historical United States Geological Survey topographic maps and accessed recent aerials (dating from 1998 to the present) on Google Earth. County histories, city directories, genealogybank.com and Ancestry.com provided biographical and demographic information about the owners of the Project parcel and neighboring properties. AE also visited the Fresno
County Recorders/Assessors records for property information. These sources provided a better understanding of the history of land use in the Project area.

3.4.2.2 Native American Outreach

On December 27, 2017, AE contacted the Native American Heritage Commission (NAHC) requesting a search of its Sacred Lands File and the contact information for local Native American representatives who may have information about the Project area. The NAHC responded on January 12, 2018, with its findings and attached a list of 12 California Native American tribes and individuals culturally affiliated with the Project area. AE prepared and sent a letter to each of the contacts identified by the NAHC and kept a log of all responses.

3.4.2.3 Pedestrian Survey

AE's pedestrian surveys entailed walking systematic transects spaced at 15–20-meter intervals over the 19-acre Project area. AE photographed the survey area using a digital camera to document the environmental setting and ground visibility at the time of survey. Upon discovery of cultural material, AE closely inspected the ground and surrounding area to identify the nature and extent of the site. AE recorded information about the site on California Department of Parks and Recreation (DPR) Primary and Archaeological Site Record forms and used a Trimble Global Positioning System (GPS) unit to collect spatial information. Photographs and field notes are on file at AE's office in Fresno, California.

3.4.3 Regulatory Setting

3.4.3.1 Federal

Construction of the Project does not require federal approval, nor is federal funding being used for construction or implementation of the Project. Therefore, federal regulations regarding cultural resources do not apply to the Project or the Project's CEQA review.

3.4.3.2 State

California Environmental Quality Act: CEQA Statutes (PRC 21000 et seq.) and the Regulations implementing the Act ("Guidelines", CCR 15000 et seq.) require consideration of project impacts on archaeological or historical sites deemed to be "historical resources". Pursuant to the CEQA Guidelines, a substantial adverse change in the significant qualities of a historical resource is considered a significant effect on the environment. Section 15064.5[a][1]-[3] defines "historical resource" to be a resource listed in, or determined to be eligible for listing in, the CRHR. According to the CEQA Guidelines, in order to be eligible for inclusion in the CRHR, the resource must meet at least one of the following four criteria, as defined in PRC Section 5024.1:

- Is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage.
- Is associated with the lives of persons important in our past.
- Embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values.
- Has yielded, or may be likely to yield, information important in history or prehistory.

Historical resources may include, but are not limited to, "any object, building, site, area, place, record, or manuscript which is historically or archaeologically significant, or is significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural annals of California" (PRC Section 5020.1[j]).

California Health and Safety Code: Health and Safety Code Section 7050.5 requires that construction or excavation be stopped in the vicinity of discovered human remains until the County coroner has determined whether the remains are those of a Native American. If the remains are determined to be Native American, the coroner must contact the California Native American Heritage Commission. PRC Section 5097.98 specifies the procedures to be followed in case of the discovery of human remains on non-federal land. The disposition of Native American burials is within the jurisdiction of the Native American Heritage Commission.

Paleontological Resources: Paleontological resources are the fossilized remains of plants and animals and associated deposits. The Society of Vertebrate Paleontology has identified vertebrate fossils, their taphonomic (fossilization) and associated environmental indicators, and fossiliferous deposits as significant nonrenewable paleontological resources. Botanical and invertebrate fossils and assemblages may also be considered significant resources[10].CEQA requires that a determination be made as to whether a project would directly or indirectly destroy a unique paleontological resource or site or unique geological feature (CEQA Appendix G(v)(c)). If an impact is significant, CEQA requires feasible measures to minimize the impact (CCR Title 14(3) Section 15126.4(a)(1)). PRC Section 5097.5 (see above) also applies to paleontological resources.

3.4.3.3 Local

The City of Fowler General Plan (1976) and the City of Fowler 2025 General Plan Update do not contain any goals or policies regarding cultural resources that are relevant to the Project or the Project's CEQA review.

3.4.4 Impact Assessment

V-a) Cause a substantial adverse change in the significance of a historical resource as defined in §15064.5?

V-b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?

[10] Society of Vertebrate Paleontology. Conformable Impact Mitigation Guidelines Committee Policy Statements. http://www.vertpaleo.org/ConformableImpactMitigationGuidelinesCommittee.htm.

V-c) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?

V-a-c) Less Than Significant with Mitigation Incorporated.
The SSJVIC records search conducted by AE reported that no cultural resource studies have occurred within the Project area and there are no previously recorded sites in the Project area. However, AE's inventory, consisting of a records search, Native American outreach, historical research, and pedestrian surveys, revealed that one cultural resource (the remains of a historic-era homestead (CA-FRE-3854H)) occurs in the Project area.

The historic-era homestead was originally discovered by AE through evaluation of historical aerial photographs of the site. During pedestrian surveys, no historic buildings, remnants, or artifacts were observed, although a large flat-topped earthen mound was present onsite that appears to correspond with the location of the structure in the aerial photographs. AE recorded archaeological site CA-FRE-3854H and evaluated its eligibility for listing in the CRHR based on the four criteria defined in PRC 5024.1 and listed in **Section 0** above. Although archival research confirmed that the site had been the location of a homestead in the early twentieth century, AE found that the site is not considered significant under any of the four CRHR evaluation criteria. Furthermore, no prehistoric archaeological sites, artifacts, features, or architectural resources were observed within the Project area during AE's field surveys.

Although the Cultural Resources Inventory Study (**Appendix E**) prepared by AE revealed an absence of known cultural resources within the Project area, the Project proposes ground-disturbing activities and therefore archaeological materials could be encountered during construction. Implementation of mitigation measure CUL-1, listed below, will reduce potential impacts to historical resources, archaeological resources, and paleontological resources, to a less than significant level.

Mitigation Measure CUL-1 (Archaeological Remains)
In the event that archaeological remains are encountered at any time during development or ground-moving activities within the entire project area, all work in the vicinity of the find shall halt until a qualified archaeologist can assess the discovery.

V-d) Disturb any human remains, including those interred outside of dedicated cemeteries?

V-d) Less Than Significant with Mitigation Incorporated. No formal cemeteries or other places of human internment are known to exist on the Project site; however, in accordance with Health and Safety Code Section 7050.5 and Public Resource Code Section 5097.98, if human remains are uncovered, mitigation measure CUL-2 as described below, shall be implemented, which will reduce potential impacts to a less than significant level.

Mitigation Measure CUL-2 (Human Remains)
If human remains are uncovered, or in any other case when human remains are discovered during construction, the Fresno County Coroner is to be notified to arrange their proper treatment and disposition. If the remains are identified—on the basis of archaeological context, age, cultural associations, or biological traits—as those of a Native American, California Health and Safety Code 7050.5 and Public Resource Code 5097.98 require that the coroner notify the NAHC within 24 hours of discovery. The NAHC will then identify the Most Likely Descendent who will determine the manner in which the remains are treated.

3.4.5 Discussion of Cumulative Impacts

Less than Significant with Mitigation Incorporated. As discussed in Impact V a-c, although unlikely, this Project could potentially disturb unknown subsurface human remains or historic, archaeological, or paleontological resources through excavation and ground disturbance. When considered cumulatively, other projects in the vicinity could also unintentionally impact unknown cultural or paleontological resources. However, it is reasonable to assume that potential impacts to unknown cultural or paleontological resources by other projects in the vicinity would be appropriately mitigated by standard mitigation measures, similar to those implemented by this Project and discussed above in Impact V a-c and d. Therefore, cumulative impacts to cultural resources would be less than significant with mitigation incorporated.

3.5 Greenhouse Gas Emissions

Table 3-12. Greenhouse Gas Emissions Topics

Greenhouse Gas Emissions				
Would the project:	**Potentially Significant Impact**	**Less than Significant with Mitigation Incorporated**	**Less than Significant Impact**	**No Impact**
a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	☒	☐	☐	☐
b) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	☒	☐	☐	☐

3.5.1 Environmental Setting

The Earth's climate has been warming for the past century. It is believed that this warming trend is related to the release of certain gases into the atmosphere. Greenhouse gases (GHG) absorb infrared energy that would otherwise escape from the Earth. As the infrared energy is absorbed, the air surrounding the Earth is heated. An overall warming trend has been recorded since the late 19th century, with the most rapid warming occurring over the past two decades. The 10 warmest years of the last century all occurred within the last 15 years. It appears that the decade of the 1990s was the warmest in human history [National Oceanic and Atmospheric Administration 2010]. Human activities have been attributed to an increase in the atmospheric abundance of greenhouse gases. The following is a brief description of the most commonly recognized GHGs.

3.5.1.1 Greenhouse Gases

Commonly identified GHG emissions and sources include the following:

Carbon dioxide (CO_2) is an odorless, colorless natural greenhouse gas. CO_2 is emitted from natural and anthropogenic sources. Natural sources include the following: decomposition of dead organic matter; respiration of bacteria, plants, animals, and fungus; evaporation from oceans; and volcanic out gassing. Anthropogenic sources include the burning of coal, oil, natural gas, and wood.

Methane (CH_4) is a flammable greenhouse gas. A natural source of methane is the anaerobic decay of organic matter. Geological deposits, known as natural gas fields, also contain methane, which is extracted for fuel. Other sources are from landfills, fermentation of manure, and ruminants such as cattle.

Nitrous oxide (N_2O), also known as laughing gas, is a colorless greenhouse gas. Nitrous oxide is produced by microbial processes in soil and water, including those reactions that occur in fertilizer containing nitrogen. In addition to agricultural sources, some industrial processes (fossil fuel-fired power plants, nylon production, nitric acid production, and vehicle emissions) also contribute to its atmospheric load.

Water vapor is the most abundant, and variable greenhouse gas. It is not considered a pollutant; in the atmosphere, it maintains a climate necessary for life.

Ozone (O_3) is known as a photochemical pollutant and is a greenhouse gas; however, unlike other greenhouse gases, ozone in the troposphere is relatively short-lived and, therefore, is not global in nature. Ozone is not emitted directly into the atmosphere but is formed by a complex series of chemical reactions between volatile organic compounds, nitrogen oxides, and sunlight.

Aerosols are suspensions of particulate matter in a gas emitted into the air through burning biomass (plant material) and fossil fuels. Aerosols can warm the atmosphere by absorbing and emitting heat and can cool the atmosphere by reflecting light.

Chlorofluorocarbons (CFCs) are nontoxic, nonflammable, insoluble, and chemically unreactive in the troposphere (the level of air at the earth's surface). CFCs were first synthesized in 1928 for use as refrigerants, aerosol propellants, and cleaning solvents. CFCs destroy stratospheric ozone; therefore, their production was stopped as required by the Montreal Protocol in 1987.

Hydrofluorocarbons (HFCs) are synthetic chemicals that are used as a substitute for CFCs. Of all the greenhouse gases, HFCs are one of three groups (the other two are perfluorocarbons and sulfur hexafluoride) with the highest global warming potential. HFCs are human made for applications such as air conditioners and refrigerants.

Perfluorocarbons (PFCs) have stable molecular structures and do not break down through the chemical processes in the lower atmosphere; therefore, PFCs have long atmospheric lifetimes, between 10,000 and 50,000 years. The two main sources of PFCs are primary aluminum production and semiconductor manufacture.

Sulfur hexafluoride (SF_6) is an inorganic, odorless, colorless, nontoxic, nonflammable gas. It has the highest global warming potential of any gas evaluated. Sulfur hexafluoride is used for insulation in electric power transmission and distribution equipment, in the magnesium industry, in semiconductor manufacturing, and as a tracer gas for leak detection.

3.5.1.2 Effects of Climate Change

There are uncertainties as to exactly what the climate changes will be in various local areas of the earth, and what the effects of clouds will be in determining the rate at which the mean temperature will increase. There are also uncertainties associated with the magnitude and timing of other consequences of a warmer planet: sea level rise, spread of certain diseases out of their usual geographic range, the effect on agricultural production, water supply, sustainability of ecosystems, increased strength and frequency of storms, extreme heat events, air pollution episodes, and the consequence of these effects on the economy.

Emissions of GHGs contributing to global climate change are largely attributable to human activities associated with the industrial/manufacturing, utility, transportation, residential, and agricultural sectors. About three-quarters of human emissions of CO_2 to the global atmosphere during the past 20 years are due to fossil fuel burning. Atmospheric concentrations of CO_2, CH_4, and N_2O have increased 31 percent, 151 percent, and 17 percent respectively since the year 1750 (CEC 2008). GHG emissions are typically expressed in carbon dioxide-equivalents (CO_2e), based on the GHG's Global Warming Potential (GWP). The GWP is dependent on the lifetime, or persistence, of the gas molecule in the atmosphere. For example, one ton of CH_4 has the same contribution to the greenhouse effect as approximately 21 tons of CO_2. Therefore, CH_4 is a much more potent GHG than CO_2.

3.5.2 Regulatory Setting

3.5.2.1 Federal

Although climate change and GHG reduction is a concern at the federal level; currently there are no regulations or legislation that have been enacted specifically addressing thresholds of significance or GHG emissions reductions requirements and climate change at the local SJVAPCD air district project level.

3.5.2.2 State

3.5.2.2.1 Assembly Bill 1493:

Assembly Bill (AB) 1493 (Pavley) of 2002 (Health and Safety Code Sections 42823 and 43018.5) requires the California Air Resources Board (CARB) to develop and adopt the nation's first GHG emission standards for automobiles.

3.5.2.2.2 Assembly Bill 32 - California Global Warming Solutions Act of 2006 (AB 32)

AB 32 (Health and Safety Code Sections 38500, 38501, 38510, 38530, 38550, 38560, 38561–38565, 38570, 38571, 38574, 38580, 38590, 38592–38599 "*et seq.,*") requires that Statewide GHG emissions be reduced to 1990 levels by the year 2020. The gases that are regulated by AB 32 include carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, nitrogen trifluoride, and sulfur hexafluoride. The reduction to 1990 levels will be accomplished through an enforceable Statewide cap on GHG emissions that will be phased in starting in 2012. To effectively implement the cap, AB 32 directs CARB to develop and implement regulations to reduce Statewide GHG emissions from stationary sources. AB 32 specifies that regulations adopted in response to AB 1493 should be used to address GHG emissions from vehicles. However, AB 32 also includes language stating that if the AB 1493 regulations cannot be implemented, then CARB should develop new regulations to control vehicle GHG emissions under the authorization of AB 32.

AB 32 requires that CARB adopt a quantified cap on GHG emissions representing 1990 emissions levels and disclose how it arrives at the cap, institute a schedule to meet the emissions cap, and develop tracking, reporting, and enforcement mechanisms to ensure that the State achieves reductions in GHG emissions necessary to meet the cap. AB 32 also includes guidance to institute emissions reductions in an economically efficient manner and conditions to ensure that businesses and consumers are not unfairly affected by the reductions.

3.5.2.2.3 Climate Change Scoping Plan

In October 2008, CARB published its Climate Change Proposed Scoping Plan, which is the State's plan to achieve GHG reductions in California required by AB 32. The Scoping Plan contains the main strategies California will implement to achieve reduction of 169 million metric tons (MMT) of CO_2e, or approximately 30 percent from the State's projected 2020 emissions level of 596 $MMTCO_2e$ under a business-as-usual scenario (this is a reduction of 42 $MMTCO_2e$, or almost 10 percent, from 2002–2004 average emissions). The Scoping Plan also includes CARB-recommended GHG reductions for each emissions sector of the State's GHG inventory. The largest proposed GHG reduction recommendations are from improving emissions standards for light-duty vehicles (estimated reductions of 31.7 $MMTCO_2e$), implementation of the Low Carbon Fuel Standard (15.0 $MMTCO_2e$) program, energy efficiency measures in buildings and appliances and the widespread development of combined heat and power systems (26.3 $MMTCO_2e$), and a renewable portfolio standard for electricity production (21.3 $MMTCO_2e$). The Scoping Plan identifies the local equivalent of AB 32 targets as a 15 percent reduction below baseline GHG emissions level, with baseline interpreted as GHG emissions levels between 2003 and 2008.

A key component of the Scoping Plan is the Renewable Portfolio Standard, which is intended to increase the percentage of renewables in California's electricity mix to 33 percent by year 2020, resulting in a reduction of 21.3 $MMTCO_2e$. Sources of renewable energy include, but are not limited to, biomass, wind, solar, geothermal, hydroelectric, and anaerobic digestion. Increasing the use of renewables will decrease California's reliance on fossil fuels, thus reducing GHG emissions.

The Scoping Plan States that land use planning and urban growth decisions will play important roles in the State's GHG reductions because local governments have primary authority to plan, zone, approve, and permit how land is developed to accommodate population growth and the changing needs of their jurisdictions. (Meanwhile, CARB is also developing an additional protocol for community emissions.) CARB further acknowledges that decisions on how land is used will have large impacts on the GHG emissions that will result from the transportation, housing, industry, forestry, water, agriculture, electricity, and natural gas emissions sectors. The Scoping Plan States that the ultimate GHG reduction assignment to local government operations is to be determined. With regard to land use planning, the Scoping Plan expects approximately 5.0 $MMTCO_2e$ will be achieved associated with implementation of Senate Bill 375, which is discussed further below. The Climate Change Proposed Scoping Plan was approved by CARB on December 11, 2008.

The First Update of the Scoping Plan was approved by the CARB on May 22, 2014, which looked past 2020 to set mid-term goals (2030-2035) on the road to reaching the 2050 goals. CARB's Key Action for the Waste Sector focused on eliminating organics from the landfill starting in 2016 and financing the in-State infrastructure development of composting and anaerobic digestion facilities. CARB's Key Action for Short-lived Climate Pollutants such as methane is to develop a comprehensive strategy by 2015 which will focus on methane generated at landfills from the disposal of organic wastes.

3.5.2.2.4 Senate Bill 97 - CEQA: Greenhouse Gas Emissions

Senate Bill 97, signed in August 2007, acknowledges that climate change is an important environmental issue that requires analysis under CEQA. This bill directs the Governor's Office of Planning and Research to prepare, develop, and transmit to the Resources Agency guidelines for the feasible mitigation of GHG emissions or the effects of GHG emissions, by July 1, 2009. The Resources Agency is required to certify or adopt those guidelines by January 1, 2010. Amendments to the CEQA guidelines took effect March 18, 2010. The revisions include a new section (Sec. 15064.4) that specifically addresses the potential significance of GHG emissions. Section 15064.4 calls for a "good-faith effort" to "describe, calculate or estimate" GHG emissions. Section 15064.4 further States that a lead agency "should" consider several factors when assessing the significance of impacts from GHG emissions on the environment, including: the extent to which the project would increase or reduce GHG emissions; whether project emissions exceed an applicable threshold of significance; and the extent to which the project complies with "regulations or requirements adopted to implement a Statewide, regional, or local plan for the reduction or mitigation of greenhouse gas emissions." The guidelines also State that a lead agency may determine that a project's incremental contribution to a cumulative effect is not cumulatively considerable if the project will comply with the requirements of previously approved plan or mitigation program (Sec. 15064(h)(3)). However, the guidelines do not require or recommend a specific analytical methodology or provide quantitative criteria for determining the significance of GHG emissions.

This bill also protected projects until January 1, 2010 that were funded by the Highway Safety, Traffic Reduction, Air Quality and Port Security Bond Act of 2006, or the Disaster Preparedness and Flood Protection Bond Act of 2006 (Proposition 1B or 1E) from claims of inadequate analysis of GHG as a legitimate cause of action. Thus, this "protection" is highly limited to a handful of projects and for a short time period (CAPCOA 2008).

3.5.2.2.5 Senate Bill 1368

Senate Bill (SB) 1368 (codified at Public Utilities Code Chapter 3) is the companion bill of AB 32. SB 1368 required the California Public Utilities Commission (CPUC) to establish a greenhouse gas emissions performance standard for baseload generation from investor-owned utilities by February 1, 2007. The bill also required the California Energy Commission (CEC) to establish a similar standard for local publicly owned utilities by June 30, 2007. These standards cannot exceed the greenhouse gas emission rate from a baseload combined-cycle natural-gas-fired plant. The legislation further requires that all electricity provided to California, including imported electricity, must be generated from plants that meet the standards set by the CPUC and the CEC.

3.5.2.2.6 Senate Bill 1078 and Governor's Order S-14-08 (California Renewables Portfolio Standards)

Senate Bill 1078 (Public Utilities Code Sections 387, 390.1, 399.25 and Article 16) addresses electricity supply and requires that retail sellers of electricity, including investor-owned utilities and community choice aggregators, provide a minimum 20 percent of their supply from renewable sources by 2017. This Senate Bill will affect Statewide GHG emissions associated with electricity generation. In 2008, Governor Schwarzenegger signed Executive Order S-14-08, which set the Renewables Portfolio Standard target to 33 percent by 2020. It directed State government agencies and retail sellers of electricity to take all appropriate actions to implement this target. The Project area would receive energy service from the investor-owned Southern California Edison.

Prior to the Executive Order, the CPUC and the CEC were responsible for implementing and overseeing the Renewables Portfolio Standard. The Executive Order shifted that responsibility to CARB, requiring it to adopt regulations by July 31, 2010. CARB is required by current law, AB 32 of 2006, to regulate sources of greenhouse gases to meet a State goal of reducing greenhouse gas emissions to 1990 levels by 2020 and an 80 percent reduction of 1990 levels by 2050. The CEC and CPUC are expected to serve in advisory roles to help CARB develop the regulations to administer the 33 percent by 2020 requirement. Additionally, the CEC and CPUC will continue their implementation and administration of the 20 percent requirement. The Executive Order also stipulates that CARB may delegate to the CPUC and CEC any policy development or program implementation responsibilities that would reduce duplication and improve consistency with other energy programs. CARB is also authorized to increase the target and accelerate and expand the time frame.

The general definition under the State Renewables Portfolio Standard for biomass is any organic material not derived from fossil fuels, including agricultural crops, agricultural wastes and residues, waste pallets, crates, dunnage, manufacturing, and construction wood wastes, landscape and right-of-way tree trimmings, mill residues that result from milling lumber, rangeland maintenance residues, sludge derived from organic matter, and wood and wood waste from timbering operations. Biomass feedstock from State and national forests is allowable under the definition.

3.5.2.2.7 Mandatory Reporting of Greenhouse Gas Emissions

Reporting of greenhouse gases by major sources is required by the California Global Warming Solutions Act (AB 32, 2006). Revisions to the existing CARB mandatory GHG reporting regulation were considered at the board hearing on December 16, 2010. The revised regulation was approved by the California Office of Administrative Law and became effective on January 1, 2012. The revised regulation affects industrial facilities, suppliers of transportation fuels, natural gas, natural gas liquids, liquefied petroleum gas, and carbon dioxide, operators of petroleum and natural gas systems, and electricity retail providers and marketers.

3.5.2.2.8 Cap-and-Trade Regulation

The cap-and-trade regulation is a key element in California's climate plan. It sets a Statewide limit on sources responsible for 85 percent of California's greenhouse gas emissions and establishes a price signal needed to drive long-term investment in cleaner fuels and more efficient use of energy. The cap-and-trade rules came into effect on January 1, 2013 and apply to large electric power plants and large industrial plants. In 2015, they will extend to fuel distributors (including distributors of heating and transportation fuels). At that stage, the program will encompass nearly 85 percent of the State's total greenhouse gas emissions.

GHG emissions addressed by the cap-and-trade regulation are subject to an industry-wide cap on overall GHG emissions. The cap-and-trade regulation sets a firm limit or cap on GHGs, which declines approximately 3 percent each year beginning in 2013. Any growth in emissions must be accounted for under the cap, such that a corresponding and equivalent reduction in emissions must occur to allow any increase. The cap-and-trade regulation will help California achieve its goal of reducing GHG emissions to 1990 levels by the year 2020, and ultimately achieving an 80% reduction from 1990 levels by 2050. As such, the CARB has determined that the cap-and-trade regulation meets the requirements of AB 32.

3.5.2.3 Local

The City of Fowler General Plan (1976) and the City of Fowler 2025 General Plan Update do not contain any relevant goals or policies regarding greenhouse gas emissions that are relevant to the Project or the Project's CEQA review.

3.5.2.4 San Joaquin Valley Air Pollution Control District

3.5.2.4.1 SJVAPCD Climate Change Action Plan:

On August 21, 2008, the SJVAPCD Governing Board approved the District's Climate Change Action Plan with the following goals and actions:

Goals:

- Assist local land-use agencies with California Environmental Quality Act (CEQA) issues relative to projects with GHG emissions increases.
- Assist Valley businesses in complying with mandates of AB 32.
- Ensure that climate protection measures do not cause increase in toxic or criteria pollutants that adversely impact public health or environmental justice communities.

Actions:

- Authorize the Air Pollution Control Officer to develop GHG significance threshold(s) or other mechanisms to address CEQA projects with GHG emissions increases. Begin the requisite public process, including public workshops, and develop recommendations for Governing Board consideration in the spring of 2009.
- Authorize the Air Pollution Control Officer to develop necessary regulations and instruments for establishment and administration of the San Joaquin Valley Carbon Exchange Bank for voluntary GHG reductions created in the Valley. Begin the requisite public process, including public workshops, and develop recommendations for Governing Board consideration in spring 2009.
- Authorize the Air Pollution Control Officer to enhance the District's existing criteria pollutant emissions inventory reporting system to allow businesses subject to Assembly Bill (AB) 32 emission reporting requirements to submit simultaneous streamlined reports to the District and the State of California with minimal duplication.
- Authorize the Air Pollution Control Officer to develop and administer voluntary GHG emission reduction agreements to mitigate proposed GHG increases from new projects.
- Direct the Air Pollution Control Officer to support climate protection measures that reduce GHG emissions as well as toxic and criteria pollutants. Oppose measures that result in a significant increase in toxic or criteria pollutant emissions in already impacted area.

3.5.2.4.2 SJVAPCD CEQA Greenhouse Gas Guidance:

In accordance with SJVAPCD's District Policy – Addressing GHG Emission Impacts for Stationary Source Projects under CEQA When Serving at the Lead Agency [11], projects proposing compliance with one or more of its identified Best Performance Standards (BPS) would be determined to have a less-than-significant impact. Once BPS have been established, Project implementing BPS would be determined to have a less than significant individual and cumulative impact on global climate change and would not require project-specific quantification of GHG emissions.

Projects not implementing BPS would require quantification of project specific GHG emissions.

The SJVAPCD's approach is intended to streamline the process of determining if project-specific greenhouse gas emissions would have a significant effect. Projects exempt from the requirements of CEQA, and projects complying with an approved plan or mitigation program would be determined to have a less than significant

[11] SJVAPCD Valley Air.org website: http://www.valleyair.org/Programs/CCAP/12-17-09/2%20CCAP%20-%20FINAL%20District%20Policy%20CEQA%20GHG%20-%20Dec%2017%202009.pdf. Accessed June 10, 2019.

cumulative impact. Such plans or programs must be specified in law or adopted by the public agency with jurisdiction over the affected resources and have a certified final CEQA document.

3.5.3 Impact Assessment

VII-a) Would the project generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment? And

VII-b) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?

VII-a and b) Less Than Significant Impact with Mitigation.

Short-Term Construction-Generated Emissions

Estimated construction-generated emissions are summarized in **Table 3-13. Short-Term Construction-Generated GHG Emissions** As indicated, construction of the Project would generate maximum annual emissions of approximately 731.2950 metric tons of carbon dioxide equivalent ($MTCO_2e$). Construction-related production of GHGs would be temporary and last approximately 19 months.

Table 3-13. Short-Term Construction-Generated GHG Emissions

Short-Term Construction-Generated GHG Emissions	
Year	**Emissions (MT CO_2e) (1)**
2019	92.3816
2020	764.7492
2021	185.4928
BAAQMD Threshold for Mobile Sources	*1,100*
BAAQMD Threshold for Stationary Sources	*10,000*
Exceed Threshold?	No

- *Emissions were quantified using the CalEEmod, Version 2016.3.2. Refer to Appendix A*
- *for modeling results and assumptions. Totals may not sum due to rounding.*

Long-Term Operational Emissions

Long-term operation of the Project would result in GHG emissions mostly related to Vehicle Miles Traveled (VMT).

Table 3-14. Long-Term Operation Generated GHG Emissions

Long-Term Operation-Generated GHG Emissions	
Category	**Emissions (MT CO_2e) (1)**
Baseline Annual Project Emissions (Business as Usual):	5,339.6757
Annual Project Operational Emissions	7,662.3243
Total New Annual Operational Emissions	**2,322.6486**
Federal Threshold	*25,000*
Exceed Threshold?	No

(1) *Emissions were quantified using the CalEEmod, Version 2016.3.2. Refer to Appendix A*
(2) *for modeling results and assumptions. Totals may not sum due to rounding.*

Efforts devoted to greenhouse gas (GHG) emissions reduction and climate change research and policy have increased dramatically in recent years. In 2002, with the passage of Assembly Bill 1493 (AB 1493), California launched an innovative and proactive approach to dealing with GHG emissions and climate change at the state level. AB 1493 requires the Air Resources Board (ARB) to develop and implement regulations to reduce automobile and light truck GHG emissions; these regulations were applied to automobiles and light trucks beginning with the 2009 model year.

On June 1, 2005, Governor Arnold Schwarzenegger signed Executive Order S-3-05 to reduce California's GHG emissions to 1) 2000 levels by 2010, 2) 1990 levels by the year 2020, and 3) 80% below the 1990 levels by the year 2050. In 2006, this goal was further reinforced with the passage of Assembly Bill 32 (AB 32), the Global Warming Solutions Act of 2006. AB 32 sets the same overall GHG emissions reduction goals while further mandating that ARB create a plan that includes market mechanisms, and implement rules to achieve "real, quantifiable, cost-effective reductions of greenhouse gases."

Executive Order S-20-06 further directs state agencies to begin implementing AB 32, including the recommendations made by the state's Climate Action Team. Climate change and GHG reduction is also a concern at the federal level; however, at this time, no legislation or regulations have been enacted specifically addressing GHG emissions reductions and climate change.

Project construction emissions and project operations would not exceed SJVAPCD thresholds of significance. In addition, Regulation VIII measures would be implemented, further decreasing potential emissions. The Project would not significantly contribute to the emission of GHGs.

The SJVAPCD has adopted its *Guidance for Valley Land Use Agencies in Addressing GHG Impacts for New Projects Under CEQA* (SJVAPCD 2009). The guidance provides initial screening criteria for climate change analyses, as well as draft guidance for the determination of significance.

The effects of project specific GHG emissions are cumulative, and therefore climate impacts are addressed as a cumulative, rather than a direct impact. The guidance for determining significance of impacts has been developed from the requirements of AB 32 and addresses potential cumulative impacts that a project's GHG emissions could have on climate change. Since climate change is a global phenomenon, no direct impact would be identified for an individual land development project. The following criteria are used to evaluate whether a project would result in a significant impact for climate change:

- Does the project comply with an adopted plan for reduction or mitigation of GHG emissions? If no, then

- Does the project achieve 29% GHG reductions by using approved Best Performance Standards? If no, then

- Does the project achieve AB 32 targeted 29% GHG emission reductions compared with Business as Usual (BAU)? (A significance threshold of 29% below "business as usual" levels are considered to demonstrate that a project would be consistent with the goals of AB 32.)

Mitigation Measures

The SJVAPCD's Interim GHG Emission Reductions Calculator[12] and the *Appendix J: GHG Emission Reduction Measures – Development Projects*, from CAPCOA[13], contain BPS as measures to reduce GHG emissions. The measures from the CAPCOA are GHG reductions specifically related to energy usage, water usage, and vehicle miles traveled. Several of these measures, listed below, are proposed by the Project, and other measures are recommended as further mitigation for this Project.

Project-proposed BPS that will reduce GHG emissions:

3. The entire project is located within one-half mile of an existing/planned Class I/Class II bike lane on Golden State Boulevard, and project design accommodates safe bicycle connection to the existing offsite facilities.

4. The project provides safe connections to external pedestrian pathways and access points via the internal street and sidewalk system.

Implementation of the proposed Project could improve the job-to-housing ratio and; therefore, could contribute to shortening the average trip distance of residents to their jobs and to the reduction of total vehicle miles traveled in the City of Fowler, resulting in a per capita reduction in GHG emissions in the Project area.

Further mitigation measures recommended to reduce Project GHG emissions are:

Mitigation Measure GHG-1: Site design and building placement shall minimize barriers to pedestrian access and interconnectivity. Physical barriers such as walls, berms, landscaping, and slopes between residential and nonresidential uses that impede bicycle or pedestrian circulation are eliminated. Estimated GHG reduction: 1 – 10%

Mitigation Measure GHG-2: The Project shall install Energy Star labeled roof materials. Estimated GHG reduction: 0.5 – 1%

Mitigation Measure GHG-3: The Project shall optimize building's thermal distribution by separating ventilation and thermal conditioning systems. Estimated GHG reduction: 1 – 10%

Compliance with state-recommended BPS would reduce GHG emissions associated with implementation of the proposed Project to less than significant.

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[12] Interim GHG Emission Reductions Calculator. Interim GHG Emission Reductions Calculator.
[13] CAPCOA Appendix B Listing.
https://www.rocklin.ca.us/sites/main/files/file-attachments/appendix_b_capcoa_ceqa_and_climate_change.pdf

3.5.4 Discussion of Cumulative Impacts

Less than Significant. In accordance with SJVAPCD's District Policy – Addressing GHG Emission Impacts for Stationary Source Projects under CEQA When Serving at the Lead Agency [14], projects proposing compliance with one or more of its identified Best Performance Standards (BPS) would be determined to have a less-than-significant impact. Once BPS have been established, Project implementing BPS would be determined to have a less than significant individual and cumulative impact on global climate change and would not require project-specific quantification of GHG emissions.

[14] SJVAPCD Valley Air.org website: http://www.valleyair.org/Programs/CCAP/12-17-09/2%20CCAP%20-%20FINAL%20District%20Policy%20CEQA%20GHG%20-%20Dec%2017%202009.pdf. Accessed June 10, 2019.

3.6 Hazards and Hazardous Materials

Table 3-15. Hazards and Hazardous Materials Topics

Hazards and Hazardous Materials				
Would the project:	**Potentially Significant Impact**	**Less than Significant with Mitigation Incorporated**	**Less than Significant Impact**	**No Impact**
a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	☐	☐	☒	☐
b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	☐	☐	☒	☐
c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	☐	☐	☐	☒ See Appendix A
d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?	☐	☐	☐	☒ See Appendix A
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?	☐	☐	☒ See Appendix A	☐
f) For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?	☐	☐	☒ See Appendix A	☐
g) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	☐	☐	☒ See Appendix A	☐
h) Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?	☐	☐	☐	☒ See Appendix A

3.6.1 Introduction

This section of the Draft EIR evaluates potential Project-related impacts associated with hazards and hazardous materials. The Initial Study evaluated the Project's impacts on Hazards and Hazardous Materials and found that the Project could potentially create a significant hazard to the public or the environment through the use, transport, or the accidental release of hazardous materials and these issues will be further analyzed below.

The Initial Study found no impacts would be associated with schools or wildland fires, and the Project is not located on a list of hazardous materials sites. Furthermore, the Initial Study concluded that impacts to airports and private airstrips would be less than significant and the Project would not interfere with an emergency response plan or evacuation plan. These issues were discussed in detail in the Initial Study and therefore, do not require further analysis. For this reason, impact questions c through h are not further analyzed below.

3.6.2 Environmental Setting

The Project is located within the City of Fowler's Golden State Industrial Corridor, which is bordered by State Route 99 on the west and Golden State Boulevard and the Union Pacific Railroad on the east. Approximately half of the 19-acre parcel is currently developed with the Fowler Shell Truck Stop, which includes a full-service truck stop equipped with gasoline and diesel fueling islands for passenger vehicles and commercial trucks, commercial truck parking, and convenience store. The existing facilities do not include a car wash or any automotive repair services. There are two operational 20,000-gallon underground fuel storage tanks and three operational 20,000-gallon above ground fuel storage tanks onsite. Historically, the site was used for agricultural production, and until approximately September of 2009, the vacant portion of the Project site was active farmland. The site is not currently listed on the Cortese List (Government Code Section 65962.5) and is not otherwise identified in the GeoTracker or EnviroStor databases.

3.6.2.1 Airports

The Project is located approximately 1.5 miles north of the Selma Airport and 1.5 northwest of a private airstrip. The nearest major airport to the Project is the Fresno Yosemite International Airport, located approximately 11.6 miles north-northwest in the city of Fresno.

3.6.2.2 Emergency Response Plan

The Fresno County Office of Emergency Services coordinates the development and maintenance of the Fresno County Operational Area Master Emergency Services Plan.

3.6.2.3 Schools

John Sutter Middle School and Fowler High School are located 1.64 miles and 1.80 miles north-northwest of the Project, respectively.

3.6.3 Regulatory Setting

3.6.3.1 Federal

Hazardous Materials - U.S. Environmental Protection Agency: The U.S. Environmental Protection Agency (EPA) was established in 1970 to consolidate in one agency a variety of Federal research, monitoring, standard-setting and enforcement activities to ensure environmental protection. EPA's mission is to protect human health and to safeguard the natural environment — air, water, and land — upon which life depends. EPA works to develop and enforce regulations that implement environmental laws enacted by Congress, is responsible for researching and setting national standards for a variety of environmental programs, and delegates to States and tribes the responsibility for issuing permits and for monitoring and enforcing compliance. Where national standards are not met, EPA can issue sanctions and take other steps to assist the states and tribes in reaching the desired levels of environmental quality.

In 1980, congress established the Comprehensive Environmental Repose, Compensation and Liability Act (CERCLA). CERCLA is informally called Superfund. It allows EPA to clean up contaminated sites. It also forces the parties responsible for the contamination to either perform cleanups or reimburse the government for EPA-led cleanup work. If there is no viable responsible party, Superfund gives EPA the funds and authority to clean up contaminated sites Superfund sites are designated in a list pursuant to Government Code Section 65962.5 (Cortese List), which is compiled and updated by the Department of Toxic Substances Control.

Toxic Substances Control Act/Resource Conservation and Recovery Act/Hazardous and Solid Waste Act: The Toxic Substances Control Act (1976) and the Resource Conservation and Recovery Act of 1976 (RCRA) established a program administered by the U.S. EPA for the regulation of the generation, transportation, treatment, storage, and disposal of hazardous waste. RCRA was amended in 1984 by the Hazardous and Solid Waste Act (HSWA), which affirmed and extended the "cradle to grave" system of regulating hazardous wastes.

Clean Water Act/SPCC Rule: The Clean Water Act (CWA) (33 U.S.C. Section 1251, *et seq*., formerly the Water Pollution Control Act of 1972), was enacted with the intent of restoring and maintaining the chemical, physical, and biological integrity of the waters of the United States. As part of the Clean Water Act, the EPA oversees and enforces the Oil Pollution Prevention regulation contained in Title 40 of the CFR, Part 112, which is often referred to as the "SPCC rule" because the regulations describe the requirements for facilities to prepare, amend and implement Spill Prevention, Control, and Countermeasure (SPCC) Plans. A facility is subject to SPCC regulations if a single oil storage tank has a capacity greater than 660 gallons, or the total above ground oil storage capacity exceeds 1,320 gallons, or the underground oil storage capacity exceeds 42,000 gallons, and if, due to its location, the facility could reasonably be expected to discharge oil into or upon the "navigable waters" of the United States. Other federal regulations overseen by the EPA relevant to hazardous materials and environmental contamination include Title 40, CFR, Chapter 1, Subchapter D – Water Programs and Subchapter I – Solid Wastes. Title 40, CFR, Chapter 1, Subchapter D, Parts 116 and 117 designate hazardous substances under the Water Pollution Control Act. Title 40, CFR, Part 116 sets forth a determination of the reportable quantity for each substance that is designated as hazardous. Title 40, CFR, Part 117 applies to quantities of designated substances equal to or greater than the reportable quantities that may be discharged into waters of the United States.

3.6.3.2 State

California Government Code Section 65962.5: This regulation requires the California Department of Toxic Substances Control to compile and update at least annually, a list, known as the Hazardous Waste and Substances Sites List (or Cortese List, named after the sponsor of the legislation promulgating the regulation) identifying the Federal Superfund Program State Resources Program funded clean-up sites. This list is used by the State, local agencies, and developers to comply with CEQA requirements in providing information about whether project sites are included on the list of sites. the location of hazardous materials release sites. The Project site is not included on this Cortese List.

California Environmental Protection Agency (CalEPA): CalEPA was created in 1991 by Governor's Executive Order. The California Air Resources Board (CARB), the Department of Pesticide Regulation (DPR), the Department of Resources Recycling and Recovery (CalRecycle), the Department of Toxic Substances Control (DTSC), the Office of Environmental Health Hazard Assessment (OEHHA) and the State Water Resources Control Board (SWRCB) were placed under the CalEPA umbrella to create a cabinet-level voice for the protection of human health and the environment and to assure the coordinated deployment of State resources. The mission of CalEPA is to restore, protect, and enhance the environment to ensure public health, environmental quality, and economic vitality under Title 22 of the CCR.[15]

Department of Toxic Substances Control (DTSC): DTSC is a department of CalEPA and is the primary agency in California that regulates hazardous waste, clean-up of existing contamination, and looks for ways to reduce the hazardous waste produced in California. DTSC regulates hazardous waste in California primarily under the

[15] California Environmental Protection Agency. http://www.calepa.ca.gov Accessed 15 August 2018.

authority of RCRA and the Health and Safety Code. The State Department of Toxic Substances maintains an on-line data management system, called EnviroStor, for tracking cleanup, permitting, enforcement and investigation efforts at hazardous waste facilities and sites with known or suspected contamination issues. This data base reflects both Federal Superfund and State Response clean-up sites as identified on the Cortese List (Government Code Section 65962.5) but also identifies other categories of clean-up sites such as school sites, military evaluation sites, volunteer sites and others. EnviroStor also identifies the status of permitted sites as 'Operating', 'Post Closure', or 'Non-Operating'. A search of the DTSC EnviroStor database performed on June 24, 2018 determined that there are no known active hazardous waste facilities or sites within the Project site or surrounding vicinity.

EnviroStor also cross-references other data maintained by the State Water Resources Control Board in its data base called GeoTracker (see separate description below).

Other laws that affect hazardous waste are specific to handling, storage, transportation, disposal, treatment, reduction, cleanup, and emergency planning. GC Section 65962.5 (commonly referred to as the Cortese List) includes DTSC-listed hazardous waste facilities and sites, SWRCB Division of Drinking Water lists of contaminated drinking water wells, sites listed by the SWRCB as having UST leaks and which have had a discharge of hazardous wastes or materials into the water or groundwater, and lists from local regulatory agencies of sites that have had a known migration of hazardous waste/material.

Unified Program: The Unified Program (CCR Title 27, Division 1, Subdivision 4, Chapter 1, Sections 15100-15620) consolidates, coordinates, and makes consistent the administrative requirements, permits, inspections, and enforcement activities of the following six environmental and emergency response programs[16]:

Hazardous Waste Generator (HWG) program and Hazardous Waste On-site Treatment activities;

Aboveground Storage Tank (AST) program Spill Prevention Control and Countermeasure Plan requirements;

Underground Storage Tank (UST) program;

Hazardous Materials Release Response Plans and Inventory (HMRRP) program;

California Accidental Release Prevention (CalARP) program;

Hazardous Materials Management Plans and Hazardous Materials Inventory Statement (HMMP/HMIS) requirements.

The Secretary of CalEPA is directly responsible for coordinating the administration of the Unified Program. The Unified Program requires all counties to apply to the CalEPA Secretary for the certification of a local unified program agency. Qualified cities are also permitted to apply for certification. The local Certified Unified Program Agency (CUPA) is required to consolidate, coordinate, and make consistent the administrative requirements, permits, fee structures, and inspection and enforcement activities for these six program elements in the county. Most CUPAs have been established as a function of a local environmental health or fire department.

Hazardous Waste Management Program: The Hazardous Waste Management Program (HWMP) regulates hazardous waste through its permitting, enforcement, and Unified Program activities in accordance with HHSC Section 25135, *et seq*. The main focus of HWMP is to ensure the safe storage, treatment, transportation, and disposal of hazardous wastes.

State Water Resources Control Board (SWRCB): The SWRCB was created by the California legislature in 1967. The mission of SWRCB is to ensure the highest reasonable quality for waters of the State, while allocating those waters to achieve the optimum balance of beneficial uses. The joint authority of water allocation and water

[16] California Environmental Protection Agency. http://www.calepa.ca.gov/cupa/ Accessed 15 August 2018

quality protection enables SWRCB to provide comprehensive protection for California's waters. The SWRCB maintains a data base and mapping resource available on-line called GeoTracker. This data base is the Water Boards' data management system for sites that impact, or have the potential to impact, water quality in California, with emphasis on groundwater. GeoTracker contains records for sites that require cleanup, such as Leaking Underground Storage Tank (LUST) Sites, Department of Defense Sites, and Cleanup Program Sites. GeoTracker also contains records for various unregulated projects as well as permitted facilities including: Irrigated Lands, Oil and Gas production, operating Permitted USTs, and Land Disposal Sites. A search of the SWRCB GeoTracker performed on June 24, 2018 determined that the Project site is not an identified site of concern for any of the listed groundwater hazard sources.

California Department of Industrial Relations – Division of Occupational Safety and Health (Cal/OSHA): In California, every employer has a legal obligation to provide and maintain a safe and healthful workplace for employees, according to the California Occupational Safety and Health Act of 1973 (per Title 8 of the CCR). The Division of Occupational Safety and Health (Cal/OSHA) program is responsible for enforcing California laws and regulations pertaining to workplace safety and health and for providing assistance to employers and workers about workplace safety and health issues. Cal/OSHA regulations are administered through Title 8 of the CCR. The regulations require all manufacturers or importers to assess the hazards of substances that they produce or import and all employers to provide information to their employees about the hazardous substances to which they may be exposed.

CalRecycle – Waste Tire Management System: Under Public Resources Code Section 42961.5, the California Department of Resources Recycling and Recovery (CalRecycle) administers a Waste Tire Manifest Program for all facilities that generate, transport, or receive used tires. During the operational phase, the service station will likely involve the transport, use, handling, temporary storage, and disposal of used and damaged truck and vehicle tires, and therefore considered a waste tire generator. Prior to occupancy of the proposed service station, the Project applicant will be required to submit the facility's Tire Program Identification (TPID) number, as assigned by CalRecycle, to the Fresno County Department of Public Health, Division of Environmental Health (DEH). The TPID is required on all Comprehensive Trip Log (CTL) forms and receipts for each transaction between the service station and a tire hauler to allow CalRecycle to identify and track the transportation of waste tires from the generator to the end-use facility. The DEH monitors the service station's participation in the Waste Tire Manifest Program by reviewing the Waste Tire Management System (WTMS), a database that collects information about waste tire facilities.

3.6.3.3 Local

City of Fowler General Plan:
The City of Fowler 2025 General Plan Update Land Use Element contains the following policy relating to hazards and hazardous materials and which has potential relevance to the Project's California Environmental Quality Act (CEQA) review:

- Ensure that disaster planning for the City of Fowler includes policies appropriate to problems associated with hazardous wastes.

Fresno County Department of Public Health, Division of Environmental Health:
The Fresno County Department of Public Health, Division of Environmental Health serves as the CUPA for Fresno County. As required under the State's Unified Hazardous Waste and Hazardous Materials Management Regulatory Program, the Fresno County CUPA's authority and responsibilities are the same as those described for the Unified Program listed above under the State Regulatory Setting (**Section 3.7.3**).
The Fresno County General Plan Health and Safety Element contains several goals and policies that address hazardous materials, including the following:

- To minimize the risk of life, injury, serious illness, and damage to property resulting from the use, transport, treatment, and disposal of hazardous materials and hazardous wastes.

- The County shall require facilities that handle hazardous materials or hazardous wastes be designed, constructed, and operated in accordance with applicable hazardous materials and waste management laws and regulations.
- The County, through its Hazardous Materials Incident Response Plan, shall coordinate and cooperate with emergency response agencies to ensure adequate Countywide response to hazardous materials incidents.

3.6.4 Impact Assessment

VIII-a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials? and;

VIII-b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?

V-III-a-b) Less Than Significant. The Project proposes demolition of an existing commercial truck fueling station and removal of all existing underground and aboveground storage tanks. Furthermore, the Project proposes installation of eight 12,000-gallon aboveground fuel storage tanks, a 12-stall commercial truck fueling station, development of a commercial truck service facility for use of truck repair/maintenance, lube/oil services, and a washing bay. Operation of the Project would require the use, transport, and dispersal of hazardous materials such as fuels, lubricants, oils, and cleaning solvents. Fuel trucks delivering fuels onsite for storage in aboveground tanks will occur on a regular basis.

Construction

The construction phase of the Project would require the use and transport of hazardous materials, including fuels, oils, and other chemicals (paints, adhesives, solvents, lubricants, etc.) typically associated with construction activities. These hazardous materials and vehicles would likely be stored onsite in a staging area, as designated by the contractor. Improper use, storage, and transportation of hazardous materials could result in accidental releases or spills, potentially creating a health risk to workers, the public, and the environment. However, the Project will impose a Storm Water Pollution Prevention Plan (SWPPP) which will include emergency procedures for incidental release of hazardous materials and Best Management Practices (BMPs) for the storage and use of hazardous materials. In addition, the use, storage, transport, and disposal of all hazardous materials shall be performed in accordance with existing local, State, and federal regulations.

Furthermore, the Project proposes removal of all existing underground and aboveground storage tanks, demolition of existing structures, including the current fueling stations. The removal of underground storage tanks (UST) creates a risk of explosion, leaking of hazardous materials, and contamination of soil and groundwater. For this reason, Health and Safety Code, Chapter 6.7 and the California Code of Regulations (UST regulations) require individuals or companies performing work on USTs to possess a Tank Tester License issued by the State Water Board, or a current license issued by the California Contractors State License Board (CSLB). Prior to conducting any activity associated with the closure of an UST, a permit shall be obtained from the Fresno County Department of Public Health. Notification to the local Fire Department is mandatory, and additional permits may be required. Removal of USTs must be conducted according to the Fresno County Department of Public Health's *Underground Storage Tank Closure Guidelines*[17] , which ensures the tank is removed safely by outlining proper procedures and techniques. Upon removal, the UST Closure Guidelines require samples of soil and/or groundwater under the direction of Fresno County Department of Public Health. In addition, Upon removal of existing structures, if hazardous materials such as asbestos or lead paint are inadvertently discovered upon removal of existing structures, industry best management practices will be

[17] Fresno County Department of Public Health. UST Closure Guidelines. https://www.co.fresno.ca.us/home/showdocument?id=12695 Accessed 28 March 2019.

employed while complying with all federal and State regulations, as well as regulations set forth by the County, specifically Fresno County's Certified Unified Program Agency (CUPA), which is comprised of the County's Environmental Health Division. All hazardous waste materials removed during construction will be disposed of by a licensed and permitted disposal or recycling facility.

Any potential hazardous materials spills or the accidental release of hazardous materials into the environment during construction would be addressed according to industry best management practices, Occupational Safety and Health Administration (OSHA) requirements, federal and State regulations, and County requirements. Furthermore, a Stormwater Pollution Prevention Plan (SWPP) will be employed to prevent stormwater contamination, control sedimentation and erosion, and comply with the requirements of the Clean Water Act.

Operation

The operational phase of the Project would require the use, transport, and dispersal of hazardous materials such as fuels, lubricants, oils, cleaning solvents, and other chemical solutions. Fuel trucks delivering fuels onsite for storage in aboveground tanks will occur on a regular basis. Trucks transporting hazardous materials along State Route 99 are expected to frequent the amenities of the proposed travel center. The transport of hazardous materials on roadways is regulated by the California Highway Patrol (CHP) and Caltrans. Transporters must receive a license from the CHP, comply with all State and federal regulations, and travel with a route map. In California, transporters of hazardous wastes must have a valid registration to do so issued by the Department of Toxic Substance Control (DTSC). The handling, use, and storage of fuel and all hazardous materials would be conducted according to industry best management practices, Occupational Safety and Health Administration (OSHA) requirements, federal and State regulations, and County requirements. Pursuant to Fresno County CUPA, the Project will be required to submit a Hazardous Materials Business Plan and will be subject to routine inspections. In accordance with the Aboveground Petroleum Storage Act (APSA), the Project will implement a Spill Prevention Control and Countermeasure (SPCC) Plan. The Project is required to undergo regular inspections due to the use of aboveground storage tanks, the use and storage of fuel and hazardous materials, and Uniform Fire Code inspections.

The Project proposes a commercial truck service station and washing bay, which will include the use of hazardous materials such as new and used motor oil, petroleum, cleaning solvents and chemicals, hydraulic fluids, lubricants, coolants, gasoline, diesel fuel, etc. If spilled, stored, or handled incorrectly, these substances could pose a risk to public health and the environment. Furthermore, use of the washing bay could accelerate the potential of groundwater contamination.

During the operational phase, the service station will likely involve the transport, use, handling, temporary storage, and disposal of used and damaged truck and vehicle tires, and therefore considered a waste tire generator. Under Public Resources Code Section 42961.5, the California Department of Resources Recycling and Recovery (CalRecycle) administers a Waste Tire Manifest Program for all facilities that generate, transport, or receive used tires. To ensure the proper storage and disposal of waste tires, the Project shall participate in CalRecycle's Waste Tire Manifest Program.

Throughout the construction phase and operational phase, the Project shall comply with all State, federal, and County legislative requirements by preparing a Hazardous Materials Management/ Spill Prevention Plan, a Health and Safety Plan, and a Hazardous Materials Business plan. Furthermore, compliance with existing local, State, and federal regulations will ensure proper labeling, storage, handling, and use of hazardous materials. The Project is also required by State, federal, and local regulations to report spills and the incidental release of hazardous materials. Implementation of a SWPPP, BMPs, and compliance with existing local, State, and federal regulations will reduce potential impacts to public health and the environment from the possibility of exposure to hazardous materials to a less than significant level.

3.6.5 Discussion of Cumulative Impacts

Less than Significant Impact. As discussed in Impact Analysis V-III-a-b), Project construction and operation would result in less than significant impacts associated with the transport, use, disposal, or foreseeable upset of, or accidents involving hazardous materials. The applicant would comply with all applicable laws and regulations regarding routine transport, use, or disposal of hazardous materials, including those related to spill or incidental release prevention and containment. For example, this Project is required to implement BMPs, a SWPPP, a Hazardous Materials Management/ Spill Prevention Plan, a Health and Safety Plan, and a Hazardous Materials Business plan. Regardless, there is potential for an accidental release of hazardous materials from this Project and other projects in the vicinity, which could contribute to a cumulatively considerable impact, especially if the hazardous materials were transferred offsite into water or air. However, all projects would be required to implement similar BMPs, and adhere to all applicable laws and regulations associated with hazardous materials. Therefore, the Project's potential to contribute to cumulative impacts related to hazardous materials would be less than significant.

3.7 Hydrology and Water Quality

Table 3-16 Hydrology and Water Quality Impacts

Hydrology and Water Quality					
Would the project:		Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
a)	Violate any water quality standards or waste discharge requirements?	☐	☐	☒	☐
b)	Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?	☒	☐	☐	☐
c)	Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site?	☐	☐	☒	☐
d)	Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site?	☐	☐	☒	☐
e)	Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?	☐	☐	☒	☐
f)	Otherwise substantially degrade water quality?	☐	☐	☒	☐
g)	Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?	☐	☐	☐	☒ See Appendix A
h)	Place within a 100-year flood hazard area structures which would impede or redirect flood flows?	☐	☐	☐	☒ See Appendix A
i)	Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?	☐	☐	☒ See Appendix A	☐
j)	Inundation by seiche, tsunami, or mudflow?	☐	☐	☐	☒ See Appendix A

3.7.1 Introduction

Hydrology and Water Quality addresses Project impacts on the pertaining to water quality, water supply, drainage patterns, and runoff capacity. The IS evaluated the Project's impacts on Hydrology and Water Quality found that potential impacts to hydrology and water quality of the site and its surroundings significantly impact the Project site and the vicinity (See **Appendix A**) The IS confirmed that there are no impacts towards housing being placed within the 100-year flood hazard area, inundation by seiche, tsunami, or mudflow. Also, the IS identified that exposing people or structures to a significant risk of loss injury or death involving flooding as a result of the failure of a levee or dam, to have a less than significant impact. Therefore, impact assessment questions g through j will not be further analyzed below.

3.7.2 Environmental Setting

The City of Fowler is located within the Kennedy Pond watershed; Hydrologic Unit Code (HUC): 180300090206. The San Joaquin River and the Kings River are the two principal drainages within the San Joaquin Valley, and Fowler is generally located approximately 18 miles south of the San Joaquin River and 9 miles west of the Kings River.

The City of Fowler lies entirely within the Kings Groundwater Subbasin of the San Joaquin Valley Groundwater Basin.[18] Due to groundwater overdraft and contamination from agricultural chemicals, provision of reliable sources of groundwater in both quantity and quality have been a challenge throughout most of the Central Valley.

Water supply is produced from six groundwater wells located throughout the City and distribution is provided by the Water Division of the City's Public Works Department through a system in which pumps deliver water from beneath the ground to a network of watermains, pipelines and laterals which distribute water to residents and businesses. Municipal water is tested monthly to ensure quality. According to the Annual Water Quality Report (2017), the average depth to groundwater is 85 to 95 feet, and the existing wells produce drinking water of good quality that does not require treatment.

In 2014, the City of Fowler entered into an agreement with Consolidated Irrigation District (CID) to fund groundwater recharge programs in order to sustain the groundwater aquifer the City is reliant upon. CID provides water from the Kings River for groundwater recharge and irrigation to over 6,000 growers within its 144,000-acre service area, which includes the vicinity surrounding the City of Fowler.

3.7.3 Regulatory Setting

3.7.3.1 Federal

Clean Water Act: The Clean Water Act (CWA) is intended to restore and maintain the chemical, physical, and biological integrity of the nation's waters (33 CFR 1251). The regulations implementing the CWA protect waters of the U.S. including streams and wetlands (33 CFR 328.3). The CWA requires States to set standards to protect, maintain, and restore water quality by regulating point source and some non-point source discharges. Under Section 402 of the CWA, the National Pollutant Discharge Elimination System (NPDES) permit process was established to regulate these discharges.

Federal Emergency Management Agency (FEMA) Flood Zones: The National Flood Insurance Act (1968) makes available federally subsidized flood insurance to owners of flood-prone properties. To facilitate identifying areas with flood potential, FEMA has developed Flood Insurance Rate Maps (FIRM) that are frequently used for planning purposes. Flood hazard areas identified on the Flood Insurance Rate Map are identified as a Special Flood Hazard Area (SFHA). SFHA are defined as the area that will be inundated by the flood event having a 1-percent chance of being equaled or exceeded in any given year. The 1-percent annual chance flood is also referred to as the base flood or 100-year flood. SFHAs are labeled as Zone A, Zone AO, Zone AH, Zones A1-A30, Zone AE, Zone A99, Zone AR, Zone AR/AE, Zone AR/AO, Zone AR/A1-A30, Zone AR/A, Zone V, Zone VE, and Zones V1-V30. Moderate flood hazard areas, labeled Zone B or Zone X (shaded) are also

[18] DWR Bulletin 118 Groundwater Basin Boundary Assessment Tool. https://gis.water.ca.gov/app/bbat/ Accessed 26 December 2018.

shown on the FIRM, and are the areas between the limits of the base flood and the 0.2-percent-annual-chance (or 500-year) flood. The areas of minimal flood hazard, which are the areas outside the SFHA and higher than the elevation of the 0.2-percent-annual-chance flood, are labeled Zone C or Zone X (un-shaded).

3.7.3.2 State

State Water Resources Control Board: The SWRCB has jurisdiction over water quality issues in California. The SWRCB is governed by the Porter-Cologne Water Quality Act (Division 7 of the Water Code (WC)), which establishes the legal framework for water quality control activities by the SWRCB. The intent of the Porter-Cologne Act is to regulate factors which may affect the quality of waters of the State to attain the highest quality which is reasonable, considering a full range of demands and values. Much of the implementation of the SWRCB's responsibilities is delegated to its nine Regional Boards. The Project site is located within the Central Valley Regional Water Quality Control Board (CVRWQCB). The CVRWQCB administers the NPDES storm water-permitting program in the Central Valley region. Construction activities on one acre or more are subject to the permitting requirements of the NPDES General Permit for Discharges of Storm Water Runoff Associated with Construction Activity (General Construction Permit). Additionally, CVRWQCB is responsible for issuing Waste Discharge Requirements Orders under WC Section 13260, Article 4, Waste Discharge Requirements.

The SWRCB requires a Storm Water Pollution Prevention Plan (SWPPP) as a requirement of the NPDES to regulates water quality associated with construction or industrial activities.

Recycled Water Policy: The Water Recycling Act of 1991 (WC Section 1357,5 *et seq.*) established a Statewide goal to recycle a total of 700,000 acre-feet of water per year by the year 2000 and 1,000,000 acre-feet of water per year by the year 2010. In February 2009, the SWRCB adopted its Recycled Water Policy (SWRCB Resolution No. 2009-0011), the purpose of which is to increase the beneficial use of recycled water from municipal wastewater sources in a manner that fully implements State and Federal water quality laws. The policy directs the State to rely less on variable annual precipitation and more on sustainable management of surface waters and groundwater, together with enhanced water conservation, water reuse and the use of stormwater. As a part of the new recycled water policy, the SWRCB adopted the following four goals for California:

- *Increase the use of recycled water over 2002 levels by at least one million acre-feet per year (AFY) by 2020 and by at least two million AFY by 2030.*
- *Increase the use of stormwater over use in 2007 by at least 500,000 AFY by 2020 and by at least one million AFY by 2030.*
- *Increase the amount of water conserved in urban and industrial uses by comparison to 2007 by at least 20 percent by 2020.*
- *Included in these goals is the substitution of as much recycled water for potable water as possible by 2030.*

In the new policy, the SWRCB also discussed several practical impacts of the greater use of recycled water in the State. Those impacts include the following:

- Groundwater salt and nutrient control: The SWRCB imposed a requirement that consistent salt and nutrient management plans be prepared for each basin and subbasin in California. Such plans must include a significant stormwater use and recharge component.
- Landscape irrigation: The SWRCB discussed issues involving the permitting of landscape irrigation projects that use recycled water, including the control of incidental runoff of recycled water.
- Groundwater recharge: The SWRCB addressed site-specific approvals of groundwater recharge projects using recycled water, emphasizing that such projects must not lower the water quality within a groundwater basin.

- Chemicals of emerging concern: The SWRCB further addressed chemicals of emerging concern (CEC), knowledge of which is currently "incomplete." An advisory panel will advise the Water Board regarding actions involving CECs, as they relate to the use of recycled water.

The wide-ranging ramifications of using recycled water, coupled with the aggressive goals established by the SWRCB for such future use in California, demonstrates that the new Recycled Water Policy will have a significant impact on land use activities within the State for many years to come.

Mandatory General Plan Elements: Planning and Zoning Law, specifically Government Code 65302 (d) requires local land use agencies to adopt a conservation element for the conservation, development, and utilization of natural resources including water and its hydraulic force, forests, soils, river and other waters, harbors, fisheries, wildlife, minerals, and other natural resources. That portion of the conservation element including waters shall be developed in coordination with any County-wide water agency and with all district and city agencies which have developed, served, controlled or conserved water for any purpose for the County or city for which the plan is prepared. Coordination shall include the discussion and evaluation of any water supply and demand information described in Section 65352.5, if that information has been submitted by the water agency to the city or County. The conservation element may also cover:

1. *The reclamation of land and waters.*
2. *Prevention and control of the pollution of streams and other waters.*
3. *Regulation of the use of land in stream channels and other areas required for the accomplishment of the conservation plan.*
4. *Prevention, control, and correction of the erosion of soils, beaches, and shores.*
5. *Protection of watersheds.*
6. *The location, quantity and quality of the rock, sand and gravel resources.*
7. *Flood control.*

Sustainable Groundwater Management Act: Governor Edmund G. Brown, Jr. signed into law a three-bill legislative package, composed of AB 1739 (Dickinson), SB 1168 (Pavley), and SB 1319 (Pavley), collectively known as the Sustainable Groundwater Management Act (SGMA) which was passed in 2014, signed into law on September 16, 2014, and is codified in Section 10720 et seq. of the California Water Code. This legislation created a statutory framework for groundwater management that can be sustained during planning and implementation without causing undesirable results.

SGMA requires governments and water agencies of high- and medium-priority basins to halt overdraft and bring groundwater basins into balanced levels of pumping and recharge. Under SGMA, these basins should reach sustainability within 20 years of implementing their sustainability plans. The Project lies within the South Kings Groundwater Sustainability Agency (GSA) area of the critically over-drafted Kings Subbasin, which has a deadline of achieving sustainability by 2040.

3.7.3.3 Local

The City of Fowler 2025 General Plan Update contains the following policies relating to hydrology and which have potential relevance to the Project's California Environmental Quality Act (CEQA) review:

- Ensure that land divisions and developments are approved only when a project's improvements, dedications, and fees fully cover incremental costs to the City and other agencies. Such improvements and infrastructure include parks, major streets, traffic signals, streetlights, drainage systems, sewer, water, fire, police, schools, and other related facilities.
- Encourage the use of drought-tolerant native plants and the use of recycled water for roadway landscaping.

3.7.4 Impact Assessment

IX-a) Violate any water quality standards or waste discharge requirements?

a) Less than Significant Impact. The construction phase of the Project would require the use and transport of fuels, oils and other chemicals (paints, adhesives, solvents, lubricants, etc.) typically associated with construction activities. If spilled or handled improperly, these materials could potentially enter the surface water or groundwater supplies. The Project also involves the removal of all existing underground and aboveground storage tanks and the installation of eight new 12,000-gallon aboveground fuel storage tanks. According to the EPA, "gasoline, leaking from service stations, is one of the most common sources of groundwater pollution.[19]"

SWRCB requires that a SWPPP be prepared for projects that disturb one (1) or more acres of soil; a SWPPP will be required for the Project because the area of disturbance is more than one acre. Furthermore, as discussed in **Section 3.6**, the Project must obtain a permit from Fresno County Department of Public Health prior to removing the USTs onsite, and construction activities must be conducted in accordance with *Underground Storage Tank Closure Guidelines*[20] which require samples of soil and/or groundwater under the direction of Fresno County Department of Public Health. Implementation of a SWPPP and an approved grading plan in addition to compliance with the Fresno County Department of Public Health's applicable guidelines will ensure that water quality impacts related to construction activities are less than significant.

The operational phase of the Project will include a truck fueling station, truck service facility for truck repair/maintenance, lube/oil services, and a washing bay. The travel center will also include a 120-room hotel, several restaurants, and additional amenities typically associated with truck stops such as restrooms, showers, and laundry facilities. These will all be connected to the sewer services as provided to the City by SKF, and any stormwater runoff will be directed to the approximately 1.57-acre stormwater basin that will be built on site. SKF handles all the collection, treatment and disposal of wastewater for the City. The Project will not violate any water quality standards or waste discharge requirements, any impacts would be less than significant.

IX-b) Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?

b) Less than Significant Impact. The City currently uses groundwater pumped from the Kings Subbasin to meet all of its water demand. Like any activity in Fowler, groundwater would be used for construction, including for dust control. as well as for minor activities such as washing of construction equipment and vehicles. Water demands generated by the Project during the construction phase would be temporary and not substantial. It is anticipated that groundwater supplies will be adequate to meet construction water demands generated by the Project without depleting the underlying aquifer or lowering the local groundwater table. Therefore, Project construction would not deplete groundwater supplies and impacts would be less than significant.

Project construction would not substantially prevent or inhibit incidental groundwater recharge onsite during precipitation events. As the Project is constructed, portions of the site would remain pervious and would allow infiltration that presently occurs during precipitation events to continue to occur. Therefore, Project construction would not result in a substantial depletion of area groundwater supplies or interfere substantially with groundwater recharge, and impacts would be less than significant

The City currently uses groundwater pumped from the Kings Subbasin to meet all of its water demand. Currently the site uses approximately 1,740 gallon per day and the projected use for the proposed Project would

[19] EPA. Underground Storage Tanks. https://www.epa.gov/ust/frequent-questions-about-underground-storage-tanks Accessed 24 January 2019.
[20] Fresno County Department of Public Health. UST Closure Guidelines. https://www.co.fresno.ca.us/home/showdocument?id=12695 Accessed 28 March 2019.

be a maximum daily demand of 33,000 gallons per day. DWR requires that the City analyze projected water usage on a 2.0 daily peak factor, which would be a maximum daily demand of 66,000 gallons of water per day. City staff has evaluated the capacity of the City water system and determined that there is sufficient capacity to serve the proposed Project at the 2.0 daily peak factor rate (**Appendix G**). The Project is consistent with the General Plan designation and zoning classification of the site and, with approval of requested Conditional Use Permit, the Project is an allowable use at the Project site.

The Project would result in development of the site, converting the majority of the site from pervious (i.e., porous) surfaces to impervious (i.e., not allowing water to pass through) surfaces. However, as part of the Project a stormwater ponding (retention) basin will be built. During large storm events, onsite stormwater would be directed towards the ponding (retention) basin located near the north end of the site. Therefore, Project operation would not interfere substantially with groundwater recharge.

Furthermore, it should be noted that the City of Fowler was required to join a Groundwater Sustainability Agency (GSA) as part of the SGMA for the Kings Subbasin, which is working to comply with the various components of SGMA. In order to be compliant under the SGMA, the local agencies within a GSA must adopt a Groundwater Sustainability Plan (GSP) and must begin annual reporting beginning in January 2020 to document the progress made toward implementation of the GSP to the Department of Water Resources (DWR). Within the GSP, implementation measures would need to be in place and enforced for the territory within the GSA governing area as prescribed by SGMA. Due to the fact that the GSP has not been adopted, there is no substantial evidence upon which the effect of the GSP on Fowler or this Project can be precisely determined without speculating.

IX-c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site? and

IX-d) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site? and

IX-e) Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?

c-e) Less Than Significant Impact. The Project will not alter the course of a waterway because there are no rivers or streams onsite or in the vicinity. Development of the Project will include excavation, grading, and the addition of impervious surfaces which will intentionally alter the drainage pattern onsite.

As discussed in impact assessment IX-a, the Project will be required to implement a SWPPP which involves site planning and scheduling, limiting disturbed soil areas, and determining best management practices to minimize the potential discharge of pollutants and sediments and reduce the risk of erosion and siltation during construction. Implementation of the SWPPP will minimize the potential for the Project to substantially alter the existing drainage pattern in a manner that will result in substantial erosion, siltation or flooding onsite or offsite during construction. In addition, the Project is required to comply with a City-approved grading plan consistent with existing stormwater drainage and management systems, and which may include additional BMPs and/or erosion control measures. Implementation of a SWPPP and an approved grading plan will ensure impacts related to erosion, siltation, and surface runoff during construction are less than significant.

Stormwater from the new impervious surfaces in the form of buildings, driveways, parking lots, and other paved areas would drain into drainage conveyance facilities and be transported to the proposed stormwater detention basin onsite. The stormwater would flow over paved or asphalt surfaces characteristic of a commercial development into a City-approved onsite stormwater detention basin and will not cause erosion or siltation. The proposed detention basin will control runoff from the Project and prevent increases in peak flow at all downstream locations. Therefore, operational impacts associated with erosion, siltation, and an increase in surface runoff will be less than significant.

IX-f) Otherwise substantially degrade water quality?

f) Less Than Significant Impact. Any impacts to water quality have been discussed in impact assessment IX-a. Any potential impacts to water quality will be less than significant, and no mitigation is required.

3.7.5 Discussion of Cumulative Impacts

Less than Significant Impact. Development patterns associated with past, present and reasonably foreseeable future projects in the City, in conjunction with the proposed Project, could change and alter drainage patterns within the region. The majority of such projects would likely occur on vacant land, which currently allows stormwater to percolate into the ground or run off of the affected sites into drainage sumps, or other systems. These projects would include some form of hardscape areas that would result in an increase in runoff and a decrease in percolation into the groundwater basin. The proposed Project's cumulative contribution to hydrology and water quality impacts to levels that would be less than cumulatively considerable.

3.8 Transportation/Traffic

Table 3-17. Transportation /Traffic Impacts

Transportation/Traffic					
Would the project:		Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
a)	Conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit?	☒	☐	☐	☐
b)	Conflict with an applicable congestion management program, including, but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways?	☒	☐	☐	☐
c)	Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that result in substantial safety risks?	☐	☐	☒ See Appendix A	☐
d)	Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	☐	☐	☐	☒ See Appendix A
e)	Result in inadequate emergency access?	☐	☐	☒ See Appendix A	☐
f)	Conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities?	☐	☐	☐	☒ See Appendix A

3.8.1 Introduction

This section of the Draft EIR evaluates potential Project-related impacts associated with transportation and traffic. The Initial Study evaluated the Project's impacts on transportation and found that the Project could potentially adversely affect level of service standards and travel demand measures. These issues, as outlined in impact questions a and b, are analyzed below.

The California Department of Transportation (Caltrans) submitted a NOP response that address transportation. Caltrans' comments focused on issues related to trip distribution at State Route 99 and Manning Avenue.

3.8.2 Environmental Setting

A traffic study scoping letter dated January 14, 2019 and identifying the Project's trip generation, study area and study scenarios was circulated by Peters Engineering Group to Caltrans and Fresno County. The study locations were determined in consultation with City of Fowler staff, County of Fresno staff, and Caltrans staff based on the anticipated volume and distribution of traffic expected to be generated by the Project. The following intersections were analyzed:

- Tract 6027 Access / Valley Drive
- Buford Drive / Valley Drive
- Golden State Boulevard / Valley Drive
- Golden State Boulevard / Site Access
- Manning Avenue / State Route (SR) 99 Southbound Ramps
- Manning Avenue / SR 99 Northbound on Ramp
- Manning Avenue / SR 99 Northbound Off Ramp
- Manning Avenue / Vineyard Avenue
- Manning Avenue / Golden State Boulevard
- Manning Avenue / Temperance Avenue

The intersection analyses include a queuing analysis along the Manning Avenue corridor.

The study time periods that were utilized were weekday a.m. and p.m. peak hours determined between 7:00 a.m. and 9:00 a.m. and between 4:00 p.m. and 6:00 p.m. The peak hours are analyzed for the following conditions:

1. Existing Conditions;
2. Existing-Plus-Project Conditions;
3. Near-Term With-Project Conditions (includes approved and pending projects described in the Pending Projects section of this report); and
4. Cumulative (Year 2040) Conditions with Project.

3.8.3 Lane Configurations and Intersection Control

The existing lane configurations and intersection control at the study intersections are illustrated in Figure 3 of **Appendix H**, Existing Lane Configurations and Intersection Control. The year 2040 analyses assume that the existing lane configurations and control will be maintained through the year 2040.

3.8.4 Project Trip Generation

3.8.4.1 Existing Conditions

The Project site contains an existing Shell gas station with eight automobile fueling positions, a convenience market with a Port of Subs restaurant, a Buford's Diesel No. 2 with seven diesel fueling positions for large trucks, and two truck scales.

Twenty-four-hour traffic counts were performed at the four existing driveways serving the Shell station, convenience store, Port of Subs, diesel station, and truck scales. The data sheets are included in **Appendix H**. The results of the counts are summarized in **Table 3-18**. For purposes of this study, vehicles with three or more axles (Class 6 or larger) are considered to be "trucks" while vehicles with two axles are considered to be "passenger" vehicles.

Table 3-18. Existing Trip Generation

Existing Trip Conditions									
Vehicle	Weekday	A.M Peak Hour (Between 7:00 and 9:00)				P.M. Peak Hour (Between 4:00 and 6:00)			
	Total	In: Out	In	Out	Total	In: Out	In	Out	Total
Passenger	1,476	49:51	41	42	83	47:53	51	58	109
Trucks	964	43:57	29	38	67	48:52	30	33	63
Totals	**2,440**	**47:53**	**70**	**80**	**150**	**47:53**	**81**	**91**	**172**

In: Out are reported as percentages of the total.

3.8.4.2 Proposed Project

Data provided in the Institute of Transportation Engineers (ITE) Trip Generation Manual, 10th Edition, are typically used to estimate the number of trips anticipated to be generated by proposed projects. However, for the Phase 1 and Phase 2 portions of the Project, the ITE data is limited; therefore, recent traffic impact studies for similar truck stops were reviewed (including the Madera Love's and the Tulare Pilot). Trip generation rates for the Phase 1 and Phase 2 portions of the Project were taken from the Madera Love's traffic impact study. **Table 3-19** presents the trip generation calculations.

The Madera Love's traffic impact study indicates that, based on observations at existing Love's Travel Stops, passenger vehicles make up 75 percent of a.m. trips entering and 81 percent of a.m. trips exiting the site. Passenger vehicles make up 71 percent of p.m. trips entering and 69 percent of p.m. trips exiting the site. The Madera Love's traffic impact study also indicated that 70 percent of daily Love's Travel Stops trips are passenger vehicles. Based on that information, for purposes of this study it is assumed that 70 percent of all peak hour trips will be passenger vehicles and 30 percent will be trucks (Class 6 or larger). **Table 3-20** presents estimates of the volume of passenger vehicles and trucks generated by the Project. An assumption is included that 80 percent of the truck tire shop trips are trucks (allowing for employee trips) and that two percent of trips generated by restaurants and hotel are truck trips. These values are estimates based on the types of businesses and accessibility of the parking lots to larger vehicles.

Table 3-19. Project Trip Generation Calculations

Project Trip Generation Calculations														
Land Use	Size	Weekday		A.M. Peak Hour					P.M. Peak Hour					
		Rate	Total	Rate	In: Out	In	Out	Total	Rate	In: Out	In	Out	Total
Travel Stop[1]	9,000 sf	470	4,230	31.0	51:49	142	137	279	39.0	51:49	179	172	351
Truck Tire Shop[1]	10,000 sf	7.46	76	0.87	63:37	6	3	9	1.25	43:57	6	7	13
Restaurant[2] (932)	4,627 sf	112.18	520	9.94	55:45	25	21	46	9.77	62:38	29	17	46
Restaurant with Drive Through[2] (934)	4,378 sf	470.95	2,062	40.19	51:49	90	86	176	32.67	52:48	74	69	143
Restaurant with Drive Through[2] (934)	3,116 sf	470.95	1,468	40.19	51:49	64	62	126	32.67	52:48	53	49	102
Hotel[2] (310)	120	8.36	1,004	0.47	59:41	34	23	57	0.60	51:49	37	35	72
TOTALS			**9,360**			**361**	**332**	**693**			**378**	**349**	**727**

References: 1. *City of Madera Love's Travel Center Project Environmental Impact Report (EIR) Traffic Impact Study*
2. *Trip Generation Manual, 10th Edition, Institute of Transportation Engineers 2017*

Rates are reported in trips per 1,000 square feet of building area or per hotel room, as applicable.

Table 3-20. Estimated Project Automobile and Truck Trips

Estimated Project Automobile and Truck Trips								
Land Use	Vehicle	Weekday	A.M. Peak Hour			P.M. Peak Hour		
		Total	In	Out	Total	In	Out	Total
Travel Stop	Passenger	2,960	99	96	195	125	120	245
	Truck	1,270	43	41	84	54	52	106
Truck Tire Shop	Passenger	60	1	0	1	1	2	3
	Truck	16	5	3	8	5	5	10
Restaurant (932)	Passenger	510	24	20	44	28	16	44
	Truck	10	1	1	2	1	1	2
Restaurant with Drive Through (934)	Passenger	2,022	88	84	172	72	67	139
	Truck	40	2	2	4	2	2	4
Restaurant with Drive Through (934)	Passenger	1,440	62	60	122	52	48	100
	Truck	28	2	2	4	1	1	2
Hotel (310)	Passenger	984	33	22	55	36	34	70
	Truck	20	1	1	2	1	1	2
TOTALS	**Passenger**	**7,976**	**307**	**282**	**589**	**316**	**286**	**602**
	Truck	**1,384**	**54**	**50**	**104**	**62**	**63**	**125**

3.8.4.2.1 Internal Capture

The Project has been designed to include complementary uses that would encourage internal capture of trips between the various land uses. Data presented in the ITE *Trip Generation Handbook* dated June 2004 (TGH) suggest that captured-trip reductions are applicable to the proposed Project. Captured-trip reductions are applied to account for the interaction between the various individual land uses assumed for the trip generation calculations. A common example of a captured trip occurs in a multi-use development containing both offices and shops. Trips made by office workers to shops within the site are defined as internal to (i.e., "captured within") the multi-use site. A more complete description of captured trips is presented in the TGH. An example of a captured trip for the proposed Project is a person who eats at a fast-food restaurant and also purchases fuel.

Captured-trip reductions were calculated as described by ITE and the calculations are attached. Capture rates were limited to 20 percent for any single use at the site based on a review of data presented in Tables 7.1 and 7.2 of the TGH. **Table 3-21** presents the results of the internally-captured-trip analyses.

Table 3-21. Estimated Internally Captured Trips

Estimated Internally Captured Trips						
Vehicle	Weekday		A.M Peak Hour		P.M. Peak Hour	
	In	Out	In	Out	In	Out
Passenger	-905	-905	-63	-63	-69	-69
Trucks	-11	-11	-2	-2	-2	-2
Totals	**-916**	**-916**	**-65**	**-65**	**-71**	**-71**

The estimated external Project traffic volumes are presented in **Table 3-22**. These values represent the total Project trips that would be expected to occur at the site entrances and exits.

Table 3-22. Estimated External Project Trips

Estimated External Project Trips									
Vehicle	Weekday			A.M Peak Hour			P.M. Peak Hour		
	In	Out	Total	In	Out	Total	In	Out	Total
Passenger	3,083	3,083	6,166	244	219	463	247	217	416
Trucks	681	681	1,362	52	48	100	60	61	121
Totals	**3,763**	**3,763**	**7,528**	**296**	**267**	**563**	**307**	**278**	**585**

The net external Project trips considering demolition of the existing facilities at the site are presented in **Table 3-23.**

Table 3-23. Estimated Net External Project Trips

Estimated Net External Project Trips									
Vehicle	Weekday			A.M Peak Hour			P.M. Peak Hour		
	In	Out	Total	In	Out	Total	In	Out	Total
Passenger	2,345	2,345	4,690	203	177	380	196	159	355
Trucks	199	199	398	23	10	33	30	28	58
Totals	**2,544**	**2,544**	**5,088**	**226**	**187**	**413**	**226**	**187**	**413**

3.8.4.2.2 *Pass-By Trips*

The TGH presents information suggesting that the Project traffic volumes will include pass-by trips. The TGH states: "There are instances, however, when the total number of trips generated by a site is different from the amount of new traffic added to the street system by the generator. For example, retail-oriented developments such as shopping centers…are often located adjacent to busy streets in order to attract the motorists already on the street. These sites attract a portion of their trips from traffic passing the site… These retail trips may not add new traffic to the adjacent street system." Pass-by reductions of 15 percent were applied to the external travel stop and restaurant passenger vehicle trips. The use of a 15-percent pass-by reduction is considered conservative, as the use of values greater than 15 percent typically requires justification. To further allow for a conservative analysis, pass-by reductions are not applied to the truck trips. **Table 3-24** presents a breakdown of Project pass-by trips and primary trips.

Table 3-24. Pass-By Trips and Net External Primary Project Trips

Pass-By Trips and Net External Primary Project Trips						
Vehicle	Weekday		A.M Peak Hour		P.M. Peak Hour	
	In	Out	In	Out	In	Out
Passenger	2,345	2,345	203	177	196	159
Pass-By	-351	-351	-30	-26	-29	-23
Truck	199	199	23	10	30	28
TOTALS	**2,193**	**2,193**	**196**	**161**	**197**	**164**

3.8.4.2.3 *Passenger Car Equivalents*

Passenger car equivalents (PCE) represent the number of passenger cars displaced by a single heavy vehicle (typically considered to be vehicles with more than four wheels touching the pavement during normal operations) under certain roadway, traffic, and control conditions. The use of PCEs compensates for the operational characteristics of heavy vehicles (e.g., slower acceleration and deceleration than passenger vehicles) as well as the roadway space displaced. The Transportation Research Board *Highway Capacity Manual, 6th Edition,* identifies a PCE factor of 2.0 for a default mix of trucks in level terrain on highway segments. A greater PCE factor is reasonable at intersections. For purposes of this study, a PCE factor of 2.5 is applied to all vehicles with three or more axles. **Table 3-25** presents a summary of the net external peak-hour Project trips in terms of PCE.

Table 3-25. Net External Primary Project Trips – Passenger Car Equivalents

Net External Primary Project Trips – Passenger Car Equivalents						
	Weekday		A.M Peak Hour		P.M. Peak Hour	
Vehicle	In	Out	In	Out	In	Out
Passenger	2,345	2,345	203	177	196	159
Pass-By	-351	-351	-30	-26	-29	-23
Truck	498	498	58	25	75	70
TOTALS	**2,492**	**2,492**	**231**	**176**	**242**	**206**

3.8.4.2.4 Project Trip Assignment

The distribution of Project trips to the adjacent streets is based on existing traffic volumes, engineering judgment, locations of major transportation routes run, and the locations of complementary land uses. The Project trips are presented in the following figures:

Figure 3-2. Peak Hour Primary Project Passenger Vehicle Trips

Figure 3-3. Next External Peak Hour Primary Project Truck Trips

Figure 3-4. Net External Peak-Hour Primary Project Trips (All Vehicles)

Figure 3-5. Peak-Hour Pass-By Project Traffic Trips

Figure 3-6. Net External Peak-Hour Primary Project Truck PCE Trips

Figure 3-7. Next External Peak-Hour Primary Project PCE Trips (All Vehicles)

3.8.4.2.5 Existing Traffic Volumes

The existing traffic volumes were determined by performing manual turning movement counts at the study intersections between 7:00 a.m. and 9:00 a.m. and between 4:00 p.m. and 6:00 p.m. on a typical weekday. The counts also included determination of truck percentages. The traffic count data sheets are attached and include the dates the counts were performed. Peak-hour existing traffic volumes are presented in **Figure 3-8**, Existing Peak-Hour Traffic Volumes.

3.8.4.2.6 Existing-Plus-Project Traffic Volumes

Peak-hour existing-plus-Project traffic volumes are presented in the following figures:

Figure 3-9. Existing Plus Project Peak-Hour Traffic Volumes (determined by adding the values in **Figure 3-4, Figure 3-5, and Figure 3-8**)

Figure 3-10. Existing Plus Project PCE Peak-Hour Traffic Volumes (determined by adding the values in **Figure 3-5, Figure 3-7, and Figure 3-8**)

3.8.4.2.7 Pending Projects

The analyses considered Tract 6027 located southwest of the intersection of Golden State Boulevard and Valley Drive. Tract 6027 includes 14.06 gross acres of M-1 zoning with a proposed tract map that creates 10 parcels ranging in size from 0.80 acres to 2.28 acres. The analyses also considered the Maxco Packaging Facility located northeast of the intersection of Manning Avenue and Golden State

Boulevard. The proposed manufacturing facility will produce cardboard boxes for agricultural uses at a proposed 295,380-square-foot building with a future 12,519-square-foot office building. Finally, the funded Golden State Corridor project will construct a second left-turn lane on northbound Golden State Boulevard at Manning Avenue. The locations of the pending projects are presented in the attached Figure 3-11. Pending Projects Map.

3.8.4.2.8 Near-Term with Project Conditions

Peak-hour near-term with-Project conditions include the existing traffic volumes, the Project trips, and the pending projects. The near-term with-Project traffic volumes are presented in the following figures:

Figure 3-12. Near-Term with Project Peak-Hour Traffic Volumes

Figure 3-13. Near-Term with Project PCE Peak-Hour Traffic Volumes

It should be noted that the phrase "near-term" is not associated with a year; rather, it represents a condition in which the Project and other known pending projects have been constructed.

3.8.4.2.9 Cumulative Traffic Volumes (Year 2040)

Cumulative traffic volumes for the year 2040 were projected using the Fresno County travel model and the *Increment Method* approved by the Council of Fresno County Governments (COG) to the extent possible. The base year and year 2035 model traffic output used in the analyses are attached in **Appendix H**. The growth was extrapolated to the year 2040. Future turning movements were projected based on the methods presented in Chapter 8 of the Transportation Research Board National Cooperative Highway Research Program Report 255 entitled *"Highway Traffic Data for Urbanized Area Project Planning and Design."* Cumulative With-Project traffic volumes are presented in the following figures:

Figure 3-14. Cumulative 2040 with Project Peak-Hour Traffic Volumes

Figure 3-15. Cumulative 2040 with Project PCE Peak-Hour Traffic Volumes

3.8.4.2.10 Significance Criteria

The Transportation Research Board *Highway Capacity Manual*, 2010, (HCM2010) defines level of service (LOS) as, "A quantitative stratification of a performance measure or measures that represent quality of service, measured on an A-F scale, with LOS A representing the best operating conditions from the traveler's perspective and LOS F the worst."

Automobile mode LOS characteristics for both unsignalized and signalized intersections are presented in **Table 3-26** and **Table 3-27**.

Table 3-26. Level of Service Characteristics for Unsignalized Intersections

Level of Service Characteristics for Unsignalized Intersections	
Level of Service	**Average Vehicle Delay (seconds)**
A	0-10
B	>10-15
C	>15-25
D	>25-35
E	>35-50
F	>50

Reference: *Highway Capacity Manual,* Transportation Research Board, 2010

Table 3-27. Level of Service Characteristics for Signalized Intersections

Level of Service Characteristics for Signalized Intersections		
Level of Service	**Description**	**Average Vehicle Delay (seconds)**
A	Volume-to-capacity ratio is low. Progression is exceptionally favorable, or the cycle length is very short.	<10
B	Volume-to-capacity ratio is low. Progression is highly favorable, or the cycle length is very short.	>10-20
C	Volume-to-capacity ratio is no greater than 1.0. Progression is favorable or cycle length is moderate.	>20-35
D	Volume-to-capacity ratio is high but no greater than 1.0. Progression is ineffective or cycle length is long. Many vehicles stop and individual cycle failures are noticeable.	>35-55
E	Volume-to-capacity ratio is high but no greater than 1.0. Progression is unfavorable and cycle length is long. Individual cycle failures are frequent.	>55-80
F	Volume-to-capacity ratio is greater than 1.0. Progression is very poor and cycle length is long. Most cycles fail to clear the queue.	>80

Reference: *Highway Capacity Manual,* Transportation Research Board, 2010

The City of Fowler 2025 General Plan establishes the following policy:

> *"Encourage a Level of Service (LOS) "C" throughout the local circulation network, with a LOS "D" along SR 99. An exception to the local road standard is that LOS "D" may be allowed at intersections of major streets, at SR 99 interchanges, and along street segments where additional improvements are not feasible."*

A project is considered to have a significant impact at an intersection if its traffic, when added to the traffic of the no-project condition, would cause any of the changes in traffic conditions described below.

1. Cause an intersection that is operating at an acceptable LOS D or better to deteriorate to an unacceptable LOS E or worse;

   OR

2. Cause the average delay to increase by more than 5.0 seconds on a movement or approach that is already operating at an unacceptable LOS. It should be noted that a decrease from an unacceptable

LOS to a lesser LOS (e.g. from LOS E to LOS F) is not considered an impact unless the corresponding delay increase is greater than 5.0 seconds.

3.8.4.2.11 Intersection Analyses

The intersection levels of service were determined using the computer program Synchro 9, which is based on HCM2010 procedures for calculating levels of service. The intersection analysis sheets are attached.

Table 3-28 through

Table 3-31 present the results of the intersection analyses. For one-way and two-way stop-controlled intersections an overall intersection level of service is not defined by the HCM2010. Therefore, for one-way and two-way stop-controlled intersections the level of service and average delay per vehicle for the approach with the greatest delay is reported. For existing conditions, levels of service below the minimum level of service are presented in bold type. For Project scenarios, significant impacts are presented in bold type. Italic type indicates levels of service below the target LOS where the increase in delay is not great enough to be identified as a significant impact (i.e., not greater than 5.0 seconds per vehicle).

Table 3-28. Intersection Level of Service Summary – Existing Conditions

Intersection Level of Service Summary – Existing Conditions					
Intersection	Control	A.M.		P.M.	
		Delay (sec)	LOS	Delay (sec)	LOS
Tract 6027 Access / Valley Drive	Does not exist				
Buford Drive / Valley Drive	Does not exist				
Golden State / Valley Drive	One-way stop	13.2	B	15.4	C
Golden State / Site Access	Does not exist				
Manning / SR 99 SB Ramps	One-way stop	12.8	B	14.7	B
Manning / SR 99 NB On Ramp	Yield	7.9	A	8.1	A
Manning / SR 99 NB Off Ramp	One-way stop	33.1	D	**64.5**	**F**
Manning / Vineyard	Signals	10.3	B	14.7	B
Manning / Golden State	Signals	19.6	B	23.6	C
Manning / Temperance	Two-way stop	11.7	B	13.2	B

Table 3-29. Intersection Level of Service Summary – Existing-Plus-Project Conditions

Intersection Level of Service Summary – Existing Plus-Project Conditions					
Intersection	Control	A.M.		P.M.	
		Delay (sec)	LOS	Delay (sec)	LOS
Tract 6027 Access / Valley Drive	One-way stop				
Buford Drive / Valley Drive	One-way stop	8.8	A	8.9	A
Golden State / Valley Drive	One-way stop	14.0	B	16.8	C
Golden State / Site Access	One-way stop	9.2	A	10.8	B
Manning / SR 99 SB Ramps	One-way stop	15.2	C	18.8	C
Manning / SR 99 NB On Ramp	Yield	8.1	A	8.4	A
Manning / SR 99 NB Off Ramp	One-way stop	**43.8**	**E**	**114.3**	**F**
Manning / Vineyard	Signals	25.7	C	24.1	C
Manning / Golden State	Signals	20.8	C	26.8	C
Manning / Temperance	Two-way stop	12.0	B	13.6	B

Table 3-30. Intersection Level of Service Summary – Near-Term With-Project Conditions

Intersection Level of Service Summary – Existing Plus-Project Conditions					
Intersection	Control	A.M.		P.M.	
		Delay (sec)	LOS	Delay (sec)	LOS
Tract 6027 Access / Valley Drive	One-way stop	8.7	A	8.9	A
Buford Drive / Valley Drive	One-way stop	9.4	A	9.5	A
Golden State / Valley Drive	One-way stop	17.3	C	19.8	C
Golden State / Site Access	One-way stop	9.3	A	11.1	B
Manning / SR 99 SB Ramps	One-way stop	15.6	C	20.6	C
Manning / SR 99 NB On Ramp	Yield	8.1	A	8.5	A
Manning / SR 99 NB Off Ramp	One-way stop	**50.6**	**F**	**143.8**	**F**
Manning / Vineyard	Signals	263.4	C	26.4	C
Manning / Golden State	Signals	19.6	B	25.0	C
Manning / Temperance	Two-way stop	12.1	B	13.7	B

Table 3-31. Intersection Level of Service Summary – Cumulative (2040) With-Project Conditions

Intersection Level of Service Summary – Existing Plus-Project Conditions					
Intersection	Control	A.M.		P.M.	
		Delay (sec)	LOS	Delay (sec)	LOS
Tract 6027 Access / Valley Drive	One-way stop	8.8	A	9.1	A
Buford Drive / Valley Drive	One-way stop	9.5	A	9.7	A
Golden State / Valley Drive	One-way stop	**43.7**	**E**	**>300**	**F**
Golden State / Site Access	One-way stop	10.8	B	21.2	C
Manning / SR 99 SB Ramps	One-way stop	31.1	D	**57.5**	**F**
Manning / SR 99 NB On Ramp	Yield	9.0	A	9.2	A
Manning / SR 99 NB Off Ramp	One-way stop	**210.4**	**F**	**>300**	**F**
Manning / Vineyard	Signals	34.7	C	43.1	D
Manning / Golden State	Signals	**73.2**	**E**	**143.6**	**F**
Manning / Temperance	Two-way stop	16.1	C	21.1	C

Table 3-32 and **Table 3-33** present the calculated 95th-percentile queues at the study intersections along the Manning Avenue corridor. Calculated 95th-percentile queues exceeding the length of the turn lane by at least 25 feet (the typical storage required for one automobile) are presented in bold type. For purposes of Tables 15 and 16, Golden State Boulevard is considered a north-south, parallel with each other. street.

The transportation system within the City of Fowler planning area includes City and County routes, as well as State Route 99 and Golden State Boulevard. The Public transit system includes public transit services, and within the County it includes common bus carriers, AMTRAK and other local agency transit and paratransit services. In addition, the County transportation system induces general aviation facilities, air passenger facilities, freight rail service, bicycle facilities. [21]

[21] [21] City of Fowler 2025 General Plan Update. http://www.fowlercity.org/city_departments/general_plan/Fowler_General_Plan.pdf Accessed August 9 2018.

Table 3-32. Intersection Queuing Summary - A.M. Peak Hour

Intersection Approach	Length of Lane (feet)	95th Percentile Queue Length (feet)			
		Existing	Existing Plus Project	Near Term with Project	Cumulative with Project
Manning / SR 99 SB					
Eastbound TR	DNS				
Westbound LT	700	8	13	13	23
Northbound L	60	0	0	3	8
Northbound R	DNS				
Manning / SR 99 NB on					
Eastbound LT	710	0	0	0	3
Eastbound T	DNS				
Westbound T	DNS				
Westbound R	DNS				
Manning / SR 99 NB Off					
Eastbound T	DNS				
Westbound T	DNS				
Northbound L	45	23	30	35	**110**
Northbound R	>1,000	20	45	58	105
Manning / Temperance					
Eastbound LTR	>1,000	0	0	0	0
Westbound LTR	350	0	0	0	0
Northbound LTR	>1,000	3	3	3	3
Southbound LTR	550	0	0	0	0
Manning / Vineyard					
Eastbound L	260	23	209	209	250
Eastbound TR	>1,000	138	156	178	284
Westbound L	270	47	67	67	85
Westbound TR	540	272	395	414	**583**
Northbound LTR	>1,000	59	88	89	127
Southbound LTR	Private	22	96	96	148

Intersection Approach	Length of Lane (feet)	95th Percentile Queue Length (feet)			
		Existing	Existing Plus Project	Near Term with Project	Cumulative with Project
Manning / Golden State					
Eastbound L	200	64	82	137	**425**
Eastbound T	570	118	132	125	233
Eastbound R	295	32	28	31	39
Westbound L	205	20	21	23	47
Westbound TR	>1,000	266	302	288	910
Northbound L	170	184	**207**	99	168
Northbound T	620	67	72	80	442
Northbound R	25	0	0	0	0
Southbound L	250	45	57	63	251
Southbound T	>1,000	52	63	63	217
Southbound R	150	5	0	18	60

* Distance to next intersection for through lanes.
DNS: Does not stop

Table 3-33. Intersection Queuing Summary - P.M. Peak Hour

Intersection Approach	Length of Lane (feet)	95th Percentile Queue Length (feet)			
		Existing	Existing Plus Project	Near Term with Project	Cumulative with Project
Manning / SR 99 SB					
Eastbound TR	DNS				
Westbound LT	700	10	15	18	28
Northbound L	60	5	8	8	40
Northbound R	DNS				
Manning / SR 99 NB on					
Eastbound LT	710	0	0	0	3
Eastbound T	DNS				
Westbound T	DNS				
Westbound R	DNS				
Manning / SR 99 NB Off					
Eastbound T	DNS				
Westbound T	DNS				
Northbound L	45	**90**	**125**	**140**	**418**
Northbound R	>1,000	70	145	163	850

Intersection Approach	Length of Lane (feet)	95th Percentile Queue Length (feet)			
		Existing	Existing Plus Project	Near Term with Project	Cumulative with Project
Manning / Temperance					
Eastbound LTR	>1,000	0	0	0	0
Westbound LTR	350	0	0	0	0
Northbound LTR	>1,000	3	3	3	3
Southbound LTR	550	0	0	0	0
Manning / Vineyard					
Eastbound L	260	45	204	204	**270**
Eastbound TR	>1,000	284	277	312	480
Westbound L	270	64	64	65	114
Westbound TR	540	150	192	247	356
Northbound LTR	>1,000	77	81	82	214
Southbound LTR	Private	29	83	83	190

Table 3-34. Intersection Queuing Summary - P.M. Peak Hour

Intersection Approach	Length of Lane (feet)	95th Percentile Queue Length (feet)			
		Existing	Existing Plus Project	Near Term with Project	Cumulative with Project
Manning / Golden State					
Eastbound L	200	177	205	203	**751**
Eastbound T	570	210	217	213	393
Eastbound R	295	33	34	32	101
Westbound L	205	32	32	38	77
Westbound TR	>1,000	236	253	267	712
Northbound L	170	137	171	79	**204**
Northbound T	620	102	95	102	523
Northbound R	25	0	0	0	0
Southbound L	250	134	174	184	**883**
Southbound T	>1,000	152	155	154	692
Southbound R	150	23	23	43	145

* Distance to next intersection for through lanes.
DNS: Does not stop

3.8.5 Regulatory Setting

3.8.5.1 Federal

Several federal regulations govern transportation issues. They include:

- Title 49, CFR, Sections 171-177 (49 CFR 171-177), governs /traffic that are applicable to the transportation of hazardous materials, the types of materials defined as hazardous, and the marking of the transportation vehicles.
- State49 CFR 350-399, and Appendices A-G, Federal Motor Carrier Safety Regulations, address safety considerations for the transport of goods, materials, and substances over public highways.
- 49 CFR 397.9, the Hazardous Materials Transportation Act of 1974, directs the U.S. Department of Transportation to establish criteria and regulations for the safe transportation of hazardous materials.

Federal Aviation Administration: The Federal Aviation Administration (FAA) regulates aviation at regional, public, and private airports. The FAA regulates objects affecting navigable airspace.

3.8.5.2 State

California Department of Transportation: Caltrans is responsible for state highways and associated highway ramps and for intersections where freeway ramps intersect the local street system. Caltrans generally strives to maintain operations for signalized intersections at the "cusp" between LOS C and LOS D on its facilities but recognizes that circumstances may limit its ability to do so. Caltrans has jurisdiction over the operations of mainline State Route 99 and over the on- and off-ramps to the highway. The proposed project will generate traffic that affects State Route 99 ramps.

3.8.5.3 Local

City of Fowler General Plan: The City of Fowler 2025 General Plan Update Circulation Element includes the following goals and policies regarding recreation, and which have potential relevance to the Project's California Environmental Quality Act (CEQA) review:

Goals and Policies:

- Ensure that all commercial uses contribute to the resolution of traffic and parking impacts created by additional traffic demands generated by those businesses.
- Make intersection improvements to the existing major street system selectively through traffic engineering solutions rather than major structural improvements. This could include signalization, intersection channelization, use of directional signs, and diversion of traffic onto under-utilized streets.
- The distance between commercial driveways on arterial streets should be not less than 400 feet. Where practical and desirable, commercial driveways should be located on adjacent collector streets rather than on arterial streets.
- Existing points of ingress and egress shall be consolidated whenever possible. Driveway consolidation for new development shall be encouraged through access agreements along arterials.
- Adjacent parking areas for large commercial and industrial developments should be designed to allow interconnection and flow of traffic between these facilities. Access easements and agreements should be obtained during the development process.
- Require private developers to be primarily responsible for the improvement of streets and highways to developing commercial, industrial, and residential areas. These may include road construction or widening, installation of turning lanes and traffic signals, and the improvement of any drainage facility

or other auxiliary facility necessary for the safe and efficient movement of traffic or the protection of road facilities.

- Require private and public land developments to provide all on-site and off-site facility improvements necessary to mitigate any development-generated circulation impacts. The City may require applicants to provide traffic impact studies prepared by qualified professionals to identify the impacts of a development and necessary mitigation measures.
- Design interior collector street systems for commercial and industrial subdivisions to accommodate the movement of heavy trucks.
- Restrict heavy duty truck through-traffic in residential areas and plan land uses so that trucks do not need to traverse these areas.
- Utilize existing infrastructure and utilities to the maximum extent practical and provide for the logical, timely, and economically efficient extension of infrastructure and services.
- Provide a well-planned, designed, constructed and maintained street and highway system that facilitates the movement of vehicles and provides safe and convenient access to surrounding developments.
- Apply consistent standards for new development based on traffic carrying capacity and classification.
- Collectors are designed to have a 72 to 80-foot right-of-way width that allows four lanes undivided with parking, or two lanes with a two-way continuous left turn center lane.
- Standards for new street development can be altered or refined where it can be demonstrated that projected traffic flows can be accommodated. Alternative standards for major streets include:
    - an 84-foot arterial without a raised median island; and
    - a 72-foot collector to contain two travel lanes and a continuous dual left-turn lane.
- Encourage a Level of Service (LOS) "C" throughout the local circulation network, with a LOS "D" along SR 99. An exception to the local road standard is that LOS "D" may be allowed at intersections of major streets, at SR 99 interchanges, and along street segments where additional improvements are not feasible.
- Consider the use of traffic calming techniques in the design of new local streets where such techniques will improve safety and manage traffic flow.
- Provide a street network with quick and efficient routes for emergency vehicles, meeting necessary street widths, turn around radius, and other factors as determined by the City Engineer in consultation with the Fire Department and other emergency service providers.
- Restrict on-street parking to reduce traffic congestion and improve safety in appropriate locations.
- Provide a safe walking environment for pedestrians.
    - Require the installation of sidewalks as an integral part of all street construction where appropriate.
    - Require street lighting within the rights-of-way of all public streets.
    - Include pedestrian signal indicators as an integral part of the installation of traffic signals.
- Maximize visibility and access for pedestrians and encourage the removal of barriers (walls, easements, and fences) for safe and convenient movement of pedestrians. Special emphasis should be placed on the needs of disabled persons considering ADA regulations.
- Plan for pedestrian access consistent with road design standards while designing street and road projects. Provisions for pedestrian paths or sidewalks and timing of traffic signals to allow safe pedestrian street crossing shall be included.
- Encourage safe pedestrian walkways within commercial, office, industrial, residential, and recreational developments that comply with the Americans with Disabilities Act (ADA) requirements.
- Provide access (driveways, local streets, and private roads) to the City's street and highway system to reduce conflicts that can result from pedestrian traffic and motorized traffic.

- Cooperate with adjacent communities and Fresno County to improve the principal gateways to Fowler (Golden State Boulevard, Manning, Adams, and Fowler) to facilitate the movement of traffic into and out of the City.
- Participate in the establishment of regional traffic mitigation fees and/or benefit districts to be assessed on new development. The fees shall cover a reasonable share of the costs of providing local and sub regional transportation improvements needed for serving new development.

Provide bikeways in proximity to major traffic generators such as commercial centers, schools, recreational areas, and major public facilities.

3.8.6 Methodology

3.8.6.1 Existing Conditions

The results of the intersection analyses indicate that the intersection of Manning Avenue and the SR 99 northbound off ramp (specifically the northbound left-turn) is currently operating at LOS F during the p.m. peak hour. The other study intersections are currently operating at acceptable levels of service.

The queuing analyses indicates that the calculated 95th-percentile queues exceed the storage capacity at the following locations:

- Intersection of Manning Avenue and Golden State Boulevard: the calculated 95th-percentile queue exceeds the storage capacity in the left-turn lane on the northbound approach by 14 feet.
- Intersection of Manning Avenue and the SR 99 northbound off ramp: the calculated 95th-percentile queue exceeds the storage capacity in the left-turn lane on the northbound approach by 45 feet.

3.8.6.2 Existing-Plus-Project Conditions

The existing-plus-Project conditions analyses represent conditions that would occur after construction of all phases of the Project in the absence of other pending projects and regional growth. This scenario isolates the specific impacts of the Project.

The results of the analyses indicate that the Project is expected to cause a significant impact at the intersection of Manning Avenue and the SR 99 northbound off ramp. The Project will cause the LOS on the northbound approach to drop from D to E during the a.m. peak hour and the Project will cause the average delay associated with the existing LOS F to increase by approximately 50 seconds per vehicle during the p.m. peak hour.

The other study intersections are expected to continue to operate at acceptable levels of service.

The Manning Avenue / SR 99 interchange was included in a COG interchange deficiency study. A report entitled *Final Report, Interchange Deficiency Study in Fresno and Madera Counties* dated December 9, 2005 indicated that the on ramp lengths are deficient and a gore object needs to be removed from the southbound off ramp. Other improvements considered include consideration of rumble strips, adding chevron signs to loop ramps, and widening the northbound on ramp to two lanes to eliminate the short merge between the eastbound left turn and the westbound right turn. Caltrans also indicated at the time that the over-crossing may need to be widened and the southbound off ramp intersection needed an additional lane and signalization.

The Manning Avenue / SR 99 interchange was subsequently studied and included in a report entitled *Fresno-Madera Metropolitan Freeway/Interchange Deficiency Study Phase II* dated November 24, 2008. The report identified the following improvements needed at the interchange:

- Replace southbound loop off-ramp with slip off-ramp. Caltrans identified this is a required improvement to signalize the southbound ramps intersection.
- Signalize southbound ramps intersection.
- Signalize northbound ramps intersection.

- Align northbound off-ramp across from northbound on-ramp. Caltrans identified this as a required improvement to signalize the northbound ramps intersection.

Although interchange improvements were identified as needed in the deficiency study, the Manning Avenue / SR 99 interchange was not included in the 2014 Fresno County Regional Transportation Plan and is not included in any funding programs.

Table 3-35 and **Table 3-36** present the results of intersection analyses for mitigated existing-plus-Project conditions. The mitigated intersection analysis sheets are attached.

Table 3-35. Mitigated Intersection LOS Summary – Existing-Plus-Project Conditions

Intersection Level of Service Summary – Existing Plus-Project Conditions					
Intersection	Control	A.M.		P.M.	
		Delay (sec)	LOS	Delay (sec)	LOS
Manning / SR 99 NB Ramps	Signals	4.1	A	4.6	A
Manning / SR 99 NB Ramps (10-year life, Year 2030)	Signals	4.0	A	5.2	A
Manning / SR 99 NB Ramps	Roundabout	15.9	C	16.4	C

Table 3-36. Mitigated Intersection Queuing Summary – Existing-Plus-Project Conditions

Intersection	95th Percentile Queue Length (feet)	
Approach	A.M. Peak Hour	P.M. Peak Hour
Manning / SR 99 NB Ramps (Traffic Signals)		
Eastbound Through	80	221
Westbound Through/Right	175	208
Northbound Left	28	48
Northbound Through/Right	27	149
Manning / SR 99 NB Ramps (Traffic Signals – Year 2030)		
Eastbound Through	178	374
Westbound Through/Right	378	396
Northbound Left	47	66
Northbound Through/Right	131	244
Manning / SR 99 NB Ramps (Roundabout)		
Eastbound	50	75
Westbound	75	50
Northbound	0	25

3.8.6.2.1 Significant Impact Phasing Threshold Analysis

Additional analyses were performed at the intersection of Manning Avenue and the SR 99 northbound off ramp to determine whether any phases of Project can be constructed prior to triggering the existing-plus-Project significant impact. The additional analyses are attached in **Appendix H** and indicate that the significant impact would occur at the time that the Project generates approximately 60 net peak-hour trips. A comparison of the values presented in **Table 3-18** and **Table 3-19** suggests that Phase 1 of the Project will trigger the significant impact.

3.8.6.3 Near-Term With-Project Conditions

The near-term with-Project conditions analyses represent conditions that are expected to occur after construction of the Project plus construction of the pending projects. This scenario estimates the near-term cumulative impacts. Mitigation measures associated with the existing-plus-Project conditions are not assumed to be in place. The results of the analyses indicate that a combination of the pending projects and the Project would result in cumulative significant impacts at the intersection of Manning Avenue and the SR 99 northbound off ramp. The near-term cumulative projects will cause the intersection LOS to drop from D to F during the a.m. peak hour and will cause the average delay associated with the existing LOS F to increase by approximately 79 seconds per vehicle during the p.m. peak hour.

The discussion of the Manning Avenue/SR 99 interchange presented above in the existing-plus-Project scenario section applies in the near-term condition as well. Signalization of the intersection of the northbound off ramp and Manning Avenue in its current configuration would function as a feasible mitigation measure. The improvement may be considered as an interim measure as other funding sources for interchange reconstruction should be explored by the City of Fowler, County of Fresno, Caltrans, and other agencies responsible for approving projects that contribute trips to the intersection.

The other study intersections and the study road segments are expected to continue to operate at acceptable levels of service.

Table 3-37 and **Table 3-38** present the results of intersection analyses for mitigated near-term conditions. The mitigated intersection analysis sheets are included in **Appendix H**.

Table 3-37. Mitigated Intersection LOS Summary – Near-Term With-Project Conditions

Intersection Level of Service Summary – Existing Plus-Project Conditions					
Intersection	Control	A.M.		P.M.	
		Delay (sec)	LOS	Delay (sec)	LOS
Manning / SR 99 NB Ramps	Signals	4.1	A	4.6	A
Manning / SR 99 NB Ramps (10-year life, Year 2030)	Signals	4.0	A	5.2	A
Manning / SR 99 NB Ramps	Roundabout	17.4	C	18.5	C

Table 3-38. Mitigated Intersection Queuing Summary – Near-Term With-Project Conditions

Intersection	95th Percentile Queue Length (feet)	
Approach	A.M. Peak Hour	P.M. Peak Hour
Manning / SR 99 NB Ramps (Traffic Signals)		
Eastbound Through	111	240
Westbound Through/Right	230	243
Northbound Left	30	52
Northbound Through/Right	49	165
Manning / SR 99 NB Ramps (Traffic Signals – Year 2030)		
Eastbound Through	178	374
Westbound Through/Right	378	396
Northbound Left	47	66
Northbound Through/Right	131	244
Manning / SR 99 NB Ramps (Roundabout)		
Eastbound	50	75
Westbound	75	50
Northbound	100	25

3.8.6.4 Cumulative 2040 With-Project Conditions

The year 2040 With-Project conditions analyses are based on the assumption that the Project site is developed with the proposed Project and that regional growth has occurred as projected in the Fresno County travel model. This scenario estimates the long-term cumulative impacts. Mitigation measures associated with the existing-plus-Project conditions and the near-term with-Project conditions are not assumed to be in place.

The results of the analyses indicate the combination of the Project, the pending projects, and regional growth through the year 2040 (in the absence of planned transportation improvements) is expected to cause a significant impact at the following study intersections:

- Golden State Boulevard / Valley Drive
- Manning Avenue / SR 99 Southbound Ramps
- Manning Avenue / SR 99 Northbound Off Ramp
- Manning Avenue / Golden State Boulevard

The significantly impacted intersections are discussed in the following sections.

3.8.6.4.1 Golden State Boulevard / Valley Drive

To mitigate the significant cumulative impact at the intersection of Golden State Boulevard and Valley Drive, the intersection should either be modified to prevent left turns from eastbound Valley Drive to northbound Golden State Boulevard or the intersection should be signalized. The Project will be responsible for its fair share of the cost of the future intersection modification.

3.8.6.4.2 Manning Avenue / SR 99 southbound ramps

The discussion of the Manning Avenue / SR 99 interchange presented above in the existing-plus-Project scenario section applies in the cumulative year 2040 condition as well. The interchange will require a major reconstruction to function at acceptable LOS. However, the future reconstruction is not in the Fresno County RTIP and is not included in any funding programs.

3.8.6.4.3 Manning Avenue / SR 99 northbound off ramp

The discussion of the Manning Avenue / SR 99 interchange presented above in the existing-plus-Project scenario section applies in the cumulative year 2040 condition as well. The interchange will require a major reconstruction to function at acceptable LOS. However, the future reconstruction is not in the Fresno County RTIP and is not included in any funding programs.

3.8.6.4.4 Manning Avenue / Golden State Boulevard

To mitigate the significant cumulative impact at the intersection of Manning Avenue and Golden State Boulevard, the intersection will require widening to provide two left-turn lanes, two through lanes, and one dedicated right-turn lane on all four approaches to the intersection. The Project will be responsible for its fair share of the cost of the future intersection modification.

Table 3-39 and **Table 3-40** present the results of intersection analyses for mitigated cumulative 2040 with-Project conditions. The mitigated intersection analysis sheets are included in **Appendix H**

Table 3-39. Mitigated Intersection LOS Summary – Cumulative 2040 With-Project Conditions

Intersection Level of Service Summary – Existing Plus-Project Conditions					
Intersection	Control	A.M.		P.M.	
		Delay (sec)	LOS	Delay (sec)	LOS
Golden State / Valley Drive	Signals	6.2	A	9.4	A
Manning / SR 99 SB Ramps	Signals	11.5	B	11.8	B
	Roundabout	6.4	A	6.9	A
Manning / SR 99 NB Ramps	Signals	36.9	D	37.2	D
	Roundabout	8.6	A	6.6	A
Manning / Golden State	Signals	30.3	C	53.1	D

Table 3-40. Mitigated Intersection Queuing Summary – Cumulative 2040 With-Project Conditions

Intersection	95th Percentile Queue Length (feet)	
Approach	A.M. Peak Hour	P.M. Peak Hour
Golden State / Valley		
Eastbound Left	29	70
Eastbound Right	17	42
Northbound Left	48	51
Northbound Through/Right	57	213
Southbound Left	113	509
Southbound Through/Right	13	10
Manning / SR 99 SB Ramps (Traffic Signals)		

Intersection	95th Percentile Queue Length (feet)	
Approach	A.M. Peak Hour	P.M. Peak Hour
Eastbound Through/Right	324	454
Westbound Left	283	355
Westbound Through	194	272
Southbound Left/Through	15	39
Southbound Right	252	638
Manning / SR 99 SB Ramps (Roundabout)		
Eastbound	50	75
Westbound	100	125
Southbound	50	75
Manning / SR 99 NB Ramps (Traffic Signals)		
Eastbound Left	43	34
Eastbound Through	214	390
Westbound Through	413	591
Westbound Right	391	114
Northbound Left/Through	73	110
Northbound Right	198	522
Manning / SR 99 NB Ramps (Roundabout)		
Eastbound	75	100
Westbound	125	125
Northbound	125	25
Manning / Golden State		
Eastbound Left	152	260
Eastbound Through	218	374
Eastbound Right	43	78
Westbound Left	18	34
Westbound Through	444	332
Westbound Right	192	167
Northbound Left	129	164
Northbound Through	272	362
Northbound Right	0	0
Southbound Left	63	295
Southbound Through	143	539
Southbound Right	47	107

3.8.6.5 Equitable share calculations

Where required future mitigation measures are not included in established development fees and are not the sole responsibility of a particular project, but rather a cumulative result of regional growth, the responsibility for mitigation measures is determined based on equitable share calculations as presented in the Caltrans *Guide for the Preparation of Traffic Impact Studies*. Caltrans recommends the following equation to determine a project's equitable share of the cost of improvements:

where:

$$P = \frac{T}{T_B - T_E}$$

P = The equitable share of the project's traffic impact;
T = The project trips generated during the peak hour of the adjacent State Highway facility;
T_B = The forecasted (future with project) traffic volume on the impacted State highway facility;
T_E = The existing traffic on the State Highway facility plus approved projects traffic.

Table 3-41 presents equitable share responsibility calculations for the Project's share of mitigation measures at City of Fowler intersections based on weekday p.m. peak hour traffic volumes.

Table 3-41. Equitable Share Responsibility – City of Fowler Locations

Derivation of Per-Trip Fee					
Location	Mitigation Measure	Project Trips	Existing Traffic	2040 Traffic	Equitable Share
Golden State / Valley Drive	Signals	56	799	3,332	2.21%
Manning / Golden State	Widening	82	2,511	5,117	3.14%

Per-trip equitable share costs for the Manning Avenue / SR 99 interchange have been derived from costs presented in a letter by Caltrans dated July 19, 2017 for the Maxco project as presented in **Table 3-42**.

Table 3-42. Derivation of Per-Trip Fee

Derivation of Per-Trip Fee					
Location	Mitigation Measure	Caltrans Cost Estimate	Maxco Fair Share	Maxco Trips	Per-Trip Fee
Overcrossing	Widening	$1,721,590	$69,036	17	$4,060.94
Manning / SR 99 NB ramps	Signals	$693,000	$34,581	38	$910.03
Manning / SR 99 SB ramps	Signals	$693,000	$20,444	17	$1,202.59

Table 3-43 presents the Project's equitable share costs applicable to the interchange based on weekday p.m. peak hour traffic volumes.

Table 3-43. Manning Avenue / SR 99 Buford Equitable Share Responsibility

Derivation of Per-Trip Fee				
Location	**Mitigation Measure**	**Project Trips**	**Per-Trip Fee**	**Buford Equitable Share**
Overcrossing	Widening	226	$4,060.94	$917,772.44
Manning / SR 99 NB ramps	Signals	234	$910.03	$212,947.02
Manning / SR 99 SB ramps	Signals	226	$1,202.59	$271,785.34
TOTAL				**$1,402,504.80**

3.8.7 Impact Assessment

XVI-a) Conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit?

XVI-b) Conflict with an applicable congestion management program, including, but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways?

Impact XVI-a-b) Significant and Unavoidable. An important goal is to maintain acceptable levels of service (LOS) along the highway, street, and road network within the City of Fowler and on the adjacent Caltrans facilities. The results of the Traffic Impact Study indicate that the Project is expected to cause a significant impact at the intersection of Manning Avenue and the SR 99 northbound off ramp. The Project will cause the LOS on the northbound approach to drop from D to E during the a.m. peak hour and the Project will cause the average delay associated with the existing LOS F to increase by approximately 50 seconds per vehicle during the p.m. peak hour.

The other study intersections are expected to continue to operate at acceptable levels of service.

In order to mitigate the significant impact at the intersection of Manning Avenue and the SR 99 the following mitigation measure is required:

The Manning Avenue/ SR 99 interchange has been determined by Fresno COG to be deficient. However, since complete reconstruction of the interchange is not considered a feasible mitigation measure for a single development project because it is cost prohibitive (estimated at more than $11 million in the *Fresno-Madera Metropolitan Freeway/Interchange Deficiency Study Phase II* dated November 24, 2008), the reconstruction of the entire interchange (discussed above) is not recommended as a feasible mitigation measure.

However, signalization of the intersection of the northbound off ramp and Manning Avenue in its current configuration would function as a feasible mitigation measure. The improvement may be considered as an interim measure as other funding sources for interchange reconstruction should be explored by the City of Fowler, County of Fresno, Caltrans, and other agencies responsible for approving projects that contribute trips to the intersection.

Project (Phase I) will cause a significant impact at the intersection of Manning Avenue and SR 99 northbound off ramp by causing the LOS to drop from D to E during the a.m. peak hour and the Project will cause the average delay associated with the existing LOS F to increase by approximately 50 seconds per vehicle during the p.m. peak hour.

In order to mitigate the significant impact at the intersection of Manning Avenue and the SR 99 northbound off ramp the following mitigation measure is required:

Mitigation Measure TRA-1 (Manning Avenue/SR99)
The Project applicant shall provide a signalized intersection with a design life of at least 10-years or convert the northbound off ramp intersection to a two-lane roundabout.

Implementation of the above mitigation measure will reduce impacts as the measure is completed. As shown in **Table 3-37** the signalization of the intersection will improve LOS to LOS A in the short-term but will not be a long-term solution. Therefore, the long-term impact is significant and unavoidable unless or until the City of Fowler, County of Fresno, Fresno COG and/or Caltrans identify or adopt a long-term funding plan for the interchange reconstruction.

3.8.8 Discussion of Cumulative Impacts

The TIS completed by Peters Engineering Group analyzed that in addition to the long-term significant impacts at the Manning/SR 99 without mitigation, the combination of the Project, the pending projects, and regional growth through the year 2040 (in the absence of funding needed for the planned – but not yet programmed, transportation improvements) is expected to cause a cumulative significant impact at the following study intersections:

1. Golden State Boulevard / Valley Drive
2. Manning Avenue / SR 99 Southbound Ramps
3. Manning Avenue / SR 99 Northbound Off Ramp
4. Manning Avenue / Golden State Boulevard

Recommended mitigation for the cumulatively significantly impacted intersections identified above are discussed below.

3.8.8.1.1 Golden State Boulevard / Valley Drive

Mitigation Measure TRA-2 (Golden State Boulevard/Valley Drive)
To mitigate the significant cumulative impact at the intersection of Golden State Boulevard and Valley Drive, the intersection, the City shall either modify the design to prevent left turns from eastbound Valley Drive to northbound Golden State Boulevard or signalize the intersection. Prior to construction of Phase I, the Project applicant shall work with the City to agree on the amount and terms of payment of its equitable fair share of the intersection improvements which are estimated to be 2.21 percent of the actual cost.

3.8.8.1.2 Manning Avenue / SR 99 southbound ramps

Mitigation Measure TRA-3 (Manning Avenue/SR 99)
As discussed above, the interchange will require a major reconstruction to function at acceptable LOS. This will require the City to advocate for and the Fresno COG and Caltrans to program the intersection to receive the funding for the needed improvements through the next round of Regional Transportation Improvement Plan and/or Statewide Transportation Improvement Plan. Prior to construction of Phase I, the Project applicant shall work with the City and Caltrans to agree on the amount and terms of payment of its equitable fair share of the interchange improvements which are estimated to be $1.4 million.

3.8.8.1.3 Manning Avenue / SR 99 northbound off ramp

Mitigation Measure TRA-4 (Manning Avenue/SR 99)
As discussed above, the interchange will require a major reconstruction to function at acceptable LOS. This will require the City to advocate for and the Fresno COG and Caltrans to program the intersection to receive the funding for the needed improvements through the next round of Regional Transportation Improvement Plan and/or Statewide Transportation Improvement Plan. Prior to construction of Phase I, the Project

applicant shall work with the City and Caltrans to agree on the amount and terms of payment of its equitable fair share of the interchange improvements which are estimated to be $1.4 million.

3.8.8.1.4 Manning Avenue / Golden State Boulevard

Mitigation Measure TRA-5 (Manning Avenue/Golden State Boulevard)
To mitigate the significant cumulative impact at the intersection of Manning Avenue and Golden State Boulevard, the City shall modify the design of the intersection widening it to provide two left-turn lanes, two through lanes, and one dedicated right-turn lane on all four approaches to the intersection. Prior to construction of Phase I, the Project applicant shall work with the City to agree on the amount and terms of payment of its equitable fair share of the intersection improvements which are estimated to be 3.14 percent of the actual cost of widening the intersection.

Therefore, the long-term impact is significant and unavoidable unless or until the City of Fowler, County of Fresno, Fresno COG and/or Caltrans identify or adopt a long-term funding plan for the intersection improvements and interchange reconstruction.

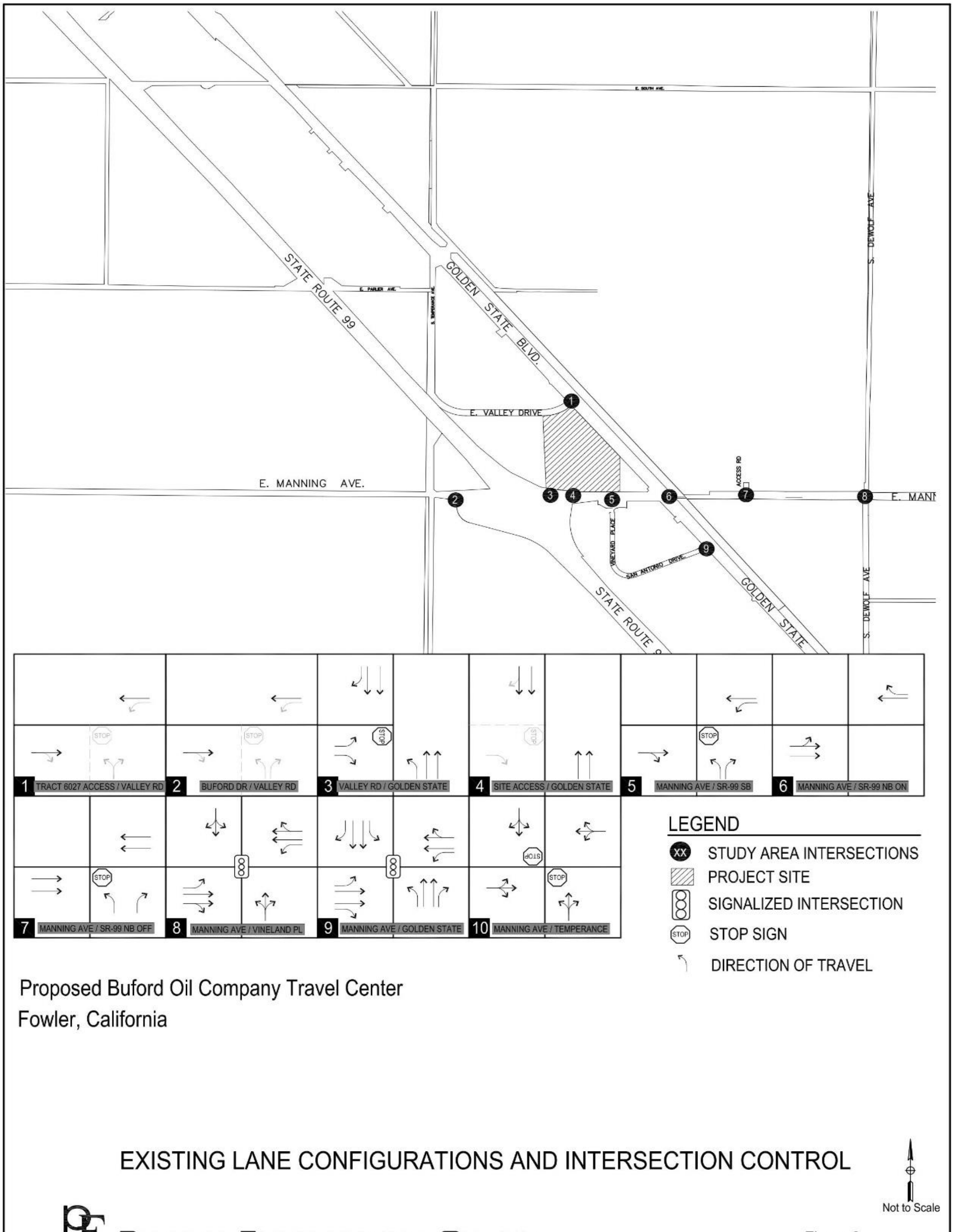

Figure 3-1. Existing Lane Configurations and Intersection Control

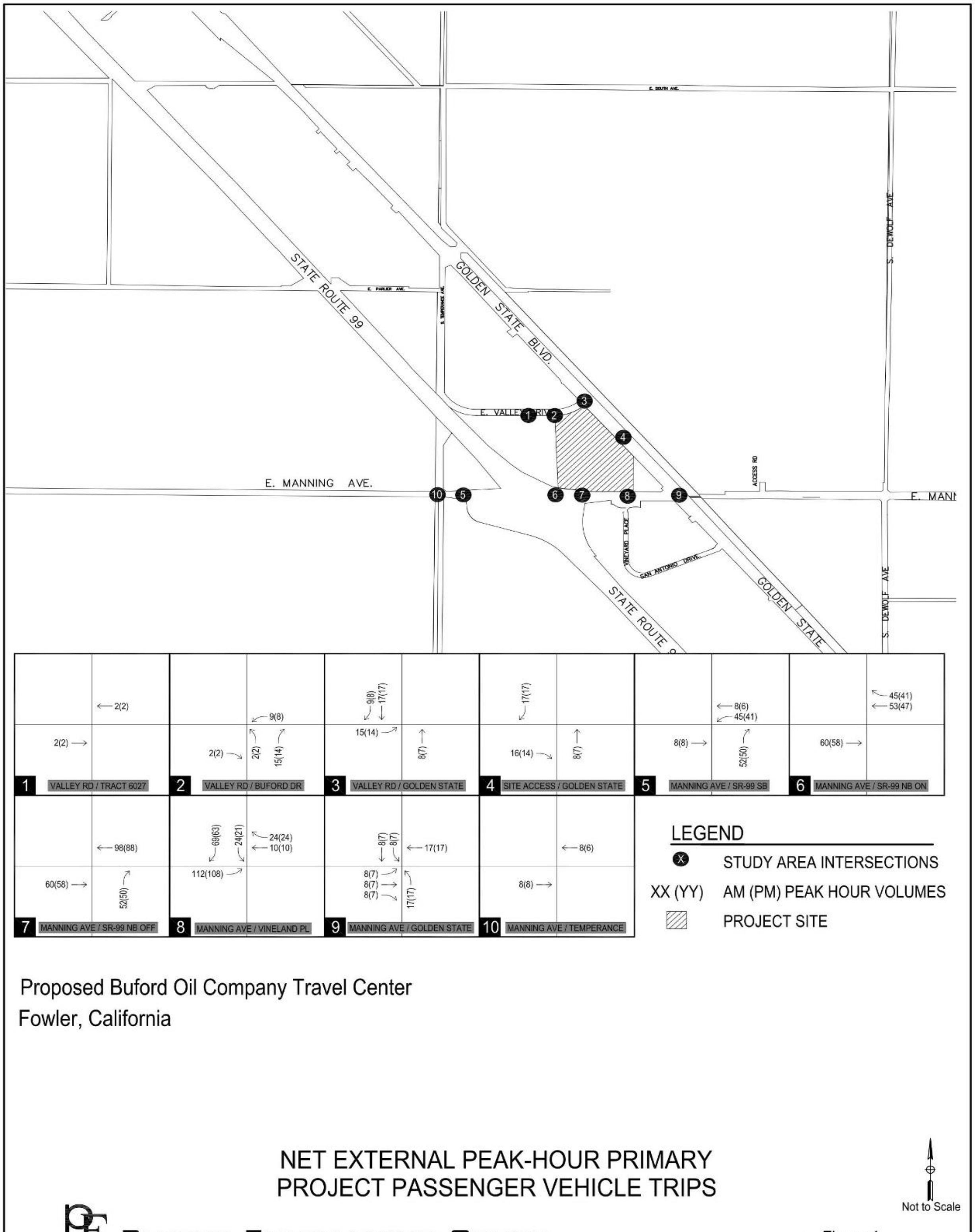

Figure 3-2. Peak Hour Primary Project Passenger Vehicle Trips

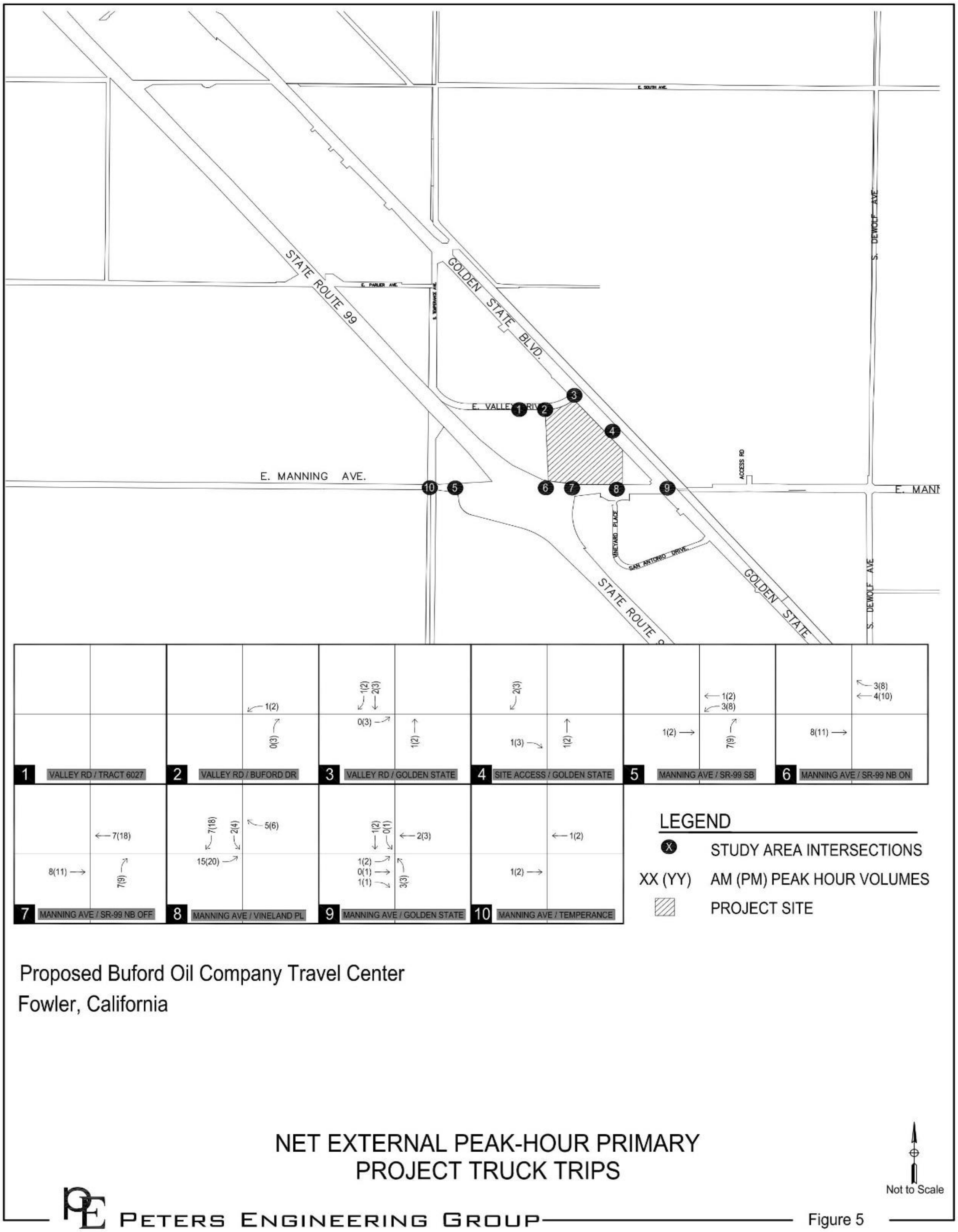

Figure 3-3. Next External Peak Hour Primary Project Truck Trips

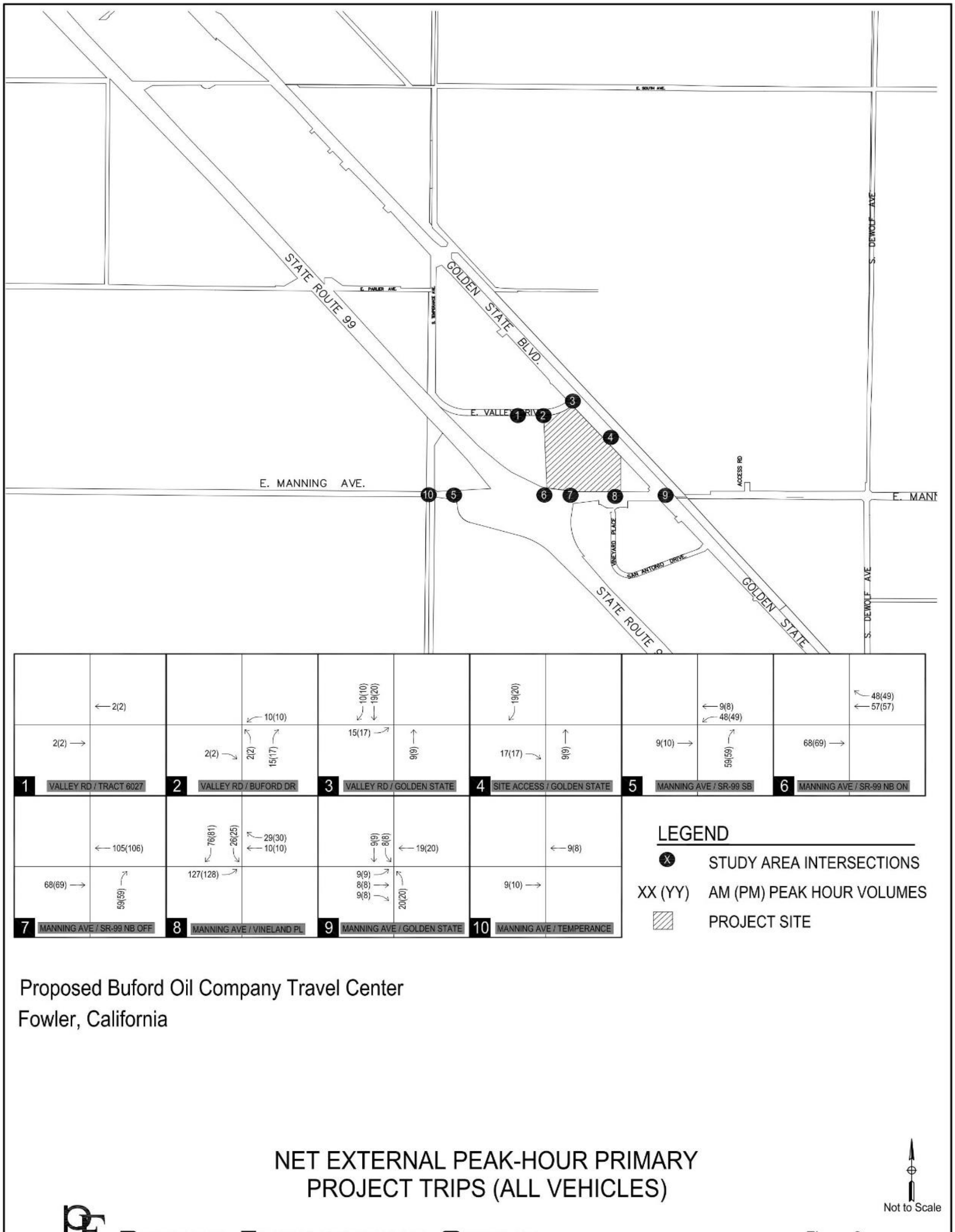

Figure 3-4. Net External Peak-Hour Primary Project Trips (All Vehicles)

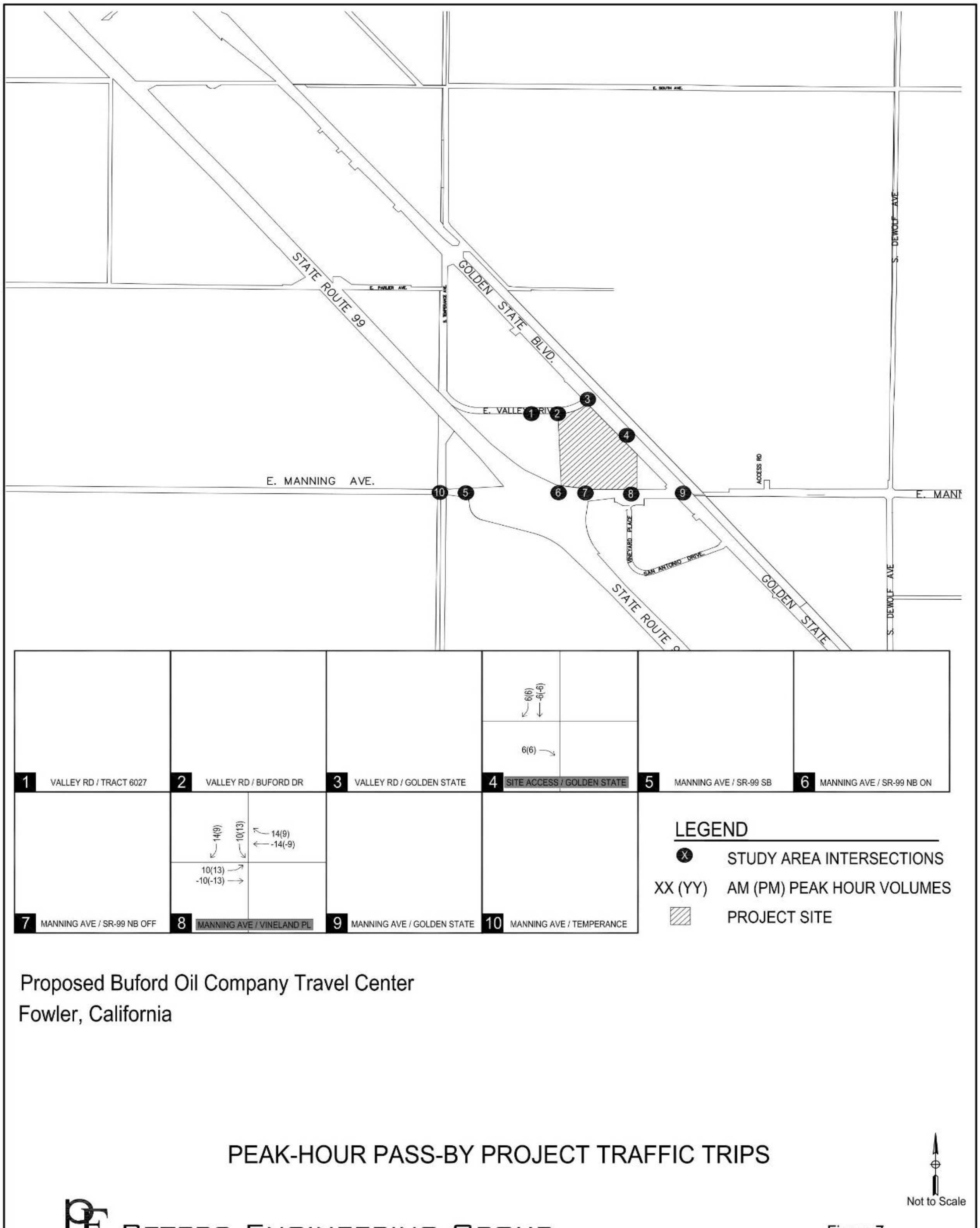

Figure 3-5. Peak-Hour Pass-By Project Traffic Trips

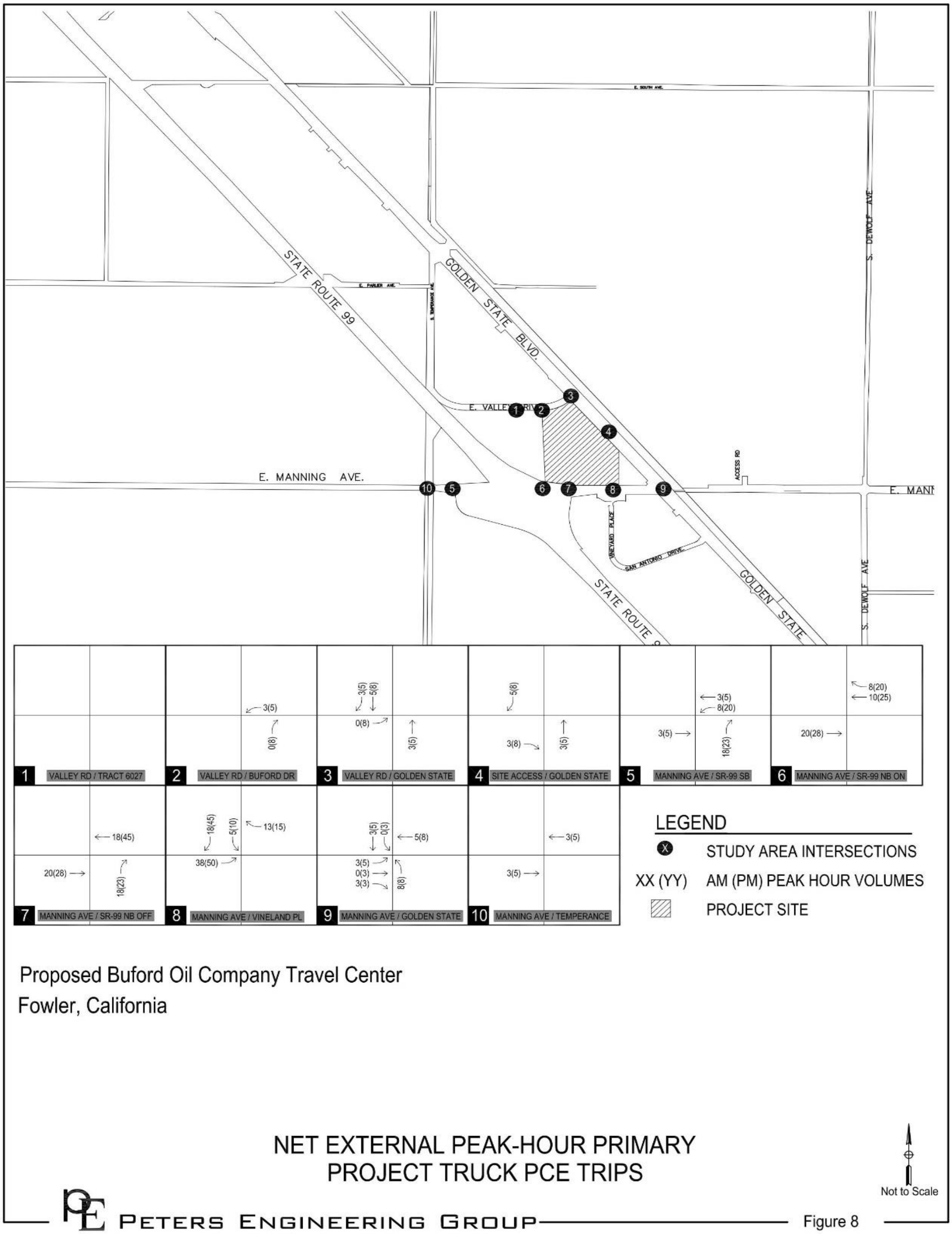

Figure 3-6. Net External Peak-Hour Primary Project Truck PCE Trips

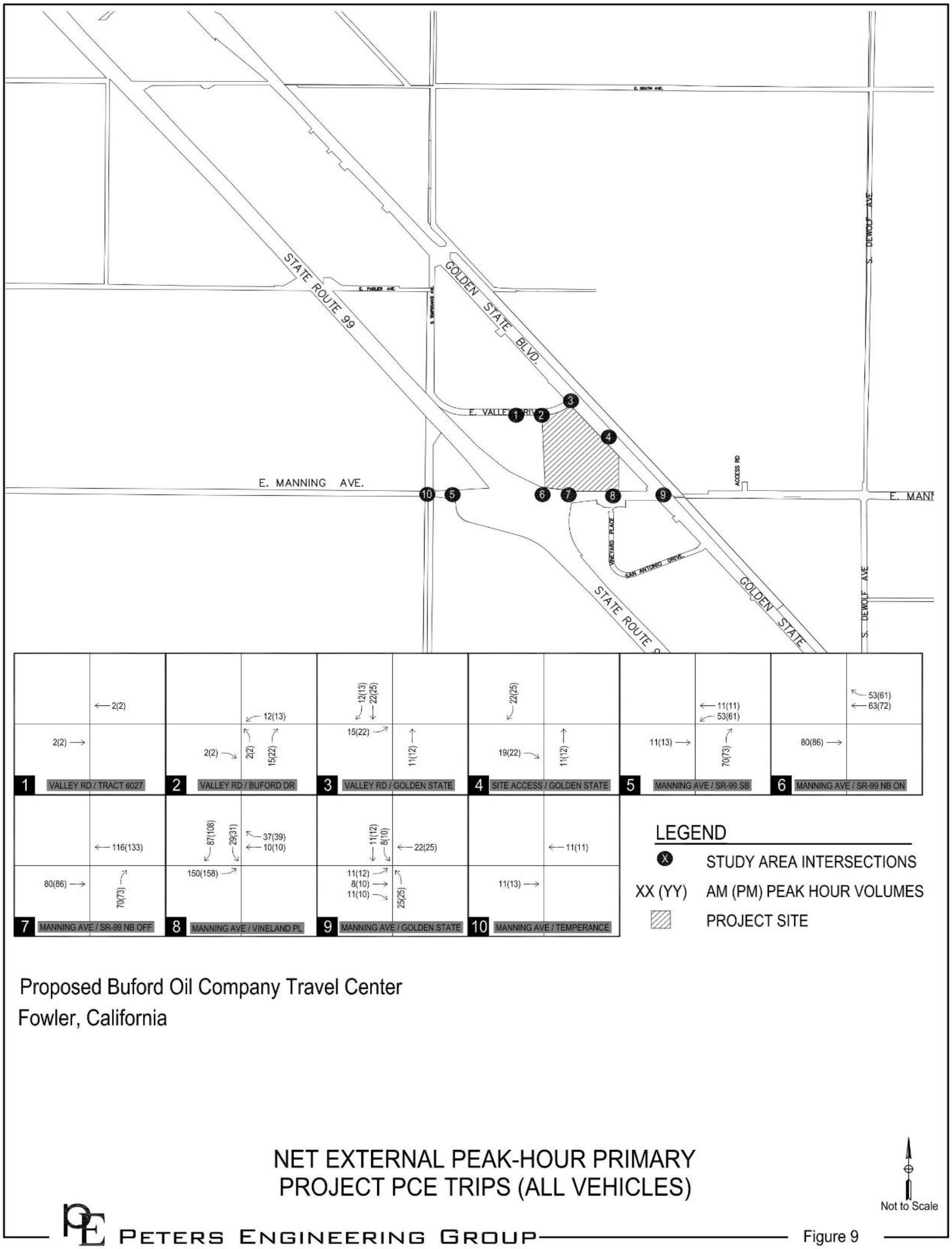

Figure 3-7. Next External Peak-Hour Primary Project PCE Trips (All Vehicles)

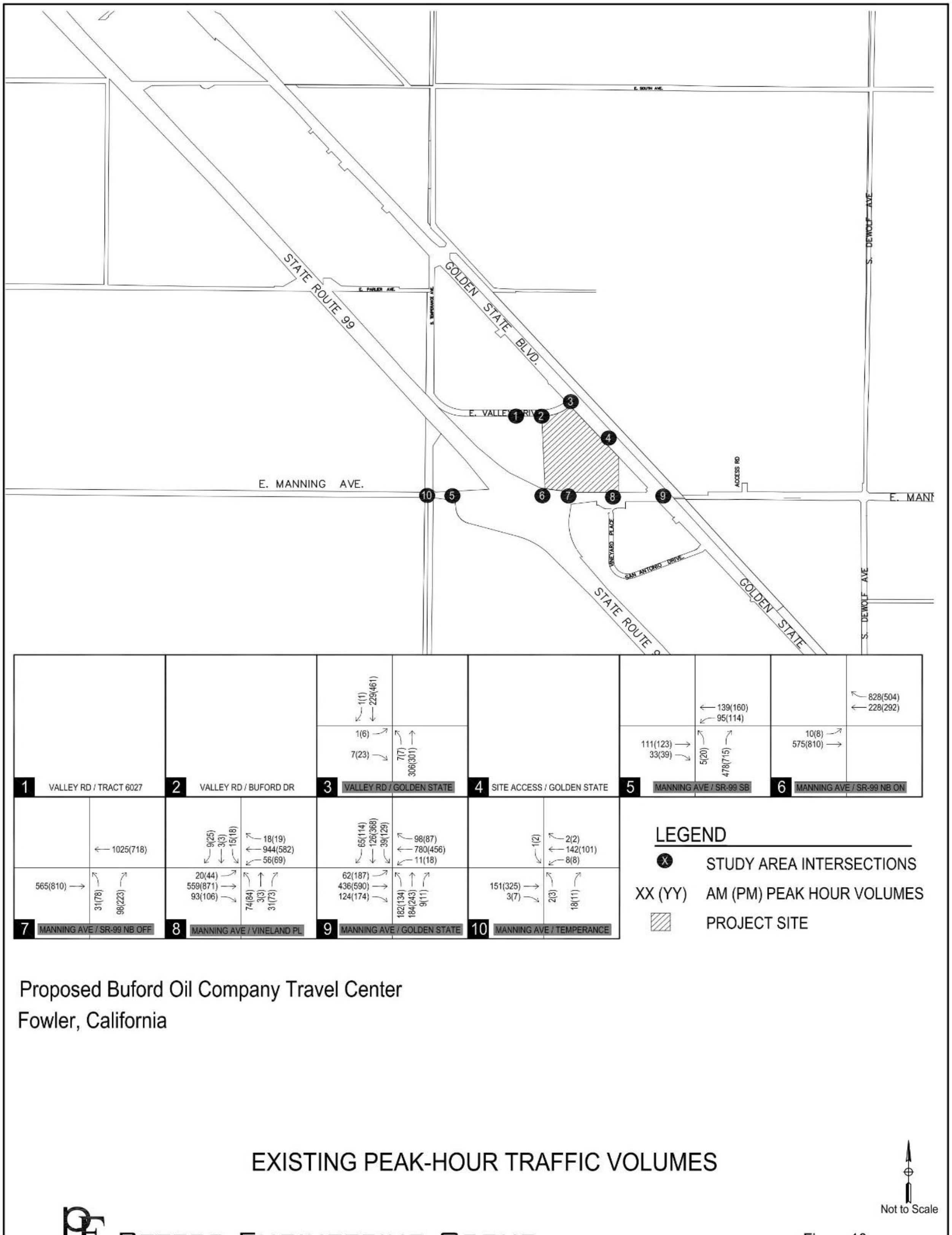

Figure 3-8. Existing Peak-Hour Traffic Volumes

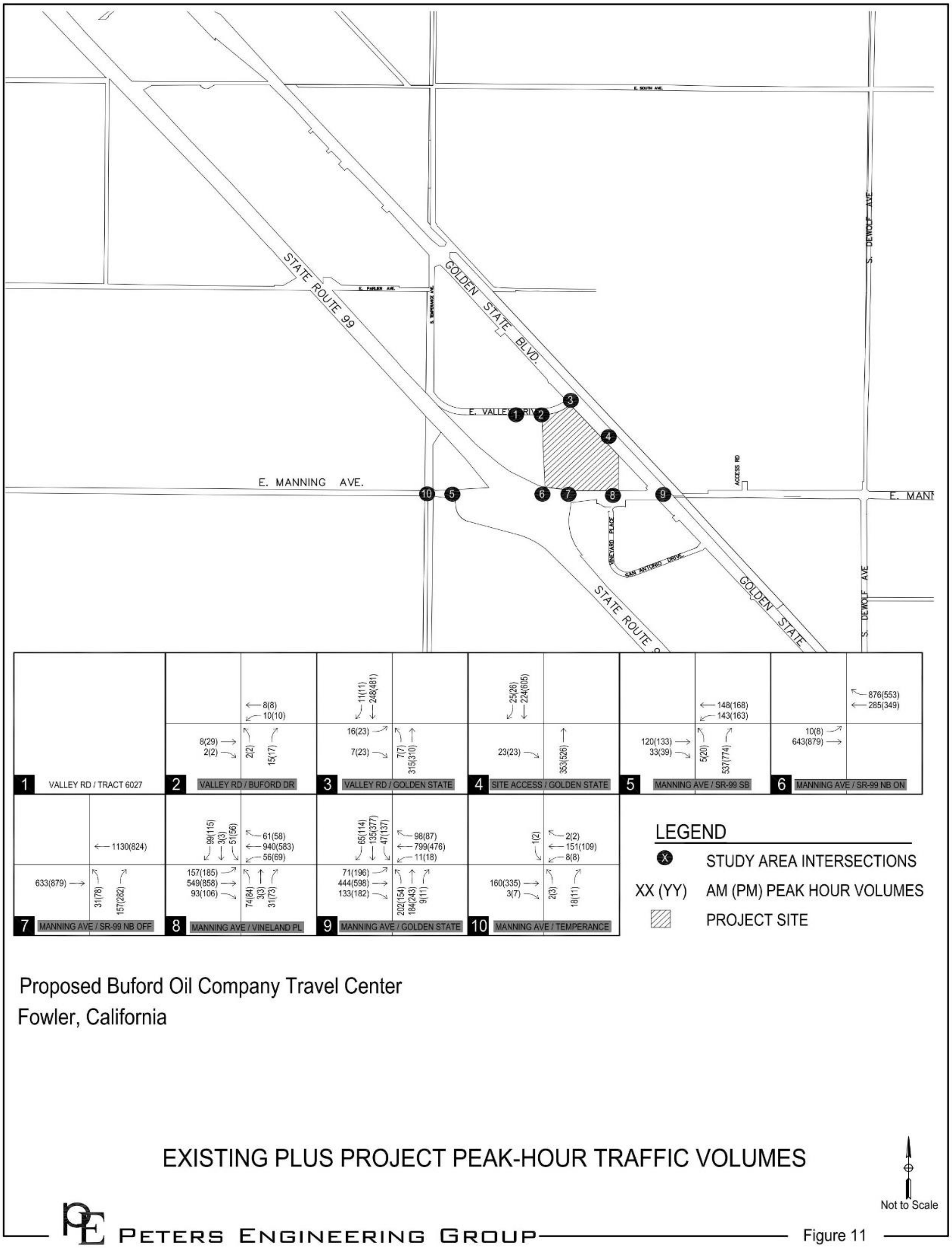

Figure 3-9. Existing Plus Project Peak-Hour Traffic Volumes

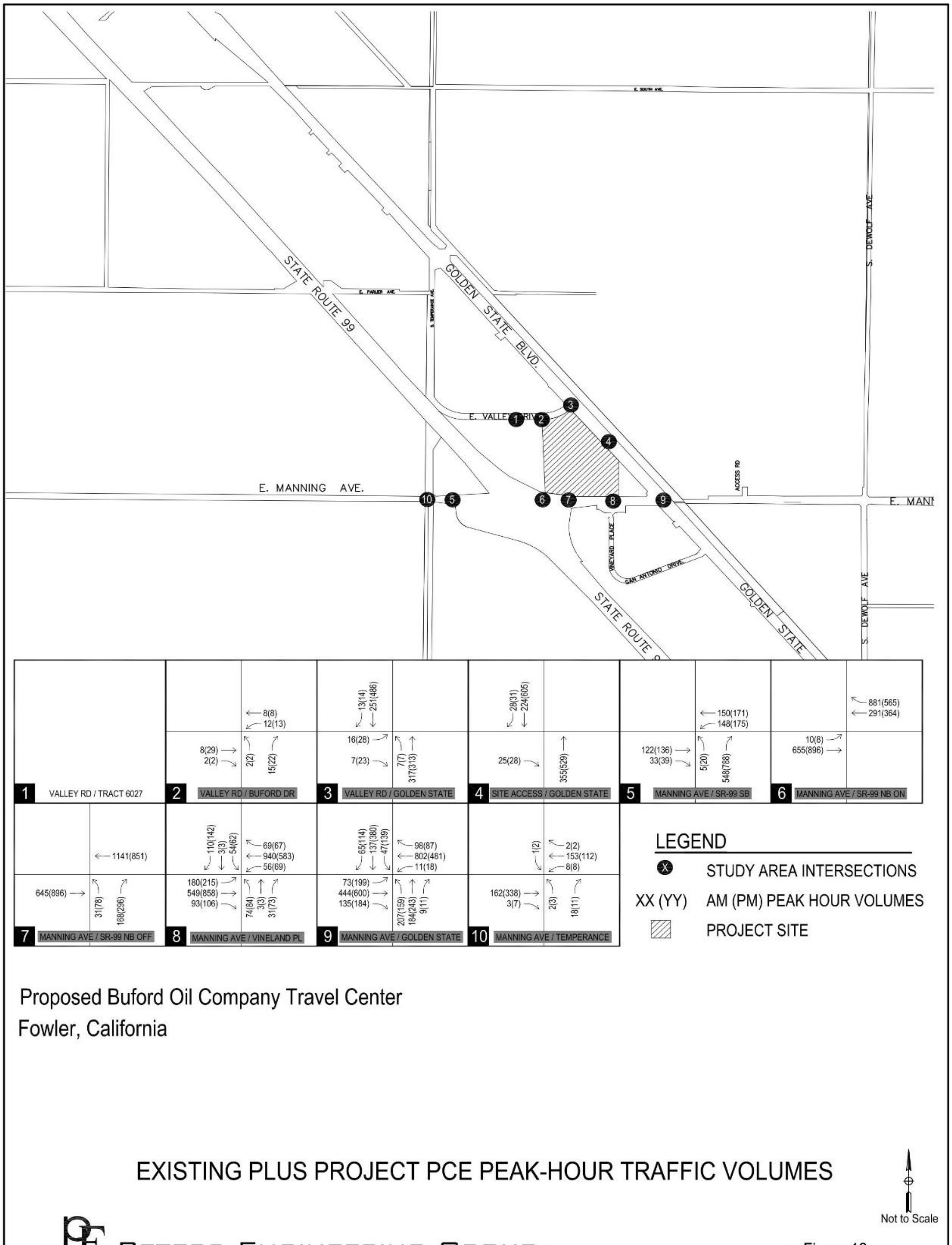

Figure 3-10. Existing Plus Project PCE Peak-Hour Traffic Volumes

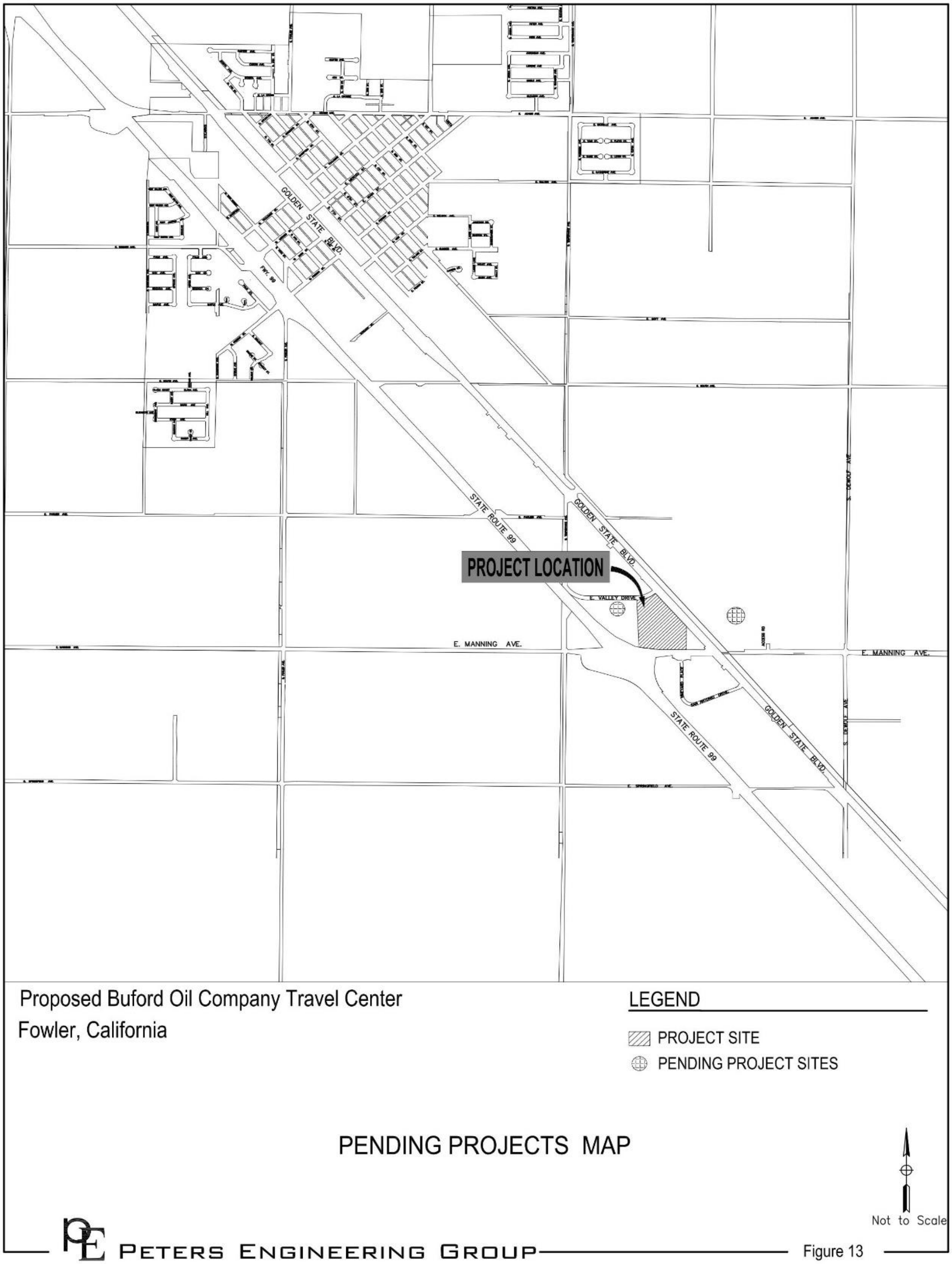

Figure 3-11. Pending Projects Map

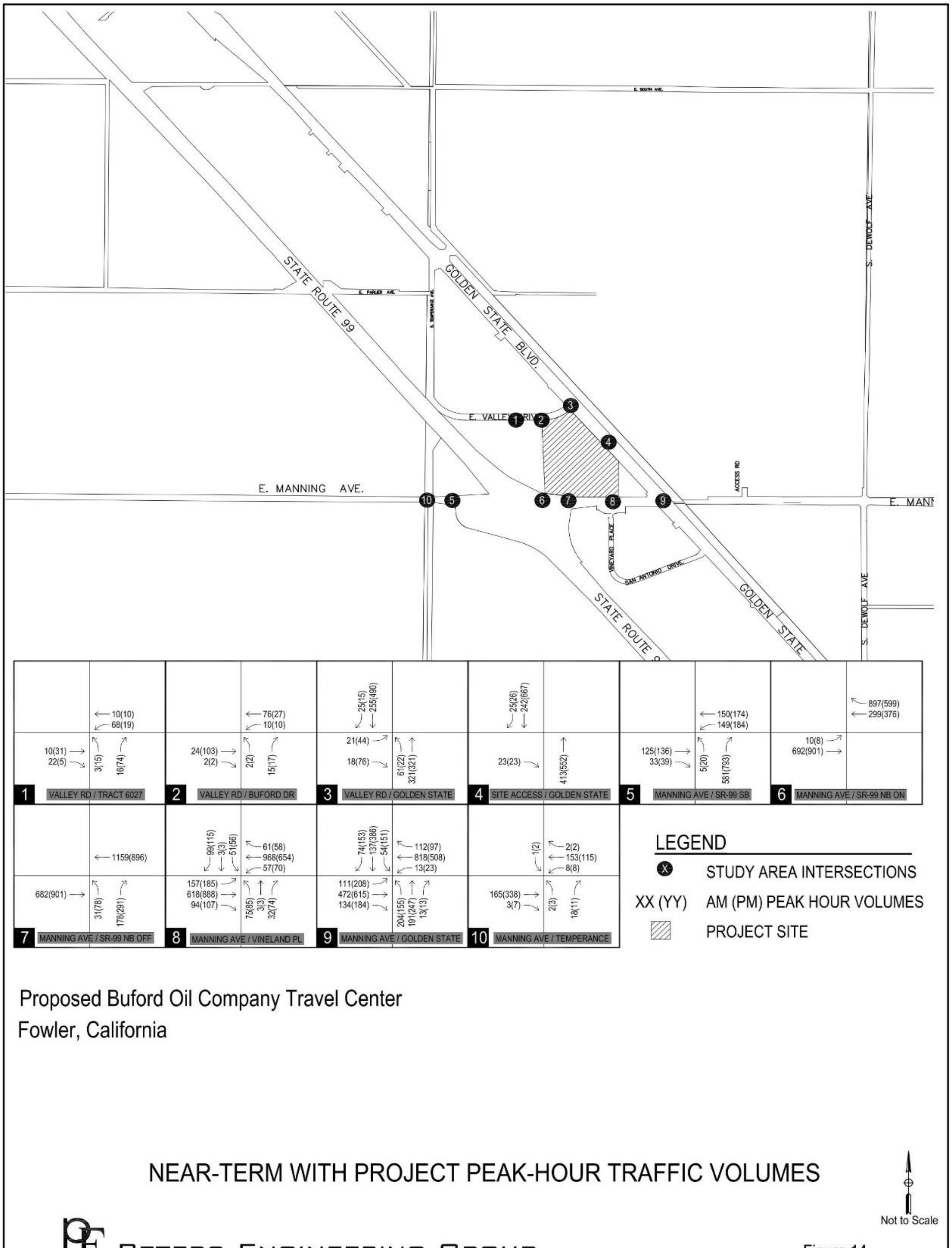

Figure 3-12. Near-Term with Project Peak-Hour Traffic Volumes

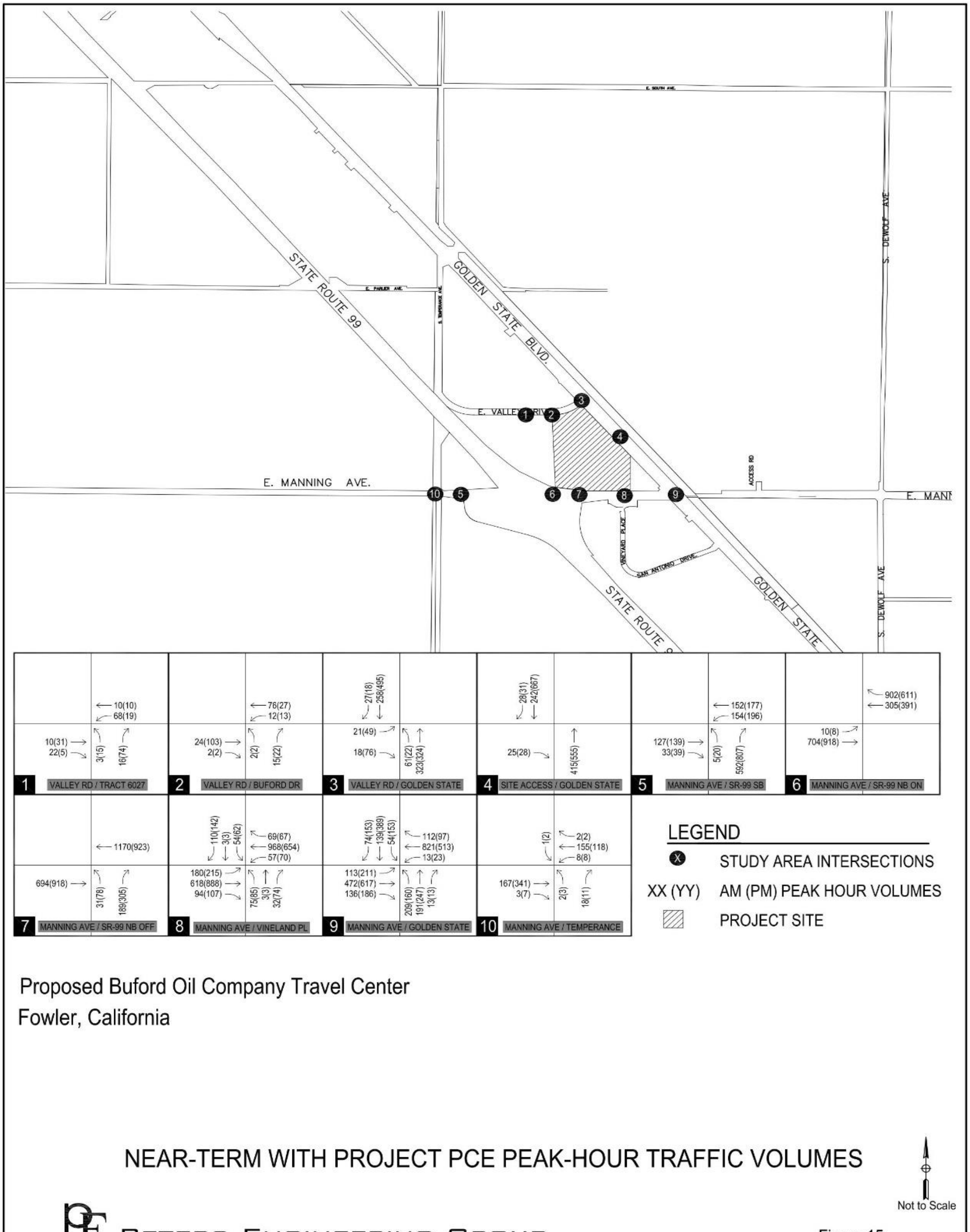

Figure 3-13. Near-Term with Project PCE Peak-Hour Traffic Volumes

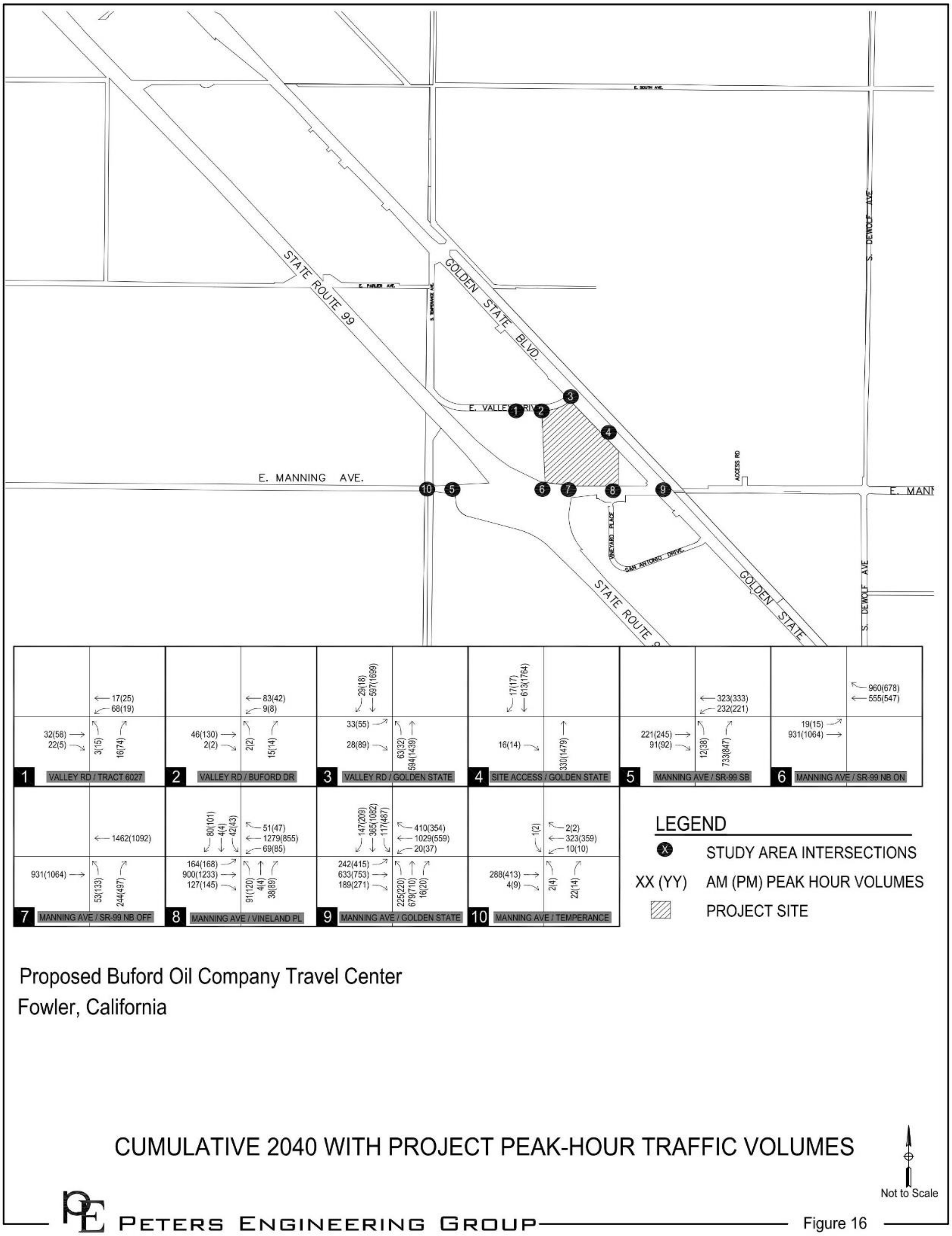

Figure 3-14. Cumulative 2040 with Project Peak-Hour Traffic Volumes

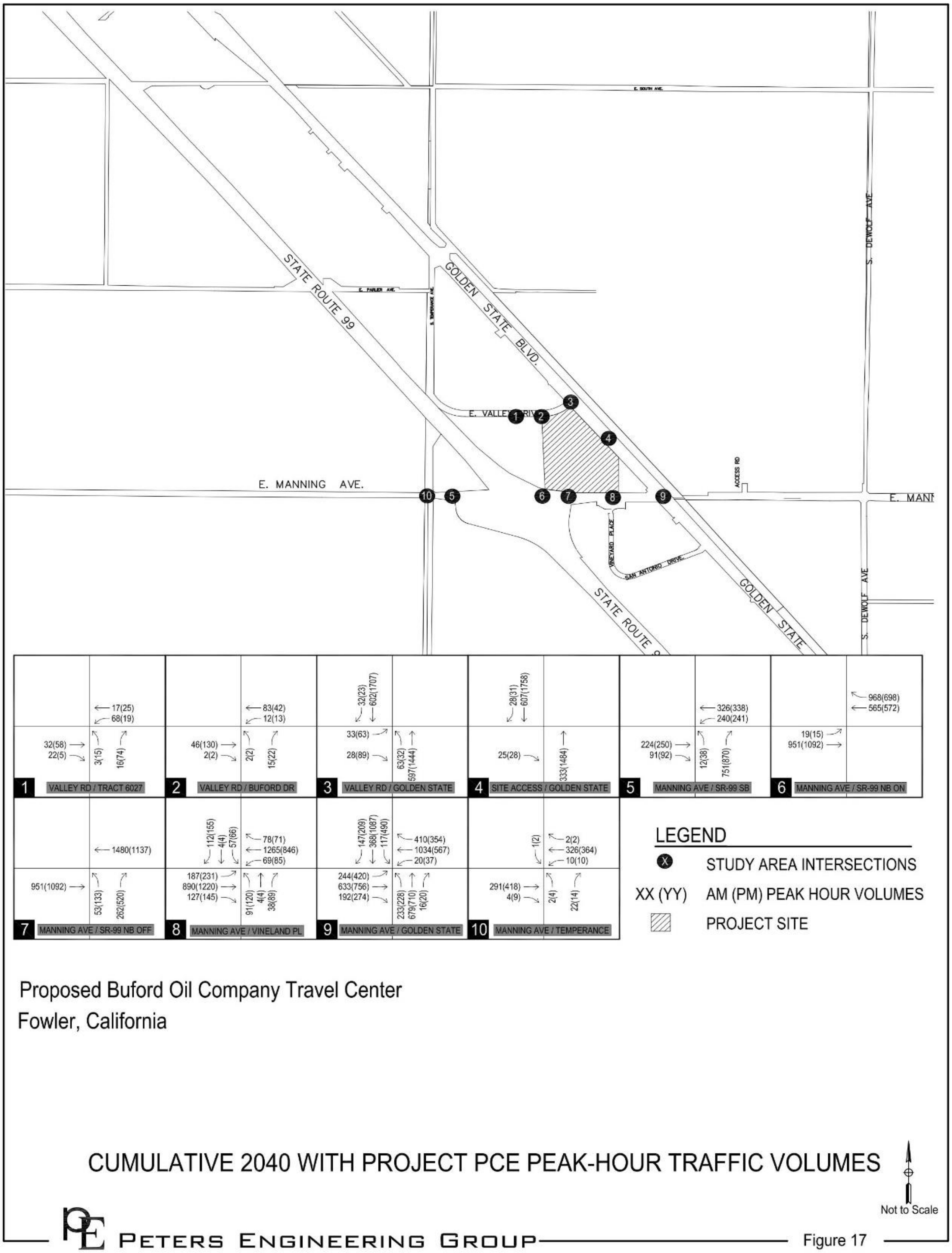

Figure 3-15. Cumulative 2040 with Project PCE Peak-Hour Traffic Volumes

3.9 Utilities and Service Systems

Table 3-44. Utilities and Service Systems Impacts

Utilities and Service Systems					
Would the project:		**Potentially Significant Impact**	**Less than Significant with Mitigation Incorporated**	**Less than Significant Impact**	**No Impact**
a)	Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?	☐	☐	☒	☐
b)	Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	☐	☐	☒	☐
c)	Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	☐	☐	☒	☐
d)	Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?	☐	☐	☒	☐
e)	Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?	☐	☐	☒	☐
f)	Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?	☐	☐	☒	☐
g)	Comply with federal, state, and local statutes and regulations related to solid waste?	☐	☐	☐	☒

3.9.1 Introduction

This section of the Draft EIR evaluates potential Project-related impacts associated with utilities and service systems. The Initial Study evaluated the Project's impacts on utilities and service systems and found that the Project could potentially create a significant impact to water supplies available to serve the project from existing entitlements and resources. These issues will be further analyzed below.

The Initial Study found less than significant impacts would be associated with wastewater treatment requirements, requiring new water or wastewater treatment or stormwater facilities or expansion of existing facilities, and analysis of sufficient land fill capacity. Furthermore, the Initial Study concluded that there would be no impacts to compliance with federal, state, and local statues and regulations related to solid waste. These issues were discussed in detail in the Initial Study and therefore, do not require further analysis. Therefore, Impact questions a-c and e-g are not further analyzed below.

3.9.2 Environmental Setting

3.9.2.1 Water Supply

The City relies on groundwater managed by Consolidated Irrigation District (CID) that is pumped by various wells throughout the City. The City has an agreement with CID and pay fees to the District in order to receive water for distribution to City users. Currently there are six wells within the City of Fowler. The Project will be served by Well 5A and 6. Well 5A has a pumping capacity of approximately 66,000 gallons per hour. Well 6 has a pumping capacity of approximately 75,000 gallons per hour.

The Project site is located within the Kings Sub-basin of the San Joaquin Valley Groundwater Basin, as defined by the California Department of Water Resources Groundwater Bulletin 118[22]. Declines in groundwater basin storage and groundwater overdraft are recurring problems in Fresno County. Measures for ensuring the continued availability of groundwater for municipal needs have been identified and planned in several areas of the county. The measures include groundwater conservation and recharge, and supplementing or replacing groundwater sources for irrigation with surface water.

3.9.2.2 Wastewater

Wastewater is managed by the Selma-Kingsburg-Fowler County Sanitation District (SKFCSD/District). The District was formed in 1971 and is currently providing wastewater services for the City of Fowler among other jurisdictions. The District's treatment facility is approximately 7.66 miles southeast of the Project area. Prior to additional development in the District, SKFCSD will review the development project and provide comments whether the District can accommodate the development.

3.9.2.3 Landfill

Solid waste services are currently managed by Waste Management in the City of Fowler. The nearest landfill is the Visalia Landfill approximately 20.57 miles southeast of the Project. According to the Tulare County Solid Waste Division, the Visalia Landfill is planned to expand based upon increased demand. Phase 1 expansion has already been implemented. With the nine phased expansions, the total capacity of the Visalia Landfill is estimated at 16,521,501 cubic yards. The Landfill has sufficient capacity to accommodate solid waste disposal demands through year 2040.[23]

3.9.3 Regulatory Setting

3.9.3.1 Federal

Clean Water Act: The Clean Water Act (CWA) is intended to restore and maintain the chemical, physical, and biological integrity of the nation's waters (33 CFR 1251). The regulations implementing the CWA protect waters of the U.S. including streams and wetlands (33 CFR 328.3). The CWA requires States to set standards to protect, maintain, and restore water quality by regulating point source and some non-point source discharges. Under Section 402 of the CWA, the National Pollutant Discharge Elimination System (NPDES) permit process was established to regulate these discharges.

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[22] Bulletin 118 – California's Groundwater - https://water.ca.gov/-/media/DWR-Website/Web-Pages/Programs/Groundwater-Management/Bulletin-118/Files/Bulletin-118-Fact-Sheet.pdf Accessed November August 18November, 2018

[23]City of Visalia Municipal Service Review - https://lafco.co.tulare.ca.us/lafco/index.cfm/msr/city-of-visalia-msr-update/ Accessed August 21, 2018

National Pollutant Discharge Elimination System. The National Pollutant Discharge Elimination System (NPDES) program, Section 402 of the CWA, controls direct discharges into navigable waters. Direct discharges or "point source" discharges are from sources such as pipes and sewers. NPDES permits, issued by either EPA or an authorized state/tribe, contain industry-specific, technology-based and/or water-quality-based limits, and establish pollutant monitoring and reporting requirements. (EPA has authorized 40 states to administer the NPDES program.) A facility that intends to discharge into the nation's waters must obtain a permit before initiating a discharge. A permit applicant must provide quantitative analytical data identifying the types of pollutants present in the facility's effluent and the permit will then set forth the conditions and effluent limitations under which a facility may make a discharge. Implementation will be managed by the State Water Resource Control Board and Regional Water Quality Control Boards.

Department of Resources Recycling and Recovery (CalRecycle): CalRecycle was created January 1, 2010, through legislation merging the programs of the former California Integrated Waste Management Board and the beverage container recycling program that was previously managed by the California Department of Conservation. It is a department within the California Environmental Protection Agency. CalRecycle administers and provides oversight for all of California's state-managed waste handling and recycling programs. Known mostly for overseeing beverage container and electronic-waste recycling, CalRecycle is also responsible for organics management, used tires, used motor oil, carpet, paint, mattresses, rigid plastic containers, newsprint, construction and demolition debris, medical sharps waste, household hazardous waste, and food-scrap composting.

CalRecycle provides training and ongoing support for Local Enforcement Agencies, which regulate and inspect California's active and closed solid waste landfills, as well as materials recovery facilities, solid waste transfer stations, compost facilities, and more. The permitting and inspection processes help CalRecycle fulfill its mission to protect the health and safety of Californians and the environment.

Legislation that took effect in 2012 established a goal for California to source reduce, recycle, or compost 75 percent of its waste statewide by the year 2020. And beginning in July 2012, it also put in place required mandatory recycling for most California commercial businesses and multi-family residential buildings with five or more units. More recent laws enacted are designed to increase commercial organics recycling and curtail reliance on single-use plastic bags.

California has some of the nation's most successful recycling and product-reuse programs, and as defined within the state's Integrated Waste Management Act of 1989 (IWMA), diverted an estimated 65 percent of its solid waste from landfills in 2013. With respect to the state's goal of recycling 75 percent of its waste by 2020, CalRecycle uses a recycling-rate calculation that removes from the equation certain materials and activities currently counted as "diversion," which includes green waste used as alternative daily cover at landfills and solid waste used as fuel. Using that calculation, the recycling rate for 2013 was 50 percent. That is well above the U.S. EPA-calculated national recycling rate of 34.5 percent.

The Waste Permitting, Compliance, and Mitigation (WPCM) Division is responsible for the CalRecycle's solid waste, waste tire, recycled content product and local government regulatory mandates and activities. This division ensures that:

1. *Solid waste and waste tire processing and disposal site permits are processed and issued as required.*
2. *Waste tire haulers are registered as required.*
3. *Solid waste landfills maintain the appropriate level of financial assurances.*
4. *Solid waste disposal sites are properly closed and maintained.*
5. *Solid waste management and waste tire facilities and operations are inspected, and noncompliant facilities and operations are under enforcement actions, and penalized as appropriate.*

6. *Local governments not making a good faith effort to implement their unique waste diversion programs are evaluated and placed on compliance orders and penalized as appropriate.*
7. *Minimum recycled content in products (rigid plastic packaging containers (RPPC), plastic trash bags, and newsprint), and producer responsibility programs (paint and carpet) are certified in compliance or penalized as appropriate.*
8. *All hazards created by the illegal or inappropriate disposal of solid waste or tires are mitigated to protect the public health and safety.*
9. *Local enforcement agencies are properly trained, certified, designated, and evaluated, and if warranted, placed on work plans or decertified as appropriate.*

State Water Resources Control Board's Waste Discharge Requirement (WDR) Program: In general, the Waste Discharge Requirements (WDRs) Program (sometimes also referred to as the regulates point discharges that are exempt pursuant to Subsection 20090 of Title 27 and not subject to the Federal Water Pollution Control Act. Exemptions from Title 27 may be granted for nine categories of discharges (e.g., sewage, wastewater, etc.) that meet, and continue to meet, the preconditions listed for each specific exemption. The scope of the WDRs Program also includes the discharge of wastes classified as inert, pursuant to section 20230 of Title 27. The Project will be discharging Sewage and Wastewater. The following exemptions may apply for:

Sewage: Discharges of domestic sewage or treated effluent which are regulated by WDRs issued pursuant to Chapter 9, Division 3, Title 23 of this code, or for which WDRs have been waived, and which are consistent with applicable water quality objectives; treatment or storage facilities associated with municipal wastewater treatment plants, provided that residual sludge or solid waste from wastewater treatment facilities shall be discharged only in accordance with the applicable provisions of the CWC.

Wastewater: Discharges of wastewater to land, including but not limited to evaporation ponds, percolation ponds, or subsurface leach fields if the following conditions are met:

- *the applicable Regional Water Board has issued WDRs, water recycling requirements, or waived the issuance;*
- *the discharge is in compliance with the applicable water quality control plan; and*
- *the wastewater does not need to be managed according to Chapter 11, Division 4.5, Title 22 of this code as a hazardous waste.*

3.9.3.2 Local

City of Fowler General Plan (1976)

The City of Fowler General Plan (1976) Public Facilities Element sets forth the following goals and policies that are relevant to the Project:

1. *To provide a safe and adequate water supply for domestic, industrial, and fire-fighting purposes within the city.*
2. *To coordinate with SKF Sanitation District in providing an adequate liquid waste collection and treatment system for the city.*
3. *Require utilization of the city water system by all domestic water users within its jurisdiction. The city will not approve any development that cannot be adequately served by the city water system.*
4. *Require all uses within the city which discharge wastewater to conform with the state requirements of the Fresno County Health Officer, the State Water Quality Control Board, and the SKF Sanitation District, and to connect to the SKF Sanitation District.*

3.9.4 Impact Assessment

XVII-d) Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?

d) Less Than Significant Impact. The Project would connect to City water. Currently the site uses approximately 1,740 gallon per day and the projected use for the proposed Project would be a maximum daily demand of 33,000 gallons per day. DWR requires that the City analyze projected water usage on a 2.0 daily peak factor, which would be a maximum daily demand of 66,000 gallons of water per day. City staff has evaluated the capacity of the City water system and determined that there is sufficient capacity to serve the proposed Project at the 2.0 daily peak factor rate (**Appendix G**). Additionally, the Project will be required to provide an on-site distribution system capable of delivering fire flows throughout the proposed Project area. This system will be designed and installed by the developer in accordance with city standards as directed by the City Engineer. Any impacts would be less than significant.

3.9.5 Discussion of Cumulative Impacts

Utility and service providers include SKF for wastewater collection and treatment, stormwater drainage, and solid waste collection; Waste Management for solid waste disposal; CID for domestic water supply with wells managed by the City of Fowler service; Pacific Gas & Electric for electricity and natural gas, and a variety of communications companies. Each of these providers have system or service capacities that are currently planned to meet growth within the City of Fowler consistent with the General Plan. The proposed Project is within the planned growth for the City. Therefore, there will be no cumulative impacts.

3.10 CEQA Mandatory Findings of Significance

Table 3-45. Mandatory Findings of Significance Impacts

Mandatory Findings of Significance				
Would the project:	**Potentially Significant Impact**	**Less than Significant with Mitigation Incorporated**	**Less than Significant Impact**	**No Impact**
a) Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?	☐	☒	☐	☐
b) Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)?	☐	☒	☐	☐
c) Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?	☐	☒	☐	☐

3.10.1 Impact Assessment

XVIII-a) Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?

a) As discussed above in Chapter 3 the Project is dominated by the existing Fowler Shell Truck Stop and the remainder of the site consists of ruderal habitat dominated by non-native plant species. Ruderal areas within the Project vicinity have minimal value to wildlife due to the frequent human disturbance, presence of domestic dogs and cats, and the absence of vegetative cover. However, some disturbance-tolerant species may make incidental use of these ruderal lands. Occurrence of a special status species onsite are determined to be unlikely. However, in order to ensure protection of any special status species with potential to occur onsite, adoption of the recommended mitigation measures will avoid or reduce Project impacts to a level less than significant.

XVIII-b) Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)?

b) There is a total of three projects of notable size that have been proposed or approved within 4 miles of the Project site. There are other sites with potential for similar future general commercial or industrial development within the industrial corridor along Golden State Boulevard and SR 99. When considered cumulatively, these projects, together with the proposed Project, resulting in the development of previously undeveloped land, contribute to the potential incremental cumulative loss of wildlife habitat in the vicinity, potential increase in greenhouse gas emissions, risk of potential loss or destruction of cultural/archaeological artifacts and human remains, and cumulative traffic/transportation-related impacts. However, development of these past, current and probable future projects, together with this Project, have already or will be required to implement appropriate mitigation measures to reduce their cumulative impacts to greatest extent reasonable and feasible. The mitigation measures identified in **Chapter 3.3** provide ways in which the Project will avoid or reduce its potential cumulative impacts to biological and cultural resources, greenhouse gas emissions at a project level and cumulatively, and near-term traffic transportation control and congestion impacts at a project level, but not long-term cumulatively. Other future projects which could further contribute to cumulative impacts in these four resource areas or others, would also be similarly required to mitigate its cumulative impacts to the greatest extent reasonable and feasible. The only unavoidable impact resulting cumulatively in significant unmitigated impacts are the cumulative long-term traffic congestion and control at the Manning Avenue/SR 99 overpass and on- and off-ramps. The cost of suitable long-term mitigation, if imposed on this Project alone or even with a fair share "up-front" fee, would render the project infeasible. Therefore, such mitigation has been identified as unreasonable.

XVIII-c) Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?

c) Based upon the analyses conducted in Chapter 3, there are identified potential environmental effects resulting from the Project that could potentially cause substantial adverse effects on human beings, either directly or indirectly. However, the analyses also found that adoption of recommended mitigation measures would either avoid or reduce such impacts to less than significant.

4 Alternatives

4.1 Introduction

CEQA Guidelines require that an EIR shall describe a range of reasonable alternatives to the Project, or to the location of the Project, which could feasibly attain most of the basic objectives of the Project, but would avoid or substantially lessen one or more of the significant effects of the Project, and evaluate the comparative merits of the alternatives (14 CCR 15126.6). The range of alternatives to be considered is governed by a rule of reason and the lead agency is responsible for identifying a range of reasonable, potentially feasible alternatives for consideration in the EIR. An EIR need not consider every conceivable alternative to a project, but rather, it must consider a reasonable range of potentially feasible alternatives that will foster informed decision making and public participation. An EIR is not required to consider alternatives which are infeasible.

4.2 Project Objectives

As noted above in 4.1, reasonable alternatives would be those that could feasibly attain most of the basic objectives of the Project. Section 2.1 of this EIR identified the following as objectives of the proposed Project:

- To promote economic activity and job growth within the City of Fowler.
- To maximize the utilization of land the applicant (Buford Oil Company) already owns
- Provide a modernized and safe place for commercial truck drivers and vehicles to stop and rest
- To provide additional services and facilities needed to accommodate the expanded traveling public within the San Joaquin Valley along the SR 99.

4.3 Considerations in Selecting Alternatives

Among the factors besides meeting Project objectives that may be taken into account in addressing the feasibility of alternatives are:

Site Suitability
Availability of infrastructure,
General Plan Consistency
Other adopted Plans, Policies or Regulatory limitations, and
Jurisdictional boundaries

4.3.1 Change in Project Considerations

CEQA Guidelines also require consideration of alternatives to the proposed Project that might avoid or substantially lessen significant impact. The range of alternatives discussed in this EIR were identified in consideration of the unmitigated significant effects of the Project, which based upon the analyses of the Initial Study and Chapter 3 Impact Assessment, include impacts to Air Quality, Biological Resources, Cultural Resources, Greenhouse Gas Emissions, Hazards and Hazardous Materials, Hydrology and Water Quality, Transportation/Traffic, and Utilities and Service Systems.

Common sense would suggest that a larger site and facility—either in terms of accommodating parking and fueling for more trucks and automobiles, or two or more hotels or four or more family style or quick-serve restaurants, or other expanded travel related conveniences would likely increase the intensity and magnitude of most impacts compared to the Project. While a larger facility may still meet the Project's stated objectives, it would not likely serve to avoid or substantially lessen the identified Project-related or cumulative impacts. Such an alternative is therefore rejected as not meeting the criteria required by CEQA for a valid alternative.

4.3.2 Location of Project Considerations

The proposed Project site is currently owned by, and under the control of, the applicant, Buford Oil Company. Buford Oil Company currently operates an existing truck stop with diesel fueling islands, two weigh scales, and a convenience store at the Project Site. Buford Oil Company does not own or lease other land in Fowler or proximate to Fowler along the SR 99 travel corridor that would be suitable for the establishment of a new Travel Center similar to that currently proposed.

An alternative site that was within Fowler and adjacent or proximate to SR 99 with similar access that was vacant could meet objectives No. 1, 3, & 4, but would not meet objective No. 2. There is no site of comparable size, location with proper zoning currently for sale within Fowler that would make it a viable alternative site for the applicant to meet most of his stated objectives.

The baseline conditions for the Project include the existing truck stop; Project-generated impacts are therefore determined by comparing the proposed development to the baseline conditions. Consequently, for instance, Project-level traffic impacts are determined based on incremental additional traffic that would result compared to what the site/existing use is currently generating. The Project-level impacts from traffic generated by developing a totally vacant site would likely be comparably more than the incremental addition from the proposed Project.

If there was another site currently for sale or lease either in or outside of the City of Fowler, and adjacent to or proximate to a travel corridor, and the applicant were to consider securing such site for development it might be able to meet objective No. 3, but likely would not to meet Project objectives No. 1, 2, and 4. Further, it would be quite speculative to determine whether such a site could meet as effectively the stated objectives of the Project or if it could avoid or substantially lessen any of the significant effects of the Project. Variables regarding whether the site was vacant or how the site were currently developed and what the existing baseline environmental conditions were at these sites would be so numerous as to be unreasonable to evaluate them all in a meaningful way. The speculation that would be necessary to evaluate the incremental changes in effects from converting such another sites to a truck stop and whether or not such circumstances would definitively avoid or substantially lessen any of the significant effects of the Project makes alternative locations infeasible to evaluate. It is also unknown whether there are sites of suitable size, location and zoning even available for sale or lease. At a minimum, it could be argued that an alternative location would simply move most all of the potentially significant impacts from one location to another, all of which may or may not be mitigable to less than significant.

According to the City of Fowler, the following were identified as the closely related past, present, and reasonably foreseeable probably future projects:

1.) Maxco Packaging, a recently approved 295,380-square foot cardboard box manufacturing facility and 12,519-square foot office building on approximately 26 acres at the northeast corner of East Manning Avenue and Golden State Boulevard.

2.) Three Crowns Industrial, Tract 6027, proposed division of 14.6 gross acres into 10 parcels ranging in size from 0.80 acres to 2.2.8 acres for M-1 industrial development immediately west of the Project site.

3.) The funded Golden State Corridor project will construct a second left-turn lane on northbound Golden State Boulevard onto East Manning Avenue. (See Figure 13 of the Traffic Impact Study in **Appendix**)

The County of Fresno was requested but did not identify any similar projects for cumulative consideration in the neighboring Fresno County jurisdiction.

A different location for the Project may not meet most of the objectives of the Project. It is too speculative to determine whether a different project location would avoid or substantially lessen the Project impacts. Therefore, based upon the scenarios analyzed above, the different location alternative is rejected as not meeting the criteria of the CEQA Guidelines.

4.4 Evaluation of Selected Alternatives

As a result of the analysis in Section 4.3 above, two Alternatives are considered for this Project:

"No Project" Alternative
"Reduced Scale of Project" Alternative

4.4.1 "No Project" Alternative

Under the No Project Alternative, the proposed Project would not be built, and the impacts of this Alternative would be those of the defined baseline conditions related to the existing truck stop/convenience store. Under this Alternative the existing truck stop and convenience store would remain in place and continue to operate.

Impacts related to aesthetics, air quality/greenhouse gas emissions, biological resources, transportation/traffic generated by the existing truck stop and convenience store would continue without benefit of any of the herein recommended mitigation measures. Without the need for a discretionary approval from the City, there would be no jurisdictional mechanism available to trigger requirements of the SJVAPCD to mitigate or offset air emission impacts, or for City to collect transportation impact fees related to the existing use for its fair share contribution to future road improvements in the vicinity of the Project. Surrounding roadways would likely continue to deteriorate unless transportation impact fees collected from other nearby new projects are sufficient to construct road repairs. The SR 99 northbound off-ramp intersection with E. Manning Avenue would continue to deteriorate to Level of Service F without adequate funding available to install signals.

Impacts related to air pollutant and greenhouse gas emissions, biological resources, water and other wet and dry utility and public service demands, and hazards and hazardous materials would be unchanged from what are currently existing under baseline conditions related to the existing truck stop, but would likely be proportionately less than the Project impacts due to development occurring on only approximately 10 of the site's approximately 19 acres.. Some hazards and hazardous materials impacts related to the existing truck stop would still potentially exist but are anticipated to be no more significant due to operation of state laws regulating the use, transport and storage of such materials on-site related to the existing truck fueling/servicing operations. One impact related to the existing use that could be more significant than Project impacts would be related to potential leaks into and resulting contamination of the groundwater table from the existing underground fuel storage tanks (USTs). These impacts are avoidable with the Project's proposal to remove the USTs and reconstruct only above-ground fuel tanks from which leaks would be contained by impervious surfacing surrounding the tanks, thereby preventing infiltration to groundwater. Further any oil storage tanks are already subject to state laws and regulations requiring spill prevention, control and countermeasure (SPCC) plans, as discussed under **Section 3.7.3.1** above.

With the No Project Alternative, the expanded and modernized truck stop with driver amenities, the hotel, and the new dining opportunities would not be built and would thereby prevent the achievement of all of the Project objectives at the proposed site. The property owner would retain the option to subdivide and sell unused portions of the site which parcels would be available for development of similar uses allowed in the Industrial zone and consistent with the Golden State Industrial Corridor. Such development would likely require discretionary a land use permit (e.g. Conditional Use Permit) which would be subject to evaluation under a separate future CEQA process.

4.4.2 "Reduced Scale of Development" Alternative

This Alternative would involve a scaling back of the Project either utilizing a smaller area of the site to accommodate smaller square footage of the same mix or uses, or a smaller site with a reduced mixture of uses altogether, as perhaps without a hotel, or with fewer restaurants, or perhaps without the truck wash and / or weigh station or other similar permutations. If a smaller area of the site were to be developed with a similar Travel Center/Truck Stop, it's likely the remainder of the site would be sold and developed by someone else, which development would create its own potential project-level or cumulative impacts. If the existing parcel were not divided, the smaller scale development may not make effective/efficient use of the current 19-acre site which could be considered a wasteful use of land resources. A reduced scale of development may be able to meet most of the stated Project objectives except No. 2.

This Alternative has the potential to reduce the magnitude of impacts related to air pollutant and greenhouse gas emissions, truck and automobile traffic, water demand, and utility and service needs but mitigation would still be required to reduce impacts to less than significant. Without precise inputs for the CalEEMOD air quality model, it is too speculative to know how much the Project would need to be scaled down for greenhouse gas emissions below the threshold for significance. While the effects on the environment could be reduced by this Alternative, such a reduced scale of development could result in a significant inefficient use of the available land resource and would, thereby, likely not meet the proponent's economic development objectives for the Project.

4.5 Comparison of Project Impacts with Alternatives' Impacts

Table 4-1 - Comparison of Project and Alternatives' Impacts

Comparison of Project and Alternatives' Impacts[1]			
Impact Topics[24]	**Proposed Project Impacts**	**No Project Alternative Impacts**	**Reduced Development Alternative Impacts**
Aesthetics: (all)	*Less than Significant*	*Potentially Significant*	*Less than Significant*
Agriculture and Forestry Resources (all)	*Less than Significant*	*Less than Significant*	*Less than Significant*
Air Quality: a) - c), e)	*Less than Significant*	*Potentially Significant*	*Less than Significant*
Air Quality: d)	*Less than Significant*	*Potentially Significant*	*Less than Significant*
Biological Resources: b) – f)	*No Impacts*	*Potentially Significant*	*No Impacts*
Biological Resources: a)	*Less than Significant with Mitigation*	*Potentially Significant*	*Less than Significant with Mitigation*
Cultural Resources: (all)	*Less than Significant with Mitigation*	*Potentially Significant*	*Less than Significant with Mitigation*
Greenhouse Gas Emissions: (all)	*Less than Significant with Mitigation*	*Less than Significant with Mitigation*	*Less than Significant with Mitigation*
Geology and Soils: (all)	*No Impacts or Less than Significant*	*Less than Significant*	*No Impacts or Less than Significant*
Hazards and Hazardous Materials: a) & b)	*Less than Significant*	*Potentially Significant*	*Less than Significant*
Hazards and Hazardous Materials: c) – h)	*No Impacts or Less than Significant*	*Potentially Significant*	*No Impacts or Less than Significant*
Hydrology and Water Quality: a) – f)	*Less than Significant*	*No Impacts*	*Less than Significant*
Hydrology and Water Quality: g) – j)	*No Impacts*	*No Impacts*	*No Impacts*
Land Use and Planning: (all)	*No Impacts*	*No Impacts*	*No Impacts*
Mineral Resources: (all)	*No Impacts*	*No Impacts*	*No Impacts*
Noise: (all)	*Less than Significant*	*Less than Significant*	*Less than Significant*
Population and Housing: (all)	*No Impacts*	*No Impacts*	*No Impacts*
Public Services: (all)	*No Impacts or Less than Significant*	*No Impacts or Less than Significant*	*No Impacts or Less than Significant*
Recreation: (all)	*Less than Significant*	*Less than Significant*	*Less than Significant*
Transportation/Traffic:	*Significant and Unavoidable*	*Potentially Significant*	*Potentially Significant*
Tribal Cultural Resources: (all)	*No Impacts*	*No Impacts*	*No Impacts*
Utilities and Service Systems: (d)	*Less than Significant*	*No Impacts or Less than Significant*	*Less than Significant*
Utilities and Service Systems: (a) – c) & d) - g)	*No Impacts or Less than Significant*	*No Impacts or Less than Significant*	*No Impacts or Less than Significant*
Mandatory Findings of Significance: a)	*Significant and Unavoidable*	*Potentially Significant*	*No Impacts or Less than Significant*
Mandatory Findings of Significance: b) & c)	*Less than Significant*	*Less than Significant*	*Less than Significant*

[24] Based upon Initial Study (Appendix A) and this focused EIR and as summarized in Chapter 1.

5 Other Considerations of Environmental Impacts

5.1 Growth Inducement

Section 15162.2(d) of the CEQA Guidelines requires that EIRs provide a discussion of the "growth inducing impacts of the proposed project." Growth inducing impacts could be caused by projects that foster economic or population growth, or the construction of additional housing, either directly or indirectly, in the surrounding environment. Growth inducing impacts can also be caused by removing obstacle to population growth, such as an expansion of a wastewater treatment plant. Growth inducement impacts result from population increases that require the construction of new community services facilities.

The proposed Buford Oil Company Travel Center consists of the demolition of the existing truck stop and convenience store and replacing them with a more modern truck stop facility as described in Chapter 2.3.1 above. Development of this type consistent with the Golden State Industrial Corridor designation and implementing M-1 Industrial Zoning is contemplated by the City General Plan for long range growth of the community. As such, while the project may generate some new supporting development (e.g. housing for employees if they are new to the area), it would not be a scale of development that would induce growth beyond that already contemplated by the adopted General Plan.

5.2 Significant Environmental Effects That Cannot Be Avoided

Section 15126.2(b) of the State CEQA Guidelines requires that the EIR describe any significant impacts, including those that can be mitigated but not reduced to a level of insignificance. Where there are impacts that cannot be alleviated without imposing an alternative design, their implications and the reasons why the Project is being proposed, notwithstanding their effect, should be described. The following effects were found to be significant project impacts for which mitigation measures are either not available or would not reduce the impacts to a less than significant level:

<u>State Route Northbound off-ramp intersection with East Manning Avenue</u>:

This EIR recommends that the Project mitigation include the signalization of this intersection. Installing a signal at this intersection would provide adequate mitigation for the "near-term with Project" impacts.

Caltrans has commented, and the Transportation Impact Study (**Appendix H**) supports this, that signalization would not be insufficient to address long-term cumulative impacts from the Project together with future development in the area consistent with the General Plan. Such long-term impacts would involve this off-ramp intersection in the context of cumulative significant impacts affecting the operation of the entire East Manning Avenue interchange (overpass and all four on-/ off-ramps to SR 99). The long-term mitigation would be redesign and reconstruct the entire interchange. Typically, such interchange construction would be funded through the collection of Transportation Impact Fees enacted by Ordinance by the local government agency (i.e. City). The local COG must also show the interchange improvement Project on an approved prioritized project list to benefit the region. Then "fair share" fees would be collected over time from individual projects that contribute adversely to the operational quality of the interchange until sufficient funds are available to pay for the improvements. Replacement of the interchange is currently not on a list of planned projects identified in the Fresno Council of Governments' Regional Transportation Plan (RTP) and thus, the City is not able to collect transportation impact fees from past, current and future developments to fund the improvements for this interchange.

The cost associated with the long-term mitigation of reconstructing the entire interchange would be infeasible for a single project to bear; or said differently, the fronting the cost of such construction by a single project would render the project economically infeasible. Consequently, there is no reasonable or feasible mitigation measures that would reduce this long-term significant impact to less than significant. The "No Project" Alternative discussed in Chapter 4 would be the only way to avoid the cumulative impact.

5.3 Irreversible Impacts

CEQA Guidelines Section 15126(c) requires the identification any irreversible uses of non-renewable resources during the initial and continued phases of the project; such as may be irreversible due to a large commitment of such resources that would make removal or nonuse thereafter unlikely (such as a highway improvement which provides access to a previously inaccessible area), or that could result in irreversible environmental damage due accidents, and to assure that such consumption of non-renewable resources is justified.

The Project's short-term demolition and construction phase will require the consumption and removal of natural resources and renewable and non-renewable materials, including building materials (e.g., wood and metal, concrete and paving), and fossil fuels (e.g., gasoline and diesel fuel) and water for dust control. Once operational, the Project uses will require consumption of similar natural resources and renewable and non-renewable materials and including electricity, natural gas, and potable water.

Storage of these fuels could also be subject to accidental spills or releases of these petroleum products which could result in environmental damage, such as fuel spills leaching into groundwater. Irreversible changes associated with the project include the use of nonrenewable resources during construction, including limestone (cement), and petroleum (including plastics) products. During the operational phase of the proposed Project, energy would be used for lighting, heating, cooling, fuel dispensers and other requirements. The use of these resources would not be substantial and would not constitute a significant effect.

This project will involve demolition of all existing structures and construction of multiple new and replacement structures. Both demolitions and new construction requires a permit from the City of Fowler. The City requires all construction and demolition debris to be collected by an authorized hauler and disposed of at an authorized construction and demolition debris recycling operation for reuse in other materials production streams. The weight and types of materials hauled away are mandated to be reported to the City and subsequently to the State (per the CalRecycle Program).

All development for the proposed Project would be an upgrade of existing development both on-site with the upgrade of the existing truck stop/travel center and off-site with surrounding or nearby roadway improvements required by mitigation measures. Build-out of the Project site and improvements over time to surrounding roadways is consistent with the City's adopted General Plan (land use and circulation elements) and therefore, is not consuming resources not already planned and anticipated. As stated above in Section 5.1, the Project is not, in and of itself, growth inducing directly or indirectly in way that would commit to consumption of unplanned resources.

The commitment of resources outlined above, and the levels of consumption associated with the Project are consistent with planned future development within the City of Fowler. Moreover, the use of resources represents a moderate percentage of these resources utilized by development City- and county-wide for other commercial hotels, retail tire and lube businesses, convenience stores, restaurants, and fuel sales. Additionally, the Project provides public benefits, such as creation of new jobs, sales and transient occupancy taxes, and other local retail opportunities for auto/tire repair, convenience shopping and dining. Therefore, there is no particular justification for avoiding or delaying the continued commitment of these resources.

5.4 Energy Use

Construction phase of the Project will include demolition activities as well as new construction. It is anticipated that demolition and construction equipment will comply with the most recent tiered emission requirements of the SJVAPCD and will thereby offer the greatest degree of efficient energy utilization reasonably and feasibly possible.

The Project operation phase proposes roof-top and parking canopy mounted solar and anticipates at least partial demand coverage to the greatest extent feasible in coordination with utility company. The remaining demand would be supplied by PG&E through their existing service utility connections. The precise demand estimates cannot be determined until the design stage, when total energy requirements of each building are known. All the buildings will comply with current California Building Code energy standards. The project will utilize energy-efficient devices and equipment, as well as energy efficient external design features and material finishes.

As a highway commercial project, the Buford Travel Center's objective is to capture business from the existing traveling public already enroute on SR 99, and is not expected to be a generator of new transportation-related energy. The site's adjacency to SR 99 also serves to reduce the vehicle miles traveled to obtain the Travel Center services.

5.5 Economic and Social Effects

The State CEQA Guidelines define the parameters under which the consideration of socioeconomic impacts is included in an environmental evaluation. State CEQA Guidelines Section 15131 states that "[e]conomic or social information may be included in an EIR or may be presented in whatever form the agency desires."

Section 15131 of the Guidelines states:

1. Economic or social effects of a project shall not be treated as significant effects on the environment. An EIR may trace a chain of cause and effect from a proposed decision on a project through anticipated economic or social changes resulting from the project to physical changes caused in turn by the economic or social changes. The intermediate economic or social changes need not be analyzed in any detail greater than necessary to trace the chain of cause and effect. The focus of the analysis shall be on the physical changes."
2. Economic or social effects of a project may be used to determine the significance of physical changes caused by the project.

   For example, the level of significance of a physical division of a community from the installation of rail lines could be measured by the social effect on the community.
3. Economic, social, and particularly housing factors shall be considered by public agencies together with technological and environmental factors in deciding whether changes in a project are feasible to reduce or avoid the significant effects on the environment identified in the EIR.

In the case of the proposed Project, no concerns were expressed by the public or agencies during the Notice of Preparation comment period or at the Public Scoping Meeting held at City Hall. (see Introduction) related to the types of socio-economic concerns set forth in the CEQA Guidelines.

Further, there is no cause and effect relationship that this EIR can trace between the development of the Project and any significant adverse effects on economic or social considerations that would in turn result in physical changes to the environment.

Barring further substantial evidence to the contrary, the Project will not result in or cause any social or economic changes that could in turn have a secondary adverse effect on the physical environment.

6 Mitigation Monitoring and Reporting Program

This Mitigation Monitoring and Reporting Program (MMRP) has been formulated based upon the findings of the Environmental Impact Report (EIR) for the Project (Project) in the City of Fowler within Fresno County (County). MMRP contains all the mitigation measures recommended in the EIR for the Project and identifies monitoring and reporting requirements for each mitigation.

The first column of **Table 6-1** lists each mitigation measures identified for the Project in Chapter 3. Each mitigation measure is numbered with a symbol indicating the topical section to which it pertains, a hyphen, and the impact number. For example, AIR-2 would be the second mitigation measure identified in the Air Quality analysis of Chapter 3 of this EIR.

The second column of **Table 6-1**, entitled "When Monitoring is to Occur," identifies the time the mitigation measure should be initiated. The third column, "Frequency of Monitoring," identifies the frequency of the monitoring of the mitigation measure. The fourth column, "Agency Responsible for Monitoring," names the party ultimately responsible for ensuring that the mitigation measure is monitored. The fifth column will document the method used to verify compliance with mitigation and the last column will be used by the City of Fowler to document the date, time and person who verified compliance.

Table 6-1. Mitigation and Monitoring Reporting Program

Mitigation Monitoring and Reporting Program					
Mitigation Measure/Condition of Approval	**When Monitoring is to Occur**	**Frequency of Monitoring**	**Agency Responsible for Monitoring**	**Method to Verify Compliance**	**Date, time and Initials of Authorized PID Personnel Verifying Compliance**
Biological Resources					
General Mitigation Measures					
BIO-1 (WEAP Training) Prior to initiating construction activities (including staging and mobilization), all personnel associated with Project construction shall attend mandatory Worker Environmental Awareness Program (WEAP) training, conducted by a qualified biologist, to aid workers in identifying special status resources that may occur in the Project area. The specifics of this program shall include identification of the sensitive species and suitable habitats, a description of the regulatory status and general ecological characteristics of sensitive resources, and review of the limits of construction and mitigation measures required to reduce impacts to biological resources within the work area. A fact sheet conveying this information, along with photographs or illustrations of sensitive species with potential to occur onsite, shall also be prepared for distribution to all contractors, their employees, and all other personnel involved with construction of the Project. All employees shall sign a form documenting that they have attended WEAP training and understand the information presented to them.	Prior to initial construction and prior to any new construction workers begin work.	At least once, but again thereafter when any new workers come on site before they commence any construction activity.	City of Fowler	Signed and dated forms from all employees testifying they have attended WEAP training.	

Mitigation Monitoring and Reporting Program

Mitigation Measure/Condition of Approval	When Monitoring is to Occur	Frequency of Monitoring	Agency Responsible for Monitoring	Method to Verify Compliance	Date, time and Initials of Authorized PID Personnel Verifying Compliance
BIO-2 (General Pre-construction Survey): A pre-construction survey for special status species shall be conducted by a qualified biologist within 30 days prior to the beginning of construction activities. If sensitive biological resources are present onsite, the biologist shall establish an appropriate buffer zone and label sensitive resources or areas of avoidance with flagging, fencing, or other easily visible means. If avoidance is not feasible, CDFW and/or USFWS shall be consulted to determine the best course of action.	Within 30-days prior to start of construction activities, or if any construction is suspended for more than 30 days, then within 30 days prior to resumption of construction. As necessary pursuant to any non-avoidance plan developed in coordination with CDFW/USFWS.	Once before start of initial construction or as often as necessary prior to resumption of any construction activities suspended longer than 30 days. Maintenance of avoidance buffers established prior to start of construction shall be monitored continuously until completion of construction. As necessary pursuant to any non-avoidance plan developed in coordination with CDFW/USFWS.	City of Fowler	Written pre-construction Survey Report from qualified biologist to City documenting results of preconstruction survey and any recommendations needed for follow-up monitoring and reporting. Written notification of CDFW/USFWS	

Mitigation Monitoring and Reporting Program					
Mitigation Measure/Condition of Approval	**When Monitoring is to Occur**	**Frequency of Monitoring**	**Agency Responsible for Monitoring**	**Method to Verify Compliance**	**Date, time and Initials of Authorized PID Personnel Verifying Compliance**
BIO-3 (Construction Operational Hours): Construction shall be conducted during daylight hours to reduce disturbance to wildlife that could be foraging within work areas.	Daily, following full sunrise until completion of construction.	Daily, until completion of construction.	City of Fowler	City and/or contractor shall maintain daily records of the starting time of construction which shall not be before full sun-rise.	
Nesting Raptors, Migratory Birds, and Special Status Birds (Including Swainson's Hawk) Although trees, shrubs, and herbaceous cover are scarce, some disturbance-tolerant avian species may find suitable nesting habitat within the Project site. For instance, a black phoebe or mourning dove could nest on a small structure, such as an irrigation standpipe and a killdeer could nest on the bare ground. Neighboring eucalyptus trees could provide suitable nesting habitat for a raptor or a variety of passerines. Birds nesting onsite could be killed or injured by Project activities, and construction could disturb birds nesting adjacent to work areas, resulting in nest abandonment. In order to protect nesting birds, the Project shall implement mitigation measures BIO-4a, BIO-4b, and BIO-4c, listed below. Nesting bird season is generally accepted as February 1 through August 31; however, Swainson's hawk nesting season is generally accepted as March 1 through September 15. For simplicity, these timeframes have been combined.					
BIO-4a (Avoidance): The Project's construction activities shall occur, if feasible, between September 16 and January 31 (outside of nesting bird season) in an effort to avoid impacts to nesting birds.	As necessary to assure construction activity starts on or after September 16 and stops or is suspended before January 31.	As necessary to assure construction activity starts on or after September 16 and stops or is suspended before January 31.	City of Fowler	Documentation of start and end dates of all ground disturbing construction activities, including start dates any construction suspensions and re-sumption dates of	

Mitigation Monitoring and Reporting Program					
Mitigation Measure/Condition of Approval	**When Monitoring is to Occur**	**Frequency of Monitoring**	**Agency Responsible for Monitoring**	**Method to Verify Compliance**	**Date, time and Initials of Authorized PID Personnel Verifying Compliance**
				construction activities.	
BIO-4b (Pre-construction Nesting Bird Survey): If activities must occur within nesting bird season (February 1 to September 15), a qualified biologist shall conduct pre-construction surveys for active nests within 30 days prior to the start of construction. The survey shall include the proposed work area and surrounding lands within 0.5 mile. If no active nests are observed, no further mitigation is required. Active nests are generally defined by the presence of eggs or young; however, raptor nests are considered "active" upon the nest-building stage.	Within 30-days prior to start of construction activities, or if any construction is suspended for more than 30 days, then within 30 days prior to resumption of construction.	Once before start of initial construction or as often as necessary prior to resumption of any construction activities suspended longer than 30 days. Thereafter as may be needed, if active nests are found based upon findings and recommendation of qualified biologist in written report to City.	City of Fowler	Written Preconstruction Survey Report from qualified biologist to City documenting results of preconstruction survey and any recommendations needed for follow-up monitoring and reporting.	

Mitigation Monitoring and Reporting Program					
Mitigation Measure/Condition of Approval	When Monitoring is to Occur	Frequency of Monitoring	Agency Responsible for Monitoring	Method to Verify Compliance	Date, time and Initials of Authorized PID Personnel Verifying Compliance
BIO-4c (Establish Buffers): On discovery of any active nests near work areas, the biologist shall determine appropriate construction setback distances based on applicable CDFW and/or USFWS guidelines and/or the biology of the species in question. Construction buffers shall be identified with flagging, fencing, or other easily visible means, and shall be maintained until the biologist has determined that the nestlings have fledged.	Immediately upon discovery of active nests, as often as recommended by biologist until nestlings have fledged.	As often as recommended by biologist until nestlings have fledged Maintenance of avoidance buffers established prior to start of construction shall be monitored continuously until completion of construction.	City of Fowler	Written report from qualified biologist to City documenting required locations of buffer zones, flagging, fencing or other visible means and any recommendations needed for follow-up monitoring and reporting.	
Burrowing Owl: Mitigation measures BIO-4a through BIO-4c provide protection to nesting birds, including burrowing owl by requiring a pre-construction nesting bird survey prior to construction activities. However, due to their elusive burrowing nature, especially while overwintering, an active burrow could be missed on a general pre-construction survey. Project activities affecting reproductive success, such as the collapse of an active burrow or disturbance causing an individual to abandon a nest would be considered a significant impact, as would injury or mortality to an individual burrowing owl. In order to reduce potential impacts to this species to a less than significant level, the following additional mitigation measures will be employed.					

Mitigation Monitoring and Reporting Program					
Mitigation Measure/Condition of Approval	**When Monitoring is to Occur**	**Frequency of Monitoring**	**Agency Responsible for Monitoring**	**Method to Verify Compliance**	**Date, time and Initials of Authorized PID Personnel Verifying Compliance**
BIO-5a (Pre-construction Take Avoidance Survey): A take avoidance survey will be conducted by a qualified biologist for burrowing owls within 30 days prior to initiating ground disturbance activities. This survey will be conducted according to methods described in CDFW's 2012 Staff Report on Burrowing Owl Mitigation.	Within 30-days prior to start initiation of ground disturbing activities, or if any construction is suspended for more than 30 days, then within 30 days prior to resumption of construction.	Once before start of initial construction or as often as necessary prior to resumption of any construction activities suspended longer than 30 days.	City of Fowler	Written pre-construction Survey Report from qualified biologist to City documenting results of preconstruction survey and any recommendations needed for follow-up monitoring and reporting pursuant to CDFW's 2012 Staff Report on Burrowing Owl Mitigation.	

<table>
<tr><th colspan="6">Mitigation Monitoring and Reporting Program</th></tr>
<tr><th>Mitigation Measure/Condition of Approval</th><th>When Monitoring is to Occur</th><th>Frequency of Monitoring</th><th>Agency Responsible for Monitoring</th><th>Method to Verify Compliance</th><th>Date, time and Initials of Authorized PID Personnel Verifying Compliance</th></tr>
<tr><td>BIO-5b (Avoidance): If an active burrowing owl burrow is detected, the occurrence shall be reported to the local CDFW office and the CNDDB, and disturbance-free buffers shall be implemented in accordance with CDFW's 2012 Staff Report on Burrowing Owl Mitigation, as outlined in the table below:
<table>
<tr><th rowspan="2">Location</th><th rowspan="2">Time of Year</th><th colspan="2">Level of Disturbance</th></tr>
<tr><th>Low</th><th>Medium</th></tr>
<tr><td>Nesting sites</td><td>April 1 – August 15</td><td>200 meters</td><td>500 meters</td></tr>
<tr><td>Nesting sites</td><td>August 16 – October 15</td><td>200 meters</td><td>200 meters</td></tr>
<tr><td>Nesting sites</td><td>October 16 – March 31</td><td>50 meters</td><td>100 meters</td></tr>
</table></td><td>Immediately upon detection of a suspected burrowing owl burrow.</td><td>Once before start of initial construction or as often as necessary prior to resumption of any construction activities suspended longer than 30 days.

Maintenance of avoidance buffers established prior to start of construction shall be monitored continuously until completion of construction.</td><td>City of Fowler</td><td>Written notification to local CDFW office and CNDDB and written report from qualified biologist to City documenting establishment of and recommended maintenance of disturbance-free buffers in accordance with schedule set forth in mitigation measure. .</td><td></td></tr>
</table>

Mitigation Monitoring and Reporting Program					
Mitigation Measure/Condition of Approval	**When Monitoring is to Occur**	**Frequency of Monitoring**	**Agency Responsible for Monitoring**	**Method to Verify Compliance**	**Date, time and Initials of Authorized PID Personnel Verifying Compliance**
BIO-5c (Consultation with CDFW and Passive Relocation): If avoidance of an active burrowing owl burrow is not feasible, CDFW shall be immediately consulted to determine the best course of action, which may include passive relocation during non-breeding season. Passive relocation and/or burrow exclusion shall not take place without coordination with CDFW and preparation of an approved exclusion and relocation plan.	Immediately upon detection of a suspected active burrow that cannot be avoided.	At least once upon each detection of an unavoidable suspected burrowing owl burrow and thereafter pursuant to recommendations of qualified biologist and CDFW until completion of construction.	City of Fowler	Written notification to local CDFW office and written report from qualified biologist (in coordination with CDFW) to City documenting establishment of and implementation of an approved exclusion and relocation plan.	
San Joaquin Kit Fox: General mitigation measure BIO-1 (WEAP Training) requires all construction personnel to attend a mandatory education program, which will include a detailed description of the San Joaquin kit fox and habitat requirements, color photographs or illustrations, an explanation of the conservation status of this species and its coverage under State and federal regulations, penalties for violating said regulations, and a list of required measures to reduce impacts to the species during construction. General mitigation measure BIO-3 (Construction Operational Hours) limits construction activities to daylight hours which would reduce the likelihood of encountering a kit fox onsite.					

Mitigation Monitoring and Reporting Program					
Mitigation Measure/Condition of Approval	When Monitoring is to Occur	Frequency of Monitoring	Agency Responsible for Monitoring	Method to Verify Compliance	Date, time and Initials of Authorized PID Personnel Verifying Compliance
BIO-6a (Pre-construction SJKF Burrow Survey): Within 30 days prior to the start of construction, a pre-construction survey for San Joaquin kit fox individuals and suitable burrows shall be conducted on and within 200 feet of proposed work areas. Any burrows within the survey area that are determined to be suitable for use by the SJKF shall be monitored for a period of three days using tracking medium and/or remotely triggered cameras. If an active kit fox den is detected within or adjacent to the Project area, construction will be delayed, and CDFW and USFWS shall be consulted to determine the best course of action.	For a period of 3 days within 30-days prior to start initiation of ground disturbing activities, or if any construction is suspended for more than 30 days, then for a period of 3 days within 30 days prior to resumption of construction.	Once before start of initial construction or as often as necessary prior to resumption of any construction activities suspended or delayed longer than 30 days.	City of Fowler	Written pre-construction Survey Report from qualified biologist to City documenting results of preconstruction survey and any recommendations needed for follow-up best course of action, monitoring and reporting.	
BIO-6b (Minimization): The Project shall observe all minimization and protective measures from the Construction and On-Going Operational Requirements of the USFWS 2011 Standardized Recommendations, including, but not limited to: construction speed limits, covering of pipes, installation of escape structures, restriction of herbicide and rodenticide use, proper disposal of food items and trash, prohibition of pets and firearms, and completion of an employee education program.	Continuously throughout construction	Continuously throughout construction. Failures to meet performance standards shall be immediately corrected and maintained through	City of Fowler through contractual agreement with all hired contractors performing project-related construction on- or off-site	Written report from hired contractors to document and date monitoring and results in maintaining and achieving mitigation performance requirements.	

Mitigation Monitoring and Reporting Program					
Mitigation Measure/Condition of Approval	**When Monitoring is to Occur**	**Frequency of Monitoring**	**Agency Responsible for Monitoring**	**Method to Verify Compliance**	**Date, time and Initials of Authorized PID Personnel Verifying Compliance**
		completion of construction.			
BIO-6c (Mortality Reporting): The Sacramento Field Office of USFWS and the Fresno Field Office of CDFW will be notified in writing within three working days in the case of the accidental death or injury to a San Joaquin kit fox during construction. Notification must include the date, time, and location of the incident and any other pertinent information.	Continuously throughout construction and within 3 days of accidental death or injury event.	Upon the discovery of accidental injury or death of a suspected protected species	City of Fowler	Written notification	
Cultural Resources					
CUL-1 (Archaeological Remains): In the event that archaeological remains are encountered at any time during development or ground-moving activities within the entire project area, all work in the vicinity of the find shall halt until a qualified archaeologist can assess the discovery.	Continuously during ground disturbing construction activity.	Upon the discovery of archaeological remains	City of Fowler	Archaeologist's assessment	

Mitigation Monitoring and Reporting Program					
Mitigation Measure/Condition of Approval	**When Monitoring is to Occur**	**Frequency of Monitoring**	**Agency Responsible for Monitoring**	**Method to Verify Compliance**	**Date, time and Initials of Authorized PID Personnel Verifying Compliance**
CUL-2 (Human Remains) If human remains are uncovered, or in any other case when human remains are discovered during construction, the Fresno County Coroner is to be notified to arrange their proper treatment and disposition. If the remains are identified—on the basis of archaeological context, age, cultural associations, or biological traits—as those of a Native American, California Health and Safety Code 7050.5 and Public Resource Code 5097.98 require that the coroner notify the NAHC within 24 hours of discovery. The NAHC will then identify the Most Likely Descendent who will determine the manner in which the remains are treated.	Continuously during ground disturbing construction activity.	Upon the discovery of suspected human remains	City of Fowler	Coroner's assessment	
Green House Gas Emissions					
GHG-1 Site design and building placement shall minimize barriers to pedestrian access and interconnectivity. Physical barriers such as walls, berms, landscaping, and slopes between residential and nonresidential uses that impede bicycle or pedestrian circulation are eliminated.	During project design phase.	Once, prior to issuance of building permits	City of Fowler	Site plan approval.	
GHG-2: The Project shall install Energy Star labeled roof materials	During project design phase.	Once, prior issuance of building permits	City of Fowler	Building Permit issuance.	
GHG-3: The Project shall optimize building's thermal distribution by separating ventilation and thermal conditioning systems.	During project design phase.	Once, prior to construction and the issuance of building permits	City of Fowler	Building Permit issuance.	

Mitigation Monitoring and Reporting Program					
Mitigation Measure/Condition of Approval	When Monitoring is to Occur	Frequency of Monitoring	Agency Responsible for Monitoring	Method to Verify Compliance	Date, time and Initials of Authorized PID Personnel Verifying Compliance
Traffic & Transportation					
TRA-1 (Manning Avenue/SR99): The Project applicant shall provide a signalized intersection with a design life of at least 10-years or convert the northbound off ramp intersection to a two-lane roundabout. Implementation of the above mitigation measure will reduce impacts as the measure is completed. As shown in Table 3 37 the signalization of the intersection will improve LOS to LOS A in the short-term but will not be a long-term solution. Therefore, the long-term impact is significant and unavoidable unless or until the City of Fowler, County of Fresno, Fresno COG and/or Caltrans identify or adopt a long-term funding plan for the interchange reconstruction.	During construction prior to opening day of project	Once at the completion of construction prior to opening day of project	City of Fowler in cooperation with Caltrans.	City and/or Caltrans final sign-offs on encroachment permit and building permits for intersection improvements...	

7 Organizations and Persons Consulted

7.1 NOP/NOS Distribution

7.1.1 Agencies/Organizations

California Department of Parks and Recreation 1515 E Divisadero Street, Fresno, CA 93721

California Highway Patrol 5435 E. Olive, Fresno CA 93727

California Public Utilities Commission 3620, 2600 Fresno St., Fresno CA 93721

Caltrans, District 6, David Padilla, 1352 W. Olive Ave, Fresno CA 93728

Caltrans, Division of Aeronautics 1120 N St., Sacramento, CA 95814

Central California Irrigation District 1335 W I St., Los Banos CA 93635

Department of Fish and Wildlife, Region 4, 1234 E. Shaw Ave, Fresno CA 93710

Department of Water Resources 1416 9th St., Sacramento, CA 95814

Fresno County Department of Public Works and Planning Christina Monfette Planner, 2220 Tulare Ave Suite A, Fowler, CA 93625

Fresno County Department of Public Works and Planning Bernard Jimenez, Assistant Director, 2220 Tulare Ave Suite A, Fowler, CA 93625

Fresno County Department of Public Works and Planning Chris Motta, Principal Planner, 2220 Tulare Ave Suite A, Fowler, CA 93625

Fresno County Department of Public Works and Planning Marianne Mollring, Senior Planner, 2220 Tulare Ave Suite A, Fowler, CA 93625

Fresno County Department of Public Works and Planning Brian Spaunhurst, Planner, 2220 Tulare Ave Suite A, Fowler, CA 93625

Fresno County Department of Public Works and Planning Steve White 2220 Tulare Ave Suite A, Fowler, CA 93625

Native American Heritage Commission, Cultural and Environmental Department, 1550 Harbor Blvd., Ste 100, West Sacramento, CA 95691

Regional Water Quality Control Board, Region 5 (Fresno) Resources Agency 1685 E St. Fresno, CA 93706

Selma-Kings-Fowler County Sanitation District Frank Hernandez

7.1.2 Sovereign Nations

Big Sandy Rancheria of Western Mono Indians, Elizabeth D. Kipp, Chairperson, PO Box 337, Auberry, CA 93602

Cold Springs Rancheria, Carol Bill, Chairperson, PO Box 209, Tollhouse, CA 93667

Dumna Wo-Wah Tribal Government, Robert Ledger SR, Chairperson, 2216 East Hammond St., Fresno, CA 93703

Dunlap Band of Mono Indians, Chairperson, Box 44, Dunlap, CA 93621

Kings River Choinumni Farm Tribe, Stan Alec, 3515 East Fedora Ave, Fresno, CA 93726

North Fork Mono Tribe, Ron Goode, Chairperson, 13396 Tollhouse Road, Clovis, CA 93619

Picayune Rancheria of Chukchansi Indians, Claudia Gonzalez, Chairperson, 8080 Palm Ave, Ste 207, Fresno, CA 93711

Santa Rosa Indian Community of the Santa Rosa Rancheria, Ruben S. Barrios Sr., Chairperson, PO Box 8, Lemoore, CA 93245

Table Mountain Rancheria of California, Bob Pennell, Cultural Resources Director, PO Box 410, Friant, CA 93626

Traditional Choinumni Tribe, David Alvarez, Chairperson, 2415 E. Houston Ave, Fresno, CA 93720

Wuksache Indian Tribe/Eshom Valley Band, Kenneth Woodrow, Chairperson, 1179 Rock Haven Ct., Salinas, CA 93906

7.1.3 Businesses

Bains Manjit & Kawaldeep Waraich Jasdeep & Hardish 2702 Vineyard Place, Fowler CA 93625

Boscacci Group LLC P O Box 1637 Lafayette CA 94549

FFI Investments LP/Maxco Supply Inc P O Box 814 Parlier CA 93648

Fortune Investment Group LLC 3040 Fairway Madera CA 93637

Grub Shack 99 2810 E Manning Ave Fowler CA 93625

Mid Valley Packaging and Supply 2240 E Valley Dr Fowler CA 93625

Southern California District Council of The Assemblies of God 17951 Cowan Irvine CA 92614

Temperance CSD Properties LLC P O BOX 96 2004 S Temperance Fowler CA 93625

Three Crowns Industrial Park INC 5362 S Peach Fresno CA 93725

Waste Management 4333 E. Jefferson Ave, Fresno, CA 93725

7.1.4 Individuals

Anderson Michael L & Elizabeth E 41275 Camino Del Vino, Temecula Ca 92592

Anderson Michael L & Elizabeth E 7323 E Manning Ave, Fowler CA 93625

Buford Marcelyn M Trustee Buford Oil CO 2729 E Manning Ave Fowler CA 93625

Camacho Eustolia 2833 E Manning Ave, Fowler CA 93625

Camacho Eustolia 3825 Dockery, Selma CA 93662

Nguyen Vivian Le David A 5106 Bengal Ct San Jose CA 95111

7.1.5 Scoping Meeting Attendees

Sunny Truck Wash, Jim Woods, 2713 Vineyard Pl., Fowler, CA 39625 (provided oral comments)

Sunny Truck Wash, Julie Woods, 2713 Vineyard Pl., Fowler, CA 39625 (provided oral comments)

Sunny Truck Wash, Raj, 2713 Vineyard Pl., Fowler, CA 39625 (did not speak)

Peters Engineering, John Rowland, 952 Pollasky Ave, Clovis, CA 93612(provided oral comments

Buford Oil Co., Tom Buford, 9925 8 ¾ Ave, Hanford, CA 93230(provided oral comments)

Appendix A

Initial Study

City of Fowler

Buford Oil Company Travel Center CUP 17-03 Initial Study

Fowler, CA
September 2018

Prepared for:
City of Fowler
Fowler, CA

Prepared by:
Provost & Pritchard Consulting Group
286 West Cromwell Avenue, Fresno, California 93711

EST. 1968
PROVOST & PRITCHARD
CONSULTING GROUP
An Employee Owned Company

Report Prepared for:

City of Fowler

128 South 5th Street
Fowler, CA 93625

Contact:
Dawn E. Marple, Contract City Planner
834-3113 Ext. 122

Report Prepared by:

Dawn E. Marple, Contract City Planner
Mary E. Beatie, QA/QC
Briza Sholars, Senior Planner
Trevor Stearns, Assistant Planner
Brooke Fletcher, Assistant Planner
Jackie Lancaster, Project Administrator

Contact:
Dawn E. Marple, Project Manager
559-636-1166

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1 Project Description

1.1.1 Project Title

Buford Oil Company Travel Center – Conditional Use Permit (CUP) No. 17-03 (Project)

1.1.2 Lead Agency Name and Address

City of Fowler
128 S. Fifth Street
Fowler, CA 93625

1.1.3 Contact Person and Phone Number

Lead Agency Contact
Dawn E. Marple, Contract City Planner
559-834-3113 Ext 122

CEQA Consultant
Provost & Pritchard Consulting Group
Dawn E. Marple, Project Manager
(559) 636-1166

Project Owner/Operator
Buford Oil Company
Tom Buford
559-582-9028

1.1.4 Project Location

The Project would be located at 2747 East Manning Avenue, Fowler, CA 93625, in the corporate limits of the City of Fowler and within Section 23, Township 15S South, Range 21E East, MDB&M. The Project site is also identified as Assessor Parcel No. (APN) 345-180-03. The Project site is located just north of East Manning Avenue between State Route 99 and South Golden State Boulevard.

1.1.5 Latitude and Longitude

The centroid of the parcels is 36˚36'23.1"N, 119˚39'29.8"W

1.1.6 General Plan Designation

General Commercial

1.1.7 Zoning

C-3 (General Commercial)

1.1.8 Description of Project

The Project includes the design and construction of the Buford Oil Company Travel Center on approximately 19-acres located in the Golden State Industrial corridor, on APN 345-180-30. Currently, there are automobile and diesel fueling islands, commercial truck parking, and traveler's amenities that are developed on approximately half of the parcel. The other approximate half is comprised of vacant land and a ponding basin. The Project would involve the demolition of the current uses and the development of diesel and gasoline fueling facilities, traveler amenities such as: restrooms, a lounge, and seating, 2 drive-through restaurants, a 24-hour diner, a 4-story hotel with 120 rooms, and parking facilities -for automobiles and commercial trucks classified under a Conditional Use Permit Application No. 17-03 pursuant to the City of Fowler Zoning Ordinance Section. 9-5.1205.

1.1.9 Surrounding Land Uses and Setting:

The Project is located in the Golden State Industrial Corridor. The Project site is surrounded by properties designated by the City General Plan as various commercial and industrial land uses and designated by the zoning map as commercial and industrial zone districts (**See Figure 1-6 and Figure 1-7)**.

West of the Project site are four parcels that are designated by the General Plan as Light Industrial and zoned as M-1 (Light Industrial). To the north, is East Valley Drive and two parcels designated by the General Plan as Light Industrial and General Commercial and zoned as C-3 (General Commercial). To the east, is a 1.9-acre parcel, developed with an operating commercial use, South Golden State Boulevard and a 25-acre parcel designated as Light Industrial by the General Plan and zoned as M-1 (Light Industrial). South of the Project are East Manning Avenue and several parcels that are designated by the General Plan as General Commercial and zoned C-3 (General Commercial).

The Project is in close proximity of property located within Fresno County. Those properties are currently operating as agricultural uses, in conformance to the Fresno County General Plan Land Use Designation and Zoning. They are located southwest and northeast of the Project.

1.1.10 Other Public Agencies Whose Approval May Be Required:

Discretionary approvals that may be required:

- City of Fowler Tentative and Final Parcel Map; to create seven parcels for sale or lease by future tenants
- State Water Resources Control Board – NPDES Construction General Permit; limits the "pollutants" discharged into a "water of the United States".

Ministerial approvals and agreements that may be required:

- City of Fowler –Building Permits; to construct the development as proposed.
- City of Fowler – Grading Permit; to allow proper on-site drainage.
- City of Fowler – Encroachment Permit; in order to improve rights-of-way.
- Regional Water Quality Control Board, Central Valley Region – Waste Discharge Requirements, to regulate treatment, storages, processing, or disposal of solid waste.
- San Joaquin Valley Air Pollution Control District –Regulation VIII – Fugitive Dust Control, Rule 9510 – Indirect Source Review Air Impact Assessment, to fulfill the District's emission reduction commitments for development projects.

1.1.11 Consultation with California Native American Tribes

The Project is subject to Native American consultation pursuant to California Public Resources Code Section 21080.3.1 (AB 52, 2014). Under this code provision, the lead agency, within 14 days of determining that an application is complete, must notify any California Native American Tribe that has previously requested such notification about the Project and inquire whether the Tribe wishes to initiate formal consultation. Tribes have 30 days from receipt of notification to request formal consultation. The lead agency then has 30 days to initiate the consultation, which then continues until the parties come to an agreement regarding necessary mitigation or agree that no mitigation is needed, or one or both parties determine that negotiation occurred in good faith, but no agreement will be made.

The City contacted the Santa Rosa Indian Community of the Santa Rosa Rancheria by certified/return receipt mail on November 17, 2017, in accordance with PRC Section 21080.3.1 to initiate their requested formal consultation.

On November 17, 2017, the City also sent a request to the Native American Heritage Commission (NAHC) to request its identification of other Native American tribes that could be traditionally and culturally affiliated with the geographic area of the Project. Separately, Applied Earthworks, on January 12, 2018 sent a request to the NAHC and received a list of Native American tribes exactly like the one below.

Certified/Return Receipt letters were sent out to all Tribes identified by NAHC and as listed below on (date) as a result of the Records and Sacred Lands File request:

- *Table Mountain Rancheria of California*
- *Big Sandy Rancheria of Western Mono Indians*
- *Cold Springs Rancheria*
- *Wuksache Indian Tribe/Eshom Valley Band*
- *Dunlap Band of Mono Indians*
- *Picayune Rancheria of Chukchansi Indians*
- *Dumna Wo-Wah Tribal Government*
- *Traditional Choinumni Tribe*
- *North Fork Mono Tribe*
- *Kings River Choinumni Farm Tribe*

The City received signed return confirmations that all letters were received. None of the Tribes listed above, including the Santa Rosa Indian Community of the Santa Rosa Rancheria responded within the allowed ~-day comment period.

Environmental Factors Potentially Affected

The environmental factors checked below would be potentially affected by this Project, as indicated by the checklist and subsequent discussion on the following pages.

☐ Aesthetics	☐ Agriculture Resources	☒ Air Quality
☒ Biological Resources	☒ Cultural Resources	☐ Geology/Soils
☒ Greenhouse Gas Emissions	☒ Hazards & Hazardous Materials	☒ Hydrology/Water Quality
☐ Land Use/Planning	☐ Mineral Resources	☐ Noise
☐ Population/Housing	☐ Public Services	☐ Recreation
☒ Transportation/Traffic	☐ Tribal Cultural Resources	☒ Utilities/Service Systems
☒ Mandatory Findings of significance		

DETERMINATION: (To be completed by the Lead Agency)

On the basis of this initial evaluation:

☐ I find that the proposed Project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.

☐ I find that although the proposed Project could have a significant effect on the environment, there will not be a significant effect in this case because revisions in the project have been made by or agreed to by the project proponent. A MITIGATED NEGATIVE DECLARATION will be prepared.

☒ I find that the proposed Project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.

☐ I find that the proposed Project MAY have a "potentially significant impact" or "potentially significant unless mitigated" impact on the environment, but at least one effect 1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and 2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed.

☐ I find that although the proposed Project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier EIR or NEGATIVE DECLARATION pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier EIR or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the proposed Project, nothing further is required.

Dawn E Marple
Signature

9/27/2018
Date

Dawn E. Marple, City Planner
Printed Name/Position

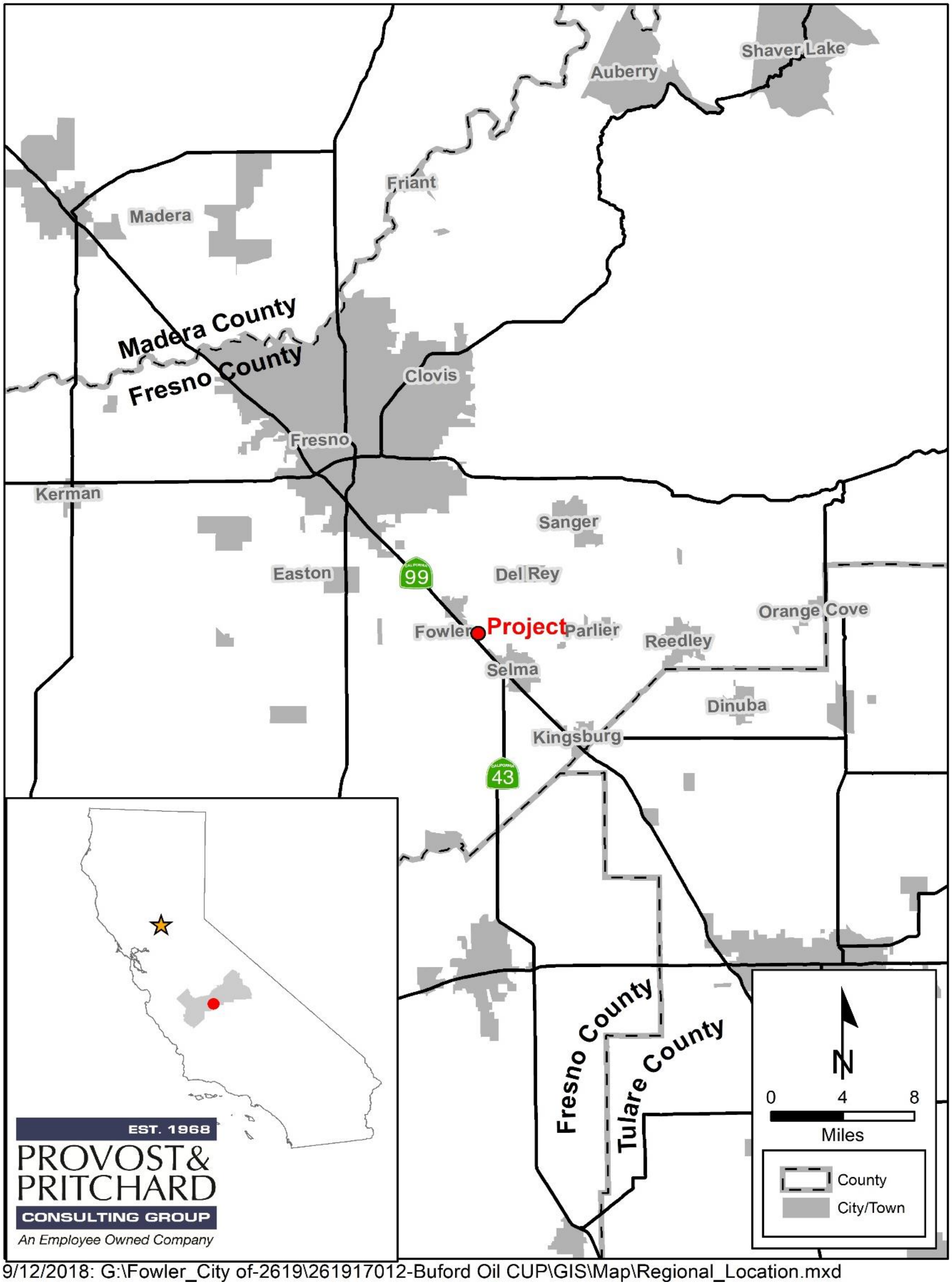

Figure 1-1. Regional Location

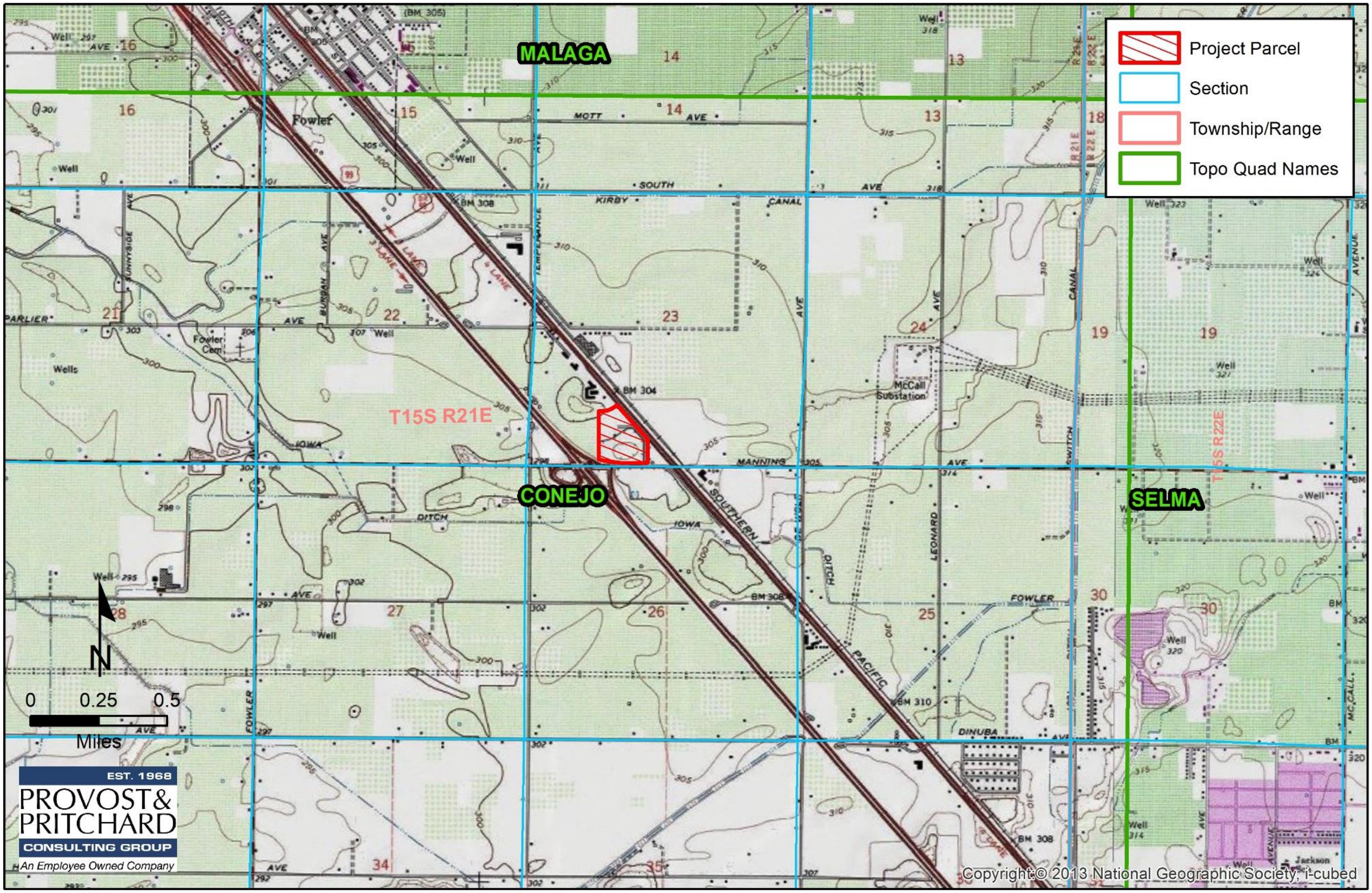

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Figure 1-2. Topographical Map

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Figure 1-3. Existing Conditions

Figure 1-4. Illustrated Site Plan

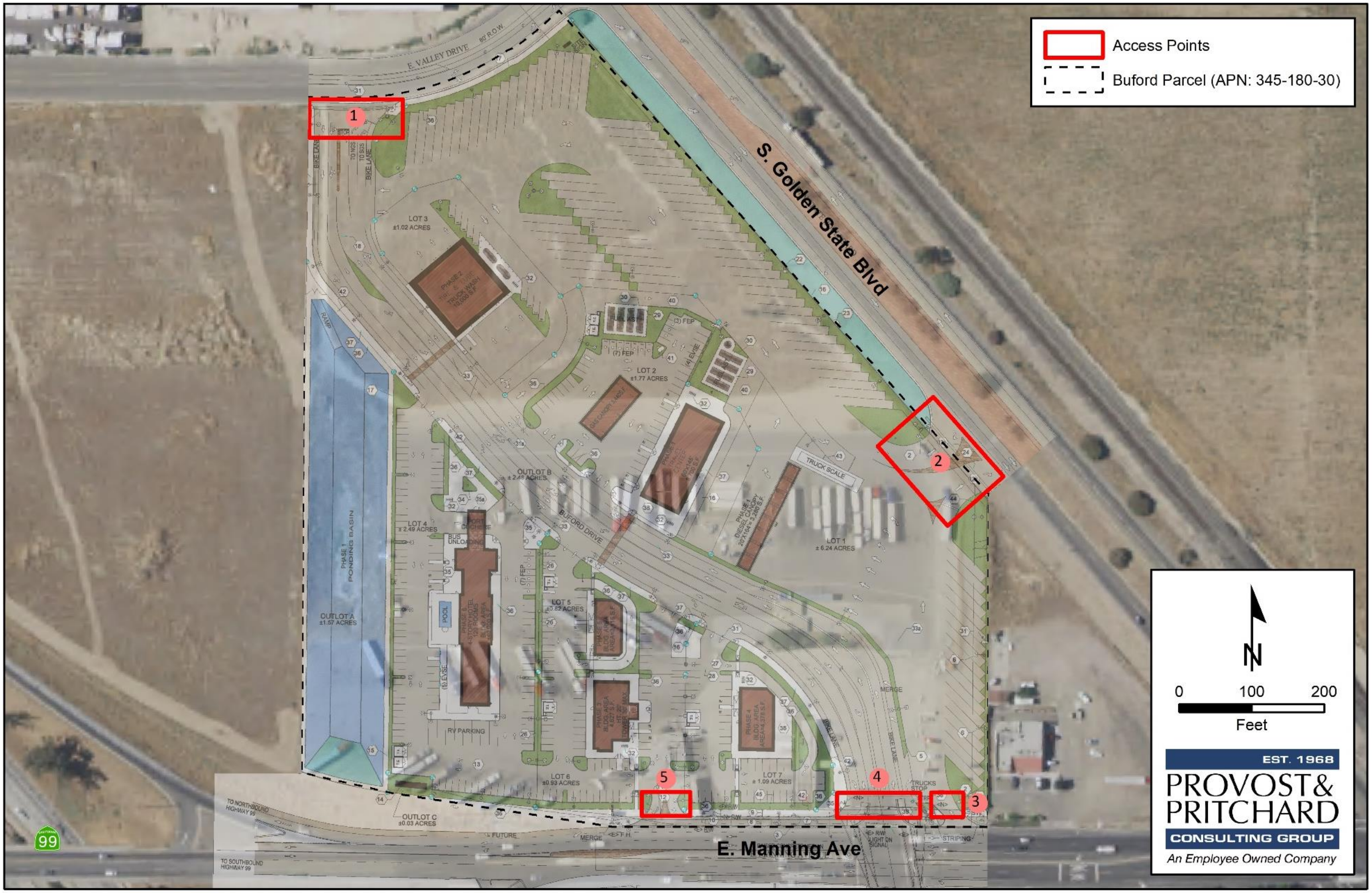

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Figure 1-5. Access Points

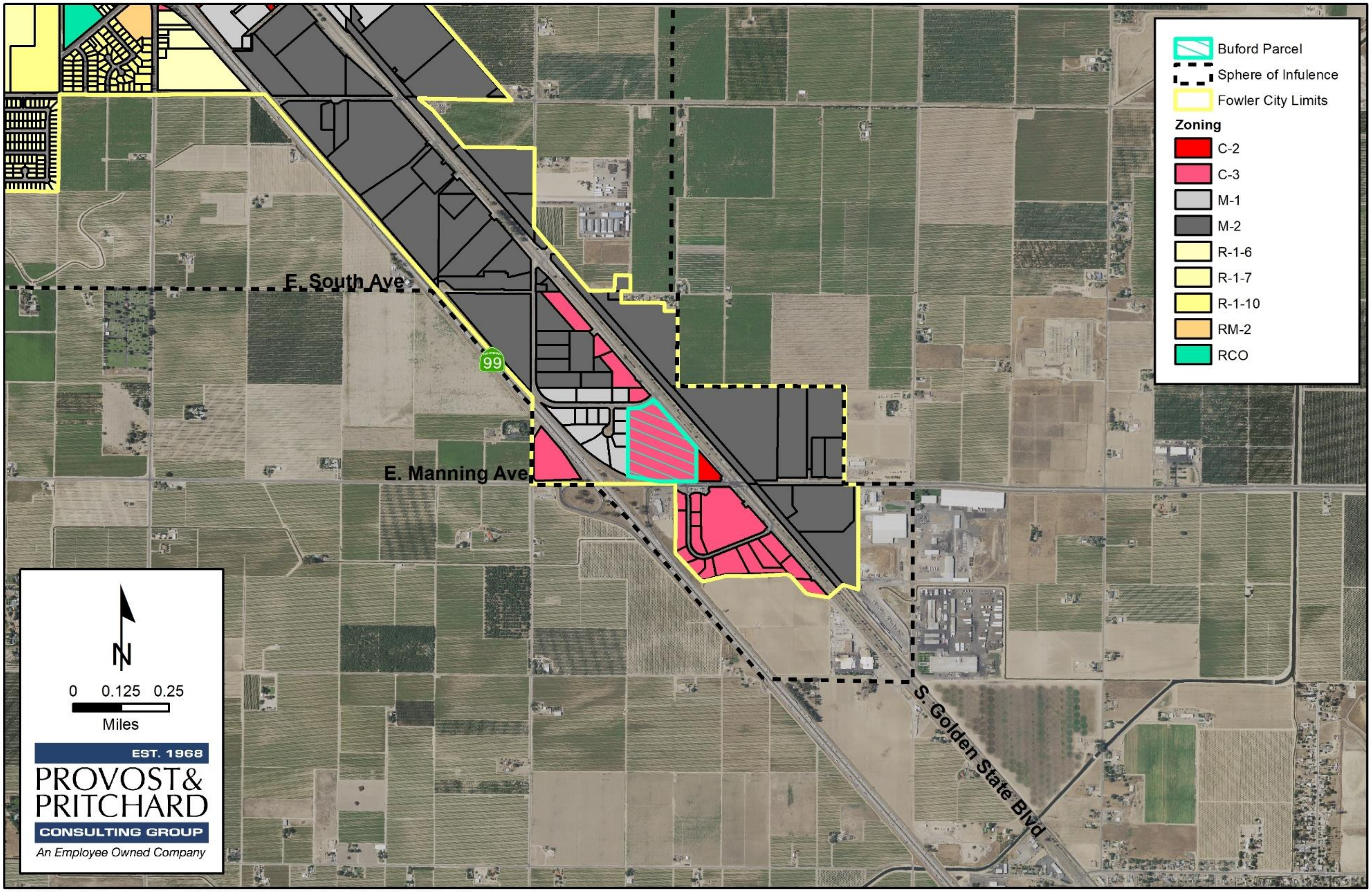

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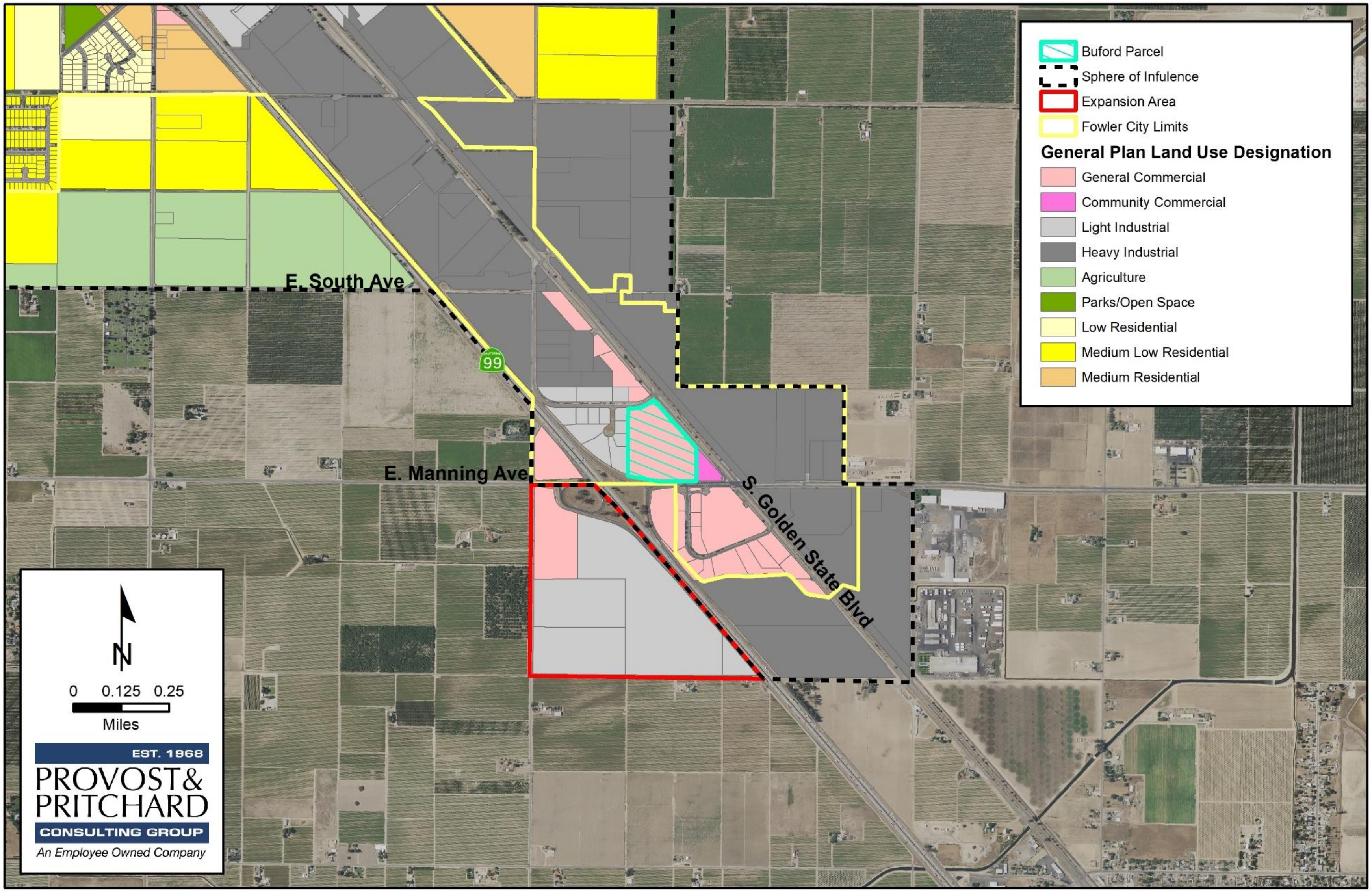
Figure 1-6. Zoning Map



6/11/2018 : G:\Fowler_City of-2619\261917012-Buford Oil CUP\GIS\Map\General Plan.mxd

Figure 1-7. General Plan Map

2 Impact Analysis

2.1 Aesthetics

Table 2-1. Aesthetics Topics

Aesthetics				
Would the project:	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less than Significa nt Impact	No Impact
a) Have a substantial adverse effect on a scenic vista?	☐	☐	☒	☐
b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?	☐	☐	☐	☒
c) Substantially degrade the existing visual character or quality of the site and its surroundings?	☐	☐	☐	☒
d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?	☐	☐	☒	☐

2.1.1 Environmental Setting

The Project site is located along the floor of the San Joaquin Valley in northeast Fowler, which lies along State Route 99. The predominant landscape feature of the San Joaquin Valley is a wide variety of agricultural land. Regional views from the valley floor are generally limited due to the flatness of the region, however, the Sierra Nevada Mountains are the primary scenic vista, visible to the east on clear days. The City of Fowler is urbanized and incorporated city with small town atmosphere surrounded by agricultural land (**See Figure 1-1).**

Approximately half of the Project site is currently developed with an automobile and diesel fueling islands, commercial truck parking, and traveler's amenities. The other half of the Project site is vacant/disturbed land. To the east is a vacant parcel that will be the location of the approved Maxco Packaging Facility. A church, drive-through restaurant, and an agricultural machinery business are to the south, State Route 99 to the west, and Mid Valley Packaging Facilities and Evanswood Apartments to the north. Surrounding lands within the City's Golden State Industrial Corridor are zoned for various Industrial and Commercial uses. (**See Figure 1-6)** The Project site is visible from State Route 99, Golden State Boulevard, and the surrounding Industrial and Commercial developments. Scenic vistas cannot be viewed from the Project site, except for a partial glimpse of the Sierra Nevada Mountains to the east on a low haze/ozone day. Surrounding sites may have similar partial glimpse of the Sierra Nevada on clear days.

A portion of State Route 180 located more than 20 miles east of the Project site is designated as a state scenic highway, and although not officially designated, a portion of State Route 168 located more than 20 miles to the north is eligible for state scenic highway status. There are no designated state scenic highways within the City of Fowler. **See Figure 2-2-1**

2.1.2 Regulatory Setting

2.1.2.1 Federal

Federal regulations relating to aesthetics do not apply to the Project since there are no federally designated lands or rivers on the site or in the vicinity, no federal approvals are needed to construct the Project and no federal money being used to construct or implement the Project.

2.1.2.2 State

California Building Code Title 24 Outdoor Lighting Standards: The requirements vary according to the "Lighting Zone" in which the equipment is located in. The Standards contain lighting power allowances for newly installed equipment and specific alterations that are dependent on the Lighting Zone in which the Project is located. Lighting power allowance is defined as the load of any lighting equipment in any defined area, or the watts per square foot of the lighting equipment. Existing outdoor lighting systems are not required to meet these lighting power allowances. However, alterations that increase outdoor lighting application that is regulated by the Standards, must meet the lighting power allowances for newly installed equipment.

The Standards base the lighting power allowances for new or increased light sources on how bright the surrounding conditions are. The least power is allowed in Lighting Zone 1 and increasingly more power is allowed in Lighting Zones 2, 3, and 4. Government designated parks, recreation areas and wildlife preserves are Lighting Zone 1 where brightness of new lighting would be the most limited; rural areas are Lighting Zone 2 where the intrusion of brighter lights might be more annoying; and urban areas are Lighting Zone 3 where the need for brighter lighting might be expected or needed. Lighting Zone 4 is a special use district that may be adopted by a local government. The proposed Project is located in an urban area; thereby, it is in Lighting Zone 3.

2.1.2.3 Local

Fowler 2025 General Plan Update[1]: The City of Fowler 2025 General Plan Update Land Use Element contains the following policy that relates to aesthetics and which has potential relevance to the Project's California Environmental Quality Act (CEQA) review:

- *A minimum of 10% of the surface area of all commercial developments shall be landscaped. Trees shall be planted within the parking lot such that a minimum of 50% of the parking lot is shaded by tree canopies when fully grown.*
- *Require site plan review and architectural review for all multi-family, commercial, and industrial development, including provisions for building setbacks, lot coverage, parking, access and circulation, outdoor lighting, signage, and landscaping.*

Zoning Ordinance[2]: The Project is subject to the City of Fowler Zoning Ordinance. The City of Fowler Zoning Ordinance establishes the allowed uses as well as applicable setbacks, parking and sign standards, building height limits, and building densities for each zone district and also sets forth uses that are subject to a Conditional Use Permit (CUP) within each Zone district. Specifically, permits for conditional uses ensure that proposed lighting is so arranged as to deflect the light away from adjoining properties. Furthermore, projects located within the Highway Beautification Overlay (HB) District are required to comply with a specific set of standards regarding aesthetics.

[1] Fowler 2025 General Plan Update. http://www.fowlercity.org/city_departments/general_plan/Fowler_General_Plan.pdf Accessed 13 August 2018.
[2] City of Fowler Zoning Ordinance. https://library.municode.com/ca/fowler/codes/code_of_ordinances Accessed 13 August 2018.

2.1.3 Impact Assessment

I-a) Have a substantial adverse effect on a scenic vista?

I-a) Less than Significant Impact. The Project is proposing development that is consistent with the City's Zoning Ordinance and General Plan. The Project will offer landscaping to enhance the visual appearance of the site from the northern, southern, and eastern sides of the t site abutting East Valley Drive, East Manning Avenue and South Golden State Boulevard. The Project will not cause any substantial adverse effect on a scenic vista, such as a view of the Sierra Nevada Mountains on a very clear day, or visually degrade the existing vacant lot. Therefore, the Project will not result is significant adverse effects to existing scenic vistas or views of the site from surrounding properties. The impact will be less than significant and therefore no mitigation measures are required. Consequently, no further analysis of this topic is required in the EIR.

I-b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?

I-b) No Impact. The site currently has no natural features of interest. The Project site is surrounded by urban development and vacant land and is not in close proximity to a state scenic highway and does not have any trees, rock outcroppings, and historic buildings. There will be no impact, and therefore no mitigation measures are required. Consequently, no further analysis of this topic is required in the EIR.

I-c) Substantially degrade the existing visual character or quality of the site and its surroundings?

I-c) No Impact. The majority of the Project site is already developed. The remainder of the Project site, approximately half of the total acreage, is currently vacant ruderal land. The proposed redevelopment of the entire site would be consistent with the adopted land use designation and zoning for the site. The Project will conform to the existing character of the predominantly urban commercial and industrial developments that surrounding the Project site. The Project will not degrade the visual quality of the site or the surrounding area. There will be no impact, and therefore no mitigation measures are required. Consequently, no further analysis of this topic is required in the EIR.

I-d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?

I-d) Less than Significant Impact. The Project would provide exterior nighttime security lighting that would be typically expected in an urbanized area. The Project will be subject to lighting restrictions of the California Building Code Zone 3 and the City of Fowler Zoning Ordinance. Therefore, the Project is not expected to create light or glare conditions that could adversely affect nighttime vision. There will a less than significant impact and therefore no mitigation measures are required. Consequently, no further analysis of this topic is required in the EIR.

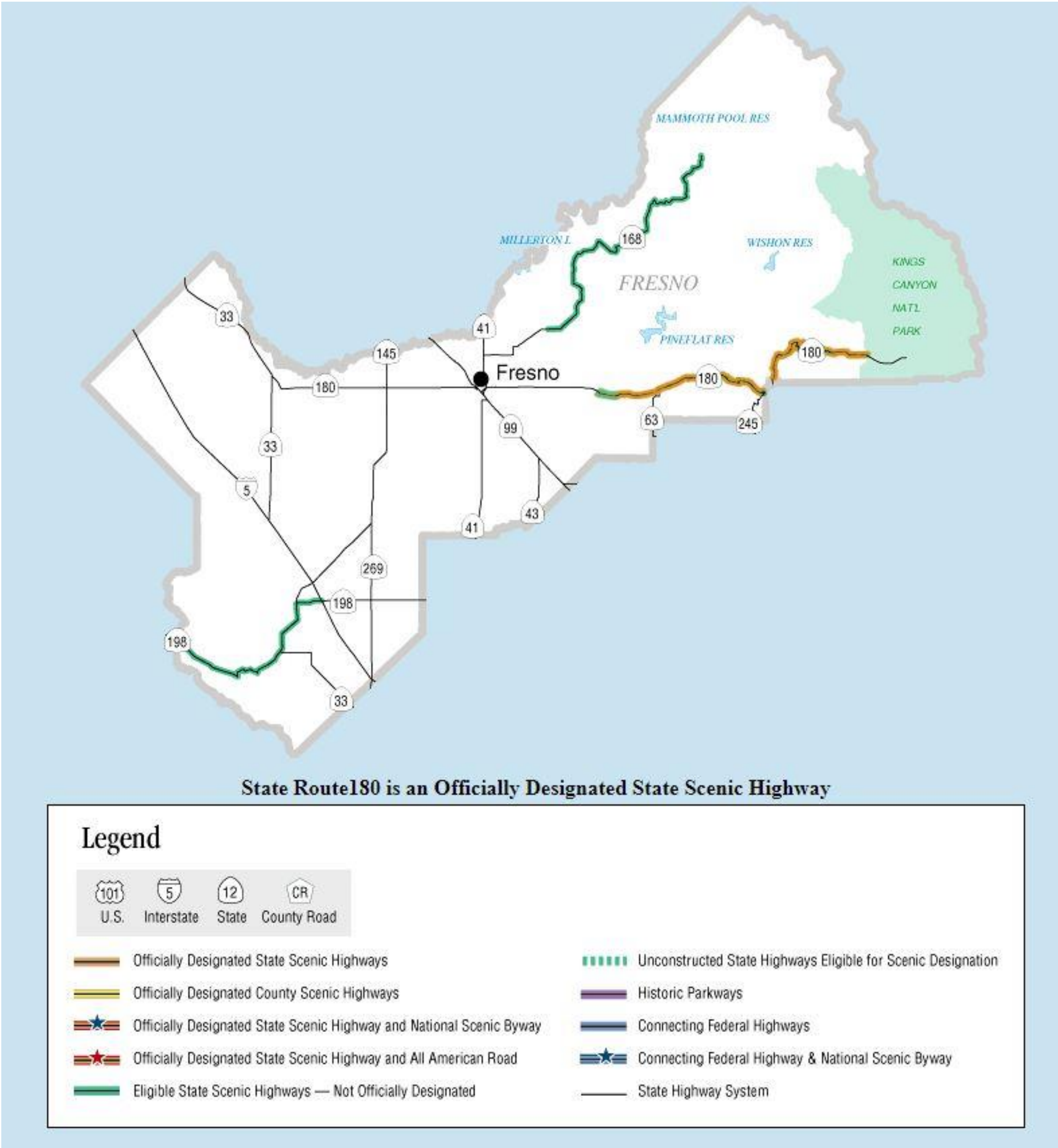


Figure 2-2-1. Scenic Highways Map

2.2 Agriculture and Forestry Resources

Table 2-2. Agriculture and Forest Resources Topics

Agriculture and Forest Resources					
Would the project:		Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less than Significant Impact	No Impact
a)	Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?	☐	☐	☐	☒
b)	Conflict with existing zoning for agricultural use, or a Williamson Act contract?	☐	☐	☐	☒
c)	Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))?	☐	☐	☐	☒
d)	Result in the loss of forest land or conversion of forest land to non-forest use?	☐	☐	☐	☒
e)	Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use?	☐	☐	☒	☐

2.2.1 Environmental Setting

The Project is located in the central San Joaquin Valley in Fresno County and more specifically within the City of Fowler, CA. The San Joaquin Valley, along with the Sacramento Valley to the north, makes up the greater California Central Valley, which is a large, flat valley that dominates the central portion of the state. The San Joaquin Valley is bounded by the forested areas of the foothills and Sierra Nevada Mountain Range to the east, the Tehachapi Mountain Range to the south, the Coast Range to the west.

California has some of the most agriculturally productive counties in the nation, and most are in the Central Valley. According to the US Department of Agriculture most recent 2012 Census of Agriculture's ranking of market value of agricultural products sold, California continues to reign as number one in the nation in total value of agricultural products sold. Furthermore, Fresno County ranked number one in total value of agricultural products sold with $4,973,041,000 in the year 2012, according to the Census.[3]

According to 2014 data gathered by the Farmland Mapping and Monitoring Program (FMMP), Fresno County contains 678,103 acres of prime farmland, as categorized in **Table 2-3**.[4]

[3]Us Department of Agriculture, 2012 Census of Agriculture
. https://www.agcensus.usda.gov/Publications/2012/Online_Resources/County_Profiles/California/index.asp Accessed 13 August 2018.
4 California Department of Conservation, Farmland Mapping and Monitoring Program. Fresno County 2014 Agricultural Land Use Data

Table 2-3. 2014 Fresno County Summary of Agricultural Land Use

Acres	Category
678,103	Prime Farmland
404,083	Farmland of Statewide Importance
93,653	Unique Farmland
191,341	Farmland of Local Importance

Although the Project is located within the City of Fowler, there are agricultural within the adjacent Fresno County jurisdiction. Within the City, there are no parcels designated as Prime Farmland, Unique Farmland, or Farmland of Statewide Importance on or adjacent to the Project parcel (**Figure 2-2**). The commercially-developed portion of the site has been designated by the Farmland Mapping and Monitoring Program as Urban Built Up Land, and the vacant portion of the site is designated as Farmland of Local Importance. **See Figure 2-2**

The property located approximately 350-feet northeast, across both the Golden State Boulevard and the Southern Pacific Railroad, is designated as Prime Farmland, zoned for agricultural land use by the Fresno County General Plan, subject to a Williamson Act contract, and is currently being used for agricultural production. Similarly, there are agricultural uses, Prime Farmland, and lands subject to Williamson Act Contracts west and northeast of the Project site, across State Route 99 and South Golden State Boulevard, located within Fresno County. **See Figure 2-3**

There are no timber or forest lands on the Project site or in the vicinity.

2.2.2 Regulatory Setting

2.2.2.1 Federal

Forestry Resources: Federal regulations relating to forestry do not apply to the Project since there are no federally designated lands or forests on the site or in the vicinity, no federal approvals are needed to construct the Project and no federal money being used to construct or implement the project.

2.2.2.2 State

California Environmental Quality Act (CEQA) Definition of Agricultural Lands: Public Resources Code Section 21060.1 defines agricultural land "as prime farmland, farmland of statewide importance, or unique farmland" as defined by California's Farmland Mapping & Monitoring Program (FMMP).

California Department of Conservation, Division of Land Resource Protection Farmland Mapping and Monitoring Project (FMMP): The FMMP was established in 1982 to identify location, quality, and quantity of agricultural lands and the conversion of these lands. The FMMP defines agricultural and non-agricultural land uses by seven categories and quantifies land use changes to non-agricultural uses throughout California. The California Department of Conservation (DOC) applies the Natural Resource Conservation Service (NRCS) soil classifications to identify agricultural lands, and these agricultural designations are used in planning for the present and future of California's agricultural land resources. Pursuant to the DOC's FMMP, these designated agricultural lands are included in the Important Farmland Maps (IFM) used in planning for the present and

. http://www.conservation.ca.gov/dlrp/fmmp/Pages/Fresno.aspx Accessed 20 June 2018.

future of California's agricultural land resources. The FMMP was established in 1982 to assess the location, quality, and quantity of agricultural lands and the conversion of these lands. The FMMP provides analysis of agricultural land use and land use changes throughout California. The DOC has a minimum mapping unit of 10 acres, with parcels that are smaller than 10 acres being absorbed into the surrounding classifications.

The list below provides a comprehensive description of all the categories mapped by the DOC. Collectively, lands classified as Prime Farmland, Farmland of Statewide Importance, and Unique Farmland are referred to as Farmland.[5]

- Prime Farmland. Farmland that has the best combination of physical and chemical features able to sustain long-term agricultural production. This land has the soil quality, growing season, and moisture supply needed to produce sustained high yields. Land must have been used for irrigated agricultural production at some time during the four years prior to the mapping date.
- Farmland of Statewide Importance. Farmland similar to Prime Farmland but with minor shortcomings, such as greater slopes or less ability to store soil moisture. Land must have been used for irrigated agricultural production at some time during the four years prior to the mapping date.
- Unique Farmland. Farmland of lesser quality soils used for the production of the State's leading agricultural crops. This land is usually irrigated but may include non-irrigated orchards or vineyards as found in some climatic zones in California. Land must have been cropped at some time during the four years prior to the mapping date.
- Farmland of Local Importance. Land of importance to the local agricultural economy as determined by each county's board of supervisors and a local advisory committee.
- Grazing Land. Land on which the existing vegetation is suited to the grazing of livestock. This category was developed in cooperation with the California Cattlemen's Association, University of California Cooperative Extension, and other groups interested in the extent of grazing activities. The minimum mapping unit for Grazing Land is 40 acres.
- Urban and Built-up Land. Land occupied by structures with a building density of at least 1 unit to 1.5 acres, or approximately 6 structures to a 10-acre parcel. This land is used for residential, industrial, commercial, institutional, public administrative purposes, railroad and other transportation yards, cemeteries, airports, golf courses, sanitary landfills, sewage treatment, water control structures, and other developed purposes.
- Other Land. Land not included in any other mapping category. Common examples include low density rural developments; brush, timber, wetland, and riparian areas not suitable for livestock grazing; confined livestock, poultry or aquaculture facilities; strip mines and borrow pits; and water bodies smaller than 40 acres. Vacant and nonagricultural land surrounded on all sides by urban development and greater than 40 acres is mapped as Other Land.

California Land Conservation Act (Williamson Act): The California Land Conservation Act of 1965, commonly referred to as the Williamson Act, is promulgated in California Government Code Sections 51200-51297.4 and is applicable only to specific land parcels within California. The Williamson Act enables local governments to enter into contracts with private landowners for the purpose of restricting specific parcels of land to agricultural or related open space uses in return for reduced property tax assessments. Private land within locally-designated agricultural preserve areas is eligible for enrollment under Williamson Act contracts. An agricultural preserve must consist of no less than 100 acres. However, in order to meet this requirement two or more parcels may be combined if they are contiguous, or if they are in common ownership.

The Williamson Act program is administered by the DOC in conjunction with local governments, which administer the individual contract arrangements with landowners. The landowner commits the parcel to a 10-

5 California Department of Conservation. FMMP – Important Farmland Map Categories http://www.consrv.ca.gov/dlrp/fmmp/mccu/Pages/map_categories.aspx. Accessed 13 August 2018

year period, or a 20-year period for property restricted by a Farmland Security Zone Contract, wherein no conversion out of agricultural use is permitted. Each year the contract automatically renews unless a notice of non-renewal is filed. In return, the land is taxed at a rate based on the actual use of the land for agricultural purposes, as opposed to its unrestricted market value. A landowner may also submit an application for immediate cancellation, provided that the proposed immediate cancellation application is consistent with the cancellation criteria stated in the California Land Conservation Act and any policies or requirements adopted by the affected county or city. Neither non-renewal nor cancellation changes the zoning of the property. Participation in the Williamson Act program is dependent on county of city adoption and implementation of the program and is voluntary for landowners.[6]

Farmland Security Zone Act: The Farmland Security Zone Act is similar to the Williamson Act and was passed by the California State Legislature in 1999 to ensure that long-term farmland preservation is part of public policy. Farmland Security Zone Act contracts are sometimes referred to as "Super Williamson Act Contracts." Under the provisions of this act, a landowner already under a Williamson Act contract can apply for Farmland Security Zone status by entering into a contract with the county. Farmland Security Zone classification automatically renews each year for an additional 20 years. In return for a further 35% reduction in the taxable value of land and growing improvements (in addition to Williamson Act tax benefits), the owner of the property agrees not to develop the property into nonagricultural uses.[7]

2.2.2.3 Local

Fowler 2025 General Plan Update[8]: The City of Fowler 2025 General Plan Update Land Use Element[9] contains the following goals or policies that relates to agriculture and which has potential relevance to the Project's California Environmental Quality Act (CEQA) review:

- *An additional issue is the preservation of prime agricultural lands and the prevention of the premature conversion of such lands to urban uses. Even with diversification, agriculture will continue to be an important component of the economy of Fowler and Fresno County.*
- *The premature conversion of producing agricultural lands is discouraged. Steps to reduce such conversion include phased growth, programmed extension of urban services, and use of Williamson Act Contracts where urbanization is not anticipated for at least 10 years.*

2.2.3 Impact Assessment

II-a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?

II-a) No Impact. There are no parcels designated as Prime Farmland, Unique Farmland, or Farmland of Statewide Importance on or adjacent to the Project parcel. The site is designated by the Farmland Mapping and Monitoring Program as Urban Built Up and Farmland of Local Importance. The Project parcel has not been farmed or cultivated for more than 10 years. The current vacant area on the Project site has been considered highly disturbed and ruderal. Furthermore, the site is zoned as C-3 (General Commercial) and is planned for commercial development. There will be no impact, and therefore no mitigation measures are required. Consequently, no further analysis of this topic is required in the EIR.

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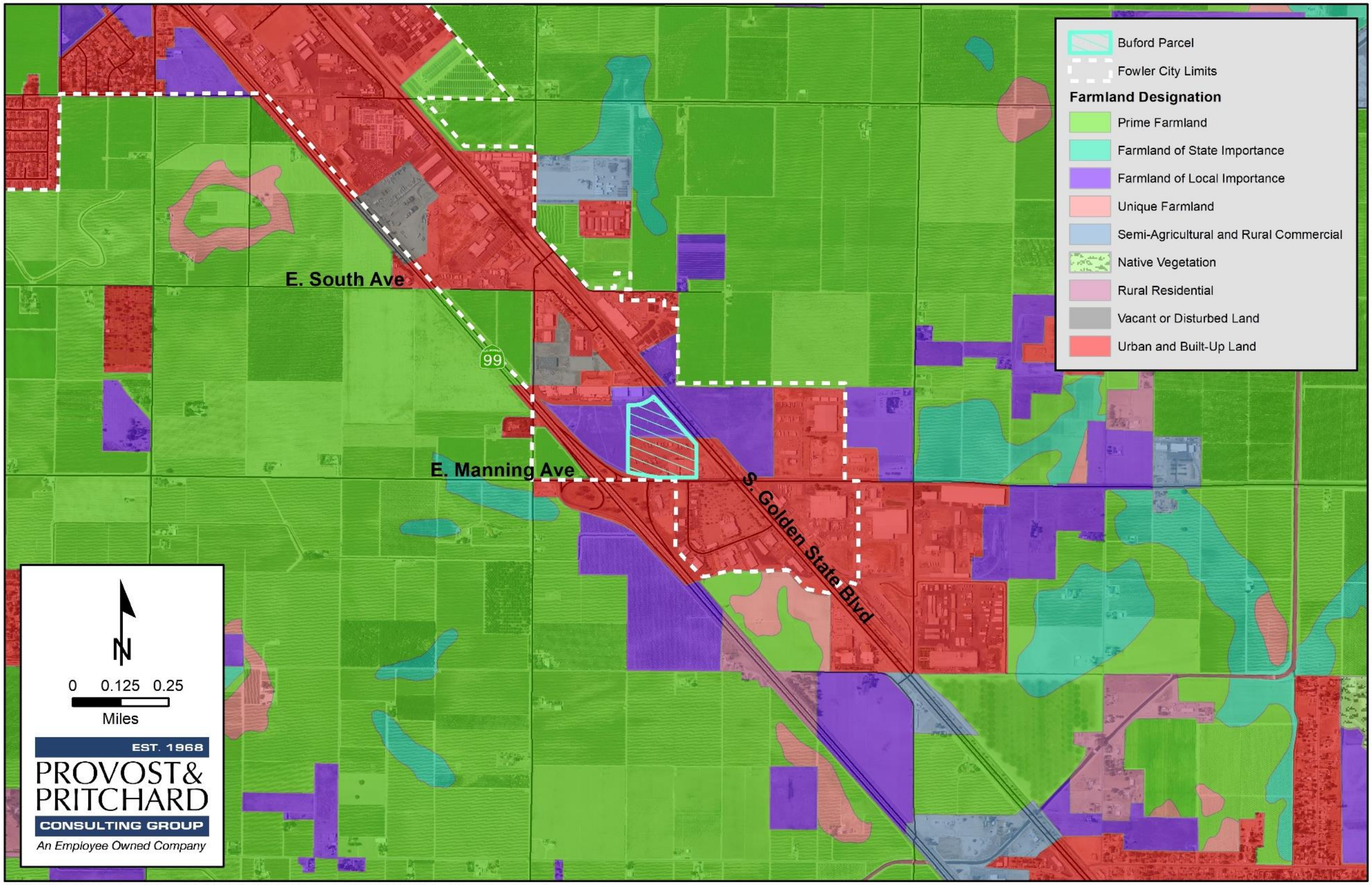
[6] California Department of Conservation. Williamson Act Program. http://www.conservation.ca.gov/dlrp/lca/Pages/Index.aspx. Accessed 13 August 2018

[7] Farmland Security Zone Act,.http://www.conservation.ca.gov/dlrp/lca/Pages/Farmland-Security-Zones.aspx Accessed 13 August 2018.

[8] Fowler 2025 General Plan Update. http://www.fowlercity.org/city_departments/general_plan/Fowler_General_Plan.pdf Accessed 13 August 2018.

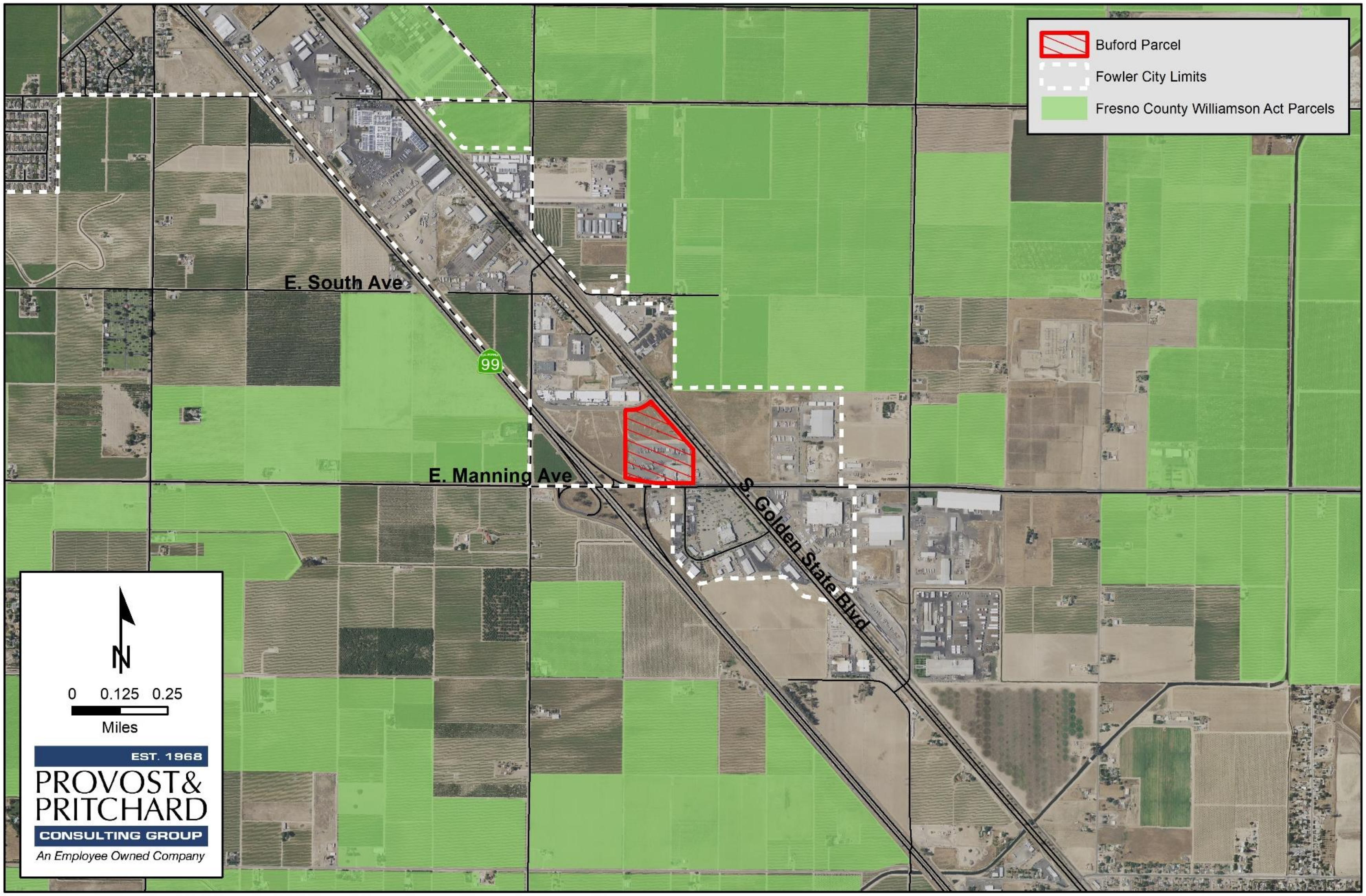


9/4/2018 : G:\Fowler_City of-2619\261917012-Buford Oil CUP\GIS\Map\Farmland.mxd

Figure 2-2. Farmland Map

II-b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?

II-b) No Impact. The site is zoned as C-3 (General Commercial) and is planned for commercial development. The site is not subject to a Williamson Act Contract, nor are the adjacent lands. The nearest parcels currently being used for agriculture and subject to a Williamson Act Contract are approximately 350-feet to the northeast, across both South Golden State Boulevard and the Southern Pacific Railroad and to the west, across State Route 99, approximately 1,300 feet (**See Figure 2-3**). There will be no impact, and no mitigation measures are required. Consequently, no further analysis of this topic is required in the EIR.



9/4/2018 : G:\Fowler_City of-2619\261917012-Buford Oil CUP\GIS\Map\Williamson Act.mxd

Figure 2-3. Williamson Act Map

II-c) Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))?

II-d) Result in the loss of forest land or conversion of forest land to non-forest use?

II-c-d) No Impact. There is no forest land, timberland, or land zoned Timberland Production by the State within the City Fowler or the vicinity of Fowler. Consequently, there will be no impact and no mitigation measures are required. No further analysis of this topic in the EIR is required.

II-e) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use?

II-e) Less Than Significant Impact. There is no forest land, timberland, or land zoned Timberland Production by the State within the City Fowler. The Project site is zoned as C-3 (General Commercial) and the adjacent lands are a mix of Industrial and Commercial zoning and use. The nearest Farmland is located approximately 350-feet to the northeast, across both South Golden State Boulevard and the Southern Pacific Railroad; and similarly, to the west, across State Route 99 approximately 1,300 feet. Both of these properties are outside of the City of Fowler Sphere of Influence and are subject to a Williamson Act Contract. Furthermore, State Route 99 provides a sufficient buffer between the Project site and the agricultural use to the west, as does Golden State Boulevard and Southern Pacific Railroad on the northeast. Impact will be less than significant, and no mitigation measures are required. No further analysis of this topic in the EIR is required.

2.3 Air Quality

Table 2-4. Air Quality Topics

Air Quality					
Would the project:		Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less than Significant Impact	No Impact
a)	Conflict with or obstruct implementation of the applicable air quality plan?	☒	☐	☐	☐
b)	Violate any air quality standard or contribute substantially to an existing or projected air quality violation?	☒	☐	☐	☐
c)	Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?	☒	☐	☐	☐
d)	Expose sensitive receptors to substantial pollutant concentrations?	☐	☐	☒	☐
e)	Create objectionable odors affecting a substantial number of people?	☒	☐	☐	☐

2.3.1 Environmental Setting

The Project lies within the eight-county San Joaquin Valley Air Basin (SJVAB), which is managed by the San Joaquin Valley Air Pollution Control District (SJVAPCD). Air quality in the SJVAB is influenced by a variety of factors, including topography, local and regional meteorology. National Ambient Air Quality Standards (NAAQS) and California Ambient Air Quality Standards (CAAQS) have been established for the following criteria pollutants: carbon monoxide (CO), ozone (O_3), sulfur dioxide (SO_2), nitrogen dioxide (NO_2), particulate matter (PM_{10} and $PM_{2.5}$), and lead (Pb). The CAAQS also set standards for sulfates (SO_4^{-2}), hydrogen sulfide (H_2S), vinyl chloride (C_2H_3Cl) and visibility.

Air quality plans or attainment plans are used to bring the applicable air basin into attainment with all State and Federal ambient air quality standards designed to protect the health and safety of residents within that air basin. Areas are classified under the Federal Clean Air Act as either "attainment", "nonattainment", or "extreme nonattainment" areas for each criteria pollutant based on whether the NAAQS have been achieved or not. Attainment relative to the State standards is determined by the California Air Resources Board (CARB). The San Joaquin Valley is designated as a State and Federal nonattainment area for O_3, a State and Federal nonattainment area for $PM_{2.5}$, a State nonattainment area for PM_{10}, a Federal and State attainment area for CO, SO_2, and NO_2, and a State attainment area for sulfates, vinyl chloride and Pb[10].

2.3.1.1 Thresholds of Significance

To assist local jurisdictions in the evaluation of air quality impacts, the SJVAPCD has published the *Guide for Assessing and Mitigating Air Quality Impacts*. This guidance document includes recommended thresholds of

[10] San Joaquin Valley Air Pollution Control District. Ambient Air Quality Standards and Valley Attainment Status. http://www.valleyair.org/aqinfo/attainment.htm. Accessed 14 August 2018.

significance to be used for the evaluation of short-term construction, long-term operational, odor, toxic air contaminant, and cumulative air quality impacts. Accordingly, the SJVAPCD-recommended thresholds of significance are used to determine whether implementation of the Project would result in a significant air quality impact. Projects that exceed these recommended thresholds would be considered to have a potentially significant impact to human health and welfare. The thresholds of significance are summarized, as follows:

Short-Term Emissions of Particulate Matter (PM_{10}): Construction impacts associated with the Project would be considered significant if the feasible control measures for construction in compliance with Regulation VIII as listed in the SJVAPCD guidelines are not incorporated or implemented, or if project-generated emissions would exceed 15 tons per year (TPY).

Short-Term Emissions of Ozone Precursors (ROG and NOx): Construction impacts associated with the Project would be considered significant if the project generates emissions of Reactive Organic Gases (ROG) or NO_X that exceeds 10 TPY.

Long-Term Emissions of Particulate Matter (PM10): Operational impacts associated with the Project would be considered significant if the project generates emissions of PM_{10} that exceed 15 TPY.

Long-Term Emissions of Ozone Precursors (ROG and NOx): Operational impacts associated with the Project would be considered significant if the project generates emissions of ROG or NO_X that exceeds 10 TPY.

Conflict with or Obstruct Implementation of Applicable Air Quality Plan: Due to the region's nonattainment status for ozone, $PM_{2.5}$, and PM_{10}, if the project-generated emissions of either of the ozone precursor pollutants (i.e., ROG and NO_x) or PM_{10} would exceed the SJVAPCD's significance thresholds, then the project would be considered to conflict with the attainment plans. In addition, if the project would result in a change in land use and corresponding increases in vehicle miles traveled, the project may result in an increase in vehicle miles traveled that is unaccounted for in regional emissions inventories contained in regional air quality control plans.

Local Mobile-Source CO Concentrations: Local mobile source impacts associated with the Project would be considered significant if the project contributes to CO concentrations at receptor locations in excess of the CAAQS (i.e. 9.0 ppm for 8 hours or 20 ppm for 1 hour).

Exposure to toxic air contaminants (TAC) would be considered significant if the probability of contracting cancer for the Maximally Exposed Individual (i.e., maximum individual risk) would exceed 10 in 1 million or would result in a Hazard Index greater than 1.

Odor impacts associated with the Project would be considered significant if the project has the potential to frequently expose members of the public to objectionable odors.

2.3.2 Regulatory Setting

2.3.2.1 Federal

U.S. Environmental Protection Agency: At the Federal level, the U.S. EPA has been charged with implementing national air quality programs. The U.S. EPA's air quality mandates are drawn primarily from the Clean Air Act (CAA), which was signed into law in 1970. Congress substantially amended the CAA in 1977 and again in 1990.

Federal Clean Air Act: The CAA required the U.S. EPA to establish National Ambient Air Quality Standards (NAAQS), and also set deadlines for their attainment. Two types of NAAQS have been established: primary standards, which protect public health, and secondary standards, which protect public welfare from non-health-related adverse effects, such as visibility restrictions.

The CAA also required each State to prepare an air quality control plan referred to as a State Implementation Plan (SIP). The CAA Amendments of 1990 added requirements for States with nonattainment areas to revise their SIPs to incorporate additional control measures to reduce air pollution. The SIP is periodically modified to reflect the latest emissions inventories, planning documents, and rules and regulations of the air basins as reported by their jurisdictional agencies. The U.S. EPA has responsibility to review all State SIPs to determine conformance with the mandates of the CAA, and the amendments thereof, and determine if implementation will achieve air quality goals. If the U.S. EPA determines a SIP to be inadequate, a Federal Implementation Plan (FIP) may be prepared for the nonattainment area that imposes additional control measures.

Toxic Substances Control Act: The Toxic Substances Control Act (TSCA) first authorized the U.S. EPA to regulate asbestos in schools and Public and Commercial buildings under Title II of the law, which is also known as the Asbestos Hazard Emergency Response Act (AHERA). AHERA requires Local Education Agencies (LEAs) to inspect their schools for ACBM and prepare management plans to reduce the asbestos hazard. The Act also established a program for the training and accreditation of individuals performing certain types of asbestos work.

National Emission Standards for Hazardous Air Pollutants: Pursuant to the CAA of 1970, the U.S. EPA established the National Emission Standards for Hazardous Air Pollutants (NESHAP). These are technology-based source-specific regulations that limit allowable emissions of HAPs.

2.3.2.2 State

California Air Resources Board: The California Air Resources Board (CARB) is the agency responsible for coordination and oversight of State and local air pollution control programs in California and for implementing the California Clean Air Act of 1988. Other CARB duties include monitoring air quality (in conjunction with air monitoring networks maintained by air pollution control districts and air quality management districts, establishing California Ambient Air Quality Standards (CAAQS), which in many cases are more stringent than the NAAQS, and setting emissions standards for new motor vehicles. The emission standards established for motor vehicles differ depending on various factors including the model year, and the type of vehicle, fuel and engine used.

California Clean Air Act: The California Clean Air Act (CCAA) requires that all air districts in the State endeavor to achieve and maintain CAAQS for ozone, CO, SO_2, and NO_2 by the earliest practical date. The CCAA specifies that districts focus particular attention on reducing the emissions from transportation and area-wide emission sources, and the act provides districts with authority to regulate indirect sources. Each district plan is required to either (1) achieve a five percent annual reduction, averaged over consecutive 3-year periods, in district-wide emissions of each nonattainment pollutant or its precursors, or (2) to provide for implementation of all feasible measures to reduce emissions. Any planning effort for air quality attainment would thus need to consider both State and Federal planning requirements.

Table 2-5. Summary of Ambient Air Quality Standard & Attainment Designation

Summary of Ambient Air Quality Standards & Attainment Designation

Pollutant	Averaging Time	California Standards*		National Standards*	
		Concentration*	Attainment Status	Primary	Attainment Status
Ozone (O_3)	1-hour	0.09 ppm	Nonattainment/ Severe	–	No Federal Standard
	8-hour	0.070 ppm	Nonattainment	0.075 ppm	Nonattainment (Extreme)**
Particulate Matter (PM_{10})	AAM	20 µg/m^3	Nonattainment	–	Attainment
	24-hour	50 µg/m^3		150 µg/m^3	
Fine Particulate Matter ($PM_{2.5}$)	AAM	12 µg/m^3	Nonattainment	12 µg/m^3	Nonattainment
	24-hour	No Standard		35 µg/m^3	
Carbon Monoxide (CO)	1-hour	20 ppm	Attainment/ Unclassified	35 ppm	Attainment/ Unclassified
	8-hour	9 ppm		9 ppm	
	8-hour (Lake Tahoe)	6 ppm		–	
Nitrogen Dioxide (NO_2)	AAM	0.030 ppm	Attainment	53 ppb	Attainment/ Unclassified
	1-hour	0.18 ppm		100 ppb	
Sulfur Dioxide (SO_2)	AAM	–	Attainment	--	Attainment/ Unclassified
	24-hour	0.04 ppm		--	
	3-hour	–		0.5 ppm	
	1-hour	0.25 ppm		75 ppb	
Lead (Pb)	30-day Average	1.5 µg/m^3	Attainment	–	No Designation/ Classification
	Calendar Quarter	–		--	
	Rolling 3-Month Average	–		0.15 µg/m^3	
Sulfates (SO_4^{-2})	24-hour	25 µg/m^3	Attainment	No Federal Standards	
Hydrogen Sulfide (H_2S)	1-hour	0.03 ppm (42 µg/m^3)	Unclassified		
Vinyl Chloride (C_2H_3Cl)	24-hour	0.01 ppm (26 µg/m^3)	Attainment		
Visibility-Reducing Particle Matter	8-hour	Extinction coefficient: 0.23/km-visibility of 10 miles or more due to particles when the relative humidity is less than 70%.	Unclassified		

** For more information on standards visit: http//www.arb.ca.gov.research/aaqs/aaqs2.pdf*
*** No Federal 1-hour standard. Reclassified extreme nonattainment for the Federal 8-hour standard May 5, 2010.*
****Secondary Standard*
Source: CARB 2015; SJVAPCD 2015

California Assembly Bill 170: Assembly Bill 170, Reyes (AB 170), was adopted by State lawmakers in 2003 creating Government Code Section 65302.1 which requires cities and counties in the San Joaquin Valley to amend their general plans to include data and analysis, comprehensive goals, policies and feasible implementation strategies designed to improve air quality.

Assembly Bills 1807 & 2588 - Toxic Air Contaminants: Within California, TACs are regulated primarily through AB 1807 (Tanner Air Toxics Act) and AB 2588 (Air Toxics Hot Spots Information and Assessment Act of 1987). The Tanner Air Toxics Act sets forth a formal procedure for CARB to designate substances as TACs. This includes research, public participation, and scientific peer review before CARB designates a substance as a TAC. Existing sources of TACs that are subject to the Air Toxics Hot Spots Information and Assessment Act are required to: (1) prepare a toxic emissions inventory; (2) prepare a risk assessment if emissions are significant; (3) notify the public of significant risk levels; and (4) prepare and implement risk reduction measures.

2.3.2.3 Local

Fowler 2025 General Plan Update: The City of Fowler 2025 General Plan Update Circulation Element contains the following goals and policies that relate to air quality, and which have potential relevance to the Project's California Environmental Quality Act (CEQA) review:

- *Design, construct, and operate the transportation system in a manner that maintains a high level of environmental quality.*
- *Control dust and mitigate other environmental impacts during all stages of roadway construction.*
- *Encourage the use of non-polluting vehicles for both public and private uses.*

San Joaquin Valley Air Pollution Control District: The SJVAPCD is the agency primarily responsible for ensuring that NAAQS and CAAQS are not exceeded and that air quality conditions are maintained in the SJVAB, within which the Project is located. Responsibilities of the SJVAPCD include, but are not limited to, preparing plans for the attainment of ambient air quality standards, adopting and enforcing rules and regulations concerning sources of air pollution, issuing permits for stationary sources of air pollution, inspecting stationary sources of air pollution and responding to citizen complaints, monitoring ambient air quality and meteorological conditions, and implementing programs and regulations required by the CAA and the CCAA.
The SJVAPCD Rules and Regulations that are applicable to the Project include, but are not limited to, the following:

Regulation VIII (Fugitive Dust Prohibitions), Regulation VIII (Rules 8011-8081): This regulation is a series of rules designed to reduce particulate emissions generated by human activity, including construction and demolition activities, carry-out and track-out, paved and unpaved roads, bulk material handling and storage, unpaved vehicle/traffic areas, open space areas, etc. If a non-residential area is 5.0 or more acres in area, a Dust Control Plan must be submitted as specified in Section 6.3.1 of Rule 8021. Additional requirements may apply, depending on total area of disturbance.

San Joaquin Valley Air Pollution Control District Thresholds of Significance. Projects that produce emissions that exceed the following thresholds shall be considered significant for a project level and/or cumulatively considerable impact to air quality. The following thresholds are defined for purposes of determining cumulative effects as the baseline for "considerable". Projects located within the SJVAPCD will be subject to the following significance thresholds identified in tons per year (TPY):

Table 2-6. SJVAPCD Air Quality Thresholds of Significance- Criteria Pollutants

SJVAPCD Air Quality Thresholds of Significance – Criteria Pollutants			
Pollutant/Precursor	Construction Emissions	Operational Emissions	
		Permitted Equipment & Activities	Non-Permitted Equipment & Activities
	Emissions (tpy)	Emissions (tpy)	Emissions (tpy)
CO	100	100	100
NO_X	10	10	10
ROG	10	10	10
SO_X	27	27	27
PM_{10}	15	15	15
$PM_{2.5}$	15	15	15

Regulatory Attainment Designations

Under the CCAA, the CARB is required to designate areas of the State as attainment, nonattainment, or unclassified with respect to applicable standards. An "attainment" designation for an area signifies that pollutant concentrations did not violate the applicable standard in that area. A "nonattainment" designation indicates that a pollutant concentration violated the applicable standard at least once, excluding those occasions when a violation was caused by an exceptional event, as defined in the criteria. Depending on the frequency and severity of pollutants exceeding applicable standards, the nonattainment designation can be further classified as serious nonattainment, severe nonattainment, or extreme nonattainment, with extreme nonattainment being the most severe of the classifications. An "unclassified" designation signifies that the data does not support either an attainment or nonattainment designation. The CCAA divides districts into moderate, serious, and severe air pollution categories, with increasingly stringent control requirements mandated for each category.

The U.S. EPA designates areas for ozone, CO, and NO_2 as "does not meet the primary standards," "cannot be classified," or "better than national standards." For SO_2, areas are designated as "does not meet the primary standards," "does not meet the secondary standards," "cannot be classified," or "better than national standards." However, the CARB terminology of attainment, nonattainment, and unclassified is more frequently used. The U.S. EPA uses the same sub-categories for nonattainment status: serious, severe, and extreme. In 1991, U.S. EPA assigned new nonattainment designations to areas that had previously been classified as Group I, II, or III for PM_{10} based on the likelihood that they would violate national PM_{10} standards. All other areas are designated "unclassified."
The State and national attainment status designations pertaining to the SJVAB are summarized in **Table 2-5**. The SJVAB is currently designated as a nonattainment area with respect to the State PM_{10} standard, ozone, and $PM_{2.5}$ standards. The SJVAB is designated nonattainment for the NAAQS 8-hour ozone and $PM_{2.5}$ standards. On September 25, 2008, the U.S. EPA re-designated the San Joaquin Valley to attainment status for the PM_{10} NAAQS and approved the PM_{10} Maintenance Plan.

2.3.3 Impact Assessment

III-a) Conflict with or obstruct implementation of the applicable air quality plan?

III-b) Violate any air quality standard or contribute substantially to an existing or projected air quality violation?

III-c) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality

standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?

III-a-c) Potentially Significant Impact. Impact sections III – a, III – b, and III - c are considered to have potentially significant impacts and will be further evaluated in an EIR. An Air Quality and Greenhouse Gas Emissions Evaluation Report will be prepared to support the evaluation in the EIR. In the EIR, this section will detail the methodology of the report and its conclusions.

III-d) Expose sensitive receptors to substantial pollutant concentrations?

III-d) Less Than Significant Impact. According to the EPA definition, "sensitive receptors include, but are not limited to, hospitals, schools, daycare facilities, elderly housing and convalescent facilities. These are areas where the occupants are more susceptible to the adverse effects of exposure to toxic chemicals, pesticides, and other pollutants."[11] Evanswood Apartment complex is located approximately 300-feet north of the northern Project site boundary. Although these apartments are not considered elderly housing, nor are they convalescent or daycare facilities, it could be argued that an apartment complex is considered a sensitive receptor; however, the apartment dwellings abut existing industrial and commercial uses, such as Mid Valley Packaging and Supply, a large factory and warehouse situated between the Evanswood Apartments and the Project site. Additionally, The Worship Center church is located approximately 800-feet south of the southern Project site boundary, and a similar argument could be made that a church is considered a sensitive receptor. Analogous to the aforementioned apartment complex, the church is surrounded by existing industrial and commercial uses, including sharing a parking lot with an Arco gas station, two mini-marts, and a construction equipment supplier.
The California Air Resources Board (CARB) publication, Air Quality and Land Use Handbook: A Community Health Perspective, recommends the following separation distances from sensitive receptors as illustrated in **Table 2-7**:

Table 2-7. Recommended Distance from Sensitive Receptors

Source Category	Recommended Distance from Sensitive Receptors
Freeways and High-Traffic Roads	500 feet
Distribution Centers	1,000 feet
Gasoline Dispensing Facilities	300 feet

Source: California Air Resources Board, Air Quality and Land Use Handbook: A Community Health Perspective. https://www.arb.ca.gov/ch/landuse.htm Accessed 21 August 2018.

There are no definitive sensitive receptors, such as schools, playgrounds, daycare facilities, elderly housing, convalescent homes, or medical facilities within one mile of the Project site. Because the Project is not located within the recommended separation distances for sensitive land uses, the Project is not anticipated to expose sensitive receptors to air pollution emissions or adversely impact these sensitive receptors.

If the neighboring church and apartment complex are to be considered sensitive receptors, the potential impacts would still be considered less than significant, since both the church and the apartment buildings are operating well beyond the recommended 300 foot distance (shown in **Table 2-7** above), from the proposed gasoline dispensing facilities. As well, both uses are existing within the Golden State Industrial Corridor, which is zoned exclusively for Industrial and Commercial Use, and thus are already exposed to effects related to industrial and commercial uses and operations. Furthermore, these two uses were also given consideration by the Planning Commission as being potential sensitive receptors during the public hearing of the Maxco Packaging Facility Site Plan Review also located within the Golden State Industrial Corridor and located a

[11] Environmental Protection Agency, Region 1 (New England). https://www3.epa.gov/region1/eco/uep/sensitivereceptors.html Accessed 27 August 2018.

similar distance away as the Buford Oil Project. In this instance the Planning Commission made the precedential determination that the church and apartments were not sensitive receptors.

Potential impacts would are therefore considered less than significant, and no mitigation measures are required. No further analysis of this topic in the EIR is required.

III-e) Create objectionable odors affecting a substantial number of people?

III-e) Potentially Significant Impact. The Project may have the potential to create potentially significant objectionable odors to a significant number of people, in particular, from truck diesel fumes and exhaust. Therefore, this potential impact will be further evaluated in the EIR.

2.4 Biological Resources

Table 2-8. Biological Resources Topics

Biological Resources				
Would the project:	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less than Significant Impact	No Impact
a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?	☒	☐	☐	☐
b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?	☐	☐	☐	☒
c) Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	☐	☐	☐	☒
d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?	☐	☐	☐	☒
e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	☐	☐	☐	☒
f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?	☐	☐	☐	☒

2.4.1 Environmental Setting

The Project site is located between State Route 99 and Golden State Boulevard in a corridor dominated by Commercial and Industrial uses in the southeastern portion of the City of Fowler, California. The City of Fowler is a small agricultural community, located in the eastern San Joaquin Valley, part of the Great Valley of California. The Valley is bordered by the Sierra Nevada Mountain Range to the east, the Coast Ranges to the west, the Klamath Mountains and Cascade Range to the north, and the Transverse Ranges and Mojave Desert to the south.

Like most of California, the San Joaquin Valley experiences a Mediterranean climate. Warm, dry summers are followed by cool, moist winters. Summer temperatures often reach above 90 degrees Fahrenheit, and the humidity is generally low. Winter temperatures are often below 60 degrees Fahrenheit during the day and rarely exceed 70 degrees.

Approximately half of the 19-acre parcel is currently developed with automobile and diesel fueling islands, commercial truck parking, and traveler's amenities. The developed lands of the travel center are not considered suitable as habitat and were not included in the biological survey report. The remaining undeveloped area of the site is a visually flat, open, vacant, consisting of annual grasses, forbs, and four trees. This habitat is best described as ruderal or disturbed annual grassland habitat characterized as fallowed agricultural land use regularly altered by routine maintenance for weed abatement

A reconnaissance-level field survey of the Project site was conducted on December 18, 2017 by Yancey Bissonnette, biologist of Alphabiotia Environmental Consulting (AEC). Contents of that study have been relied upon for much of the narrative provided in this section. The complete report of the survey findings is contained in **Appendix B**.

Prior to conducting a field survey of the site, AEC conducted research and review of desktop and database resources. Information regarding the biological resources in the vicinity of the project study area was obtained by reviewing available data from a number of resources. The data review included a search of existing databases, inventories, lists, and collections that contain information regarding the occurrence of special-status species. Resources used in this review included the following:

- California Natural Diversity Database (CNDDB) for records of sensitive plants, animals, and vegetation communities.
- California Native Plant Society (CNPS) online inventory of rare and endangered plants of California.
- Consortium of California Herbaria.
- USFWS online Critical Habitat Portal.
- California Wildlife Habitat Relationships (CWHR) life history and range maps.
- Aerial photographs on Google Earth, (Google Earth, Inc 2017).
- USFWS National Wetlands Inventory (NWI) database.
- Natural Resources Conservation Services: Web Soil Survey page (NRCS, 2017)
- The Corps of Engineers Wetlands Delineation Manual (USACE 1987);
- Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (Version 2.0) (USACE 2008);
- A Field Guide to the Identification of the Ordinary High-Water Mark (OHWM) in the Arid West Region of the Western United States (Lichvar and McColley 2008);
- Hydric Soils List of California, 2017 (Natural Resources Conservation Service 2017

Following the review of existing data and literature a survey of the site was conducted by walking meandering pedestrian transects throughout the entire site area. During the reconnaissance survey, a single detention basin was observed located near the southwest property bounds just west of the existing parking lot. The basin is surrounded by dilapidated chain link fence and littered trash. The basin's slopes and general integrity appear to be in poor shape, according to the reconnaissance survey. Litter and oil sheened water were observed in the basin. The northern portions of the site are vacant, fallow land with make-shift dirt roads, and annual weedy species of vegetation dominating most of the undeveloped areas. This habitat is classified as ruderal disturbed grassland. Observations of the surface soils indicate the site is disced at least once a year. Rutting and furrows consistent with discing activities were present. Soils of the site consist of a mix of sands and loams where one or the other is the parent material. The northern portion of the site is developed lands with pavement and buildings covering all the surfaces currently in use for the as built travel center.

Two remnant Chinaberry trees (Melia azedarach) occupy this area and were observed to be stressed and nearly dead as evidenced by the reconnaissance survey. Two very old olive trees located near the south-eastern bounds of the undeveloped open space also appear to be barely alive as evidenced by the reconnaissance survey. Naturalized non-native grasses of bromes (*Bromus diandrus* and *Bromus madritensis ssp. rubens*), and wild oats (*Avena sp.*) appear to have been the dominant grasses, while mustard (*Hirschfeldia incana*), tumbleweed / Russian thistle (*Salsola tragus*), and yarrow (*Achillea millefolium*) were also plentifully extant. At the time of the survey most annual plants had already fulfilled their lifecycle and were well past fruiting. No federal, State or CNPS listed species of plants (identified for the project in the database review) were observed during the survey. No federal or State special status species were observed during the survey. Burrows and sign of commonly occurring fossorial mammals were observed at the site and were abundant.

House finches (*Haemorhous mexicanus*) and mourning doves (*Zenaida macroura*) were observed during the biological reconnaissance survey. Cottontail rabbit (*Sylvilagus audubonii*) scat was observed throughout the site. Ground squirrel (*Spermophilus beecheyi*) burrows and pocket gopher (*Thomomys bottae*) burrows were extremely dominant and were observed in most locations throughout the site. Mice burrows were observed but little evidence was available to indicate the genus or species occurring at the site. Other species utilizing the site and identified by the presence of scat, tracks, burrow, or other indications include pocket gophers, domestic cats (*Felis catus*) and domestic dogs (*Canis lupus familiaris*). No other macro wildlife was observed during the survey. Burrow mounds of a small species of ant were observed periodically throughout the site. No other significant invertebrates were noted or observed at the time.

2.4.2 Regulatory Setting

2.4.2.1 Threatened and Endangered Species

State and federal "endangered species" legislation has provided the California Department of Fish and Wildlife (CDFW) and the U.S. Fish and Wildlife Service (USFWS) with a mechanism for conserving and protecting plant and animal species of limited distribution and/or low or declining populations. Permits may be required from both CDFW and USFWS if activities associated with the Project will result in the "take" of a listed species. "Take" is defined by the State of California as "to hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture or kill" (Fish and Game Code Section 86). "Take" is more broadly defined by the federal Endangered Species Act to include "harm" (16 USC, Section 1532(19), 50 CFR, Section 17.3). Furthermore, CDFW and USFWS are responsible agencies under CEQA. Both agencies review CEQA documents in order to determine the adequacy of their treatment of endangered species issues and to make project-specific recommendations for their conservation.

2.4.2.2 Migratory Birds

State and federal laws also protect most birds. The federal Migratory Bird Treaty Act (MBTA; 16 U.S.C., sec. 703, Supp. I, 1989) prohibits killing, possessing, or trading in migratory birds, except in accordance with regulations prescribed by the Secretary of the Interior. This act encompasses whole birds, parts of birds, and bird nests and eggs.

2.4.2.3 Birds of Prey

Birds of prey are also protected in California under provisions of Fish and Game Code Section 3503.5, which states that it is "unlawful to take, possess, or destroy any birds in the order *Falconiformes* or *Strigiformes* (birds of prey) or to take, possess, or destroy the nest or eggs of any such bird except as otherwise provided by this code or any regulation adopted pursuant thereto." Construction disturbance during the breeding season could result in the incidental loss of fertile eggs or nestlings, or otherwise lead to nest abandonment. Disturbance that causes nest abandonment and/or loss of reproductive effort is considered "taking" by the CDFW.

2.4.2.4 California Fully Protected Species

The classification of certain animal species as "fully protected" was the State of California's initial effort in the 1960s, prior to the passage of the California Endangered Species Act, to identify and provide additional protection to those species that were rare or faced possible extinction. Following CESA enactment in 1970, many fully protected species were also listed as California threatened or endangered. The fully protected species are identified, and their protections stipulated, in Fish and Game Code Sections 3511 (birds), 4700 (mammals), 5050 (reptiles and amphibians), and 5515 (fish). Fully protected species may not be taken or possessed at any time and no licenses or permits may be issued for their take, except in conjunction with necessary scientific research and protection of livestock.

2.4.2.5 Wetlands and Other Jurisdictional Waters

Natural drainage channels and adjacent wetlands may be considered "Waters of the United States" (hereafter referred to as "jurisdictional waters") subject to the jurisdiction of the U.S. Army Corps of Engineers (USACE). The extent of jurisdiction has been defined in the Code of Federal Regulations but has also been subject to interpretation of the federal courts. Jurisdictional waters generally include:

- All waters which are currently used, or were used in the past, or may be susceptible to use in interstate or foreign commerce ("navigable"), including all waters which are subject to the ebb and flow of the tide.
- All interstate waters including interstate wetlands.
- All other waters such as intrastate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds, the use, degradation or destruction of which could affect interstate or foreign commerce.
- All impoundments of waters otherwise defined as waters of the United States under the definition.
- Tributaries of waters identified in the bulleted items above.

As determined by the United States Supreme Court in its 2001 *Solid Waste Agency of Northern Cook County v. U.S. Army Corps of Engineers* (*SWANCC*) decision, channels and wetlands isolated from other jurisdictional waters cannot be considered jurisdictional on the basis of their use, hypothetical or observed, by migratory birds. Similarly, in its 2006 consolidated *Carabell/Rapanos* decision, the U.S. Supreme Court ruled that a significant nexus between a wetland and other navigable waters must exist for the wetland itself to be considered navigable, and therefore jurisdictional, water.

The USACE regulates the filling or grading of jurisdictional waters under the authority of Section 404 of the Federal Clean Water Act. The extent of jurisdiction within drainage channels is defined by "ordinary high-water marks" on opposing channel banks. All activities that involve the discharge of fill into jurisdictional waters are subject to the permit requirements of the USACE. The filling of isolated wetlands over which the USACE has disclaimed jurisdiction is regulated by the State Water Resources Control Board (SWRCB). Such permits are typically issued on the condition that the applicant agrees to provide mitigation that result in no net loss of wetland functions or values. No permit can be issued until the Regional Water Quality Control Board (RWQCB) issues a certification (or waiver of such certification) that the proposed activity will meet State water quality standards (Federal CWA Section 401 permitting).

It is unlawful to fill isolated wetlands without filing a Notice of Intent with the RWQCB. The RWQCB is also responsible for enforcing National Pollutant Discharge Elimination System (NPDES) permits, including the General Construction Activity Storm Water Permit.

CDFW has jurisdiction over the bed and bank of natural drainages and lakes according to provisions of Fish and Game Code Sections 1601 and 1602. Activities that would disturb these waters are regulated by CDFW via a Streambed Alteration Agreement. Such an agreement typically stipulates that certain measures will be implemented to protect the habitat values of impacted drainages, lakes, or ponds.

2.4.2.6 Local

The City of Fowler General Plan (1976) and the City of Fowler 2025 General Plan Update do not contain any relevant goals or policies regarding biological resources that are relevant to the Project or the Project's CEQA review.

2.4.3 Impact Assessment

IV-a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?

IV-a) Potentially Significant Impact. The Project may cause potentially significant impacts through the development of the project parcel. Since a portion of the project involves developing a large portion of vacant land, there is a chance that certain species' habitats will be modified. Therefore, this impact is potentially significant and will be further analyzed in an EIR.

IV-b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?

IV-c) Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?

IV-b-c) No Impact. The Project site and surrounding areas do not contain riparian habitat, designated natural communities, natural water features, wetlands, or jurisdictional waters. Given the absence of these biological resources of special concern, none of the State and federal regulations protecting these resources are relevant to the Project. Furthermore, no mitigation measures are necessary. There will be no impact and no mitigation measures are required. No further analysis of this topic in the EIR is required.

IV-d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?

IV-d) No Impact. The Project is located within the Golden State Industrial Corridor, which is bounded on west by State Route 99 and bounded on the east by Golden State Boulevard and Southern Pacific Railroad. The Project site does not contain any features consistent with a migratory wildlife corridor or a wildlife nursery site, nor does it contain any water features that could support fish habitat. There will be no impact and no mitigation measures are required. No further analysis of this topic in the EIR is required.

IV-e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?

IV-e) No Impact. There are no local policies or ordinances regarding biological resources relevant to the Project. Furthermore, no sensitive biological resources were observed during the biological reconnaissance survey of the site. There will be no impact and no mitigation measures are required. No further analysis of this topic in the EIR is required.

IV-f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?

IV-f) No Impact. The Project site and surrounding areas are not subject to a Habitat Conservation Plan, Natural Community Conservation Plan, or any other type of conservation plan. Furthermore, as mentioned above, no sensitive biological resources, including habitats or communities of concern were observed during the biological reconnaissance survey. There will be no impact and no mitigation measures are required. No further analysis of this topic in the EIR is required.

2.5 Cultural Resources

Table 2-9. Cultural Resources Topics

Cultural Resources					
Would the project:		Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less than Significant Impact	No Impact
a)	Cause a substantial adverse change in the significance of a historical resource as defined in §15064.5?	☒	☐	☐	☐
b)	Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?	☒	☐	☐	☐
c)	Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	☒	☐	☐	☐
d)	Disturb any human remains, including those interred outside of dedicated cemeteries?	☒	☐	☐	☐

2.5.1 Environmental Setting

According to the Cultural Resource Inventory Study, prepared by Applied EarthWorks (AE), the Project is near the eastern periphery of the San Joaquin Valley near the base of the Sierra Nevada foothills, approximately 12 miles west of the Kings River. The San Joaquin Valley is the southern half of an elongated trough called the Great Valley, a 50-mile-wide lowland that extends approximately 500 miles south from the Cascade Range to the Tehachapi Mountains. The San Joaquin Valley parallels the 400-mile stretch of the Sierra Nevada geomorphic province, which encompasses a 40- to 100-mile-wide area ranging in elevation from 400 feet above mean sea level (amsl) along the western boundary to more than 14,000 feet amsl in the east (Norris and Webb 1990:63)[**Appendix C**].

The Project site is currently partially developed. Much of the vacant land is covered in tall grasses and weeds. The vacant portion is predominately flat with the exception of a large flat-topped earthen mound, an assortment of concrete irrigation pipes, and a water pump among unidentified ornamental trees and two olive trees. Among the previously identified, there is a moderate amount of modern trash. The vacant land has been considered fallow and ruderal land.

On January 12, 2018 Applied EarthWorks, Inc. (AE), a qualified cultural resources consultant conducted literature and field cultural resource inventory of the Project area. AE's inventory included a general cultural records search and a Sacred Lands File search at the regional information center of the California Historical Resources Information System (CHRIS) at California State University, Bakersfield, and outreach with local tribes and individuals. This purpose of this research and outreach was to identify previously recorded cultural resources in and around the proposed development and a better understanding of historical land use in the Project area and likelihood for significant buried cultural deposits. A pedestrian survey of the approximate 19-acre Project area utilizing 15 to 20-meter/foot transects was also performed on January 4, 2018. Additionally, AE evaluated the eligibility of one historic-era archaeological site in the Project area for inclusion in the California Register of Historical Resources.

2.5.1.1 Records Search

On December 27, 2017, AE requested a records search from the Southern San Joaquin Valley Information Center (SSJVIC) of the CHRIS at California State University, Bakersfield. The records search encompassed the 19-acre Project area plus all land within a half- mile radius of the Project area. SSJVIC staff consulted cultural resource location and survey base maps, reports of previous investigations, cultural resource records, the listings of the Office of Historic Preservation Historic Properties Directory, Archaeological Determinations of Eligibility, and the California Inventory of Historic Resources.
In addition to the SSJVIC records search, AE consulted General Land Office land patent records and survey plats available online and reviewed a series of historical atlases dating between 1891 and 1935 as well as aerial photographs of the Project area dating between 1937 and 1999 from the online collection maintained by the Henry Madden Library at California State University, Fresno. AE also reviewed online historical USGS topographic maps and accessed recent aerials (dating from 1998 to the present) on Google Earth. County histories, city directories, genealogybank.com and Ancestry.com provided biographical and demographic information about the owners of the Project parcel and neighboring properties. AE also visited the Fresno County Recorders/Assessors records for property information. These sources provided a better understanding of the history of land use in the Project area.

2.5.1.2 Native American Outreach

On December 27, 2017, AE contacted the Native American Heritage Commission (NAHC) requesting a search of its Sacred Lands File and the contact information for local Native American representatives who may have information about the Project area. The NAHC responded on January 12, 2018, with its findings and attached a list of 12 California Native American tribes and individuals culturally affiliated with the Project area. AE prepared and sent a letter to each of the contacts identified by the NAHC and kept a log of all responses.

2.5.1.3 Pedestrian Survey

AE's pedestrian survey entailed walking systematic transects spaced at 15–20-meter intervals over accessible areas of the 19-acre Project area. AE photographed the survey area using a digital camera to document the environmental setting and ground visibility at the time of survey. Upon discovery of cultural material, AE closely inspected the ground and surrounding area to identify the nature and extent of the site. AE recorded information about the site on California Department of Parks and Recreation (DPR) Primary and Archaeological Site Record forms and used a Trimble Global Positioning System (GPS) unit to collect spatial information. Photographs and field notes are on file at AE's office in Fresno, California.

2.5.2 Regulatory Setting

2.5.2.1 Federal

Federal regulations relating to cultural resources do not apply to the Project. No federal approvals are needed to construct the Project and no federal money being used to construct or implement the project.

2.5.2.2 State

California Environmental Quality Act: CEQA Statutes (PRC 21000 et seq.) and the Regulations implementing the Act ("Guidelines", CCR 15000 et seq.) require consideration of project impacts on archaeological or historical sites deemed to be "historical resources". Pursuant to the CEQA Guidelines, a substantial adverse change in the significant qualities of a historical resource is considered a significant effect on the environment Section 15064.5[a][1]-[3] defines "historical resource" to be a resource listed in, or determined to be eligible for listing in, the California Register of Historical Resources). Historical resources may include, but are not limited to, "any object, building, site, area, place, record, or manuscript which is historically or archaeologically significant, or is significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural annals of California" (PRC Section 5020.1[j]).

California Health and Safety Code: Health and Safety Code Section 7050.5 requires that construction or excavation be stopped in the vicinity of discovered human remains until the County coroner can determine whether the remains are those of a Native American. If the remains are determined to be Native American, the coroner must contact the California Native American Heritage Commission. PRC Section 5097.98 specifies the procedures to be followed in case of the discovery of human remains on non-federal land. The disposition of Native American burials is within the jurisdiction of the Native American Heritage Commission.

Paleontological Resources: Paleontological resources are the fossilized remains of plants and animals and associated deposits. The Society of Vertebrate Paleontology has identified vertebrate fossils, their taphonomic (fossilization) and associated environmental indicators, and fossiliferous deposits as significant nonrenewable paleontological resources. Botanical and invertebrate fossils and assemblages may also be considered significant resources[12].CEQA requires that a determination be made as to whether a project would directly or indirectly destroy a unique paleontological resource or site or unique geological feature (CEQA Appendix G(v)(c)). If an impact is significant, CEQA requires feasible measures to minimize the impact (CCR Title 14(3) Section 15126.4(a)(1)). PRC Section 5097.5 (see above) also applies to paleontological resources.

2.5.2.3 Local

The City of Fowler General Plan (1976) and the City of Fowler 2025 General Plan Update do not contain any goals or policies regarding cultural resources that are relevant to the Project or the Project's CEQA review.

2.5.3 Impact Assessment

V-a) Cause a substantial adverse change in the significance of a historical resource as defined in §15064.5?

V-b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?

V-c) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?

V-d) Disturb any human remains, including those interred outside of dedicated cemeteries?

V-a-d) Potentially Significant Impact. Due to the Project proposing development of a large area of ground disturbance of both vacant land and demolition of existing development, there is potential that historical resources, archeological resources, paleontological resources, or human remains could be discovered. Therefore, it is determined the Project may have a potentially significant impact on cultural resources. Therefore, this impact will be further analyzed in an EIR.

[12] Society of Vertebrate Paleontology. Conformable Impact Mitigation Guidelines Committee Policy Statements. http://www.vertpaleo.org/ConformableImpactMitigationGuidelinesCommittee.htm.

2.6 Geology and Soils

Table 2-10. Geology and Soils Topics

Geology and Soils					
Would the project:	**Potentially Significant Impact**	**Less than Significant With Mitigation Incorporated**	**Less than Significant Impact**	**No Impact**
a) Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving: i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.	☐	☐	☒	☐
ii) Strong seismic ground shaking?	☐	☐	☒	☐
iii) Seismic-related ground failure, including liquefaction?	☐	☐	☐	☒
iv) Landslides?	☐	☐	☐	☒
b) Result in substantial soil erosion or the loss of topsoil?	☐	☐	☒	☐
c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?	☐	☐	☐	☒
d) Be located on expansive soil, as defined in Table 18-1-B of the most recently adopted Uniform Building Code creating substantial risks to life or property?	☐	☐	☐	☒
e) Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of wastewater?	☐	☐	☐	☒

2.6.1 Environmental Setting

The Project lies within the Central Valley geomorphic province, an area generally described as a trough between the City of Clovis and Interstate 5. Geologically, this area is comprised of quaternary alluvial materials, primarily, non-marine sedimentary rocks.[13]

"There are a number of active and potentially-active faults within and adjacent to Fresno County. Although most of Fresno County is situated within an area of relatively low seismic activity by comparison to other areas of the state, the faults and fault systems that lie along the eastern and western boundaries of the county,

[13] Fresno County General Plan Background Report. http://www.co.fresno.ca.us/home/showdocument?id=8398. Accessed 14 August 2018.

as well as other regional faults, have the potential to produce high-magnitude earthquakes throughout the county. The principle earthquake hazard is groundshaking."[14]

Due to its location in central California along the valley floor, Fresno County (including the City of Fowler) is not susceptible to seiches or tsunamis. However, volcanic activity, landslides, subsidence, expansive soils and erosion, are potential geologic hazards.[15]

Technicon Engineering Services, Inc. (Technicon) performed a site exploration survey on November 15 and 16, 2017 and prepared a subsequent Geotechnical Investigation Report, which is included as **Appendix D**. The field survey consisted of drilling 12 exploratory test borings and a site reconnaissance by a staff engineer. The test borings were drilled with a CME 55 truck-mounted drill rig using hollow stem augers. The borings extended to depths of 16.5, 21.5 and 36.5 feet below the existing ground surface (bgs).

The soils encountered in the borings were visually classified in the field and a continuous log was recorded. Relatively undisturbed samples were collected from the test borings at selected depths by driving a 2.5-inch I.D. split barrel sampler containing brass liners into the undisturbed soil with a 140-pound automatic hammer free falling a distance of 30 inches. In addition, samples of the subsurface material were obtained using a 1.4-inch I.D. standard penetrometer, driven 18 inches in accordance with ASTM D1586 test procedures. The sampler was used without liners. Resistance to sampler penetration was noted as the number of blows per foot over the last 12 inches of sampler penetration on the boring logs. The blow counts listed in the boring logs have not been corrected for the effects of overburden pressure, boring diameter, rod length, sampler size, or hammer efficiency. Bulk samples were also retained from auger cuttings of the near surface soils.

Penetration rates, determined in general accordance with ASTM D1586, were used to aid in evaluating the consistency, compression, and strength characteristics of the foundation soils.

Laboratory tests were performed on selected near surface samples to evaluate their physical characteristics. The following laboratory tests were used to develop the design geotechnical parameters:

- *Unit weight (ASTM D2937)*
- *Moisture Content (ASTM D2216)*
- *Sieve Analysis (ASTM C136)*
- *Direct Shear (ASTM D3080)*
- *Soluble Sulfate and Soluble Chloride Contents (California Test Method No's 417& 422)*
- *pH and Minimum Resistivity (California Test Method No. 643)*
- *Resistance Value (California Test Method No. 301)*

The project site consists of approximately 19 acres of partially developed land. The northern half of the project site is currently vacant, and the southern half of the project site is currently occupied by an existing automobile and diesel fueling islands, commercial truck parking, and traveler's amenities. The project site is generally bounded by East Valley Drive to the north, South Golden State Boulevard to the east, East Manning Avenue to the south, and vacant land to the west. The overall site topography is relatively flat and at a relative elevation approximately 1-foot above the adjacent street grades. The vacant northern half of the lot supported a moderate growth of annual weeds and grasses and the southern half of the lot is paved with asphalt and Portland cement concrete.

The natural site soil consists of Holocene age Great Valley fan deposits. The general earth material profile depicted by the subsurface exploration generally consists of silty sand extending to a depth of approximately 8 to 11 feet bgs. Two borings, B-1 and B-2 consist of silty clay and poorly graded sand extending to a depth

[14] Fresno County General Plan. http://www.co.fresno.ca.us/home/showdocument?id=18117 Accessed 14 August 2018.
[15] Fresno County General Plan EIR. http://www2.co.fresno.ca.us/4510/4360/General_Plan/GP_Final_EIR/EIR/seisgeo413.pdf Accessed 14 August 2018.

of 11 feet. All borings were underlain by sandy clay, clayey sand, sandy silt, and poorly graded sand soils to the depth of exploration (36.5 feet bgs.) The granular soils generally had a relative consistency of medium dense to very dense and the fine-grained soils generally had a relative consistency of stiff to hard. (All results are available within Technicon's Geotechnical Report, included as **Appendix D**.) Groundwater was not encountered within the depth of exploration, 36.5 feet below existing ground surface, and according to Technicon's Geotechnical Investigation Report (**Appendix D)**, groundwater is not anticipated to impact design or construction.

According to the Federal Emergency Management Agency (FEMA), the project site lies within a Zone X flood designation (Map Number 06019C2650H, dated February 18, 2009), indicating areas determined to be outside the 0.2 percent annual chance (500-year) floodplain.
The project site and its vicinity are located in an area traditionally characterized by relatively low to moderate seismic activity. The site is not located in an Alquist-Priolo Earthquake Fault Zone as established by the Alquist-Priolo Fault Zoning Act (Section 2622 of Chapter 7.5, Division 2 of the California Public Resources Code).

Based on review of published data and current understanding of the geologic framework and tectonic setting of the proposed improvements, the primary sources of seismic shaking at this site are anticipated to be the Coast Ranges Sierran Block, the Foothills Fault System, the San Andreas, and the Independence faults, which are located approximately 42, 50, 69, and 75 miles, respectively, from the site. The San Andreas Fault located west of the site, is considered the governing fault.
In order for liquefaction, and possible associated effects, of soils due to ground shaking to occur, it is generally accepted that four conditions will exist:

- *The subsurface soils are in a relatively loose state,*
- *The soils are saturated,*
- *The soils are fine, granular, and uniform,*
- *Ground shaking of sufficient intensity should occur to act as a triggering mechanism.*

Saturated granular sediments can experience liquefaction if subject to seismically induced ground motion of sufficient intensity and duration. The absence of groundwater would preclude the occurrence of liquefaction. Based on the ground shaking which may be expected at this site, the relative density and geologic age of the sediments, analysis performed by Technicon in the Geotechnical Investigation Report (**Appendix D**) indicates liquefaction, seismically induced settlement, or bearing loss is considered unlikely, even if there should be a substantial increase in groundwater levels.

2.6.2 Regulatory Setting

2.6.2.1 Federal

Federal regulations relating to Geology and Soils do not apply to the Project. No federal approvals are needed to construct the Project and no federal money being used to construct or implement the project.

2.6.2.2 State

California Alquist-Priolo Earthquake Fault Zoning Act: The Alquist-Priolo Earthquake Fault Zoning Act (originally enacted in 1972 and renamed in 1994) is intended to reduce the risk to life and property from surface fault rupture during earthquakes. The statute prohibits the location of most types of structures intended for human occupancy across the traces of active faults and regulates construction in the corridors along active faults.

California Building Standards: The California Code of Regulations (CCR) Title 24 is assigned to the California Building Standards Commission, which, by law, is responsible for coordinating and publishing what is known as the California Building Code (CBC). The CBC incorporates by reference the International Building Code with necessary California amendments. The International Building Code is a widely-adopted model building code in the United States published by the International Code Council. Text within the CBC has been tailored for California earthquake conditions.

2.6.2.3 Local

The City of Fowler General Plan (1976) Environmental Resources Management Element contains the following goal relating to geology and soils and which have potential relevance to the Project's California Environmental Quality Act (CEQA) review:

- *Reduce the potential impacts upon the community of earthquakes and other natural or man-made environmental hazards.*

The City of Fowler 2025 General Plan Update Land Use Element contains the following policy relating to geology and soils and which has potential relevance to the Project's California Environmental Quality Act (CEQA) review:

- *Consider seismic and public safety concerns in the environmental review process.*

2.6.3 Impact Assessment

VI-a) Would the Project expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:

VI-a-i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.

VI-a-ii) Strong seismic ground shaking?

VI-a-i-ii) Less Than Significant Impact. There are no recorded active faults within the Project site or the vicinity. The Project site is not within close proximity to a designated fault zone, delineated by the Department of Conversation. According to the Third Uniform California Earthquake Rupture Forecast (UCERF3) published in 2015, the chance of the San Joaquin Valley experiencing a major earthquake (6.7 magnitude or greater) within the next 30 years is less than 1%.[16] In contrast, the same study predicts a 7% chance of California experiencing an earthquake of magnitude eight or greater in the next 30 years.

Due to its location along the Valley floor and distance from active faults, the City of Fowler is not typically considered high risk for major earthquake hazards. However, central California does periodically experience seismic groundshaking in relation to fault ruptures and seismic activity along fault zones in other parts of the state, such as the San Andreas fault, located approximately 69 miles west of the Project. Although the Project does not propose additional housing, development could potentially increase the number of people exposed to seismic hazards. Mandatory compliance with all applicable regulations, design standards, and building codes would reduce potential impacts to a less than significant level. There will be no impact, and no mitigation measures are required. Consequently, no further analysis of this topic is required in the EIR.

VI-a-iii) Seismic-related ground failure, including liquefaction?

VI-a-iii) No Impact. In order for liquefaction to occur, the following four conditions must be met: 1. Subsurface soils are in a loose state; 2. Soil is saturated; 3. Soil is fine, granular, and uniform; 4.

[16]UCERF3 Earthquake Forecast. https://www.usgs.gov/news/new-long-term-earthquake-forecast-california Accessed 15 August 2018.

Groundshaking of sufficient intensity must occur. The Project site was surveyed by a qualified Geotechnical Engineer and the subsequent report (**Appendix D**) summarizes the findings. The absence of groundwater at the Project site disqualifies the occurrence of liquefaction. Furthermore, the Geotechnical Investigation Report found that "liquefaction, seismically induced settlement, or bearing loss is considered unlikely, even if there should be a substantial increase in groundwater levels." Therefore, there will be no impact and no mitigation measures are required. No further analysis of this topic in the EIR is required.

VI-a-iv) Landslides?

VI-a-iv) No Impact. A landslide is the movement of rock, soil, and debris down a hillside or slope. The Project site is flat and does not contain any significant slopes, nor do the surrounding areas. Approximately 15 miles east of the foothills, the Project is located within the Golden State Industrial Corridor, bounded on the east by Golden State Boulevard and Southern Pacific Railroad, and bounded on the west by State Route 99. The Project site and vicinity does not contain any of the necessary characteristics or features consistent landslide risk areas. There will be no impact and no mitigation measures are required. No further analysis of this topic in the EIR is required.

VI-b) Result in substantial soil erosion or the loss of topsoil?

VI-b) Less Than Significant Impact. According to the Geotechnical Investigation Report (**Appendix D**) that was prepared by Technicon Engineering Services, Inc., surface vegetation and any miscellaneous surface obstructions should be removed prior to development of the site. Stripping of vegetation may involve the upper 1 to 3 inches of soil being displaced. The project area has been considered ruderal and disturbed land from site surveys. Development of the site would include ground-disturbing activities, which includes excavation and grading and hauling of materials onto and off the site, therefore some minor amounts of wind erosion of top soil could result as the Project is implemented. The Project would be required to comply with the General Construction Permit, Order No. 2012-006-DWQ, issued by the State Water Resources Control Board (SWECB) adopted in 2012 to establish best management practices in terms of erosion and sediment control on active construction sites and the San Joaquin Valley Air Pollution Control District Regulation VIII – Fugitive PM10 Prohibitions, Rule 8021 that was last adopted in 2004. The Project shall obtain coverage by developing and implementing a Storm Water Pollution Prevention Plan (SWPPP) estimating sediment risk from construction activities to receiving waters and specifying best management practices (BMPs) that would be used by the Project to minimize pollution of storm water.

BMPs may include, but not limited to, water to control dust or irrigation of vegetative erosion control measure. Impacts related to soil erosion and the loss of topsoil would be less than significant. Any excavations during the construction phase of any unsuitable conditions should be dish-shaped and backfilled with engineered fill. There will be a less than significant impact, and no mitigation measures are required. Consequently, no further analysis of this topic is required in the EIR.

VI-c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?

VI -d) Be located on expansive soil, as defined in Table 18-1-B of the most recently adopted Uniform Building Code creating substantial risks to life or property?

VI-c-d) No Impact. The Project site was surveyed by a qualified Geotechnical Engineer and the subsequent report (**Appendix D**) summarizes the findings. The soils found onsite are not considered expansive soils. The Project site is flat and does not contain any significant slopes, nor do the surrounding areas. The absence of groundwater at the Project site disqualifies the occurrence of liquefaction. Furthermore, the Geotechnical Investigation Report found that "liquefaction, seismically induced settlement, or bearing loss is considered unlikely, even if there should be a substantial increase in groundwater levels." Therefore, there will be no impact and no mitigation measures are required. No further analysis of this topic in the EIR is required.

VI-e) Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?

VI-e) No Impact. No septic system is proposed. The site will be connected to the Selma-Kingsburg-Fowler County Sanitation District wastewater treatment facility. Therefore, there will be no impacts related to septic systems and no mitigation measures are required. Furthermore, no further analysis of this topic in the EIR is required.

2.7 Greenhouse Gas Emissions

Table 2-11. Greenhouse Gas Emissions Topics

Greenhouse Gas Emissions					
Would the project:		Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less than Significant Impact	No Impact
a)	Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	☒	☐	☐	☐
b)	Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	☒	☐	☐	☐

2.7.1 Environmental Setting

The Earth's climate has been warming for the past century. It is believed that this warming trend is related to the release of certain gases into the atmosphere. Greenhouse gases (GHG) absorb infrared energy that would otherwise escape from the Earth. As the infrared energy is absorbed, the air surrounding the Earth is heated. An overall warming trend has been recorded since the late 19th century, with the most rapid warming occurring over the past two decades. The 10 warmest years of the last century all occurred within the last 15 years. It appears that the decade of the 1990s was the warmest in human history [NOAA 2010]. Human activities have been attributed to an increase in the atmospheric abundance of greenhouse gases. The following is a brief description of the most commonly recognized GHGs.

In accordance with SJVAPCD's CEQA Greenhouse Gas Guidance[17] proposed projects complying with its identified Best Performance Standards (BPS) would be determined to have a less-than-significant impact. Projects not complying with BPS would be considered less than significant if operational GHG emissions would be reduced or mitigated by a minimum of 29 percent, in comparison to business-as-usual (year 2004) conditions. In addition, "projects complying with an approved GHG emission reduction plan or GHG mitigation program, which avoids or substantially reduces GHG emissions within the geographic area in which the project is located would be determined to have a less than significant individual and cumulative impact for GHG emissions. Such plans or programs must be specified in law or approved by the lead agency with jurisdiction over the affected resource and supported by a CEQA compliant environmental review document adopted by the lead agency.[18] "

2.7.1.1 Greenhouse Gases

Commonly identified GHG emissions and sources include the following:

- Carbon dioxide (CO_2) is an odorless, colorless natural greenhouse gas. CO_2 is emitted from natural and anthropogenic sources. Natural sources include the following: decomposition of dead organic

[17] SJVAPCD Final Staff Report Addressing Greenhouse Gas Emissions Impacts Under the California Environmental Quality Act, published 2009. http://www.valleyair.org/Programs/CCAP/12-17-09/1%20CCAP%20-%20FINAL%20CEQA%20GHG%20Staff%20Report%20-%20Dec%2017%202009.pdf Accessed September 10, 2018.
[18] Ibid. Page 64. Section 4.3.2.4 Determining Project Significance.

matter; respiration of bacteria, plants, animals, and fungus; evaporation from oceans; and volcanic out gassing. Anthropogenic sources include the burning of coal, oil, natural gas, and wood.

- Methane (CH_4) is a flammable greenhouse gas. A natural source of methane is the anaerobic decay of organic matter. Geological deposits, known as natural gas fields, also contain methane, which is extracted for fuel. Other sources are from landfills, fermentation of manure, and ruminants such as cattle.
- Nitrous oxide (N_2O), also known as laughing gas, is a colorless greenhouse gas. Nitrous oxide is produced by microbial processes in soil and water, including those reactions that occur in fertilizer containing nitrogen. In addition to agricultural sources, some industrial processes (fossil fuel-fired power plants, nylon production, nitric acid production, and vehicle emissions) also contribute to its atmospheric load.
- Water vapor is the most abundant, and variable greenhouse gas. It is not considered a pollutant; in the atmosphere, it maintains a climate necessary for life.
- Ozone (O_3) is known as a photochemical pollutant and is a greenhouse gas; however, unlike other greenhouse gases, ozone in the troposphere is relatively short-lived and, therefore, is not global in nature. Ozone is not emitted directly into the atmosphere but is formed by a complex series of chemical reactions between volatile organic compounds, nitrogen oxides, and sunlight.
- Aerosols are suspensions of particulate matter in a gas emitted into the air through burning biomass (plant material) and fossil fuels. Aerosols can warm the atmosphere by absorbing and emitting heat and can cool the atmosphere by reflecting light.
- Chlorofluorocarbons (CFCs) are nontoxic, nonflammable, insoluble, and chemically unreactive in the troposphere (the level of air at the earth's surface). CFCs were first synthesized in 1928 for use as refrigerants, aerosol propellants, and cleaning solvents. CFCs destroy stratospheric ozone; therefore, their production was stopped as required by the Montreal Protocol in 1987.
- Hydrofluorocarbons (HFCs) are synthetic chemicals that are used as a substitute for CFCs. Of all the greenhouse gases, HFCs are one of three groups (the other two are perfluorocarbons and sulfur hexafluoride) with the highest global warming potential. HFCs are human-made for applications such as air conditioners and refrigerants.
- Perfluorocarbons (PFCs) have stable molecular structures and do not break down through the chemical processes in the lower atmosphere; therefore, PFCs have long atmospheric lifetimes, between 10,000 and 50,000 years. The two main sources of PFCs are primary aluminum production and semiconductor manufacture.
- Sulfur hexafluoride (SF_6) is an inorganic, odorless, colorless, nontoxic, nonflammable gas. It has the highest global warming potential of any gas evaluated. Sulfur hexafluoride is used for insulation in electric power transmission and distribution equipment, in the magnesium industry, in semiconductor manufacturing, and as a tracer gas for leak detection.

2.7.1.2 Effects of Climate Change

There are uncertainties as to exactly what the climate changes will be in various local areas of the earth, and what the effects of clouds will be in determining the rate at which the mean temperature will increase. There are also uncertainties associated with the magnitude and timing of other consequences of a warmer planet: sea level rise, spread of certain diseases out of their usual geographic range, the effect on agricultural production, water supply, sustainability of ecosystems, increased strength and frequency of storms, extreme heat events, air pollution episodes, and the consequence of these effects on the economy.

Emissions of GHGs contributing to global climate change are largely attributable to human activities associated with the industrial/manufacturing, utility, transportation, residential, and agricultural sectors. About three-quarters of human emissions of CO_2 to the global atmosphere during the past 20 years are due to fossil fuel burning. Atmospheric concentrations of CO_2, CH_4, and N_2O have increased 31 percent, 151 percent, and 17 percent respectively since the year 1750 (CEC 2008). GHG emissions are typically expressed in carbon dioxide-equivalents (CO_2e), based on the GHG's Global Warming Potential (GWP). The GWP is dependent on the lifetime, or persistence, of the gas molecule in the atmosphere. For example, one ton of CH_4 has the same contribution to the greenhouse effect as approximately 21 tons of CO_2. Therefore, CH_4 is a much more potent GHG than CO_2.

2.7.2 Regulatory Setting

2.7.2.1 Federal

Although climate change and GHG reduction is a concern at the federal level; currently there are no regulations or legislation that have been enacted specifically addressing GHG emissions reductions and climate change at the project level.

2.7.2.2 State

2.7.2.2.1 Assembly Bill 1493:

Assembly Bill (AB) 1493 (Pavley) of 2002 (Health and Safety Code Sections 42823 and 43018.5) requires the California Air Resources Board (CARB) to develop and adopt the nation's first GHG emission standards for automobiles.

2.7.2.2.2 Assembly Bill 32 - California Global Warming Solutions Act of 2006 (AB 32)

AB 32 (Health and Safety Code Sections 38500, 38501, 38510, 38530, 38550, 38560, 38561–38565, 38570, 38571, 38574, 38580, 38590, 38592–38599 "*et seq.,*") requires that Statewide GHG emissions be reduced to 1990 levels by the year 2020. The gases that are regulated by AB 32 include carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, nitrogen trifluoride, and sulfur hexafluoride. The reduction to 1990 levels will be accomplished through an enforceable Statewide cap on GHG emissions that will be phased in starting in 2012. To effectively implement the cap, AB 32 directs CARB to develop and implement regulations to reduce Statewide GHG emissions from stationary sources. AB 32 specifies that regulations adopted in response to AB 1493 should be used to address GHG emissions from vehicles. However, AB 32 also includes language stating that if the AB 1493 regulations cannot be implemented, then CARB should develop new regulations to control vehicle GHG emissions under the authorization of AB 32.

AB 32 requires that CARB adopt a quantified cap on GHG emissions representing 1990 emissions levels and disclose how it arrives at the cap, institute a schedule to meet the emissions cap, and develop tracking, reporting, and enforcement mechanisms to ensure that the State achieves reductions in GHG emissions necessary to meet the cap. AB 32 also includes guidance to institute emissions reductions in an economically efficient manner and conditions to ensure that businesses and consumers are not unfairly affected by the reductions.

2.7.2.2.3 Climate Change Scoping Plan

In October 2008, CARB published its Climate Change Proposed Scoping Plan, which is the State's plan to achieve GHG reductions in California required by AB 32. The Scoping Plan contains the main strategies California will implement to achieve reduction of 169 million metric tons (MMT) of CO_2e, or approximately 30 percent from the State's projected 2020 emissions level of 596 $MMTCO_2e$ under a business-as-usual scenario (this is a reduction of 42 $MMTCO_2e$, or almost 10 percent, from 2002–2004 average emissions). The Scoping Plan also includes CARB-recommended GHG reductions for each emissions sector of the State's GHG inventory. The largest proposed GHG reduction recommendations are from improving emissions standards for light-duty vehicles (estimated reductions of 31.7 $MMTCO_2e$), implementation of the Low Carbon Fuel Standard (15.0 $MMTCO_2e$) program, energy efficiency measures in buildings and appliances and the widespread development of combined heat and power systems (26.3 $MMTCO_2e$), and a renewable portfolio standard for electricity production (21.3 $MMTCO_2e$). The Scoping Plan identifies the local equivalent of AB 32 targets as a 15 percent reduction below baseline GHG emissions level, with baseline interpreted as GHG emissions levels between 2003 and 2008.

A key component of the Scoping Plan is the Renewable Portfolio Standard, which is intended to increase the percentage of renewables in California's electricity mix to 33 percent by year 2020, resulting in a reduction of 21.3 $MMTCO_2e$. Sources of renewable energy include, but are not limited to, biomass, wind, solar, geothermal, hydroelectric, and anaerobic digestion. Increasing the use of renewables will decrease California's reliance on fossil fuels, thus reducing GHG emissions.

The Scoping Plan States that land use planning and urban growth decisions will play important roles in the State's GHG reductions because local governments have primary authority to plan, zone, approve, and permit how land is developed to accommodate population growth and the changing needs of their jurisdictions. (Meanwhile, CARB is also developing an additional protocol for community emissions.) CARB further acknowledges that decisions on how land is used will have large impacts on the GHG emissions that will result from the transportation, housing, industry, forestry, water, agriculture, electricity, and natural gas emissions sectors. The Scoping Plan States that the ultimate GHG reduction assignment to local government operations is to be determined. With regard to land use planning, the Scoping Plan expects approximately 5.0 $MMTCO_2e$ will be achieved associated with implementation of Senate Bill 375, which is discussed further below. The Climate Change Proposed Scoping Plan was approved by CARB on December 11, 2008.

The First Update of the Scoping Plan was approved by the CARB on May 22, 2014, which looked past 2020 to set mid-term goals (2030-2035) on the road to reaching the 2050 goals. CARB's Key Action for the Waste Sector focused on eliminating organics from the landfill starting in 2016 and financing the in-State infrastructure development of composting and anaerobic digestion facilities. CARB's Key Action for Short-lived Climate Pollutants such as methane is to develop a comprehensive strategy by 2015 which will focus on methane generated at landfills from the disposal of organic wastes.

2.7.2.2.4 Senate Bill 97 - CEQA: Greenhouse Gas Emissions

Senate Bill 97, signed in August 2007, acknowledges that climate change is an important environmental issue that requires analysis under CEQA. This bill directs the Governor's Office of Planning and Research to prepare, develop, and transmit to the Resources Agency guidelines for the feasible mitigation of GHG emissions or the effects of GHG emissions, by July 1, 2009. The Resources Agency is required to certify or adopt those guidelines by January 1, 2010. Amendments to the CEQA guidelines took effect March 18, 2010. The revisions include a new section (Sec. 15064.4) that specifically addresses the potential significance of GHG emissions. Section 15064.4 calls for a "good-faith effort" to "describe, calculate or estimate" GHG emissions. Section 15064.4 further States that a lead agency "should" consider several factors when assessing the significance of impacts from GHG emissions on the environment, including: the extent to which the project would increase or reduce GHG emissions; whether project emissions exceed an applicable threshold of significance; and the extent to which the project complies with "regulations or requirements adopted to implement a Statewide, regional, or local plan for the reduction or mitigation of greenhouse gas emissions." The guidelines also State that a lead agency may determine that a project's incremental contribution to a cumulative effect is not cumulatively considerable if the project will comply with the requirements of previously approved plan or mitigation program (Sec. 15064(h)(3)). However, the guidelines do not require or recommend a specific analytical methodology or provide quantitative criteria for determining the significance of GHG emissions.

This bill also protected projects until January 1, 2010 that were funded by the Highway Safety, Traffic Reduction, Air Quality and Port Security Bond Act of 2006, or the Disaster Preparedness and Flood Protection Bond Act of 2006 (Proposition 1B or 1E) from claims of inadequate analysis of GHG as a legitimate cause of action. Thus, this "protection" is highly limited to a handful of projects and for a short time period (CAPCOA 2008).

2.7.2.2.5 Senate Bill 1368

Senate Bill (SB) 1368 (codified at Public Utilities Code Chapter 3) is the companion bill of AB 32. SB 1368 required the California Public Utilities Commission (CPUC) to establish a greenhouse gas emissions performance standard for baseload generation from investor-owned utilities by February 1, 2007. The bill also required the California Energy Commission (CEC) to establish a similar standard for local publicly owned utilities by June 30, 2007. These standards cannot exceed the greenhouse gas emission rate from a baseload combined-cycle natural-gas-fired plant. The legislation further requires that all electricity provided to California, including imported electricity, must be generated from plants that meet the standards set by the CPUC and the CEC.

2.7.2.2.6 Senate Bill 1078 and Governor's Order S-14-08 (California Renewables Portfolio Standards)

Senate Bill 1078 (Public Utilities Code Sections 387, 390.1, 399.25 and Article 16) addresses electricity supply and requires that retail sellers of electricity, including investor-owned utilities and community choice aggregators, provide a minimum 20 percent of their supply from renewable sources by 2017. This Senate Bill will affect Statewide GHG emissions associated with electricity generation. In 2008, Governor Schwarzenegger signed Executive Order S-14-08, which set the Renewables Portfolio Standard target to 33 percent by 2020. It directed State government agencies and retail sellers of electricity to take all appropriate actions to implement this target. The Project area would receive energy service from the investor-owned Southern California Edison.

Prior to the Executive Order, the CPUC and the CEC were responsible for implementing and overseeing the Renewables Portfolio Standard. The Executive Order shifted that responsibility to CARB, requiring it to adopt regulations by July 31, 2010. CARB is required by current law, AB 32 of 2006, to regulate sources of greenhouse gases to meet a State goal of reducing greenhouse gas emissions to 1990 levels by 2020 and an 80 percent reduction of 1990 levels by 2050. The CEC and CPUC are expected to serve in advisory roles to help CARB develop the regulations to administer the 33 percent by 2020 requirement. Additionally, the CEC and CPUC will continue their implementation and administration of the 20 percent requirement. The Executive Order also stipulates that CARB may delegate to the CPUC and CEC any policy development or program implementation responsibilities that would reduce duplication and improve consistency with other energy programs. CARB is also authorized to increase the target and accelerate and expand the time frame.

The general definition under the State Renewables Portfolio Standard for biomass is any organic material not derived from fossil fuels, including agricultural crops, agricultural wastes and residues, waste pallets, crates, dunnage, manufacturing, and construction wood wastes, landscape and right-of-way tree trimmings, mill residues that result from milling lumber, rangeland maintenance residues, sludge derived from organic matter, and wood and wood waste from timbering operations. Biomass feedstock from State and national forests is allowable under the definition.

2.7.2.2.7 Mandatory Reporting of Greenhouse Gas Emissions

Reporting of greenhouse gases by major sources is required by the California Global Warming Solutions Act (AB 32, 2006). Revisions to the existing CARB mandatory GHG reporting regulation were considered at the board hearing on December 16, 2010. The revised regulation was approved by the California Office of Administrative Law and became effective on January 1, 2012. The revised regulation affects industrial facilities, suppliers of transportation fuels, natural gas, natural gas liquids, liquefied petroleum gas, and carbon dioxide, operators of petroleum and natural gas systems, and electricity retail providers and marketers.

2.7.2.2.8 Cap-and-Trade Regulation

The cap-and-trade regulation is a key element in California's climate plan. It sets a Statewide limit on sources responsible for 85 percent of California's greenhouse gas emissions and establishes a price signal needed to drive long-term investment in cleaner fuels and more efficient use of energy. The cap-and-trade rules came into effect on January 1, 2013 and apply to large electric power plants and large industrial plants. In 2015, they will extend to fuel distributors (including distributors of heating and transportation fuels). At that stage, the program will encompass nearly 85 percent of the State's total greenhouse gas emissions.

GHG emissions addressed by the cap-and-trade regulation are subject to an industry-wide cap on overall GHG emissions. The cap-and-trade regulation sets a firm limit or cap on GHGs, which declines approximately 3 percent each year beginning in 2013. Any growth in emissions must be accounted for under the cap, such that a corresponding and equivalent reduction in emissions must occur to allow any increase. The cap-and-trade regulation will help California achieve its goal of reducing GHG emissions to 1990 levels by the year 2020, and ultimately achieving an 80% reduction from 1990 levels by 2050. As such, the CARB has determined that the cap-and-trade regulation meets the requirements of AB 32.

2.7.2.3 Local

The City of Fowler General Plan (1976) and the City of Fowler 2025 General Plan Update do not contain any relevant goals or policies regarding greenhouse gas emissions that are relevant to the Project or the Project's CEQA review.

2.7.2.4 San Joaquin Valley Air Pollution Control District

SJVAPCD Climate Change Action Plan:

On August 21, 2008, the SJVAPCD Governing Board approved the District's Climate Change Action Plan with the following goals and actions:

Goals:

- Assist local land-use agencies with California Environmental Quality Act (CEQA) issues relative to projects with GHG emissions increases.
- Assist Valley businesses in complying with mandates of AB 32.
- Ensure that climate protection measures do not cause increase in toxic or criteria pollutants that adversely impact public health or environmental justice communities.

Actions:

- Authorize the Air Pollution Control Officer to develop GHG significance threshold(s) or other mechanisms to address CEQA projects with GHG emissions increases. Begin the requisite public process, including public workshops, and develop recommendations for Governing Board consideration in the spring of 2009.
- Authorize the Air Pollution Control Officer to develop necessary regulations and instruments for establishment and administration of the San Joaquin Valley Carbon Exchange Bank for voluntary GHG reductions created in the Valley. Begin the requisite public process, including public workshops, and develop recommendations for Governing Board consideration in spring 2009.
- Authorize the Air Pollution Control Officer to enhance the District's existing criteria pollutant emissions inventory reporting system to allow businesses subject to AB32 emission reporting

requirements to submit simultaneous streamlined reports to the District and the State of California with minimal duplication.

- Authorize the Air Pollution Control Officer to develop and administer voluntary GHG emission reduction agreements to mitigate proposed GHG increases from new projects.
- Direct the Air Pollution Control Officer to support climate protection measures that reduce GHG emissions as well as toxic and criteria pollutants. Oppose measures that result in a significant increase in toxic or criteria pollutant emissions in already impacted area.

SJVAPCD CEQA Greenhouse Gas Guidance:

On December 17, 2009, the SJVAPCD Governing Board adopted "Guidance for Valley Land-use Agencies in Addressing GHG Emission Impacts for New Projects under CEQA" and the policy, "District Policy—Addressing GHG Emission Impacts for Stationary Source Projects Under CEQA When Serving as the Lead Agency." The SJVAPCD concluded that the existing science is inadequate to support quantification of the impacts that project specific greenhouse gas emissions have on global climatic change. The SJVAPCD found the effects of project-specific emissions to be cumulative, and without mitigation, that their incremental contribution to global climatic change could be considered cumulatively considerable. The SJVAPCD found that this cumulative impact is best addressed by requiring all projects to reduce their greenhouse gas emissions, whether through project design elements or mitigation.

The SJVAPCD's approach is intended to streamline the process of determining if project-specific greenhouse gas emissions would have a significant effect. Projects exempt from the requirements of CEQA, and projects complying with an approved plan or mitigation program would be determined to have a less than significant cumulative impact. Such plans or programs must be specified in law or adopted by the public agency with jurisdiction over the affected resources and have a certified final CEQA document.

To address operational emissions of a project, BPS would be established according to performance-based determinations. Projects incorporating one or more BPS would not require specific quantification of GHG emissions and would be determined to have a less than significant cumulative impact for GHG emissions. Projects not incorporating BPS would require quantification of GHG emissions and demonstration that operational greenhouse gas emissions have been reduced or mitigated by 29 percent, as targeted by CARB's AB 32 Scoping Plan. Furthermore, quantification of GHG emissions would be required for all projects for which the lead agency has determined that an Environmental Impact Report is required, regardless of whether the project incorporates BPS.

Project-related GHG Emissions will be quantified and further analyzed in the EIR. In Air Districts such as SJVAPCD, that have not published a specific threshold for significance, the Bay Area Air Quality Management District's thresholds of significance are often applied to facilitate with evaluation of potential impacts. The Bay Area Air Quality Thresholds of Significance are further discussed below.

SJVAPCD CEQA Determinations of Significance for Projects Subject to CARB's Cap-and Trade Regulation (Application Review Policy APR 2025)

The purpose of this policy is to provide guidance for APCD staff on how to determine significance of GHG emissions from projects subject to CARB's cap-and-trade regulation or occurring at entities subject to the CARB Cap-and-Trade regulation. The SJVAPCD recognizes that the CARB's Cap-and-Trade Regulation is adopted State-wide for reducing or mitigating GHG emissions from targeted industries throughout California. GHG emissions addressed by the Cap-and-Trade regulation are subject to an industry-wide cap on overall GHG emissions. As such, any growth in emissions must be accounted for under that cap, such that a corresponding and equivalent reduction in emissions must occur to allow any increase. Further, the cap decreases over time, resulting in an overall decrease in GHG emissions. Therefore, the SJVAPCD concluded that GHG emissions increases subject to CARB's Cap-and-Trade regulation would have a less than significant individual and cumulative impact on global climate change. This policy applies to projects for which the SJVAPCD is the lead agency but is also useful for evaluation of other CEQA related projects for which the SJVAPCD is a Responsible Agency under CEQA.

Bay Area Air Quality Management District's Thresholds for Significance

Although the Project is not located in the Bay Area, the Bay Area Air Quality Management District's thresholds for significance are based on the Statewide AB 32 objectives and are felt to be valid for other areas of the state. Bay Area Air Quality Management District's approach to developing a threshold of significance for GHG emissions is to identify the emissions level for which a project would not be expected to substantially conflict with existing California legislation adopted to reduce Statewide GHG emissions. If a project would generate GHG emissions above the threshold level, it would be considered to contribute substantially to a cumulative impact and would be considered significant. If mitigation can be applied to lessen the emissions such that the project meets its share of emission reductions needed to address the cumulative impact, the project would normally be considered less than significant.
Project-related GHG Emissions will be quantified and further analyzed in the EIR. In Air Districts such as SJVAPCD, that have not published a specific threshold for significance, the Bay Area Air Quality Management District's thresholds of significance are often applied to facilitate with evaluation of potential impacts.

2.7.3 Impact Assessment

VII-a) Would the project generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment? And

VII-b) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?

VII-a-b) Potentially Significant Impact. The Project may conflict with greenhouse gas reduction plans, policies or regulations but requires further understanding of project-level and cumulative-level traffic generation provided by a technical study prepared by qualified subconsultant and possibly evaluation using the CalEEMod pollution generation model. It is therefore assumed the resulting impacts may be potentially significant and therefore will require further analysis in an EIR. An Air Quality and Greenhouse Gas Emissions Evaluation Report will be prepared to support the analysis in the EIR. The EIR will detail the methodology of the Report and its conclusions.

2.8 Hazards and Hazardous Materials

Table 2-12. Hazards and Hazardous Materials Topics

Hazards and Hazardous Materials					
Would the project:		Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less than Significant Impact	No Impact
a)	Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	☒	☐	☐	☐
b)	Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	☒	☐	☐	☐
c)	Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	☐	☐	☐	☒
d)	Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?	☐	☐	☐	☒
e)	For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?	☐	☐	☒	☐
f)	For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?	☐	☐	☒	☐
g)	Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	☐	☐	☒	☐
h)	Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?	☐	☐	☐	☒

2.8.1 Environmental Setting

Currently on the developed portion of the site, there exists automobile and diesel fueling islands, commercial truck parking, and traveler's amenities. There are two 20,000-gallon underground fuel storage tanks and three 20,000-gallon above ground tanks that are in use. The underground and aboveground storage tanks will be removed once the construction of the Project and demolition of the existing site commences. Until approximately September of 2009, the vacant portion of the Project site was in agricultural production. Currently, the site is not included on the Cortese List (Government Code Section 65962.5) and is not otherwise identified in the GeoTracker or EnviroStor databases. Areas with active agricultural production utilize fertilizer, potentially pesticides, and farm equipment which may inadvertently leak/spill petroleum products. According to the California Department of Toxic Substances Control Cortese List, the Project site is not designated. More information will be brought forth and analyzed an EIR.

2.8.1.1 Airports

The Selma Airport, a municipal airport, is located approximately 1.5 miles south of the Project on the west side of SR 99. Quinn Company's (Caterpillar Dealer) private airstrip is located on the approximately 1.5 miles southeast of the Project east side of SR 99. Fresno Yosemite International Airport is located approximately 11.6 miles north-northwest of the Project in the City of Fresno.

2.8.1.2 Emergency Response Plan

The Fresno County Office of Emergency Services coordinates the development and maintenance of the Fresno County Operational Area Master Emergency Services Plan.

2.8.1.3 Schools

John Sutter Middle School and Fowler High School are located 1.64 miles and 1.80 miles north-northwest of the Project, respectively.

2.8.2 Regulatory Setting

2.8.2.1 Federal

Hazardous Materials - U.S. Environmental Protection Agency: The U.S. Environmental Protection Agency (EPA) was established in 1970 to consolidate in one agency a variety of Federal research, monitoring, standard-setting and enforcement activities to ensure environmental protection. EPA's mission is to protect human health and to safeguard the natural environment — air, water, and land — upon which life depends. EPA works to develop and enforce regulations that implement environmental laws enacted by Congress, is responsible for researching and setting national standards for a variety of environmental programs, and delegates to States and tribes the responsibility for issuing permits and for monitoring and enforcing compliance. Where national standards are not met, EPA can issue sanctions and take other steps to assist the states and tribes in reaching the desired levels of environmental quality.

In 1980, congress established the Comprehensive Environmental Repose, Compensation and Liability Act (CERCLA). CERCLA is informally called Superfund. It allows EPA to clean up contaminated sites. It also forces the parties responsible for the contamination to either perform cleanups or reimburse the government for EPA-led cleanup work. If there is no viable responsible party, Superfund gives EPA the funds and authority to clean up contaminated sites Superfund sites are designated in a list pursuant to Government Code Section 65962.5 (Cortese List), which is compiled and updated by the Department of Toxic Substances Control.

Toxic Substances Control Act/Resource Conservation and Recovery Act/Hazardous and Solid Waste Act: The Toxic Substances Control Act (1976) and the Resource Conservation and Recovery Act of 1976 (RCRA) established a program administered by the U.S. EPA for the regulation of the generation, transportation, treatment, storage, and disposal of hazardous waste. RCRA was amended in 1984 by the Hazardous and Solid Waste Act (HSWA), which affirmed and extended the "cradle to grave" system of regulating hazardous wastes.

Clean Water Act/SPCC Rule: The Clean Water Act (CWA) (33 U.S.C. Section 1251, *et seq*., formerly the Water Pollution Control Act of 1972), was enacted with the intent of restoring and maintaining the chemical, physical, and biological integrity of the waters of the United States. As part of the Clean Water Act, the EPA oversees and enforces the Oil Pollution Prevention regulation contained in Title 40 of the CFR, Part 112, which is often referred to as the "SPCC rule" because the regulations describe the requirements for facilities to prepare, amend and implement Spill Prevention, Control, and Countermeasure (SPCC) Plans. A facility is subject to SPCC regulations if a single oil storage tank has a capacity greater than 660 gallons, or the total above ground oil storage capacity exceeds 1,320 gallons, or the underground oil storage capacity exceeds 42,000 gallons, and if, due to its location, the facility could reasonably be expected to discharge oil into or upon the "navigable waters" of the United States. Other federal regulations overseen by the EPA relevant to hazardous materials and environmental contamination include Title 40, CFR, Chapter 1, Subchapter D – Water Programs and Subchapter I – Solid Wastes. Title 40, CFR, Chapter 1, Subchapter D, Parts 116 and 117 designate hazardous substances under the Water Pollution Control Act. Title 40, CFR, Part 116 sets forth a determination of the reportable quantity for each substance that is designated as hazardous. Title 40, CFR, Part 117 applies to quantities of designated substances equal to or greater than the reportable quantities that may be discharged into waters of the United States.

2.8.2.2 State

California Government Code Section 65962.5: This regulation requires the California Department of Toxic Substances Control to compile and update at least annually, a list, known as the Hazardous Waste and Substances Sites List (or Cortese List, named after the sponsor of the legislation promulgating the regulation) identifying the Federal Superfund Program State Resources Program funded clean-up sites. This list is used by the State, local agencies, and developers to comply with CEQA requirements in providing information about whether project sites are included on the list of sites. the location of hazardous materials release sites. The Project site is not included on this Cortese List.

California Environmental Protection Agency (CalEPA): CalEPA was created in 1991 by Governor's Executive Order. The California Air Resources Board (CARB), the Department of Pesticide Regulation (DPR), the Department of Resources Recycling and Recovery (CalRecycle), the Department of Toxic Substances Control (DTSC), the Office of Environmental Health Hazard Assessment (OEHHA) and the State Water Resources Control Board (SWRCB) were placed under the CalEPA umbrella to create a cabinet-level voice for the protection of human health and the environment and to assure the coordinated deployment of State resources. The mission of CalEPA is to restore, protect, and enhance the environment to ensure public health, environmental quality, and economic vitality under Title 22 of the CCR.[19]

Department of Toxic Substances Control (DTSC): DTSC is a department of CalEPA and is the primary agency in California that regulates hazardous waste, clean-up of existing contamination, and looks for ways to reduce the hazardous waste produced in California. DTSC regulates hazardous waste in California primarily under the authority of RCRA and the Health and Safety Code. The State Department of Toxic Substances maintains an on-line data management system, called EnviroStor, for tracking cleanup, permitting, enforcement and investigation efforts at hazardous waste facilities and sites with known or suspected contamination issues. This data base reflects both Federal Superfund and State Response clean-up sites as identified on the Cortese List (Government Code Section 65962.5) but also identifies other categories of clean-up sites such as school sites, military evaluation sites, volunteer sites and others. EnviroStore also identifies the status of permitted sites as 'Operating', 'Post Closure', or 'Non-Operating'. A search of the DTSC EnviroStore database performed on June 24, 2018 determined that there are no known active hazardous waste facilities or sites within the Project site or surrounding vicinity.

[19] California Environmental Protection Agency. http://www.calepa.ca.gov Accessed 15 August 2018.

EnviroStor also cross-references other data maintained by the State Water Resources Control Board in its data base called GeoTracker (see separate description below).

Other laws that affect hazardous waste are specific to handling, storage, transportation, disposal, treatment, reduction, cleanup, and emergency planning. GC Section 65962.5 (commonly referred to as the Cortese List) includes DTSC-listed hazardous waste facilities and sites, SWRCB Division of Drinking Water lists of contaminated drinking water wells, sites listed by the SWRCB as having UST leaks and which have had a discharge of hazardous wastes or materials into the water or groundwater, and lists from local regulatory agencies of sites that have had a known migration of hazardous waste/material.

Unified Program: The Unified Program (CCR Title 27, Division 1, Subdivision 4, Chapter 1, Sections 15100-15620) consolidates, coordinates, and makes consistent the administrative requirements, permits, inspections, and enforcement activities of the following six environmental and emergency response programs[20]:

- Hazardous Waste Generator (HWG) program and Hazardous Waste On-site Treatment activities;
- Aboveground Storage Tank (AST) program Spill Prevention Control and Countermeasure Plan requirements;
- Underground Storage Tank (UST) program;
- Hazardous Materials Release Response Plans and Inventory (HMRRP) program;
- California Accidental Release Prevention (CalARP) program;
- Hazardous Materials Management Plans and Hazardous Materials Inventory Statement (HMMP/HMIS) requirements.

The Secretary of CalEPA is directly responsible for coordinating the administration of the Unified Program. The Unified Program requires all counties to apply to the CalEPA Secretary for the certification of a local unified program agency. Qualified cities are also permitted to apply for certification. The local Certified Unified Program Agency (CUPA) is required to consolidate, coordinate, and make consistent the administrative requirements, permits, fee structures, and inspection and enforcement activities for these six program elements in the county. Most CUPAs have been established as a function of a local environmental health or fire department.

Hazardous Waste Management Program: The Hazardous Waste Management Program (HWMP) regulates hazardous waste through its permitting, enforcement, and Unified Program activities in accordance with HHSC Section 25135, *et seq*. The main focus of HWMP is to ensure the safe storage, treatment, transportation, and disposal of hazardous wastes.

State Water Resources Control Board (SWRCB): The SWRCB was created by the California legislature in 1967. The mission of SWRCB is to ensure the highest reasonable quality for waters of the State, while allocating those waters to achieve the optimum balance of beneficial uses. The joint authority of water allocation and water quality protection enables SWRCB to provide comprehensive protection for California's waters. The SWRCB maintains a data base and mapping resource available on-line called GeoTracker. This data base is the Water Boards' data management system for sites that impact, or have the potential to impact, water quality in California, with emphasis on groundwater. GeoTracker contains records for sites that require cleanup, such as Leaking Underground Storage Tank (LUST) Sites, Department of Defense Sites, and Cleanup Program Sites. GeoTracker also contains records for various unregulated projects as well as permitted facilities including: Irrigated Lands, Oil and Gas production, operating Permitted USTs, and Land Disposal Sites. A search of the SWRCB GeoTracker performed on June 24, 2018 determined that the Project site is not an identified site of concern for any of the listed groundwater hazard sources.

[20] California Environmental Protection Agency. http://www.calepa.ca.gov/cupa/ Accessed 15 August 2018

California Department of Industrial Relations – Division of Occupational Safety and Health (Cal/OSHA): In California, every employer has a legal obligation to provide and maintain a safe and healthful workplace for employees, according to the California Occupational Safety and Health Act of 1973 (per Title 8 of the CCR). The Division of Occupational Safety and Health (Cal/OSHA) program is responsible for enforcing California laws and regulations pertaining to workplace safety and health and for providing assistance to employers and workers about workplace safety and health issues. Cal/OSHA regulations are administered through Title 8 of the CCR. The regulations require all manufacturers or importers to assess the hazards of substances that they produce or import and all employers to provide information to their employees about the hazardous substances to which they may be exposed.

2.8.2.3 Local

City of Fowler General Plan:
The City of Fowler 2025 General Plan Update Land Use Element contains the following policy relating to hazards and hazardous materials and which has potential relevance to the Project's California Environmental Quality Act (CEQA) review:

- *Ensure that disaster planning for the City of Fowler includes policies appropriate to problems associated with hazardous wastes.*

Fresno County Department of Public Health, Division of Environmental Health:
The Fresno County Department of Public Health, Division of Environmental Health serves as the CUPA for Fresno County. As required under the State's Unified Hazardous Waste and Hazardous Materials Management Regulatory Program, the Fresno County CUPA's authority and responsibilities are the same as those described for the Unified Program listed above under the State Regulatory Setting (Section 1.8.2.2). The Fresno County General Plan Health and Safety Element contains several goals and policies that address hazardous materials, including the following:

- *To minimize the risk of life, injury, serious illness, and damage to property resulting from the use, transport, treatment, and disposal of hazardous materials and hazardous wastes.*
- *The County shall require facilities that handle hazardous materials or hazardous wastes be designed, constructed, and operated in accordance with applicable hazardous materials and waste management laws and regulations.*
- *The County, through its Hazardous Materials Incident Response Plan, shall coordinate and cooperate with emergency response agencies to ensure adequate Countywide response to hazardous materials incidents.*

2.8.3 Impact Assessment

VIII-a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials? and;

VIII-b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?

V-III-a-b) Potentially Significant Impact. Within the last 20 years until approximately 2009, the northern half of the Project site has been in agricultural production. Areas with active agricultural production utilize fertilizer, potentially pesticides, and farm equipment which may inadvertently leak/spill petroleum products. According to the California Department of Toxic Substances Control's Cortese List, the Project is not designated. The Project proposes demolition of an existing commercial truck fueling station and removal of all existing underground and aboveground storage tanks. Operation of the Project, detailed in the Project Description, would require the use, transport, and dispersal of hazardous materials such as fuels, lubricants, oils, and cleaning solvents. Fuel trucks delivering fuels onsite for storage in aboveground tanks will occur on a regular basis. As a result, development of the Project could potentially create a significant hazard to the public or the environment through the transport, use, or accidental release of hazardous materials. Therefore, the EIR will provide further analysis of the Project's construction and operational hazardous materials use, storage, transport, and disposal methods, as well as risk of accidental release and will identify the potential need for any remediation of soil or groundwater contamination caused by past uses.

VIII-c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?

VIII-c) No Impact. There are no existing or proposed schools within one-quarter mile of the Project site. Therefore, there would be no impact and no mitigation measures are required. No further analysis of this topic in the EIR is required.

VIII-d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?

VIII-d) No Impact. The Project is not located on a site which is included on a list of hazardous materials compiled pursuant to Government Code Section 65962.5 and, as a result, would not create a significant hazard to the public or the environment. There would be no impact and no mitigation measures are required. No further analysis of this topic in the EIR is required.

VIII-e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?; and,

VIII-f) For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?

V-III-e-f) Less Than Significant Impact. Although there are two airports within a two miles radius of the Project, it is not located within an airport land use plan, nor is it located within the approach or landing zone of an active runway. Any potential impacts would be less than significant, and no mitigation measures are required. No further analysis of this topic in the EIR is required

VIII-g) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?

VIII-g) Less Than Significant Impact. Although the Project proposes access points from South Golden State Boulevard, East Manning Avenue, and East Valley Drive, the Area of Potential Effect does not extend across any publicly accessed transportation routes and would not interfere with implementation of an emergency response plan or evacuation. (**See Figure 1-5**) Furthermore, the Project has been designed with multiple ingress/egress routes which enable adequate access to emergency vehicles. Therefore, impacts would be less than significant, and no mitigation measures are required. No further analysis of this topic in the EIR is required.

VIII-h) Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?

VIII-d) No Impact. The Project site and surrounding areas are comprised primarily of developed industrial lands. There are no wildlands in the vicinity of the Project and therefore no associated risk of wildland fires. There would be no impact and no mitigation measures are required. No further analysis of this topic in the EIR is required.

2.9 Hydrology and Water Quality

Table 2-13. Hydrology and Water Quality Topics

Hydrology and Water Quality					
	Would the project:	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less than Significant Impact	No Impact
a)	Violate any water quality standards or waste discharge requirements?	☒	☐	☐	☐
b)	Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?	☒	☐	☐	☐
c)	Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site?	☒	☐	☐	☐
d)	Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site?	☒	☐	☐	☐
e)	Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?	☒	☐	☐	☐
f)	Otherwise substantially degrade water quality?	☒	☐	☐	☐
g)	Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?	☐	☐	☐	☒
h)	Place within a 100-year flood hazard area structures which would impede or redirect flood flows?	☐	☐	☐	☒
i)	Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?	☐	☐	☒	☐
j)	Inundation by seiche, tsunami, or mudflow?	☐	☐	☐	☒

2.9.1 Environmental Setting

California receives 75% of its total precipitation in the form of rain and snow in the watersheds north of Sacramento. However, 80% of California's water demand comes from the lower 2/3 of the State. In the San Joaquin Valley, water supply is supplemented by the Federal Central Valley Project (CVP) Friant Kern and

Madera Canals and the State Water Project (SWP) California Aqueduct supplied by rain and snow from the Sierra Nevada Mountain Range. The SWP is a water storage and delivery system of reservoirs, aqueducts, power plants, and pumping plants used to supply water to more than 26 million people in California, including providing municipal water and irrigation to 750,000 acres of farmland, primarily on the west side of the San Joaquin Valley. [21] The CVP, like the SWP, is a water storage and delivery system, encompassing many reservoirs and conveyance facilities. The Friant Kern Canal (FKC) transports water south of Millerton Lake/Dam to users along the east side of the San Joaquin Valley. The Madera Canal delivers water north from Millerton Lake/Dam.

The City of Fowler's water supply and distribution is provided by the Water Division of the City's Public Works Department. Fowler's water supply is comprised entirely of groundwater from six wells throughout the City. Pumps deliver the water from beneath the ground to a network of watermains, pipelines and laterals which distribute water to residents and businesses.

Most of Fresno County, including the City of Fowler and the Project site, is located in the Tulare Lake Hydrologic Region. The Tulare Lake Hydrologic Region is subdivided into 12 groundwater basins. The San Joaquin Valley Groundwater basin is further divided into seven sub-basins. The Project lies within the Kings sub-basin of the San Joaquin Valley Groundwater Basin within the Tulare Lake Hydrologic Region. "While the Tulare Lake Hydrologic Region remains the largest agricultural region in California with irrigated acreage declining only slightly from 2005 to 2010, it is facing many issues. The 2007-2009 drought along with reduced imported surface water supplies from the Delta, led to increased groundwater pumping. Older water storage and delivery facilities are affecting flood management and distribution reliability. Along with more agricultural reliance on groundwater, many smaller communities have to deal with aging municipal wells and sewage treatment facilities that have difficulty meeting water quality standards. Additionally, the urban population continues to grow, gaining 8 percent from 2005 to 2010." [22]

Groundwater monitoring and evaluation is a key aspect to understanding groundwater conditions, identifying effective resource management strategies, and implementing sustainable resource management practices. Department of Water Resources (DWR) strengthened existing groundwater level monitoring by administering the California Statewide Groundwater Elevation and Monitoring (CASGEM) program, which collects groundwater elevation data in a systematic manner on a statewide basis and shared the information with the public. The Kings sub-basin was classified by CASGEM as high-priority, as were the remaining six sub-basins within the San Joaquin Valley Basin.

"During years of normal or above normal precipitation, or during periods of low groundwater extraction, aquifer systems tend to recharge and respond with rising groundwater levels. As groundwater levels rise, they reconnect to surface water systems, contributing to surface water baseflow or wetlands, seeps, and springs. However, for much of the Tulare Lake Hydrologic Region, due to extensive pumping over the years the groundwater table has been disconnected from the surface water system for decades and provides no contribution to baseflow."[23] Historically, the Tulare Lake Region extracts more groundwater than what naturally recharges, resulting in a condition called 'groundwater overdraft.' Overdraft is characterized by groundwater levels that decline over a period of years and never fully recover, even in years that experience above-average precipitation. As early as 1980, DWR identified five of the seven southern San Joaquin Valley groundwater sub-basins (Kings, Kaweah, Tulare Lake, Tule, and Kern County) as being subject to conditions of critical overdraft. According to the 2013 Update of the California Water Plan (Tulare Lake Region), groundwater overdraft continues throughout these same five sub-basins and beyond. [24]

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[21] California Department of Water Resources. https://water.ca.gov/Water-Basics/The-California-Water-System Accessed 21 August 2018.
[22] California Water Plan; Tulare Lake Region. https://water.ca.gov/-/media/DWR-Website/Web-Pages/Programs/California-Water-Plan/Docs/Update2013/Regional-Reports/Water-Plan-Update-2013-Tulare-Lake-Regional-Report.pdf Accessed 21 August 2018.
[23] California Water Plan; Tulare Lake Region. https://water.ca.gov/-/media/DWR-Website/Web-Pages/Programs/California-Water-Plan/Docs/Update2013/Regional-Reports/Water-Plan-Update-2013-Tulare-Lake-Regional-Report.pdf Accessed 21 August 2018.
[24] Ibid.

2.9.2 Regulatory Setting

2.9.2.1 Federal

Clean Water Act: The Clean Water Act (CWA) is intended to restore and maintain the chemical, physical, and biological integrity of the nation's waters (33 CFR 1251). The regulations implementing the CWA protect waters of the U.S. including streams and wetlands (33 CFR 328.3). The CWA requires States to set standards to protect, maintain, and restore water quality by regulating point source and some non-point source discharges. Under Section 402 of the CWA, the National Pollutant Discharge Elimination System (NPDES) permit process was established to regulate these discharges.

Federal Emergency Management Agency (FEMA) Flood Zones: The National Flood Insurance Act (1968) makes available federally-subsidized flood insurance to owners of flood-prone properties. To facilitate identifying areas with flood potential, FEMA has developed Flood Insurance Rate Maps (FIRM) that can be used for planning purposes. Flood hazard areas identified on the Flood Insurance Rate Map are identified as a Special Flood Hazard Area (SFHA). SFHA are defined as the area that will be inundated by the flood event having a 1-percent chance of being equaled or exceeded in any given year. The 1-percent annual chance flood is also referred to as the base flood or 100-year flood. SFHAs are labeled as Zone A, Zone AO, Zone AH, Zones A1-A30, Zone AE, Zone A99, Zone AR, Zone AR/AE, Zone AR/AO, Zone AR/A1-A30, Zone AR/A, Zone V, Zone VE, and Zones V1-V30. Moderate flood hazard areas, labeled Zone B or Zone X (shaded) are also shown on the FIRM, and are the areas between the limits of the base flood and the 0.2-percent-annual-chance (or 500-year) flood. The areas of minimal flood hazard, which are the areas outside the SFHA and higher than the elevation of the 0.2-percent-annual-chance flood, are labeled Zone C or Zone X (un-shaded).

2.9.2.2 State

State Water Resources Control Board: The SWRCB has jurisdiction over water quality issues in California. The SWRCB is governed by the Porter-Cologne Water Quality Act (Division 7 of the Water Code (WC)), which establishes the legal framework for water quality control activities by the SWRCB. The intent of the Porter-Cologne Act is to regulate factors which may affect the quality of waters of the State to attain the highest quality which is reasonable, considering a full range of demands and values. Much of the implementation of the SWRCB's responsibilities is delegated to its nine Regional Boards. The Project site is located within the Central Valley Regional Water Quality Control Board (CVRWQCB). The CVRWQCB administers the NPDES storm water-permitting program in the Central Valley region. Construction activities on one acre or more are subject to the permitting requirements of the NPDES General Permit for Discharges of Storm Water Runoff Associated with Construction Activity (General Construction Permit). Additionally, CVRWQCB is responsible for issuing Waste Discharge Requirements Orders under WC Section 13260, Article 4, Waste Discharge Requirements.

The SWRCB requires a Storm Water Pollution Prevention Plan (SWPPP) as a requirement of the NPDES to regulates water quality associated with construction or industrial activities.

Recycled Water Policy: The Water Recycling Act of 1991 (WC Section 1357,5 *et seq.*) established a Statewide goal to recycle a total of 700,000 acre-feet of water per year by the year 2000 and 1,000,000 acre-feet of water per year by the year 2010. In February 2009, the SWRCB adopted its Recycled Water Policy (SWRCB Resolution No. 2009-0011), the purpose of which is to increase the beneficial use of recycled water from municipal wastewater sources in a manner that fully implements State and Federal water quality laws. The policy directs the State to rely less on variable annual precipitation and more on sustainable management of surface waters and groundwater, together with enhanced water conservation, water reuse and the use of stormwater. As a part of the new recycled water policy, the SWRCB adopted the following four goals for California:

1. *Increase the use of recycled water over 2002 levels by at least one million acre-feet per year (AFY) by 2020 and by at least two million AFY by 2030.*
2. *Increase the use of stormwater over use in 2007 by at least 500,000 AFY by 2020 and by at least one million AFY by 2030.*
3. *Increase the amount of water conserved in urban and industrial uses by comparison to 2007 by at least 20 percent by 2020.*
4. *Included in these goals is the substitution of as much recycled water for potable water as possible by 2030.*

In the new policy, the SWRCB also discussed several practical impacts of the greater use of recycled water in the State. Those impacts include the following:

- Groundwater salt and nutrient control: The SWRCB imposed a requirement that consistent salt and nutrient management plans be prepared for each basin and subbasin in California. Such plans must include a significant stormwater use and recharge component.
- Landscape irrigation: The SWRCB discussed issues involving the permitting of landscape irrigation projects that use recycled water, including the control of incidental runoff of recycled water.
- Groundwater recharge: The SWRCB addressed site-specific approvals of groundwater recharge projects using recycled water, emphasizing that such projects must not lower the water quality within a groundwater basin.
- Chemicals of emerging concern: The SWRCB further addressed chemicals of emerging concern (CEC), knowledge of which is currently "incomplete." An advisory panel will advise the Water Board regarding actions involving CECs, as they relate to the use of recycled water.

The wide-ranging ramifications of using recycled water, coupled with the aggressive goals established by the SWRCB for such future use in California, demonstrates that the new Recycled Water Policy will have a significant impact on land use activities within the State for many years to come.

Mandatory General Plan Elements: Planning and Zoning Law, specifically Government Code 65302 (d) requires local land use agencies to adopt a conservation element for the conservation, development, and utilization of natural resources including water and its hydraulic force, forests, soils, river and other waters, harbors, fisheries, wildlife, minerals, and other natural resources. That portion of the conservation element including waters shall be developed in coordination with any County-wide water agency and with all district and city agencies which have developed, served, controlled or conserved water for any purpose for the County or city for which the plan is prepared. Coordination shall include the discussion and evaluation of any water supply and demand information described in Section 65352.5, if that information has been submitted by the water agency to the city or County. The conservation element may also cover:

1. *The reclamation of land and waters.*
2. *Prevention and control of the pollution of streams and other waters.*
3. *Regulation of the use of land in stream channels and other areas required for the accomplishment of the conservation plan.*
4. *Prevention, control, and correction of the erosion of soils, beaches, and shores.*
5. *Protection of watersheds.*
6. *The location, quantity and quality of the rock, sand and gravel resources.*
7. *Flood control.*

Sustainable Groundwater Management Act: On September 16, 2014 Governor Edmund G. Brown, Jr. signed historic legislation to strengthen local management and monitoring of groundwater basins most critical to the State's water needs. The three bills, SB 1168 (Pavley), SB 1319 (Pavley), and AB 1739 (Dickinson) together makeup the Sustainable Groundwater Management Act (SGMA). SGMA comprehensively reforms groundwater management in California. The intent of the Act is to place management at the local level, although the State may intervene to manage basins when local agencies fail to take appropriate responsibility.

The Act provides authority for local agency management of groundwater and requires creation of groundwater sustainability agencies and implementation of plans to achieve groundwater sustainability within basins of high and medium-priority including the San Joaquin Valley- Kings Sub-basin. The Act took effect on January 1, 2015 and will be implemented over the course of next several years and decades.

2.9.2.3 Local

The City of Fowler 2025 General Plan Update contains the following policy relating to hydrology and which has potential relevance to the Project's California Environmental Quality Act (CEQA) review:

- *Ensure that land divisions and developments are approved only when a project's improvements, dedications, and fees fully cover incremental costs to the City and other agencies. Such improvements and infrastructure include parks, major streets, traffic signals, street lights, drainage systems, sewer, water, fire, police, schools, and other related facilities.*
- *Encourage the use of drought-tolerant native plants and the use of recycled water for roadway landscaping.*

2.9.3 Impact Assessment

IX-a) Violate any water quality standards or waste discharge requirements?

IX-a) Potentially Significant Impact. Stormwater runoff from precipitation events could carry on-site generated pollutants into municipal storm drains, resulting in the significant degradation of water quality downstream. Therefore, the EIR will provide further analysis of the Project's potential impacts to water quality.

IX-b) Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?

IX-b) Potentially Significant Impact. The Project proposes a substantial increase in impervious surfaces which will decrease potential for recharge of stormwater runoff in the currently vacant areas and will increase stormwater runoff generated overall on-site. In addition, the operational phase of the proposed uses (in particular the hotel, restaurants and Travel Center services) will increase water demand at the site and may potentially substantially deplete available groundwater supplies within the City of Fowler. Therefore, further analysis of the Project's potential impacts to groundwater will be evaluated in the EIR.

IX-c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site?

IX-d) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site?

IX-e) Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?

IX-c-e) Potentially Significant Impact. The Project proposes demolition of an existing development, and replacement with additional and more extensive development as described in Section 1.1.8. There are no streams or rivers onsite; however, the proposed significant increase in impervious surfaces will substantially alter the existing drainage volume and pattern onsite. The operational phase of the Project would involve the use, transport, and dispersal of hazardous materials such as fuels, lubricants, oils, and cleaning solvents. Fuel trucks delivering fuels onsite for storage in aboveground tanks will occur on a regular basis. Stormwater runoff could carry pollutants into municipal storm drains. These activities may result in potentially significant impacts on the environment. Therefore, the topics of onsite drainage patterns, erosion, surface runoff, stormwater drainage, and polluted runoff will be further analyzed in the EIR.

IX-f) Otherwise substantially degrade water quality?

IX-f) Potentially Significant Impact. Operation of the Project would require the use, transport, and dispersal of hazardous materials such as fuels, lubricants, oils, and cleaning solvents. Fuel trucks delivering fuels onsite for storage in aboveground tanks will occur on a regular basis. Stormwater runoff could carry pollutants into municipal storm drains, resulting in the degradation of water quality. Therefore, the EIR will provide further analysis of the Project's potential impacts to water quality.

IX-g) Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map? and,

IX-h) Place within a 100-year flood hazard area structures which would impede or redirect flood flows?

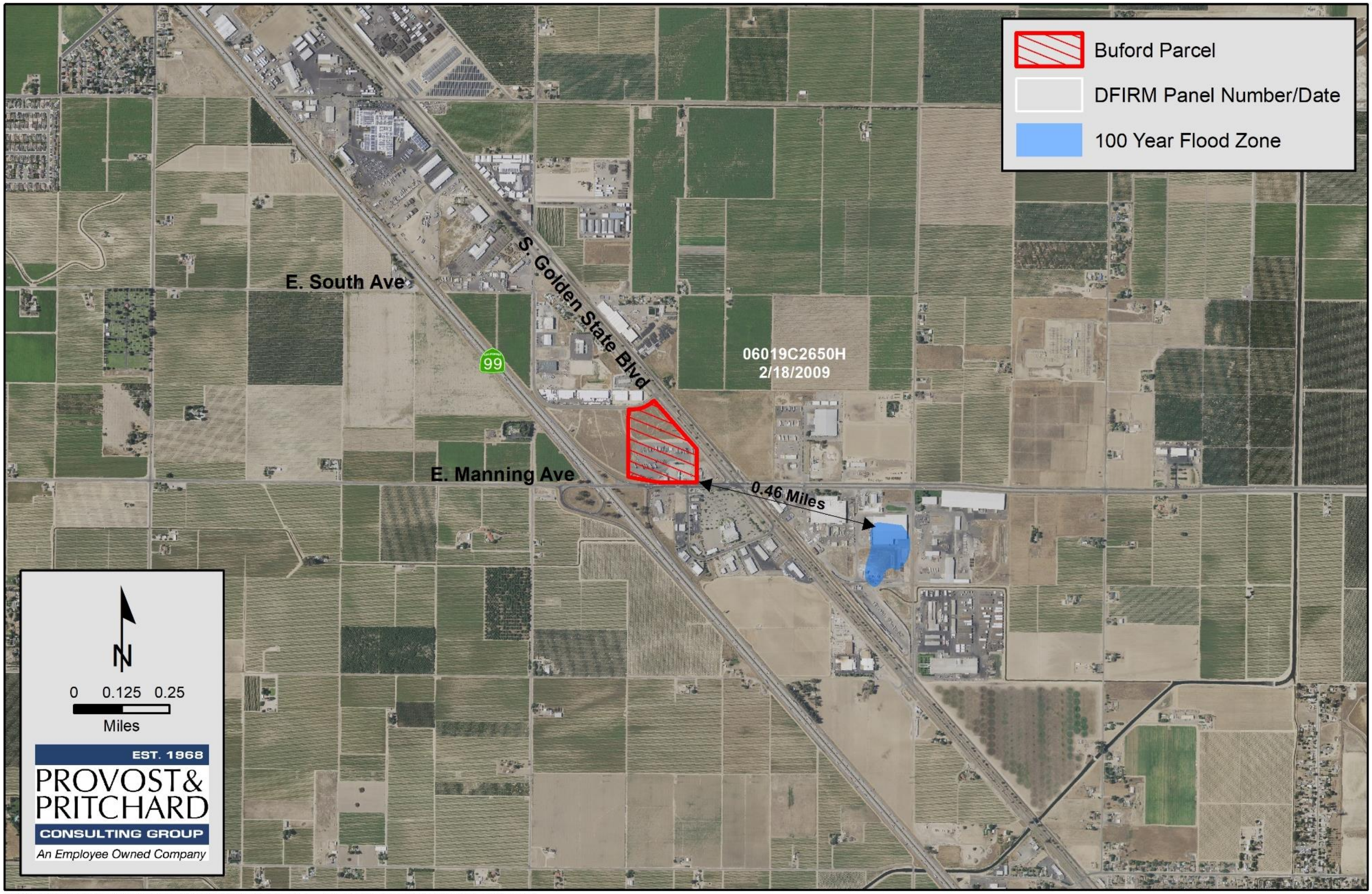
IX-g-h) No Impact. According to FEMA National Flood Insurance Program (NFIP) FIRM Panel 06019C2650H, the Project will not intersect a 100-year flood zone (See **Figure 2-4**). The Project would not involve the construction of housing, nor would it involve the development of structures within a 100-year flood area. There would be no impact, and no mitigation measures are required. No further analysis of this topic in the EIR is required.

IX-i) Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam? and,

IX-i) Less Than Significant Impact. The Project is located approximately 23 miles southwest of Pine Flat dam. Even at this distance, because of the topography of the valley, the Project site, along with the rest of the City of Fowler, is located within the inundation area of Pine Flat dam. In general, dam failure, although an existing hazard of baseline conditions, is a low-probability event due to regular inspections and an extensive set of specifications and standards implemented by state and federal agencies, such as FEMA and DWR to maintain dam safety. Furthermore, the Project does not have the potential to exacerbate the potential of a dam failure. Impacts would be less than significant, and no mitigation measures are required. No further analysis of this topic in the EIR is required.

IX-j) Inundation by seiche, tsunami, or mudflow?

IX-j) No Impact. There are no nearby bodies of water of sufficient size or shape to generate a standing wave resulting in seiche and the Project site's distance from the Pacific Ocean and the intervening Coast Ranges preclude occurrence of a tsunami. The site's flat topography and its distance from flood-prone bodies of water make inundation by mudflow unlikely. Therefore, there will be no impact, and no mitigation measures will be required. No further analysis of this topic in the EIR is required.



6/26/2018 : G:\Fowler_City of-2619\261917012-Buford Oil CUP\GIS\Map\FEMA.mxd

Figure 2-4. FEMA Map

2.10 Land Use and Planning

Table 2-14. Land Use and Planning Topics

Land Use and Planning					
	Would the project:	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less than Significant Impact	No Impact
a)	Physically divide an established community?	☐	☐	☐	☒
b)	Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the General Plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?	☐	☐	☐	☒
c)	Conflict with any applicable habitat conservation plan or natural community conservation plan?	☐	☐	☐	☒

2.10.1 Environmental Setting

The Project site is located entirely within the City of Fowler's designated Golden State Industrial Corridor (GSIC) intended for industrial and commercial uses. The City of Fowler General Plan designates the Project site as General Commercial. The Project site is zoned C-3 (General Commercial). Properties adjacent/nearby the Project to the west include four undeveloped parcels designated by the General Plan as Light Industrial and zoned as M-1 (Light Industrial). To the north, are two parcels designated by the General Plan as Light Industrial and General Commercial and zoned as C-3 (General Commercial) and developed with one warehouse structure each. To the east is a 1.9-acre parcel, containing a restaurant. Also, to the east is a 25-acre parcel designated as Light Industrial by the General Plan and zoned as M-1 (Light Industrial) This parcel is currently undergoing development for the Maxco Packaging Facility recently approved by the City, which will be a large manufacturing structure and office. South of the Project are East Manning Avenue and several parcels beyond designated by the General Plan as General Commercial and zoned as C-3 (General Commercial) and developed with commercial uses. All the above nearby/adjacent properties and the Project site are within the Golden State Industrial Corridor. **See Figure 1-5**.

The Project site is approximately 700 feet west and 300 feet east of the City limit line. The County properties outside the City limit line are currently in agricultural production and conform with the County's land use designations and zoning districts.

2.10.2 Regulatory Setting

There are no federal regulations regarding land use that are relevant to the Project.

2.10.2.1 Federal

There are no state regulations regarding land use that are relevant to the Project.

2.10.2.2 Local

The City of Fowler 2025 General Plan Update includes the following goals and policies regarding land use and which have potential relevance to the Project's California Environmental Quality Act (CEQA) review:

Goals and Policies:

- *Existing vacant land within the city limits lying generally between Highway 99 and Golden State Boulevard shall be planned for major new industrial, commercial, mixed-use, and public facility uses.*
- *General Commercial. This designation provides for commercial areas with a wide range of retail and service activities along major traffic corridors as permitted in the C-3 district. Highway commercial uses as permitted in the C-H district are permitted at the interchange of major streets with Highway 99 and Golden State Boulevard and are intended to provide for visitor-serving uses, including restaurants, lodging, and gasoline.*
- *Ensure that all commercial uses contribute to the resolution of traffic and parking impacts created by additional traffic demands generated by those businesses.*
- *A minimum of 10% of the surface area of all commercial developments shall be landscaped. Trees shall be planted within the parking lot such that a minimum of 50% of the parking lot is shaded by tree canopies when fully grown.*

Fowler Zoning Ordinance: The Fowler Zoning Ordinance establishes land use regulations by specific zone district located within the City limits. This includes allowable uses per zone districts, uses subject to conditional use permits, building setback requirements, parking stall ratios, and development standards. Pursuant to Government Code Section 65860, the zoning ordinance must be consistent with the City's General Plan. The intent of the Fowler Zoning Ordinance is to preserve and promote the public health, safety and welfare of the city and of the public generally and to facilitate development and expansion of the municipality in a precise and orderly manner throughout the City of Fowler.

Zoning Districts:
C-3 General Commercial zone district: The C-3 General Commercial district is intended to provide commercial locations that, due to space requirements or the product or service rendered, are not compatible with and are usually not located within the downtown business district. [25]

2.10.3 Impact Assessment

X-a) Would the project physically divide an established community?

a) No Impact: The Project is located in the southern portion of the City of Fowler within the Golden State Industrial Corridor. Properties adjacent/nearby the Project are considered industrial and commercial land uses by the City of Fowler General Plan. The zoning designation are M-1 (Light Industrial), M-2 (Heavy Industrial), C-3 (General Commercial), and C-2 (Community Commercial). The Project site is located within the City's growth boundary and is adequately served by public facilities and streets. It will not physically divide the community. There will be no impact and no mitigation measures are required. No further analysis of this topic in the EIR is required

X-b) Would the project conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the General Plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?

b) No Impact: The Project is located within the City of Fowler and the proposed use is consistent with the City's General Plan land use designation and zoning. In the future, the Project may complete a Tentative Map

[25] City of Fowler Municipal Code. https://library.municode.com/ca/fowler/codes/code_of_ordinances?nodeId=ART7EFAREDI Accessed August 14, 2018

if the applicant wishes to sell their parcels. There will be no impact and no mitigation measures are required. No further analysis of this topic in the EIR is required

X-c) Would the project conflict with any applicable habitat conservation plan or natural community conservation plan?

c) No Impact: The Project is not located within a habitat conservation plan or natural community conservation plan, nor is it in the vicinity of any such plan. There will be no impact and no mitigation measures are required. No further analysis of this topic in the EIR is required.

2.11 Mineral Resources

Table 2-15. Mineral Resources Topics

Mineral Resources					
Would the project:		Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less than Significant Impact	No Impact
a)	Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?	☐	☐	☐	☒
b)	Result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?	☐	☐	☐	☒

2.11.1 Environmental Setting

City of Fowler is located in the San Joaquin Valley. The San Joaquin Valley is bounded by the Sierra Nevada mountain range to the east, the Coast Ranges to the west, and the Tehachapi Mountains to the south. The relatively flat floor of the San Joaquin Valley overlies thousands mineral deposits that have accumulated as the trough has been lowered and the adjacent mountains have been elevated. The low alluvial plains and fans in the San Joaquin Valley floor are relatively flat and featureless which occupy most of the floor's surface area.

2.11.2 Regulatory Setting

2.11.2.1 Federal

There are no federal regulations pertaining to mineral resources relevant to the Project.

2.11.2.2 State

California Surface Mining and Reclamation Act of 1975: Enacted by the State Legislature in 1975, the Surface Mining and Reclamation Act (SMARA), Public Resources Code § 2710 et seq., insures a continuing supply of mineral resources for the State. The act also creates surface mining and reclamation policy to assure that:

- Production and conservation of minerals is encouraged;
- Environmental effects are prevented or minimized;
- Consideration is given to recreational activities, watersheds, wildlife, range and forage, and aesthetic enjoyment;
- Mined lands are reclaimed to a useable condition once mining is completed; and
- Hazards to public safety both now and in the future, are eliminated.

Areas in the State (city or county) that do not have their own regulations for mining and reclamation activities rely on the Department of Conservation, Division of Mines and Geology, Office of Mine Reclamation to enforce this law. SMARA contains provisions for the inventory of mineral lands in the State of California. The State Geologist, in accordance with the State Board's Guidelines for Classification and Designation of Mineral Lands, must classify Mineral Resource Zones (MRZ) as designated below:

- **MRZ-1.** Areas where available geologic information indicates that there is minimal likelihood of significant resources.

- **MRZ-2.** Areas underlain by mineral deposits where geologic data indicate that significant mineral deposits are located or likely to be located.
- **MRZ-3.** Areas where mineral deposits are found but the significance of the deposits cannot be evaluated without further exploration.
- **MRZ-4.** Areas where there is not enough information to assess the zone. These are areas that have unknown mineral resource significance.

SMARA only covers mining activities that impact or disturb the surface of the land. Deep mining (tunnel) or petroleum and gas production is not covered by SMARA.

2.11.2.3 Local

There are no goals or policies listed in the City of Fowler General Plan (!976) or City of Fowler General Plan Update (2025) relevant to the subject of mineral resources.

The Fresno County General Plan Background Report, Mineral Section: Figure 7-7 Mineral Resource Locations, in the *Fresno County General Plan Background Report (Background Report)* [26]. illustrates the general distribution of minerals throughout the County. However, the California Division of Mines and Geology (CDMG) has not performed a comprehensive survey of all potential mineral resource locations or classified other locations within the County into Mineral Resource Zones (MRZ)

2.11.3 Impact Assessment

XI-a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?

XI-b) Result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?

a-b) No Impact: The Project site is not classified as a Mineral Resource Zone under the SMARA, according to Figure 7-7 of the *Fresno County General Plan Background Report (2000)*[27], see Figure 2-8. California Department of Conservation's Division of Oil, Gas, and Geothermal Resources has no record of closed or active oil or gas wells on the Project site or within 2 miles. The Project does not include any mining operations or related operations. Therefore, since no known mineral resources have been designated in this area, the Project would not result in the loss of availability of a known mineral resources. No further analysis of this topic in the EIR is required.

[26] Fresno County General Plan Update. February 2000. Page 4.11-1
[27] Ibid

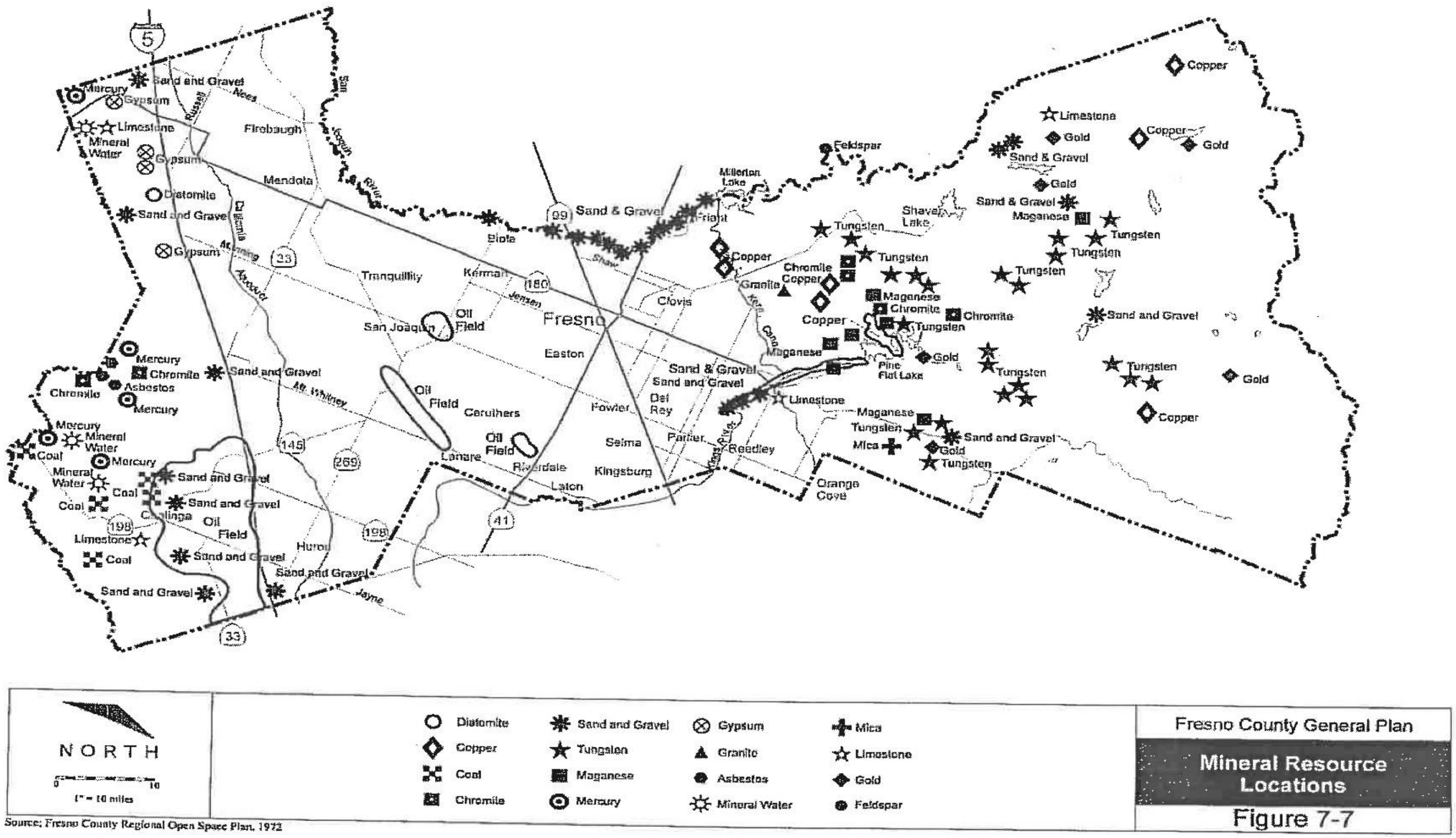


Figure 2-5 Fresno County Mineral Resources Map

2.12 Noise

Table 2-16. Noise Topics

Noise					
Would the project:		Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less than Significant Impact	No Impact
a)	Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	☐	☐	☒	☐
b)	Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?	☐	☐	☒	☐
c)	A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?	☐	☐	☒	☐
d)	A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?	☐	☐	☒	☐
e)	For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	☒	☐
f)	For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	☒	☐

2.12.1 Environmental Setting

The ambient noise level in the Project area is largely generated by automobile/commercial truck traffic on adjacent arterial/collector streets. In addition, State Route (SR) 99, a heavily used truck route north and south in California, is approximately 500 feet west of the Project site. The arterials and SR 99 are designed to facilitate commercial truck traffic. The site is surrounded by industrial and commercial uses. Also, a major noise generator is the active Southern Pacific Railroad, located approximately 200 feet east of the Project.

The Evanwoods Apartments a medium density residential development are approximately 250 feet north of the Project.

According to the overall noise level standards set forth in the Fowler General Plan Noise Element, the acceptable noise environment for residential uses is a maximum Day/Night Average of 60 decibels (dB). The Noise section also establishes maximum hourly values 50 dB in the daytime (7:00 a.m. to 10:00 p.m.) and 45 dB at night (10:00 p.m. to 7:00 a.m.)[28]

[28] City of Fowler General Plan Update 2025 Draft Environmental Impact Report, Accessed August 17, 2018

2.12.2 Regulatory Setting

2.12.2.1 Federal

Federal Highway Administration (FHWA) Highway Traffic Noise Prediction methodology

"In March 1998, the Federal Highway Administration (FHWA) released the Traffic Noise Model, Version 1.0 (FHWA TNM®). It was developed as a means for aiding compliance with policies and procedures under FHWA regulations. Since its release in March 1998, Version 1.0a was released in March 1999, Version 1.0b in August 1999, Version 1.1 in September 2000, Version 2.0 in June 2002, Version 2.1 in March 2003 and the current version, Version 2.5 in April 2004. The FHWA TNM is an entirely new, state-of-the-art computer program used for predicting noise impacts in the vicinity of highways. It uses advances in personal computer hardware and software to improve upon the accuracy and ease of modeling highway noise, including the design of effective, cost-efficient highway noise barriers."[29]

Federal Railway Administration (FRA) and the Federal Transit Administration (FTA)

"The Federal Railway Administration (FRA) and the Federal Transit Administration (FTA) have published guidance relative to vibration impacts. According to the FRA, fragile buildings can be exposed to groundborne vibration levels of 0.5 Peak Particle Velocity (PPV) without experiencing structural damage. The FTA has identified the human annoyance response to vibration levels as 80 VdB."30

2.12.2.2 State

California Noise Insulation Standards

"The California Noise Insulation Standards found in the California Code of Regulations, Title 24, set requirements for new multi-family residential units, hotels, and motels that may be subject to relatively high levels of transportation-related noise. For exterior noise, the noise insulation standard is DNL 45 dB in any habitable room and requires an acoustical analysis demonstrating how dwelling units have been designed to meet this interior standard where such units are proposed in areas subject to noise levels greater than DNL 60 dB."[31]

California's Airport Noise Standards

"The State of California has the authority to establish regulations requiring airports to address aircraft noise impacts on land uses in their vicinities. The State of California's Airport Noise Standards, found in Title 21 of the California Code of Regulations, identify a noise exposure level of Community Noise Equivalent Level (CNEL) 65 dB as the noise impact boundary around airports. Within the noise impact boundary, airport proprietors are required to ensure that all land uses are compatible with the aircraft noise environment or the airport proprietor must secure a variance from the California Department of Transportation."[32]

California Department of Transportation (Caltrans)

"The State of California establishes noise limits for vehicles licensed to operate on public roads. For heavy trucks, the State passby standard is consistent with the federal limit of 80 dB. The State passby standard for light trucks and passenger cars (less than 4.5 tons gross vehicle rating) is also 80 dB at 15 meters from the centerline."[33]

[29] Federal Highway Administration, *Traffic Noise Model*, http://www.fhwa.dot.gov/environment/noise/traffic_noise_model/
[30] Ibid.
[31] Ibid,. page 153.
[32] Ibid., page 152.
[33] Tulare County Association of Governments (TCAG). *2011 Regional Transportation Plan: Draft Subsequent EIR*, 152.

California State Building Code

The State Building Code, Title 24, Part 2 of the State of California Code of Regulation establishes uniform minimum noise insulation performance standards to protect persons within new buildings which house people, including hotels, motels, dormitories, apartment houses and dwellings other than single-family dwellings. Title 24 mandates that interior noise levels attributable to exterior sources shall not exceed 45 dB CNEL in any habitable room.

Title 24 also mandates that for structures containing noise sensitive uses to be located where CNEL exceeds 60 dB, an acoustical analysis must be prepared to identify mechanisms for limiting exterior noise to the prescribed allowable interior levels. If the interior allowable noise levels are met by requiring that windows be kept closed, the design for the structure must also specify a ventilation or air condition system to provide a habitable interior environment.

2.12.2.3 Local

The City of Fowler 2025 General Plan Update contain the following goals and policies that relate to noise and which have potential relevance to the Project's California Environmental Quality Act (CEQA) review:
Goals and Policies:

- *5-3: Provide designated routes and loading standards that reduce the noise and safety concerns associated with truck traffic.*
- *Require that the automobile and truck access of commercial and industrial land uses abutting residential parcels be located at the maximum practical distance from the nearest residential parcels to minimize noise impacts.*
- *Protect City residents from transportation generated noise. Increased setbacks, walls, landscaped berms, other sound-absorbing barriers, or a combination thereof shall be provided along major roadways where appropriate in order to protect adjacent noise-sensitive land uses from traffic-generated noise impacts. Additionally, noise generators such as commercial or industrial activities shall use these techniques to mitigate exterior noise levels.*

The City of Fowler Municipal Code contains the following policy for the control of noise.

- *Project site is subject to the City of Fowler Municipal Code, which is covered in Title 5, Article 6, Chapter 21 of the municipal code. It prohibits continued loud noise or noise which disturbs others by placing time constraints on noise producing activities and volume limits on noise amplification devices. Specifically, construction and operation of machinery is prohibited within the hours of 8:00 p.m. and 7:00 a.m. Furthermore, the following noise level standards by receiving land use category have been established by the City of Fowler Municipal Code:*

2.12.3 Impact Assessment

XII-a) Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?

a) Less Than Significant Impact: Typical construction equipment would include scrapers, backhoes, and miscellaneous equipment (i.e. pneumatic tools, generators and portable air compressors). Typical noise levels generated by this type of construction equipment at various distances from the noise source are:

Table 2-17. Typical Noise Levels[34]

Construction Equipment	dBA at 50 ft	dBA at 100 ft	dBA at 300 ft
Pneumatic tools	85	79	70
Truck (e.g. dump, water)	88	82	73
Concrete mixer (truck)	85	79	70
Scraper	88	82	73
Backhoe	85	79	70
Generator	76	70	61
Portable air compressor	81	75	66

Noise levels generated by the equipment would range from 76 to 88 dBA at a distance of 50 feet from the noise source; at 100 feet, the noise levels would range from 70 to 82 dBA. The distance to the nearest sensitive receptor is approximately 240 feet to the north (Evanswood Apartments) and 200 feet to the south (The Worship Center). Construction noise will be temporary and only done during the permitted daytime hours of 7:00 a.m. to 8:00 p.m. [35] The portion of the Project site closest to the sensitive receptor will not include the development of a structure, thus reducing the impact of exposing persons to the generation of noise in excess of established standards.

The proposed uses will operate normal business hours with the exception of noise generated from traveler's amenities, and the 24-hour diner. Traffic noise will be limited to vehicles and commercial trucks. The site, being situated between State Route 99, Golden State Boulevard and the Southern Pacific Railroad, will not significantly increase the ambient noise level if measured at each sensitive receptor's property line because the ambient noise level in the project's vicinity is naturally high. All activities within the Project site will be contained in their respective uses from the hours of 10:00p.m. to 7:00 a.m. to reduce the noise impacts to adjacent sensitive receptors. There will be a less than significant impact and no mitigation measures are required. No further analysis of this topic in the EIR is required.

XII-b) Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?

b) Less Than Significant: The nearest sensitive receptor to groundborne vibration or groundborne noise levels are those mentioned in XI-a) above. Although construction activities potentially generate the highest vibration levels and the most damage, they are temporary in nature. [36] Normally, highway traffic does not generate high enough levels to cause damage to residences or other structures, even at very close distances.[37] Both of the sensitive receptors are located adjacent west of Golden State Boulevard and the Southern Pacific Railroad (within 200 feet). Trains can produce some of the highest vibration levels. These train tracks have approximately 17 to 40 trains pass through daily, according to the City of Fowler Public Works Director. Any vibration from the Project would be less than the existing daily vibration levels from both Golden State Boulevard and the Southern Pacific Railroad and are therefore determined to be less than significant and no mitigation is required. There will be a less than significant impact and no mitigation measures are required. No further analysis of this topic in the EIR is required.

[34] California Department of Transportation Division of Environmental analysis Environmental Engineering Technical Noise Supplement to the Traffic Noise Analysis Protocol

[35] City of Fowler Municipal Code - https://library.municode.com/ca/fowler/codes/code_of_ordinances?nodeId=TIT5PUWE_CH21NU, Accessed August 15, 2018

[36] California Department of Transportation Division of Environmental analysis Environmental Engineering Technical Noise Supplement to the Traffic Noise Analysis Protocol

[37] Ibid

XII-c) A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?

c) Less Than Significant Impact: Currently, approximately half of the project is development and used as a commercial truck fueling facility and traveler amenities. After construction, the Project may potentially increase the level of ambient noise. Once fully constructed, most of the Project will operate during normal business hours, with the exception of, the travelers' amenities, hotel, and 24-hour restaurant. Sources of noise pertaining to the Project will include commercial trucks and vehicle traffic. The nearest sensitive receptors are approximately 240 feet north of the Project site and 200 feet south of the Project site. All deliveries via semi-truck and trailers will be done during the daytime hours. Operations will be reduced after daytime hours, but the hotel and 24-hour diner will remain operational. However, during nighttime hours, operations will be conducted indoors from the hours of 10:00 p.m. to 7:00 a.m. All uses at the site will be subject to City noise regulations and enforcement. The surrounding land uses consist of industrial, commercial, and a high traffic thoroughfare. In relation to the Project's surrounding land uses, the potential impacts that the Project may cause will be less than significant. There will be a less than significant impact and no mitigation measures are required. No further analysis of this topic in the EIR is required.

XII-d) A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?

d) Less Than Significant Impact: The Project would create short-term noise impacts related to the operation of construction equipment. However, after construction of the Project, temporary noise associated with the construction will cease. Construction will be limited to day-time hours of Monday through Friday 7:00 am. to 8:00 pm. The impact will be less than significant. (See Impact Section XII.a). There will be a less than significant impact and no mitigation measures are required. No further analysis of this topic in the EIR is required.

XII-e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels? and,

e) Less Than Significant Impact: The Project site is not located within an airport land use plan. The Project is approximately 1.54 miles northeast of the Selma Municipal Airport. The airports land strip is 2206 feet by 50 feet, paved with asphalt and rated for single wheel aircrafts. The planes utilizing the airport will not generate enough to noise to be discernable between the ambient noise level of the project area. There will be a less than significant impact and no mitigation measures are required. No further analysis of this topic in the EIR is required.

XII-f) For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?

f) Less Than Significant Impact: The nearest private airstrip is the Quinn Cat Company Facility. It is located approximately 1.53 miles southeast of the project. The airstrip is of similar size and rating as the Selma Municipal Airport. There will be no impact regarding exposing people to residing or working to private airstrip noise. There will be a less than significant impact and no mitigation measures are required. No further analysis of this topic in the EIR is required.

2.13 Population and Housing

Table 2-18. Population and Housing

Population and Housing					
	Would the project:	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less than Significant Impact	No Impact
a)	Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?	☐	☐	☐	☒
b)	Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒
c)	Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒

2.13.1 Environmental Setting

According to the California Department of Financing, the City of Fowler's population as of January 1, 2018 was 6,241.[38] The City has grown at a slower rate than surrounding cities over the past decade and is expected to maintain a 2-3% growth rate over the planning period. This would be consistent with overall Fresno County growth. Policies in the Land Use Element are intended to monitor population growth rates and allow the community to adjust the approach to growth based on the availability of services and other quality of life issues. At a 2% growth rate, the population of the City would increase from 4,100 in 2004 to approximately 6,100 in 2025. At 3%, the population would increase to 7,200, or an average annual increase of 180 residents per year."[39]

2.13.2 Regulatory Setting

2.13.3 Federal

There are no federal regulations related to population and housing that are applicable to the Project.

2.13.3.1 State

There are no state regulations related to population and housing that are applicable to the Project.

2.13.3.2 Local

The City of Fowler 2025 General Plan Update includes the following general plan concepts, goals and policies regarding population and housing which have potential relevance to the Project's California Environmental Quality Act (CEQA) review:

[38] Department of Finance http://www.dof.ca.gov/Forecasting/Demographics/Estimates/E-1/ Accessed August 13, 2018
[39] City of Fowler 2025 General Plan Update. http://www.fowlercity.org/city_departments/general_plan/Fowler_General_Plan.pdf Accessed August 8 2018.

General Plan Concepts:

- ***Providing commercial and industrial sites consistent with Fowler's growth.*** *With expected population growth, the City will be able to support a wider variety of retail stores and services, including some not available at present. Continued industrial and employment growth will be required to maintain a jobs/housing balance that offers many opportunities to City residents.*

Policies and Goals

- *Fostering economic growth, diversification, and the provision of commercial services and employment opportunities.*
- *Reducing land use conflicts while providing a balance range of residential, commercial, industrial, and institutional uses.*

2.13.4 Impact Assessment

XIII-a) Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?

a.) No Impact: The Project will consist of the development of a travel center with fueling facilities, traveler amenities, two drive-thru restaurants, a 24-hour diner, and a 4-story 120 rooms hotel. This project will employ approximately 91 employees, although, it is ultimately up to the prospective tenants for each lot. The Project will provide a place for employment for the Fowler community. The Buford travel center will not exclusively hire within the City of Fowler, so the impact of creating a substantial population growth in an area either directly or indirectly with be inconsequential. There will be no impact. No further analysis of this topic in the EIR is required.

XIII-b) Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?

b) No Impact: The Project site is approximately 19 acres, 11 of which are developed. There are no single-family or multi-family residential structures within the Project site. The Project will not result in the displacement of housing. There will be no impact. No further analysis of this topic in the EIR is required.

XIII-c) Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?

c)No Impact: Since the Project is partially developed and the remainder is vacant land. The development of the vacant land will not displace a substantial number of people, necessitating the construction of replacement housing. There will be no impact. No further analysis of this topic in the EIR is required.

2.14 Public Services

Table 2-19. Public Services Issues

Public Services					
Would the project:		Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less than Significant Impact	No Impact
a)	Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services:				
	Fire protection?	☐	☐	☒	☐
	Police protection?	☐	☐	☒	☐
	Schools?	☐	☐	☐	☒
	Parks?	☐	☐	☒	☐
	Other public facilities?	☐	☐	☐	☒

2.14.1 Environmental Setting

This section discusses public services in the Project vicinity, including fire protection, police protection, schools, and other public facilities. These services and facilities are provided and maintained by local and county entities. The environmental setting and evaluation of impacts to parks and recreational facilities are discussed with greater detail in Section 1.15 "Recreation".

Fire Protection: The City of Fowler Fire Department provides services to incorporated areas and as annexation and development occurs. The volunteer department has 12 volunteers and is approved for 14. There are no plans to transition to a full-time department. The City has approved a new fire station in 2017 and has started receiving bids for construction. Completion of construction is estimated spring of 2019.
Unincorporated portions of the planning area are within the jurisdiction of the Fresno County Fire Protection District. The City has entered into a transition agreement with the District to provide property tax revenue as areas annex to the City to reduce fiscal impacts on the District. In the event that the Fowler Fire Department cannot adequately respond to an emergency, the Fresno County Fire Protection District will be able to respond.

Police Protection: The Fowler City Police Department provides law enforcements services within the City as annexation and development occurs. The entire City is served from the headquarters office in downtown Fowler. Approximately 1.83 miles northwest of the Project Site. Currently, the City has 12 sworn officers, three sworn part-time officers, and 1 support staff member. Unincorporated portions of the planning area are served by the Fresno County Sheriff's Department. An Instant Aide Agreement exists between the Sheriff's Department, the California Highway Patrol, and the Fowler Police Department.

Schools: The City is served by the Fowler Unified School District (FUSD). The District also serves Malaga and the area north of Fowler. There are five schools in Fowler: Marshall Elementary School, Fremont School, Sutter Middle School, Fowler High School, and Casa Blanca continuation high school.

An analysis of school facilities by FUSD at each school site in Fowler shows that each school will be above capacity with anticipated cumulative residential development. New school facilities are shown on the land use map and are general in location, allowing flexibility in the location of such facilities.

According to the California Department of Education's Enrollment Report, total enrollment for Fowler Unified School District in 2017-2018 was 2,609 students, a slight increase from 2,562 in 2016-2017.[40]

Parks: The City of Fowler has three designated City Parks. Panzak Park, the most visually appealing park with luscious vegetation and mature trees, covers an area of approximately 2 acres, located 1.92 miles northwest of the Project site. Panzak Park is an area of open space used for recreation, surrounded by Medium and High density residential land uses. Covered portions of the park are available for a fee to rent for gatherings, while the remainder of the park is open to all on a first-come first-serve basis.

Donny Wright Park, the newest and largest park in the City of Fowler, is located north of West Fresno Street, between Stanford Avenue and Walnut Drive. The park is surrounded by Low and Medium density residential land uses. The park is approximately 6 acres and is about 1.73 miles northwest of the Project site.

The Fowler Veteran's Monument is located approximately 1.95 miles northwest of the Project site at the intersection of Merced Street and First Street. The park is designated as Medium Residential by the Fowler General Plan and zoned as R-1-6 (One Family Residential 6,000 square foot lots).

Library: The Fowler branch of the Fresno County Public Library is located 1.69 miles northwest of the Project site.

2.14.2 Regulatory Setting

2.14.2.1 Federal

No federal regulations apply to the Project.

2.14.2.2 State

California Occupational Safety and Health Administration

In accordance with California Code of Regulations Title 8 Sections 1270 "Fire Prevention" and 6773 "Fire Protection and Fire Equipment," the California Occupational Safety and Health Administration (Cal- OSHA) has established minimum standards for fire suppression and emergency medical services (EMS). The standards include, but are not limited to, guidelines on the handling of highly combustible materials, fire hose sizing requirements, restrictions on the use of compressed air, access roads, and the testing, maintenance and use of all firefighting and emergency medical equipment.

City Emergency Response/Evacuation Plans

The State of California passed legislation authorizing the Office of Emergency Services (OES) to prepare a Standard Emergency Management System (SEMS) program, which sets forth measures by which a jurisdiction should handle emergency disasters. Non-compliance with SEMS could result in the State withholding disaster relief from the non-complying jurisdiction in the event of an emergency disaster.

[40] California Department of Education Enrollment Reports. https://www.cde.ca.gov/sdprofile/details.aspx?cds=10621580000000 Accessed August 16, 2018.

California Fire Code

The California Fire Code (CFC) contains regulations relating to construction, maintenance, and use of buildings. Topics addressed in the code include fire department access, fire hydrants, automatic sprinkler systems, fire alarm systems, fire and explosion hazards safety, hazardous materials storage and use, provisions intended to protect and assist fire responders, industrial processes, and many other general and specialized fire-safety requirements for new and existing buildings and the surrounding premises. The CFC also contains specialized technical regulations related to fire and life safety.

California Health and Safety Code

State fire regulations are set forth in Sections 13000 et seq. of the California Health and Safety Code, which includes regulations for building standards, fire protection and notification systems, fire protection devices such as extinguishers, smoke alarms, high-rise buildings, childcare facility standards, and fire suppression training.

2.14.2.3 Local

The City of Fowler 2025 General Plan Update includes the following goals and policies regarding public services and which have potential relevance to the Project's California Environmental Quality Act (CEQA) review:

Goals and Policies:

- *Ensure that land division and developments are approved only when a project's improvements, dedications, and fees fully cover incremental costs to the City and other agencies. Such improvements and infrastructure include parks, major streets, traffic signals, street lights, drainage systems, sewer, water, fire, police, schools, and other related facilities.*
- *In cooperation with the Fresno County Fire Protection District, provide firefighting equipment, facilities and manpower sufficient to assure quick response and adequate fire flow at all times.*
- *Provide adequate police manpower and facilities and review development proposals so as to reduce crime and impacts on police protection services.*
- *In cooperation with the Fresno County Fire Protection District, provide fire fighting equipment, facilities and manpower sufficient to assure quick response and adequate fire flow at all times.*
- *Provide urban services to meet the needs of the existing community and planned growth.*
- *Ensure that land divisions and developments are approved only when a project's improvements, dedications, and fees fully cover incremental costs to the City and other agencies. Such improvements and infrastructure include parks, major streets, traffic signals, street lights, drainage systems, sewer, water, fire, police, schools, and other related facilities.*
- *Annually review the Capital Improvement Program in order to increase the capacity of needed public services in response to City growth, improve existing public facilities, and develop necessary new public facilities.*
- *Consider providing public cost-sharing of public services under certain circumstances to encourage desirable and innovative development within the city.*
- *Provide adequate police manpower and facilities and review development proposals so as to reduce crime and impacts on police protection services.*
- *The City shall work to expand the existing City hall to provide increased space for city employees, including expansion of the Fowler Police Department.*
- *The City shall work to provide a headquarters station for the Fowler Fire Department to house personnel and equipment in the downtown area.*
- *Develop park space based on a standard of 3.0 acres/1,000 residents (2.0 acres for neighborhood parks and 1.0 acre for community parks)*
- *The City will seek to manage the rates of population and housing growth at levels which do not exceed the capacity of the city, SKF, and the Fowler Unified School District to provide the necessary levels of community and educational services and facilities required, consistent with other goals of the General Plan.*

2.14.3 Impact Assessment

XIV-a) Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services:

a.i.) Fire Protection: Less Than Significant: The Project site would be served by the Fowler Fire Department and would be required to comply with requirements of the City regarding access and review of engineering plans. Standard fire suppression conditions shall be incorporated as part of the Project as per Fresno County Ordinance, including indoor sprinklers and placement of fire hydrants along roadways. The Project will construct a 4-story, 120 room hotel, the Fowler Fire Department will have to rely on the Fresno County Fire Protection Agency to respond to an emergency at the proposed hotel. The Project will not require new or altered government facilities that may cause environmental impacts. The impacts will be less than significant. No further analysis of this topic in the EIR is required.

a.ii.) Police Protection: Less Than Significant: The Fowler Police Department provides 24-hour policing services within the city limits. There are two officers that are on patrol 24 hours a day in the City of Fowler. Currently the Police Department is operating below a sufficient level according to the City's Police Chief. With the implementation of a Capital Improvement Program, this will allow the Police Department to utilize fees collected from the development impact fees required by each development project within the City. The Police Department will be able to use the fees to increase their presence to a satisfactory level. The impacts will be less than significant. No further analysis of this topic in the EIR is required.

a.iii.) Schools: No Impact: The Project site is within the Fowler Unified School District. As the Project would not create additional housing or students, there would be no impacts to schools. The Project would pay applicable school impact fees in effect at the time of building permits. There will be no impact. No further analysis of this topic in the EIR is required.

a.iv.) Schools: No Impact: The Project site is within the Fowler Unified School District. As the Project would not create additional housing or students, there would be no impacts to schools. The Project would pay applicable school impact fees in effect at the time of building permits. There will be no impact. No further analysis of this topic in the EIR is required.

a.v.) Parks: Less Than Significant: Please refer to Section 3.15 "Recreation" for information. There will a less than significant impact. No further analysis of this topic in the EIR is required.

a.vi.) Other public facilities: No Impact: As the Project would not would not create additional housing, there would be no impacts to other public facilities. there will be no impact. No further analysis of this topic in the EIR is required.

2.15 Recreation

Table 2-20. Recreation Topics

Recreation					
	Would the project:	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less than Significant Impact	No Impact
a)	Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	☐	☐	☒	☐
b)	Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?	☐	☐	☒	☐

2.15.1 Environmental Setting

The City of Fowler has three designated City Parks. Panzak Park, the most visually appealing park with luscious vegetation and mature trees, covers an area of approximately 2 acres, located 1.92 miles northwest of the Project site. Panzak Park is an area of open space used for recreation, surrounded by Medium and High density residential land uses. Covered portions of the park are available for a nominal fee to rent for gatherings, while the remainder of the park is open to all on a first-come first-serve basis.

Donny Wright Park, the newest and largest park in the City of Fowler, is located north of West Fresno Street, between Stanford Avenue and Walnut Drive. The park is surrounded by Low and Medium density residential land uses. The park is approximately 6 acres and is about 1.7 miles northwest of the Project site.

The Fowler Veteran's Monument is located approximately 1.95 miles northwest of the Project site at the intersection of Merced Street and First Street. The park is designated as Medium Residential by the Fowler General Plan and zoned as R-1-6 (One Family Residential 6,000 square foot lots).

2.15.2 Regulatory Setting

2.15.2.1 Federal

There are no federal regulations, plans, programs, and guidelines associated with recreation that is applicable to the Project.

2.15.2.2 State

There are no state regulations, plans, programs, and guidelines associated with recreation that is applicable to the Project.

2.15.2.3 Local

The City of Fowler 2025 General Plan Update includes the following goals and policies regarding recreation and which have potential relevance to the Project's California Environmental Quality Act (CEQA) review:

Open Space for Managed Resource Production

- *Develop park space based on a standard of 3.0 acres/1,000 residents (2.0 acres for neighborhood parks and 1.0 acre for community parks)*

2.15.3 Impact Assessment

XV-a) Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?

XV-b) Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?

a-b) Less Than Significant Impact: The Project will not include any recreational facilities. Currently, the City of Fowler has approximately 8 acres used for public parks. According to the Fowler General Plan, the City is required to supply approximately 18 acres of park space mandated by a standard calculation of 3.0 acres per 1,000 residents. There is a need for park space, however, the Project will not directly induce a substantial increase in population, therefore increasing the use of existing park facilities or require the construction or expansion of recreational facilities, which might have an adverse effect on the environment. No further analysis of this topic in the EIR is required.

2.16 Transportation/Traffic

Table 2-21. Transportation/Traffic Topics

Transportation/Traffic						
	Would the project:	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less than Significant Impact	No Impact
a)	Conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit?	☒	☐	☐	☐
b)	Conflict with an applicable congestion management program, including, but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways?	☒	☐	☐	☐
c)	Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that result in substantial safety risks?	☐	☐	☒	☐
d)	Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	☐	☐	☐	☒
e)	Result in inadequate emergency access?	☐	☐	☒	☐
f)	Conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities?	☐	☐	☐	☒

2.16.1 Environmental Setting

The Project site is located in the southeast area of the City of Fowler within Fresno County. The City is bisected by State Route 99, Golden State Boulevard, and the Southern Pacific Railroad used for both freight and passenger trains via AMTRAK. All three of these major transportation routes run north-south, parallel with each other.

The transportation system within the City of Fowler planning area includes City and County routes, as well as State Route 99 and Golden State Boulevard. The Public transit system includes public transit services, and within the County it includes common bus carriers, AMTRAK and other local agency transit and paratransit services. In addition, the County transportation system induces general aviation facilities, air passenger facilities, freight rail service, bicycle facilities. [41]

2.16.2 Regulatory Setting

2.16.2.1 Federal

Several federal regulations govern transportation issues. They include:

- Title 49, CFR, Sections 171-177 (49 CFR 171-177), governs the transportation of hazardous materials, the types of materials defined as hazardous, and the marking of the transportation vehicles.
- 49 CFR 350-399, and Appendices A-G, Federal Motor Carrier Safety Regulations, address safety considerations for the transport of goods, materials, and substances over public highways.
- 49 CFR 397.9, the Hazardous Materials Transportation Act of 1974, directs the U.S. Department of Transportation to establish criteria and regulations for the safe transportation of hazardous materials.

Federal Aviation Administration: The Federal Aviation Administration (FAA) regulates aviation at regional, public, and private airports. The FAA regulates objects affecting navigable airspace.

2.16.2.2 State

State of California Transportation Department Transportation Concept Reports: Each District of the California Department of Transportation (Caltrans) prepares a Transportation Concept Report (TCR) for every state highway or portion thereof in its jurisdiction. The TCR usually represents the first step in Caltrans' long-range corridor planning process. The purpose of the TCR is to determine how a highway will be developed and managed so that it delivers the targeted LOS and quality of operations that are feasible to attain over a 20-year period, otherwise known as the "route concept" or beyond 20 years, for what is known as the "ultimate concept".

2.16.2.3 Local

The City of Fowler 2025 General Plan Update Circulation Element includes the following goals and policies regarding recreation and which have potential relevance to the Project's California Environmental Quality Act (CEQA) review:

Goals and Policies:

- *Ensure that all commercial uses contribute to the resolution of traffic and parking impacts created by additional traffic demands generated by those businesses.*
- *Make intersection improvements to the existing major street system selectively through traffic engineering solutions rather than major structural improvements. This could include signalization, intersection channelization, use of directional signs, and diversion of traffic onto under-utilized streets.*
- *The distance between commercial driveways on arterial streets should be not less than 400 feet. Where practical and desirable, commercial driveways should be located on adjacent collector streets rather than on arterial streets.*
- *Existing points of ingress and egress shall be consolidated whenever possible. Driveway consolidation for new development shall be encouraged through access agreements along arterials.*
- *Adjacent parking areas for large commercial and industrial developments should be designed to allow interconnection and flow of traffic between these facilities. Access easements and agreements should be obtained during the development process.*

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[41] [41] City of Fowler 2025 General Plan Update. http://www.fowlercity.org/city_departments/general_plan/Fowler_General_Plan.pdf Accessed August 9 2018.

- *Require private developers to be primarily responsible for the improvement of streets and highways to developing commercial, industrial, and residential areas. These may include road construction or widening, installation of turning lanes and traffic signals, and the improvement of any drainage facility or other auxiliary facility necessary for the safe and efficient movement of traffic or the protection of road facilities.*
- *Require private and public land developments to provide all on-site and off-site facility improvements necessary to mitigate any development-generated circulation impacts. The City may require applicants to provide traffic impact studies prepared by qualified professionals to identify the impacts of a development and necessary mitigation measures.*
- *Design interior collector street systems for commercial and industrial subdivisions to accommodate the movement of heavy trucks.*
- *Restrict heavy duty truck through-traffic in residential areas and plan land uses so that trucks do not need to traverse these areas.*
- *Utilize existing infrastructure and utilities to the maximum extent practical and provide for the logical, timely, and economically efficient extension of infrastructure and services.*
- *Provide a well-planned, designed, constructed and maintained street and highway system that facilitates the movement of vehicles and provides safe and convenient access to surrounding developments.*
- *Apply consistent standards for new development based on traffic carrying capacity and classification.*
    - *Collectors are designed to have a 72 to 80-foot right-of-way width that allows four lanes undivided with parking, or two lanes with a two-way continuous left turn center lane.*
- *Standards for new street development can be altered or refined where it can be demonstrated that projected traffic flows can be accommodated. Alternative standards for major streets include:*
    - *an 84-foot arterial without a raised median island; and*
    - *a 72-foot collector to contain two travel lanes and a continuous dual left-turn lane.*
- *Encourage a Level of Service (LOS) "C" throughout the local circulation network, with an LOS "D" along SR 99. An exception to the local road standard is that LOS "D" may be allowed at intersections of major streets, at SR 99 interchanges, and along street segments where additional improvements are not feasible.*
- *Consider the use of traffic calming techniques in the design of new local streets where such techniques will improve safety and manage traffic flow.*
- *Provide a street network with quick and efficient routes for emergency vehicles, meeting necessary street widths, turn around radius, and other factors as determined by the City Engineer in consultation with the Fire Department and other emergency service providers.*
- *Restrict on-street parking to reduce traffic congestion and improve safety in appropriate locations.*
- *Provide a safe walking environment for pedestrians.*
    - *Require the installation of sidewalks as an integral part of all street construction where appropriate.*
    - *Require street lighting within the rights-of-way of all public streets.*
    - *Include pedestrian signal indicators as an integral part of the installation of traffic signals.*
- *Maximize visibility and access for pedestrians and encourage the removal of barriers (walls, easements, and fences) for safe and convenient movement of pedestrians. Special emphasis should be placed on the needs of disabled persons considering ADA regulations.*
- *Plan for pedestrian access consistent with road design standards while designing street and road projects. Provisions for pedestrian paths or sidewalks and timing of traffic signals to allow safe pedestrian street crossing shall be included.*
- *Encourage safe pedestrian walkways within commercial, office, industrial, residential, and recreational developments that comply with the Americans with Disabilities Act (ADA) requirements.*
- *Provide access (driveways, local streets, and private roads) to the City's street and highway system to reduce conflicts that can result from pedestrian traffic and motorized traffic.*
- *Cooperate with adjacent communities and Fresno County to improve the principal gateways to Fowler (Golden State Boulevard, Manning, Adams, and Fowler) to facilitate the movement of traffic into and out of the City.*

- *Participate in the establishment of regional traffic mitigation fees and/or benefit districts to be assessed on new development. The fees shall cover a reasonable share of the costs of providing local and subregional transportation improvements needed for serving new development.*
- *Provide bikeways in proximity to major traffic generators such as commercial centers, schools, recreational areas, and major public facilities.*

2.16.3 Impact Assessment

XVI-a) Conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit? And;

XVI-b) Conflict with an applicable congestion management program, including, but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways?

a-b) Potentially Significant Impact: The Project's operation has the potential to result in an increase in daily and peak-hour traffic within the vicinity of the local street system and state highway network. In addition, the construction of the Project has the potential to affect the transportation system through hauling of excavated materials, the delivery of construction materials, and the transportation of construction workers to and from the Project site. Once construction is completed, the Project's employees, customers, and visitors would generate a significant number of trips throughout the day. The resulting increase in traffic trips could exceed roadway capacitates or Level of Service. (LOS). Therefore, sections XVI – a and XVI – b will be elaborated within the EIR and provide further analysis of impacts to applicable plans, ordinances, policies, and congestion management programs.

XVI-c) Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that result in substantial safety risks?

c) Less Than Significant Impact: The Project does not propose any type of air transportation. The nearest airstrip is The Quinn Company Cat Facility airstrip and is located 1.5 miles southeast. The Project is proposing a four story, 120- room hotel located on Lot 4 (**Figure 1-3**). This will not affect any nearby air traffic patterns, because the Quinn Cat Facility's flight can only serve smaller aircrafts it will not affect the Project. The nearest international airport is 11.6 miles northwest. No further evaluation of this topic in an EIR is necessary.

XVI-d) Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?

d) No Impact: The Project's design does not include hazardous features. Access to the Project Site (**Figure 1-4**) allow for safe ingress and egress to the site from East Valley Drive, South Golden State Boulevard, and East Manning Avenue. The intersection at East Manning Avenue and Vineyard Place will be improved to allow for safer ingress and egress for commercial truck and trailers. The Project does not propose the development or improvement of adjacent roadways except for the aforementioned intersection, in which the intent is to make access safer. The Project will be further reviewed by the City Engineer during the Conditional Use Permit Application process and during that review circulation is taken into account. No further evaluation of this topic in an EIR is necessary.

XVI-e) Result in inadequate emergency access?

e) Less Than Significant Impact: While it is expected that construction activities for the Project would not occur within the Project Site, construction activities could potentially require the partial closure of adjacent streets for the installation or upgrading of local infrastructure. The street that may be affected by the installation or upgrading of infrastructure will be East Manning Avenue. Construction within these roadways may the potential to impede access to adjoining uses, as well as reduce the rate of flow of the affected roadway. The Project would also generate construction traffic, particularly haul trucks, which may affect the capacity of adjacent streets and highways. Additionally, once constructed, the Project Site would include more dense development than currently exists. Infrastructure construction is temporary in nature and during the operation of the Project, there will be several access points (**Figure 1-4)** to and from the site, so as not to cause congestion to the adjacent roadways. Therefore, the Project will have a less than significant impact. No further evaluation of this topic in an EIR is necessary.

XVI-f) Conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities?

f) No Impact: The Project is proposing to construct two bike lanes within Buford Drive. The Project will allow access to transit and pedestrian access to via the access points depicted in **Figure 1-4**, however, there are no proposed public transit stops within the Project site. The Project provides ample parking to satisfy the demand of the proposed land uses. Population will not have a substantial increase as an effect of this project, therefore, it will not decrease the performance or safety of the existing facilities. Furthermore, with the addition of more access points onto the site and the implementation of bike lanes, pedestrian access, and transit access, there will be no impacts. No further evaluation of this topic in an EIR is necessary.

2.17 Tribal Cultural Resources

Table 2-22. Tribal Cultural Resources Topics

Tribal Cultural Resources				
Would the project:	**Potentially Significant Impact**	**Less than Significant With Mitigation Incorporated**	**Less than Significant Impact**	**No Impact**
a) Cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:	☐	☐	☐	☒
i. Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code section 5020.1(k), or	☐	☐	☐	☒
ii. A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.	☐	☐	☐	☒

2.17.1 Environmental Setting

The Project area is near the eastern periphery of the San Joaquin Valley near the base of the Sierra Nevada foothills, approximately 12 miles west of the Kings River. The San Joaquin Valley is the southern half of an elongated trough called the Great Valley, a 50-mile-wide lowland that extends approximately 500 miles south from the Cascade Range to the Tehachapi Mountains (Norris and Webb 1990:412). The San Joaquin Valley parallels the 400-mile stretch of the Sierra Nevada geomorphic province, which encompasses a 40- to 100-mile-wide area ranging in elevation from 400 feet above mean sea level (amsl) along the western boundary to more than 14,000 feet amsl in the east (Norris and Webb 1990:63).[42]

2.17.2 Regulatory Setting

2.17.2.1 Federal

There are no Federal laws and regulations that apply to the project.

[42] Appendix B - Cultural Resource Inventory and Evaluation for the Buford Oil Travel Center Project in Fowler, Fresno County, California

2.17.2.2 State

Public Resources Code Section 21080.3.2 (AB 52, 2015): The Project is subject to provisions for consultation with California Native American Indian Tribes pursuant to California Public Resources Code Section 21080.3 (AB 52). The PRC requires the lead agency must, within 14 days of determining that an application for a project is complete, notify any California Native American Tribe in writing that has previously requested such notification about the project from the lead agency and inquire whether the Tribe wishes to initiate formal consultation. Tribes have 30 days from receipt of said notification to request formal consultation; tribal consultation is required only with those tribes that formally request consultation, in writing. The lead agency then has 30 days to initiate the consultation, which then continues until the parties come to an agreement regarding necessary mitigation for impacts to Tribal Cultural Resources or agree that no mitigation is needed, or one or both parties determine that negotiation occurred in good faith, but no agreement will be made.

California Environmental Quality Act and Guidelines (GC 15000 et seq.):
CEQA is applicable to discretionary actions by State or local lead agencies. Under CEQA, lead agencies must analyze impacts to cultural resources, generally (see Section 3.5 above), and Tribal Cultural Resources, specifically.

2.17.2.3 Local

No local policies regarding tribal cultural resources apply to the Project.

2.17.3 Impact Assessment

XVII-a) Cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:

XVII-a-i) Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code section 5020.1(k)

a-i) No Impact: The Project site is not located within proximity of any area designated to be highly sensitive for archeological or historical resources, according to the Cultural Resource Inventory Study, prepared by Applied Earthworks (**Appendix C**). The Project is determined to be located in an area that is adjacent to development and motorways. The parcel is not eligible for listing in wither the National Register of Historic Places or the California Register of Historical Resources.

In response to notification provided pursuant to PRC 21080.3.2, the City of Fowler received a letter from the Santa Rosa Indian Community of the Santa Rosa Rancheria tribe dated July 13, 2016 requesting formal notice of projects. A notice letter and site plan describing the project had been sent to the Santa Rosa Indian Community of the Santa Rosa Rancheria tribe on November 6, 2017 and was received by the tribe December 8, 2017. The NAHC was consulted and the City received a list of tribes that should be contact for project consultation. The list consisted of: the Table Mountain Rancheria of California, Big Sandy Rancheria of Wester Mono Indians, Cold Springs Rancheria, Wuksache Indian Tribe/Eshom Valley Band, Dunlap Band of Mono Indians, Picayune Rancheria of Chukchansi Indians, Dumna Wo-Wah Tribal Government, Traditional Choinumni Tribe, North Fork Mono Tribe, Kings River Choinumni Farm Tribe. All the aforementioned tribes were consulted November 29, 2017. After the 30-day period in which the tribe can request consultation, the City of Fowler did not receive any notification from any of the previously listed tribes that they were requesting further consultation. The Project will not cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code section 21074, sacred place, or object with cultural value to a California Native American tribe. There will be no impact. No further evaluation of this topic in an EIR is necessary.

XVII-a-ii) A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.

a-ii) Less Than Significant Impact: A search of the Native American Heritage Commission (NAHC) Sacred Lands File was completed January 12, 2018 for the area of potential project effect with no tribal cultural resources being identified. This search determined that the study area had not been previously surveyed and that no archaeological sites, sacred sites or traditional cultural places/landscapes had been identified within the Project Area. The City did not receive a request for additional consultation from the Santa Rosa Rancheria Tachi Yokut Tribe nor an indication there was concern for impact to any Tribal Cultural Resources. Therefore, it is concluded, barring evidence to the contrary, that there is little or no chance the Project will cause a substantial adverse change to the significance of a tribal cultural resource as defined. Therefore, the impact will be less than significant, and no mitigation is required. Further analysis of this topic will not be necessary in the EIR.

2.18 Utilities and Service Systems

Table 2-23. Utilities and Service Systems Topics

Utilities and Service Systems						
	Would the project:	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less than Significant Impact	No Impact
a)	Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?	☐	☐	☒	☐
b)	Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	☐	☐	☒	☐
c)	Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	☐	☐	☒	☐
d)	Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?	☒	☐	☐	☐
e)	Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?	☐	☐	☒	☐
f)	Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?	☐	☐	☒	☐
g)	Comply with federal, state, and local statutes and regulations related to solid waste?	☐	☐	☐	☒

2.18.1 Environmental Setting

2.18.1.1 Water Supply

The City relies on groundwater managed by Consolidated Irrigation District (CID) that is pumped by various wells throughout the City. The City has an agreement with CID and pay fees to the District in order to receive water for distribution to City users. Currently there are six wells within the City of Fowler. The Project will be served by Well 5A and 6. Well 5A is currently not in production. It is projected that Well 5A will be in production in 2019. Well 6 is producing an average of 64,500 gallons per month.

The Project site is located within the Kings Sub-basin of the San Joaquin Valley Groundwater Basin, as defined by the California Department of Water Resources Groundwater Bulletin 118[43]. Declines in groundwater basin storage and groundwater overdraft are recurring problems in Fresno County. Measures for ensuring the

[43] Bulletin 118 – California's Groundwater - https://water.ca.gov/-/media/DWR-Website/Web-Pages/Programs/Groundwater-Management/Bulletin-118/Files/Bulletin-118-Fact-Sheet.pdf Accessed August 18, 2018

continued availability of groundwater for municipal needs have been identified and planned in several areas of the county. The measures include groundwater conservation and recharge, and supplementing or replacing groundwater sources for irrigation with surface water.

2.18.1.2 Wastewater

Wastewater is managed by the Selma-Kingsburg-Fowler County Sanitation District (SKFCSD/District). The District was formed in 1971 and is currently providing wastewater services for the City of Fowler among other jurisdictions. The District's treatment facility is approximately 7.66 miles southeast of the Project area. Prior to additional development in the District, SKFCSD will review the development project and provide comments whether the District can accommodate the development.

2.18.1.3 Landfill

Solid waste services are currently managed by Waste Management in the City of Fowler. The nearest landfill is the Visalia Landfill approximately 20.57 miles southeast of the Project. According to the Tulare County Solid Waste Division, the Visalia Landfill is planned to expand based upon increased demand. Phase 1 expansion has already been implemented. With the nine phased expansions, the total capacity of the Visalia Landfill is estimated at 16,521,501 cubic yards. The Landfill has sufficient capacity to accommodate solid waste disposal demands through year 2040.[44]

2.18.2 Regulatory Setting

2.18.2.1 Federal

Clean Water Act: The Clean Water Act (CWA) is intended to restore and maintain the chemical, physical, and biological integrity of the nation's waters (33 CFR 1251). The regulations implementing the CWA protect waters of the U.S. including streams and wetlands (33 CFR 328.3). The CWA requires States to set standards to protect, maintain, and restore water quality by regulating point source and some non-point source discharges. Under Section 402 of the CWA, the National Pollutant Discharge Elimination System (NPDES) permit process was established to regulate these discharges.

National Pollutant Discharge Elimination System. The National Pollutant Discharge Elimination System (NPDES) program, Section 402 of the CWA, controls direct discharges into navigable waters. Direct discharges or "point source" discharges are from sources such as pipes and sewers. NPDES permits, issued by either EPA or an authorized state/tribe, contain industry-specific, technology-based and/or water-quality-based limits, and establish pollutant monitoring and reporting requirements. (EPA has authorized 40 states to administer the NPDES program.) A facility that intends to discharge into the nation's waters must obtain a permit before initiating a discharge. A permit applicant must provide quantitative analytical data identifying the types of pollutants present in the facility's effluent and the permit will then set forth the conditions and effluent limitations under which a facility may make a discharge. Implementation will be managed by the State Water Resource Control Board and Regional Water Quality Control Boards.

2.18.2.2 State

California Department of Resources Recycling and Recovery (CalRecycle): CalRecycle was created January 1, 2010, through legislation merging the programs of the former California Integrated Waste Management Board and the beverage container recycling program that was previously managed by the California Department

[44] City of Visalia Municipal Service Review - https://lafco.co.tulare.ca.us/lafco/index.cfm/msr/city-of-visalia-msr-update/ Accessed August 21, 2018

of Conservation. It is a department within the California Environmental Protection Agency. CalRecycle administers and provides oversight for all of California's state-managed waste handling and recycling programs. Known mostly for overseeing beverage container and electronic-waste recycling, CalRecycle is also responsible for organics management, used tires, used motor oil, carpet, paint, mattresses, rigid plastic containers, newsprint, construction and demolition debris, medical sharps waste, household hazardous waste, and food-scrap composting.

CalRecycle provides training and ongoing support for Local Enforcement Agencies, which regulate and inspect California's active and closed solid waste landfills, as well as materials recovery facilities, solid waste transfer stations, compost facilities, and more. The permitting and inspection processes help CalRecycle fulfill its mission to protect the health and safety of Californians and the environment.

Legislation that took effect in 2012 established a goal for California to source reduce, recycle, or compost 75 percent of its waste statewide by the year 2020. And beginning in July 2012, it also put in place required mandatory recycling for most California commercial businesses and multi-family residential buildings with five or more units. More recent laws enacted are designed to increase commercial organics recycling and curtail reliance on single-use plastic bags.

California has some of the nation's most successful recycling and product-reuse programs, and as defined within the state's Integrated Waste Management Act of 1989 (IWMA), diverted an estimated 65 percent of its solid waste from landfills in 2013. With respect to the state's goal of recycling 75 percent of its waste by 2020, CalRecycle uses a recycling-rate calculation that removes from the equation certain materials and activities currently counted as "diversion," which includes green waste used as alternative daily cover at landfills and solid waste used as fuel. Using that calculation, the recycling rate for 2013 was 50 percent. That is well above the U.S. EPA-calculated national recycling rate of 34.5 percent.

The Waste Permitting, Compliance, and Mitigation (WPCM) Division is responsible for the CalRecycle's solid waste, waste tire, recycled content product and local government regulatory mandates and activities. This division ensures that:

- *Solid waste and waste tire processing and disposal site permits are processed and issued as required.*
- *Waste tire haulers are registered as required.*
- *Solid waste landfills maintain the appropriate level of financial assurances.*
- *Solid waste disposal sites are properly closed and maintained.*
- *Solid waste management and waste tire facilities and operations are inspected, and noncompliant facilities and operations are under enforcement actions, and penalized as appropriate.*
- *Local governments not making a good faith effort to implement their unique waste diversion programs are evaluated and placed on compliance orders, and penalized as appropriate.*
- *Minimum recycled content in products (rigid plastic packaging containers (RPPC), plastic trash bags, and newsprint), and producer responsibility programs (paint and carpet) are certified in compliance, or penalized as appropriate.*
- *All hazards created by the illegal or inappropriate disposal of solid waste or tires are mitigated to protect the public health and safety.*
- *Local enforcement agencies are properly trained, certified, designated, and evaluated, and if warranted, placed on work plans or decertified as appropriate.*

State Water Resources Control Board's Waste Discharge Requirement (WDR) Program: In general, the Waste Discharge Requirements (WDRs) Program (sometimes also referred to as the "Non Chapter 15 (Non 15) Program") regulates point discharges that are exempt pursuant to Subsection 20090 of Title 27 and not subject to the Federal Water Pollution Control Act. Exemptions from Title 27 may be granted for nine categories of discharges (e.g., sewage, wastewater, etc.) that meet, and continue to meet, the preconditions listed for each specific exemption. The scope of the WDRs Program also includes the discharge of wastes classified as inert, pursuant to section 20230 of Title 27.The Project will be discharging Sewage and Wastewater. The following exemptions may apply for:

Sewage: Discharges of domestic sewage or treated effluent which are regulated by WDRs issued pursuant to Chapter 9, Division 3, Title 23 of this code, or for which WDRs have been waived, and which are consistent with applicable water quality objectives; treatment or storage facilities associated with municipal wastewater treatment plants, provided that residual sludge or solid waste from wastewater treatment facilities shall be discharged only in accordance with the applicable provisions of the CWC.

Wastewater: Discharges of wastewater to land, including but not limited to evaporation ponds, percolation ponds, or subsurface leach fields if the following conditions are met:

(1) the applicable Regional Water Board has issued WDRs, water recycling requirements, or waived the issuance;
(2) the discharge is in compliance with the applicable water quality control plan; and
(3) the wastewater does not need to be managed according to Chapter 11, Division 4.5, Title 22 of this code as a hazardous waste.

2.18.2.3 Local

City of Fowler General Plan (1976)

The City of Fowler General Plan (1976) Public Facilities Element sets forth the following goals and policies that are relevant to the Project:

- *To provide a safe and adequate water supply for domestic, industrial, and fire-fighting purposes within the city.*
- *To coordinate with SKF Sanitation District in providing an adequate liquid waste collection and treatment system for the city.*
- *Require utilization of the city water system by all domestic water users within its jurisdiction. The city will not approve any development that cannot be adequately served by the city water system.*
- *Require all uses within the city which discharge wastewater to conform with the state requirements of the Fresno County Health Officer, the State Water Quality Control Board, and the SKF Sanitation District, and to connect to the SKF Sanitation District.*

2.18.3 Impact Assessment

XVII-a) *Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?*

a) Less Than Significant Impact: The Project described in Section 1.1.8 will increase the amount of wastewater currently generated on-site. Wastewater generated from the proposed uses will vary depending specific use. Pursuant to the Clean Water Act and Porter-Cologne Water Quality Control Act, the Project will need to obtain a National Pollution Discharge Elimination System (NPDES) permit and. submit its proposed system to the Central Valley Regional Water Quality Control Board for review and approval. Following the evaluation, the Project may receive a waste discharge permit. Pursuant to the waste discharge permit, the Project will not exceed a level more than less than significant. The impacts will be less than significant. No further evaluation of this topic in an EIR is necessary.

XVII-b) Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?

b) Less Than Significant Impact: The Project will connect to the City of Fowler's water system. SKFCSD sewer and the City's water lines are located along South Golden State Boulevard and East Valley Drive. The Project intends to utilize all existing utility lines for the project. New water demands will be discussed further in the Environmental Impact Report. Currently, SKFCSD is responsible for the treatment and disposal of over one billion gallons annually of wastewater emanating from within its service boundaries. In a Municipal Service Review dated July 2007[45], SKF has indicated it can accommodate future growth, however, SKF plans to increase its capacity to 6.0-9.0 million of gallons per day of treatment capacity, this expansion is not due to the Project. The Project will not result in the construction of new water or wastewater facilities or expansion of existing facilities, the construction of which could cause significant environmental effects due to the fact that SKFCSD proposes to expand its facilities. The impacts will be less than significant. No further evaluation of this topic in an EIR is necessary.

XVII-c) Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?

c) Less Than Significant Impact: The Project will divert storm water run-off into a proposed ponding basin located on the western edge of the project site. Curb and gutter will be constructed per City Standards and be subject to City review in which will collect the rest of the anticipated storm water.. The Project will construct the necessary infrastructure to divert runoff and utilize the existing on-site ponding basin also. The construction of the curb and gutter will not cause significant environmental effects. The impacts will be less than significant. No further evaluation of this topic in an EIR is necessary.

XVII-d) Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?

d) Potentially Significant Impact: The City of Fowler would supply water to the Project. Given the Project's potential to significantly increase demand for water the ability of the City/CCID to assure adequate water supply to serve the development long-term will need to be further evaluated in the EIR will provide further analysis on this topic.

XVII-e) Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?

e) Less than Significant Impact: As discussed in Impact Section XVII b) above, the Project will generate new wastewater, however, SKFCSD can accommodate the increase and is planning to expand their facilities in the future. According to the SKFCSD, the Project will be approximately 50-60 Equivalent Single-Family Residences (ESFR's). This estimate is based on preliminary information. Further review by the District is required and a sewer infrastructure plan must be submitted and reviewed by the District. Pursuant to the review of SKFCSD the Project's impact will be less than significant. No further evaluation of this topic in an EIR is necessary.

XVII-f) Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?

f) Less Than Significant Impact: During construction and operation, all waste will be collected and transported to the American Landfill by Waste Management, a private solid waste collection contractor. During the

[45] City of Fowler Municipal Service Review
http://www.fresnolafco.org/documents/staff-reports/Approved%20MSR's/City%20of%20Fowler.pdf

operational phase the uses will generate waste similar to the other industrial and commercial uses in the GSIC, consistent with the waste stream type and volume anticipated by the General Plan. The solid waste will mainly consist of food waste from the restaurants and traveler center and domestic waste from the hotel. The solid waste will be transported by Waste Management, which currently provides waste removal services for the City of Fowler. According to Fresno County Public Works Department, the American Landfill is projected to reach capacity October 2036. Currently, the amount of solid waste at American Landfill is approximately 20.1 million cubic yards. The total capacity estimated for the landfill is approximately 41.46 million cubic yards. With the promotion of recycling pursuant to the Waste Management Act, the landfill will not see a significant increase of waste making the impact less than significant. The impacts will be less than significant. No further evaluation of this topic in an EIR is necessary.

XVII-g) Comply with federal, state, and local statutes and regulations related to solid waste?

g) No Impact: The Project through compliance with City standards and standards regulating Waste Management will be in compliance with all federal and state efforts to reduce tonnage of solid waste going to landfills, including Assembly Bill 939 (Integrated Solid Waste Management Act of 1989, Public Resources Code Section 40050, *et seq*.), the goal of which was to reduce tonnage to landfills by 50 percent by the year 2000. The Project shall recycle all recyclable materials. The Project would comply with all federal, state, and local statutes and regulations related to solid waste, and no significant impact would occur. The impacts will be less than significant. No further evaluation of this topic in an EIR is necessary.

2.19 CEQA Mandatory Findings of Significance

Table 2-24. Mandatory Findings of Significance Topics

Mandatory Findings of Significance					
Would the project:		Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less than Significant Impact	No Impact
a)	Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?	☐	☒	☐	☐
b)	Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)?	☒	☐	☐	☐
c)	Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?	☒	☐	☐	☐

2.19.1 Impact Assessment

XVIII-a) Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?

a) Less Than Significant with Mitigation Incorporated. The analysis conducted in this Initial Study results in the determination that the Project would have a less than significant impact. The potential for impacts to biological and cultural resources from the construction and operation of the proposed travel center would be less than significant. Accordingly, the Project would involve no potential for significant impacts through the degradation of the quality of the environment, the reduction in the habitat or population of fish or wildlife, including endangered plants or animals, the elimination of a plant or animal community or example of a major period of California history or prehistory. There will be no impact. No further evaluation of this topic in an EIR is necessary.

XVIII-b) Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)?

XVIII-c) Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?

b and c) Potentially Significant Impact: Impact section XVIII – B and XVIII – C is to be considered to have potentially significant impact and will be reviewed in greater detail in the EIR. Technical studies will be prepared and any cumulative environmental effects will be addressed in greater detail in the EIR. This section will be deferred to the EIR.

Appendix A

CalEEMod Output files

Buford Oil Existing Conditions

Fresno County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Parking Lot	100.00	Space	0.90	40,000.00	0
Fast Food Restaurant w/o Drive Thru	3.90	1000sqft	0.09	3,900.00	0
Gasoline/Service Station	22.00	Pump	0.07	3,105.85	0

1.2 Other Project Characteristics

Urbanization Urban **Wind Speed (m/s)** 2.2 **Precipitation Freq (Days)** 45

Climate Zone 3 **Operational Year** 2021

Utility Company Pacific Gas & Electric Company

CO2 Intensity (lb/MWhr) 641.35 **CH4 Intensity (lb/MWhr)** 0.029 **N2O Intensity (lb/MWhr)** 0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Total of 10 acres currently developed.

Table Name	Column Name	Default Value	New Value

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2019	0.2345	1.7512	1.4015	2.5200e-003	0.0345	0.0948	0.1292	0.0131	0.0910	0.1041	0.0000	214.4220	214.4220	0.0398	0.0000	215.4162
2020	0.0940	0.2726	0.2501	4.5000e-004	3.5500e-003	0.0141	0.0177	9.6000e-004	0.0136	0.0145	0.0000	38.0246	38.0246	7.1200e-003	0.0000	38.2026
Maximum	**0.2345**	**1.7512**	**1.4015**	**2.5200e-003**	**0.0345**	**0.0948**	**0.1292**	**0.0131**	**0.0910**	**0.1041**	**0.0000**	**214.4220**	**214.4220**	**0.0398**	**0.0000**	**215.4162**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2019	0.2345	1.7512	1.4015	2.5200e-003	0.0345	0.0948	0.1292	0.0131	0.0910	0.1041	0.0000	214.4218	214.4218	0.0398	0.0000	215.4160
2020	0.0940	0.2726	0.2501	4.5000e-004	3.5500e-003	0.0141	0.0177	9.6000e-004	0.0136	0.0145	0.0000	38.0245	38.0245	7.1200e-003	0.0000	38.2025
Maximum	**0.2345**	**1.7512**	**1.4015**	**2.5200e-003**	**0.0345**	**0.0948**	**0.1292**	**0.0131**	**0.0910**	**0.1041**	**0.0000**	**214.4218**	**214.4218**	**0.0398**	**0.0000**	**215.4160**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	3-29-2019	6-28-2019	0.6964	0.6964
2	6-29-2019	9-28-2019	0.6411	0.6411
3	9-29-2019	12-28-2019	0.6347	0.6347
4	12-29-2019	3-28-2020	0.3799	0.3799
		Highest	0.6964	0.6964

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.0358	1.0000e-005	1.1600e-003	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.2500e-003	2.2500e-003	1.0000e-005	0.0000	2.4000e-003
Energy	4.7700e-003	0.0434	0.0365	2.6000e-004		3.3000e-003	3.3000e-003		3.3000e-003	3.3000e-003	0.0000	92.1613	92.1613	2.9400e-003	1.2900e-003	92.6181
Mobile	1.7943	20.8776	12.2305	0.0556	2.4641	0.0479	2.5119	0.6643	0.0453	0.7096	0.0000	5,189.4389	5,189.4389	0.9784	0.0000	5,213.8987
Waste						0.0000	0.0000		0.0000	0.0000	11.5258	0.0000	11.5258	0.6812	0.0000	28.5548
Water						0.0000	0.0000		0.0000	0.0000	0.4683	2.5827	3.0509	0.0482	1.1600e-003	4.6018
Total	**1.8348**	**20.9210**	**12.2681**	**0.0558**	**2.4641**	**0.0512**	**2.5152**	**0.6643**	**0.0486**	**0.7129**	**11.9941**	**5,284.1851**	**5,296.1792**	**1.7107**	**2.4500e-003**	**5,339.6757**

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.0358	1.0000e-005	1.1600e-003	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.2500e-003	2.2500e-003	1.0000e-005	0.0000	2.4000e-003
Energy	4.7700e-003	0.0434	0.0365	2.6000e-004		3.3000e-003	3.3000e-003		3.3000e-003	3.3000e-003	0.0000	92.1613	92.1613	2.9400e-003	1.2900e-003	92.6181
Mobile	1.7943	20.8776	12.2305	0.0556	2.4641	0.0479	2.5119	0.6643	0.0453	0.7096	0.0000	5,189.4389	5,189.4389	0.9784	0.0000	5,213.8987
Waste						0.0000	0.0000		0.0000	0.0000	11.5258	0.0000	11.5258	0.6812	0.0000	28.5548
Water						0.0000	0.0000		0.0000	0.0000	0.4683	2.5827	3.0509	0.0482	1.1600e-003	4.6018
Total	**1.8348**	**20.9210**	**12.2681**	**0.0558**	**2.4641**	**0.0512**	**2.5152**	**0.6643**	**0.0486**	**0.7129**	**11.9941**	**5,284.1851**	**5,296.1792**	**1.7107**	**2.4500e-003**	**5,339.6757**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	3/29/2019	4/25/2019	5	20	
2	Site Preparation	Site Preparation	4/26/2019	4/29/2019	5	2	
3	Grading	Grading	4/30/2019	5/3/2019	5	4	
4	Building Construction	Building Construction	5/4/2019	2/7/2020	5	200	
5	Paving	Paving	2/8/2020	2/21/2020	5	10	
6	Architectural Coating	Architectural Coating	2/22/2020	3/6/2020	5	10	

Acres of Grading (Site Preparation Phase): 1

Acres of Grading (Grading Phase): 1.5

Acres of Paving: 0.9

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 10,509; Non-Residential Outdoor: 3,503; Striped Parking Area: 2,400 (Architectural Coating – sqft)

<u>OffRoad Equipment</u>

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Rubber Tired Dozers	1	8.00	247	0.40
Demolition	Tractors/Loaders/Backhoes	3	8.00	97	0.37
Site Preparation	Graders	1	8.00	187	0.41
Site Preparation	Rubber Tired Dozers	1	7.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Grading	Graders	1	6.00	187	0.41
Grading	Rubber Tired Dozers	1	6.00	247	0.40
Grading	Tractors/Loaders/Backhoes	1	7.00	97	0.37
Building Construction	Cranes	1	6.00	231	0.29
Building Construction	Forklifts	1	6.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	1	6.00	97	0.37
Building Construction	Welders	3	8.00	46	0.45
Paving	Cement and Mortar Mixers	1	6.00	9	0.56
Paving	Pavers	1	6.00	130	0.42
Paving	Paving Equipment	1	8.00	132	0.36
Paving	Rollers	1	7.00	80	0.38
Paving	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Architectural Coating	Air Compressors	1	6.00	78	0.48

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	5	13.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	3	8.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	3	8.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	7	19.00	8.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	5	13.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	4.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Demolition - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0230	0.2268	0.1489	2.4000e-004		0.0129	0.0129		0.0120	0.0120	0.0000	21.4161	21.4161	5.4500e-003	0.0000	21.5524
Total	**0.0230**	**0.2268**	**0.1489**	**2.4000e-004**		**0.0129**	**0.0129**		**0.0120**	**0.0120**	**0.0000**	**21.4161**	**21.4161**	**5.4500e-003**	**0.0000**	**21.5524**

3.2 Demolition - 2019

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.1000e-004	4.0000e-004	4.0500e-003	1.0000e-005	1.0400e-003	1.0000e-005	1.0500e-003	2.8000e-004	1.0000e-005	2.8000e-004	0.0000	0.9284	0.9284	3.0000e-005	0.0000	0.9291
Total	**6.1000e-004**	**4.0000e-004**	**4.0500e-003**	**1.0000e-005**	**1.0400e-003**	**1.0000e-005**	**1.0500e-003**	**2.8000e-004**	**1.0000e-005**	**2.8000e-004**	**0.0000**	**0.9284**	**0.9284**	**3.0000e-005**	**0.0000**	**0.9291**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0230	0.2268	0.1489	2.4000e-004		0.0129	0.0129		0.0120	0.0120	0.0000	21.4161	21.4161	5.4500e-003	0.0000	21.5524
Total	**0.0230**	**0.2268**	**0.1489**	**2.4000e-004**		**0.0129**	**0.0129**		**0.0120**	**0.0120**	**0.0000**	**21.4161**	**21.4161**	**5.4500e-003**	**0.0000**	**21.5524**

3.2 Demolition - 2019

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.1000e-004	4.0000e-004	4.0500e-003	1.0000e-005	1.0400e-003	1.0000e-005	1.0500e-003	2.8000e-004	1.0000e-005	2.8000e-004	0.0000	0.9284	0.9284	3.0000e-005	0.0000	0.9291
Total	**6.1000e-004**	**4.0000e-004**	**4.0500e-003**	**1.0000e-005**	**1.0400e-003**	**1.0000e-005**	**1.0500e-003**	**2.8000e-004**	**1.0000e-005**	**2.8000e-004**	**0.0000**	**0.9284**	**0.9284**	**3.0000e-005**	**0.0000**	**0.9291**

3.3 Site Preparation - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					5.8000e-003	0.0000	5.8000e-003	2.9500e-003	0.0000	2.9500e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.7100e-003	0.0195	7.8900e-003	2.0000e-005		8.8000e-004	8.8000e-004		8.1000e-004	8.1000e-004	0.0000	1.5467	1.5467	4.9000e-004	0.0000	1.5589
Total	**1.7100e-003**	**0.0195**	**7.8900e-003**	**2.0000e-005**	**5.8000e-003**	**8.8000e-004**	**6.6800e-003**	**2.9500e-003**	**8.1000e-004**	**3.7600e-003**	**0.0000**	**1.5467**	**1.5467**	**4.9000e-004**	**0.0000**	**1.5589**

3.3 Site Preparation - 2019

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.0000e-005	2.0000e-005	2.5000e-004	0.0000	6.0000e-005	0.0000	6.0000e-005	2.0000e-005	0.0000	2.0000e-005	0.0000	0.0571	0.0571	0.0000	0.0000	0.0572
Total	**4.0000e-005**	**2.0000e-005**	**2.5000e-004**	**0.0000**	**6.0000e-005**	**0.0000**	**6.0000e-005**	**2.0000e-005**	**0.0000**	**2.0000e-005**	**0.0000**	**0.0571**	**0.0571**	**0.0000**	**0.0000**	**0.0572**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					5.8000e-003	0.0000	5.8000e-003	2.9500e-003	0.0000	2.9500e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.7100e-003	0.0195	7.8900e-003	2.0000e-005		8.8000e-004	8.8000e-004		8.1000e-004	8.1000e-004	0.0000	1.5467	1.5467	4.9000e-004	0.0000	1.5589
Total	**1.7100e-003**	**0.0195**	**7.8900e-003**	**2.0000e-005**	**5.8000e-003**	**8.8000e-004**	**6.6800e-003**	**2.9500e-003**	**8.1000e-004**	**3.7600e-003**	**0.0000**	**1.5467**	**1.5467**	**4.9000e-004**	**0.0000**	**1.5589**

3.3 Site Preparation - 2019

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.0000e-005	2.0000e-005	2.5000e-004	0.0000	6.0000e-005	0.0000	6.0000e-005	2.0000e-005	0.0000	2.0000e-005	0.0000	0.0571	0.0571	0.0000	0.0000	0.0572
Total	**4.0000e-005**	**2.0000e-005**	**2.5000e-004**	**0.0000**	**6.0000e-005**	**0.0000**	**6.0000e-005**	**2.0000e-005**	**0.0000**	**2.0000e-005**	**0.0000**	**0.0571**	**0.0571**	**0.0000**	**0.0000**	**0.0572**

3.4 Grading - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					9.8300e-003	0.0000	9.8300e-003	5.0500e-003	0.0000	5.0500e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.8400e-003	0.0321	0.0132	3.0000e-005		1.4700e-003	1.4700e-003		1.3600e-003	1.3600e-003	0.0000	2.5336	2.5336	8.0000e-004	0.0000	2.5536
Total	**2.8400e-003**	**0.0321**	**0.0132**	**3.0000e-005**	**9.8300e-003**	**1.4700e-003**	**0.0113**	**5.0500e-003**	**1.3600e-003**	**6.4100e-003**	**0.0000**	**2.5336**	**2.5336**	**8.0000e-004**	**0.0000**	**2.5536**

3.4 Grading - 2019

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	8.0000e-005	5.0000e-005	5.0000e-004	0.0000	1.3000e-004	0.0000	1.3000e-004	3.0000e-005	0.0000	3.0000e-005	0.0000	0.1143	0.1143	0.0000	0.0000	0.1144
Total	**8.0000e-005**	**5.0000e-005**	**5.0000e-004**	**0.0000**	**1.3000e-004**	**0.0000**	**1.3000e-004**	**3.0000e-005**	**0.0000**	**3.0000e-005**	**0.0000**	**0.1143**	**0.1143**	**0.0000**	**0.0000**	**0.1144**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					9.8300e-003	0.0000	9.8300e-003	5.0500e-003	0.0000	5.0500e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.8400e-003	0.0321	0.0132	3.0000e-005		1.4700e-003	1.4700e-003		1.3600e-003	1.3600e-003	0.0000	2.5336	2.5336	8.0000e-004	0.0000	2.5536
Total	**2.8400e-003**	**0.0321**	**0.0132**	**3.0000e-005**	**9.8300e-003**	**1.4700e-003**	**0.0113**	**5.0500e-003**	**1.3600e-003**	**6.4100e-003**	**0.0000**	**2.5336**	**2.5336**	**8.0000e-004**	**0.0000**	**2.5536**

3.4 Grading - 2019

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	8.0000e-005	5.0000e-005	5.0000e-004	0.0000	1.3000e-004	0.0000	1.3000e-004	3.0000e-005	0.0000	3.0000e-005	0.0000	0.1143	0.1143	0.0000	0.0000	0.1144
Total	**8.0000e-005**	**5.0000e-005**	**5.0000e-004**	**0.0000**	**1.3000e-004**	**0.0000**	**1.3000e-004**	**3.0000e-005**	**0.0000**	**3.0000e-005**	**0.0000**	**0.1143**	**0.1143**	**0.0000**	**0.0000**	**0.1144**

3.5 Building Construction - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1954	1.3743	1.1599	1.9000e-003		0.0788	0.0788		0.0761	0.0761	0.0000	157.4418	157.4418	0.0303	0.0000	158.1985
Total	**0.1954**	**1.3743**	**1.1599**	**1.9000e-003**		**0.0788**	**0.0788**		**0.0761**	**0.0761**	**0.0000**	**157.4418**	**157.4418**	**0.0303**	**0.0000**	**158.1985**

3.5 Building Construction - 2019

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	3.1700e-003	0.0930	0.0159	2.0000e-004	4.5600e-003	6.7000e-004	5.2300e-003	1.3200e-003	6.5000e-004	1.9600e-003	0.0000	18.7151	18.7151	2.3800e-003	0.0000	18.7746
Worker	7.7200e-003	5.0800e-003	0.0509	1.3000e-004	0.0131	9.0000e-005	0.0132	3.4700e-003	8.0000e-005	3.5500e-003	0.0000	11.6689	11.6689	3.5000e-004	0.0000	11.6776
Total	**0.0109**	**0.0981**	**0.0668**	**3.3000e-004**	**0.0176**	**7.6000e-004**	**0.0184**	**4.7900e-003**	**7.3000e-004**	**5.5100e-003**	**0.0000**	**30.3840**	**30.3840**	**2.7300e-003**	**0.0000**	**30.4522**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1954	1.3743	1.1599	1.9000e-003		0.0788	0.0788		0.0761	0.0761	0.0000	157.4417	157.4417	0.0303	0.0000	158.1983
Total	**0.1954**	**1.3743**	**1.1599**	**1.9000e-003**		**0.0788**	**0.0788**		**0.0761**	**0.0761**	**0.0000**	**157.4417**	**157.4417**	**0.0303**	**0.0000**	**158.1983**

3.5 Building Construction - 2019

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	3.1700e-003	0.0930	0.0159	2.0000e-004	4.5600e-003	6.7000e-004	5.2300e-003	1.3200e-003	6.5000e-004	1.9600e-003	0.0000	18.7151	18.7151	2.3800e-003	0.0000	18.7746
Worker	7.7200e-003	5.0800e-003	0.0509	1.3000e-004	0.0131	9.0000e-005	0.0132	3.4700e-003	8.0000e-005	3.5500e-003	0.0000	11.6689	11.6689	3.5000e-004	0.0000	11.6776
Total	**0.0109**	**0.0981**	**0.0668**	**3.3000e-004**	**0.0176**	**7.6000e-004**	**0.0184**	**4.7900e-003**	**7.3000e-004**	**5.5100e-003**	**0.0000**	**30.3840**	**30.3840**	**2.7300e-003**	**0.0000**	**30.4522**

3.5 Building Construction - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0284	0.2070	0.1846	3.1000e-004		0.0111	0.0111		0.0108	0.0108	0.0000	25.4159	25.4159	4.7200e-003	0.0000	25.5339
Total	**0.0284**	**0.2070**	**0.1846**	**3.1000e-004**		**0.0111**	**0.0111**		**0.0108**	**0.0108**	**0.0000**	**25.4159**	**25.4159**	**4.7200e-003**	**0.0000**	**25.5339**

3.5 Building Construction - 2020

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	4.2000e-004	0.0139	2.2200e-003	3.0000e-005	7.4000e-004	7.0000e-005	8.2000e-004	2.1000e-004	7.0000e-005	2.8000e-004	0.0000	3.0205	3.0205	3.7000e-004	0.0000	3.0298
Worker	1.1500e-003	7.3000e-004	7.3900e-003	2.0000e-005	2.1300e-003	1.0000e-005	2.1400e-003	5.7000e-004	1.0000e-005	5.8000e-004	0.0000	1.8406	1.8406	5.0000e-005	0.0000	1.8418
Total	**1.5700e-003**	**0.0146**	**9.6100e-003**	**5.0000e-005**	**2.8700e-003**	**8.0000e-005**	**2.9600e-003**	**7.8000e-004**	**8.0000e-005**	**8.6000e-004**	**0.0000**	**4.8610**	**4.8610**	**4.2000e-004**	**0.0000**	**4.8716**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0284	0.2070	0.1846	3.1000e-004		0.0111	0.0111		0.0108	0.0108	0.0000	25.4159	25.4159	4.7200e-003	0.0000	25.5338
Total	**0.0284**	**0.2070**	**0.1846**	**3.1000e-004**		**0.0111**	**0.0111**		**0.0108**	**0.0108**	**0.0000**	**25.4159**	**25.4159**	**4.7200e-003**	**0.0000**	**25.5338**

3.5 Building Construction - 2020

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	4.2000e-004	0.0139	2.2200e-003	3.0000e-005	7.4000e-004	7.0000e-005	8.2000e-004	2.1000e-004	7.0000e-005	2.8000e-004	0.0000	3.0205	3.0205	3.7000e-004	0.0000	3.0298
Worker	1.1500e-003	7.3000e-004	7.3900e-003	2.0000e-005	2.1300e-003	1.0000e-005	2.1400e-003	5.7000e-004	1.0000e-005	5.8000e-004	0.0000	1.8406	1.8406	5.0000e-005	0.0000	1.8418
Total	**1.5700e-003**	**0.0146**	**9.6100e-003**	**5.0000e-005**	**2.8700e-003**	**8.0000e-005**	**2.9600e-003**	**7.8000e-004**	**8.0000e-005**	**8.6000e-004**	**0.0000**	**4.8610**	**4.8610**	**4.2000e-004**	**0.0000**	**4.8716**

3.6 Paving - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	4.2000e-003	0.0423	0.0444	7.0000e-005		2.3500e-003	2.3500e-003		2.1600e-003	2.1600e-003	0.0000	5.8829	5.8829	1.8600e-003	0.0000	5.9295
Paving	1.1800e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**5.3800e-003**	**0.0423**	**0.0444**	**7.0000e-005**		**2.3500e-003**	**2.3500e-003**		**2.1600e-003**	**2.1600e-003**	**0.0000**	**5.8829**	**5.8829**	**1.8600e-003**	**0.0000**	**5.9295**

3.6 Paving - 2020

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.8000e-004	1.8000e-004	1.8100e-003	0.0000	5.2000e-004	0.0000	5.2000e-004	1.4000e-004	0.0000	1.4000e-004	0.0000	0.4498	0.4498	1.0000e-005	0.0000	0.4501
Total	**2.8000e-004**	**1.8000e-004**	**1.8100e-003**	**0.0000**	**5.2000e-004**	**0.0000**	**5.2000e-004**	**1.4000e-004**	**0.0000**	**1.4000e-004**	**0.0000**	**0.4498**	**0.4498**	**1.0000e-005**	**0.0000**	**0.4501**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	4.2000e-003	0.0423	0.0444	7.0000e-005		2.3500e-003	2.3500e-003		2.1600e-003	2.1600e-003	0.0000	5.8828	5.8828	1.8600e-003	0.0000	5.9295
Paving	1.1800e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**5.3800e-003**	**0.0423**	**0.0444**	**7.0000e-005**		**2.3500e-003**	**2.3500e-003**		**2.1600e-003**	**2.1600e-003**	**0.0000**	**5.8828**	**5.8828**	**1.8600e-003**	**0.0000**	**5.9295**

3.6 Paving - 2020

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.8000e-004	1.8000e-004	1.8100e-003	0.0000	5.2000e-004	0.0000	5.2000e-004	1.4000e-004	0.0000	1.4000e-004	0.0000	0.4498	0.4498	1.0000e-005	0.0000	0.4501
Total	**2.8000e-004**	**1.8000e-004**	**1.8100e-003**	**0.0000**	**5.2000e-004**	**0.0000**	**5.2000e-004**	**1.4000e-004**	**0.0000**	**1.4000e-004**	**0.0000**	**0.4498**	**0.4498**	**1.0000e-005**	**0.0000**	**0.4501**

3.7 Architectural Coating - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.0571					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.2100e-003	8.4200e-003	9.1600e-003	1.0000e-005		5.5000e-004	5.5000e-004		5.5000e-004	5.5000e-004	0.0000	1.2766	1.2766	1.0000e-004	0.0000	1.2791
Total	**0.0583**	**8.4200e-003**	**9.1600e-003**	**1.0000e-005**		**5.5000e-004**	**5.5000e-004**		**5.5000e-004**	**5.5000e-004**	**0.0000**	**1.2766**	**1.2766**	**1.0000e-004**	**0.0000**	**1.2791**

3.7 Architectural Coating - 2020

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	9.0000e-005	5.0000e-005	5.6000e-004	0.0000	1.6000e-004	0.0000	1.6000e-004	4.0000e-005	0.0000	4.0000e-005	0.0000	0.1384	0.1384	0.0000	0.0000	0.1385
Total	**9.0000e-005**	**5.0000e-005**	**5.6000e-004**	**0.0000**	**1.6000e-004**	**0.0000**	**1.6000e-004**	**4.0000e-005**	**0.0000**	**4.0000e-005**	**0.0000**	**0.1384**	**0.1384**	**0.0000**	**0.0000**	**0.1385**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.0571					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.2100e-003	8.4200e-003	9.1600e-003	1.0000e-005		5.5000e-004	5.5000e-004		5.5000e-004	5.5000e-004	0.0000	1.2766	1.2766	1.0000e-004	0.0000	1.2791
Total	**0.0583**	**8.4200e-003**	**9.1600e-003**	**1.0000e-005**		**5.5000e-004**	**5.5000e-004**		**5.5000e-004**	**5.5000e-004**	**0.0000**	**1.2766**	**1.2766**	**1.0000e-004**	**0.0000**	**1.2791**

3.7 Architectural Coating - 2020

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	9.0000e-005	5.0000e-005	5.6000e-004	0.0000	1.6000e-004	0.0000	1.6000e-004	4.0000e-005	0.0000	4.0000e-005	0.0000	0.1384	0.1384	0.0000	0.0000	0.1385
Total	**9.0000e-005**	**5.0000e-005**	**5.6000e-004**	**0.0000**	**1.6000e-004**	**0.0000**	**1.6000e-004**	**4.0000e-005**	**0.0000**	**4.0000e-005**	**0.0000**	**0.1384**	**0.1384**	**0.0000**	**0.0000**	**0.1385**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	1.7943	20.8776	12.2305	0.0556	2.4641	0.0479	2.5119	0.6643	0.0453	0.7096	0.0000	5,189.4389	5,189.4389	0.9784	0.0000	5,213.8987
Unmitigated	1.7943	20.8776	12.2305	0.0556	2.4641	0.0479	2.5119	0.6643	0.0453	0.7096	0.0000	5,189.4389	5,189.4389	0.9784	0.0000	5,213.8987

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Gasoline/Service Station	3,708.32	3,708.32	3708.32	2,136,617	2,136,617
Fast Food Restaurant w/o Drive Thru	2,792.40	2,714.40	1950.00	4,290,906	4,290,906
Parking Lot	0.00	0.00	0.00		
Total	6,500.72	6,422.72	5,658.32	6,427,522	6,427,522

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Gasoline/Service Station	9.50	7.30	7.30	2.00	79.00	19.00	14	27	59
Fast Food Restaurant w/o Drive	9.50	7.30	7.30	1.50	79.50	19.00	51	37	12
Parking Lot	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Gasoline/Service Station	0.487139	0.031901	0.169199	0.121386	0.017033	0.004732	0.033028	0.124746	0.002366	0.001590	0.005154	0.001097	0.000629
Fast Food Restaurant w/o Drive Thru	0.487139	0.031901	0.169199	0.121386	0.017033	0.004732	0.033028	0.124746	0.002366	0.001590	0.005154	0.001097	0.000629
Parking Lot	0.487139	0.031901	0.169199	0.121386	0.017033	0.004732	0.033028	0.124746	0.002366	0.001590	0.005154	0.001097	0.000629

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	44.9099	44.9099	2.0300e-003	4.2000e-004	45.0859
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	44.9099	44.9099	2.0300e-003	4.2000e-004	45.0859
NaturalGas Mitigated	4.7700e-003	0.0434	0.0365	2.6000e-004		3.3000e-003	3.3000e-003		3.3000e-003	3.3000e-003	0.0000	47.2514	47.2514	9.1000e-004	8.7000e-004	47.5322
NaturalGas Unmitigated	4.7700e-003	0.0434	0.0365	2.6000e-004		3.3000e-003	3.3000e-003		3.3000e-003	3.3000e-003	0.0000	47.2514	47.2514	9.1000e-004	8.7000e-004	47.5322

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Fast Food Restaurant w/o Drive Thru	820638	4.4300e-003	0.0402	0.0338	2.4000e-004		3.0600e-003	3.0600e-003		3.0600e-003	3.0600e-003	0.0000	43.7924	43.7924	8.4000e-004	8.0000e-004	44.0526
Gasoline/Service Station	64819.1	3.5000e-004	3.1800e-003	2.6700e-003	2.0000e-005		2.4000e-004	2.4000e-004		2.4000e-004	2.4000e-004	0.0000	3.4590	3.4590	7.0000e-005	6.0000e-005	3.4796
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**4.7800e-003**	**0.0434**	**0.0365**	**2.6000e-004**		**3.3000e-003**	**3.3000e-003**		**3.3000e-003**	**3.3000e-003**	**0.0000**	**47.2514**	**47.2514**	**9.1000e-004**	**8.6000e-004**	**47.5322**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Fast Food Restaurant w/o Drive Thru	820638	4.4300e-003	0.0402	0.0338	2.4000e-004		3.0600e-003	3.0600e-003		3.0600e-003	3.0600e-003	0.0000	43.7924	43.7924	8.4000e-004	8.0000e-004	44.0526
Gasoline/Service Station	64819.1	3.5000e-004	3.1800e-003	2.6700e-003	2.0000e-005		2.4000e-004	2.4000e-004		2.4000e-004	2.4000e-004	0.0000	3.4590	3.4590	7.0000e-005	6.0000e-005	3.4796
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**4.7800e-003**	**0.0434**	**0.0365**	**2.6000e-004**		**3.3000e-003**	**3.3000e-003**		**3.3000e-003**	**3.3000e-003**	**0.0000**	**47.2514**	**47.2514**	**9.1000e-004**	**8.6000e-004**	**47.5322**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Fast Food Restaurant w/o Drive Thru	112983	32.8681	1.4900e-003	3.1000e-004	32.9968
Gasoline/Service Station	27393.6	7.9691	3.6000e-004	7.0000e-005	8.0003
Parking Lot	14000	4.0728	1.8000e-004	4.0000e-005	4.0887
Total		**44.9099**	**2.0300e-003**	**4.2000e-004**	**45.0859**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Fast Food Restaurant w/o Drive Thru	112983	32.8681	1.4900e-003	3.1000e-004	32.9968
Gasoline/Service Station	27393.6	7.9691	3.6000e-004	7.0000e-005	8.0003
Parking Lot	14000	4.0728	1.8000e-004	4.0000e-005	4.0887
Total		**44.9099**	**2.0300e-003**	**4.2000e-004**	**45.0859**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.0358	1.0000e-005	1.1600e-003	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.2500e-003	2.2500e-003	1.0000e-005	0.0000	2.4000e-003
Unmitigated	0.0358	1.0000e-005	1.1600e-003	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.2500e-003	2.2500e-003	1.0000e-005	0.0000	2.4000e-003

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	5.7100e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0300					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	1.1000e-004	1.0000e-005	1.1600e-003	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.2500e-003	2.2500e-003	1.0000e-005	0.0000	2.4000e-003
Total	**0.0358**	**1.0000e-005**	**1.1600e-003**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**2.2500e-003**	**2.2500e-003**	**1.0000e-005**	**0.0000**	**2.4000e-003**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	5.7100e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0300					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	1.1000e-004	1.0000e-005	1.1600e-003	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.2500e-003	2.2500e-003	1.0000e-005	0.0000	2.4000e-003
Total	**0.0358**	**1.0000e-005**	**1.1600e-003**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**2.2500e-003**	**2.2500e-003**	**1.0000e-005**	**0.0000**	**2.4000e-003**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	3.0509	0.0482	1.1600e-003	4.6018
Unmitigated	3.0509	0.0482	1.1600e-003	4.6018

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Fast Food Restaurant w/o Drive Thru	1.18378 / 0.0755605	2.3159	0.0387	9.3000e-004	3.5593
Gasoline/Service Station	0.292202 / 0.179091	0.7350	9.5500e-003	2.3000e-004	1.0426
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**3.0509**	**0.0482**	**1.1600e-003**	**4.6018**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Fast Food Restaurant w/o Drive Thru	1.18378 / 0.0755605	2.3159	0.0387	9.3000e-004	3.5593
Gasoline/Service Station	0.292202 / 0.179091	0.7350	9.5500e-003	2.3000e-004	1.0426
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**3.0509**	**0.0482**	**1.1600e-003**	**4.6018**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	11.5258	0.6812	0.0000	28.5548
Unmitigated	11.5258	0.6812	0.0000	28.5548

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Fast Food Restaurant w/o Drive Thru	44.92	9.1184	0.5389	0.0000	22.5903
Gasoline/Service Station	11.86	2.4075	0.1423	0.0000	5.9644
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Total		**11.5258**	**0.6812**	**0.0000**	**28.5548**

8.2 Waste by Land Use

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Fast Food Restaurant w/o Drive Thru	44.92	9.1184	0.5389	0.0000	22.5903
Gasoline/Service Station	11.86	2.4075	0.1423	0.0000	5.9644
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Total		**11.5258**	**0.6812**	**0.0000**	**28.5548**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Buford Oil Company Travel Center

Fresno County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Other Non-Asphalt Surfaces	1.57	Acre	1.57	68,389.20	0
Parking Lot	200.00	Space	1.80	80,000.00	0
Parking Lot	6.00	Acre	6.00	261,360.00	0
Fast Food Restaurant with Drive Thru	4.30	1000sqft	0.91	4,300.00	0
Fast Food Restaurant with Drive Thru	3.10	1000sqft	0.63	3,100.00	0
High Turnover (Sit Down Restaurant)	4.60	1000sqft	0.88	4,600.00	0
Hotel	120.00	Room	2.23	40,000.00	0
Automobile Care Center	10.00	1000sqft	0.98	10,000.00	0
Gasoline/Service Station	20.00	Pump	3.00	9,000.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	45
Climate Zone	3			**Operational Year**	2021
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	641.35	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Per project description

Construction Off-road Equipment Mitigation -

Demolition -

Table Name	Column Name	Default Value	New Value
tblLandUse	LandUseSquareFeet	174,240.00	40,000.00
tblLandUse	LandUseSquareFeet	2,823.50	9,000.00
tblLandUse	LotAcreage	0.07	0.63
tblLandUse	LotAcreage	0.10	0.91
tblLandUse	LotAcreage	0.11	0.88
tblLandUse	LotAcreage	4.00	2.23
tblLandUse	LotAcreage	0.23	0.98
tblLandUse	LotAcreage	0.06	3.00

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2019	0.0895	0.9458	0.5600	1.0200e-003	0.1757	0.0454	0.2211	0.0768	0.0420	0.1188	0.0000	91.7147	91.7147	0.0267	0.0000	92.3816
2020	0.4402	4.0437	3.2128	8.4600e-003	0.3523	0.1630	0.5153	0.1034	0.1529	0.2563	0.0000	761.7235	761.7235	0.1210	0.0000	764.7492
2021	0.6870	0.8831	0.8104	2.0600e-003	0.0628	0.0350	0.0978	0.0170	0.0329	0.0499	0.0000	184.7422	184.7422	0.0300	0.0000	185.4928
Maximum	**0.6870**	**4.0437**	**3.2128**	**8.4600e-003**	**0.3523**	**0.1630**	**0.5153**	**0.1034**	**0.1529**	**0.2563**	**0.0000**	**761.7235**	**761.7235**	**0.1210**	**0.0000**	**764.7492**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2019	0.0895	0.9458	0.5600	1.0200e-003	0.0808	0.0454	0.1262	0.0350	0.0420	0.0770	0.0000	91.7146	91.7146	0.0267	0.0000	92.3815
2020	0.4402	4.0437	3.2127	8.4600e-003	0.3023	0.1630	0.4652	0.0855	0.1529	0.2385	0.0000	761.7232	761.7232	0.1210	0.0000	764.7488
2021	0.6870	0.8831	0.8104	2.0600e-003	0.0628	0.0350	0.0978	0.0170	0.0329	0.0499	0.0000	184.7421	184.7421	0.0300	0.0000	185.4926
Maximum	**0.6870**	**4.0437**	**3.2127**	**8.4600e-003**	**0.3023**	**0.1630**	**0.4652**	**0.0855**	**0.1529**	**0.2385**	**0.0000**	**761.7232**	**761.7232**	**0.1210**	**0.0000**	**764.7488**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	24.52	0.00	17.37	30.23	0.00	14.03	0.00	0.00	0.00	0.00	0.00	0.00

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	11-1-2019	1-31-2020	1.5965	1.5965
2	2-1-2020	4-30-2020	1.0556	1.0556
3	5-1-2020	7-31-2020	1.0759	1.0759
4	8-1-2020	10-31-2020	1.0775	1.0775
5	11-1-2020	1-31-2021	1.0466	1.0466
6	2-1-2021	4-30-2021	0.9639	0.9639
7	5-1-2021	7-31-2021	0.2782	0.2782
		Highest	1.5965	1.5965

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.3620	3.0000e-005	3.4100e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	6.6000e-003	6.6000e-003	2.0000e-005	0.0000	7.0400e-003
Energy	0.0212	0.1925	0.1617	1.1600e-003		0.0146	0.0146		0.0146	0.0146	0.0000	486.6239	486.6239	0.0165	6.4300e-003	488.9549
Mobile	2.5208	29.2385	16.6778	0.0748	3.2042	0.0640	3.2682	0.8638	0.0605	0.9244	0.0000	6,986.0394	6,986.0394	1.3879	0.0000	7,020.7377
Waste						0.0000	0.0000		0.0000	0.0000	51.6937	0.0000	51.6937	3.0550	0.0000	128.0689
Water						0.0000	0.0000		0.0000	0.0000	2.5040	13.7583	16.2624	0.2578	6.2000e-003	24.5557
Total	**2.9040**	**29.4310**	**16.8429**	**0.0759**	**3.2042**	**0.0787**	**3.2829**	**0.8638**	**0.0752**	**0.9390**	**54.1977**	**7,486.4282**	**7,540.6259**	**4.7173**	**0.0126**	**7,662.3243**

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.3620	3.0000e-005	3.4100e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	6.6000e-003	6.6000e-003	2.0000e-005	0.0000	7.0400e-003
Energy	0.0212	0.1925	0.1617	1.1600e-003		0.0146	0.0146		0.0146	0.0146	0.0000	486.6239	486.6239	0.0165	6.4300e-003	488.9549
Mobile	2.5208	29.2385	16.6778	0.0748	3.2042	0.0640	3.2682	0.8638	0.0605	0.9244	0.0000	6,986.0394	6,986.0394	1.3879	0.0000	7,020.7377
Waste						0.0000	0.0000		0.0000	0.0000	51.6937	0.0000	51.6937	3.0550	0.0000	128.0689
Water						0.0000	0.0000		0.0000	0.0000	2.5040	13.7583	16.2624	0.2578	6.2000e-003	24.5557
Total	**2.9040**	**29.4310**	**16.8429**	**0.0759**	**3.2042**	**0.0787**	**3.2829**	**0.8638**	**0.0752**	**0.9390**	**54.1977**	**7,486.4282**	**7,540.6259**	**4.7173**	**0.0126**	**7,662.3243**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	11/1/2019	11/28/2019	5	20	
2	Site Preparation	Site Preparation	11/29/2019	12/12/2019	5	10	
3	Grading	Grading	12/13/2019	1/23/2020	5	30	
4	Building Construction	Building Construction	1/24/2020	3/18/2021	5	300	
5	Paving	Paving	3/19/2021	4/15/2021	5	20	
6	Architectural Coating	Architectural Coating	4/16/2021	5/13/2021	5	20	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 75

Acres of Paving: 9.37

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 106,500; Non-Residential Outdoor: 35,500; Striped Parking Area: 24,585 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Excavators	3	8.00	158	0.38
Demolition	Rubber Tired Dozers	2	8.00	247	0.40
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Grading	Excavators	2	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Scrapers	2	8.00	367	0.48
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38
Architectural Coating	Air Compressors	1	6.00	78	0.48

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	6	15.00	0.00	30.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	7	18.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	200.00	79.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	40.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

3.2 Demolition - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					3.2000e-003	0.0000	3.2000e-003	4.8000e-004	0.0000	4.8000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0351	0.3578	0.2206	3.9000e-004		0.0180	0.0180		0.0167	0.0167	0.0000	34.6263	34.6263	9.6300e-003	0.0000	34.8672
Total	**0.0351**	**0.3578**	**0.2206**	**3.9000e-004**	**3.2000e-003**	**0.0180**	**0.0212**	**4.8000e-004**	**0.0167**	**0.0172**	**0.0000**	**34.6263**	**34.6263**	**9.6300e-003**	**0.0000**	**34.8672**

3.2 Demolition - 2019

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.3000e-004	4.5200e-003	6.0000e-004	1.0000e-005	2.6000e-004	2.0000e-005	2.7000e-004	7.0000e-005	2.0000e-005	9.0000e-005	0.0000	1.1559	1.1559	1.0000e-004	0.0000	1.1585
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	7.1000e-004	4.7000e-004	4.6700e-003	1.0000e-005	1.2000e-003	1.0000e-005	1.2100e-003	3.2000e-004	1.0000e-005	3.3000e-004	0.0000	1.0712	1.0712	3.0000e-005	0.0000	1.0720
Total	**8.4000e-004**	**4.9900e-003**	**5.2700e-003**	**2.0000e-005**	**1.4600e-003**	**3.0000e-005**	**1.4800e-003**	**3.9000e-004**	**3.0000e-005**	**4.2000e-004**	**0.0000**	**2.2271**	**2.2271**	**1.3000e-004**	**0.0000**	**2.2305**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					1.4400e-003	0.0000	1.4400e-003	2.2000e-004	0.0000	2.2000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0351	0.3578	0.2206	3.9000e-004		0.0180	0.0180		0.0167	0.0167	0.0000	34.6263	34.6263	9.6300e-003	0.0000	34.8671
Total	**0.0351**	**0.3578**	**0.2206**	**3.9000e-004**	**1.4400e-003**	**0.0180**	**0.0194**	**2.2000e-004**	**0.0167**	**0.0169**	**0.0000**	**34.6263**	**34.6263**	**9.6300e-003**	**0.0000**	**34.8671**

3.2 Demolition - 2019

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.3000e-004	4.5200e-003	6.0000e-004	1.0000e-005	2.6000e-004	2.0000e-005	2.7000e-004	7.0000e-005	2.0000e-005	9.0000e-005	0.0000	1.1559	1.1559	1.0000e-004	0.0000	1.1585
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	7.1000e-004	4.7000e-004	4.6700e-003	1.0000e-005	1.2000e-003	1.0000e-005	1.2100e-003	3.2000e-004	1.0000e-005	3.3000e-004	0.0000	1.0712	1.0712	3.0000e-005	0.0000	1.0720
Total	**8.4000e-004**	**4.9900e-003**	**5.2700e-003**	**2.0000e-005**	**1.4600e-003**	**3.0000e-005**	**1.4800e-003**	**3.9000e-004**	**3.0000e-005**	**4.2000e-004**	**0.0000**	**2.2271**	**2.2271**	**1.3000e-004**	**0.0000**	**2.2305**

3.3 Site Preparation - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0903	0.0000	0.0903	0.0497	0.0000	0.0497	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0217	0.2279	0.1103	1.9000e-004		0.0120	0.0120		0.0110	0.0110	0.0000	17.0843	17.0843	5.4100e-003	0.0000	17.2195
Total	**0.0217**	**0.2279**	**0.1103**	**1.9000e-004**	**0.0903**	**0.0120**	**0.1023**	**0.0497**	**0.0110**	**0.0607**	**0.0000**	**17.0843**	**17.0843**	**5.4100e-003**	**0.0000**	**17.2195**

3.3 Site Preparation - 2019

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.3000e-004	2.8000e-004	2.8000e-003	1.0000e-005	7.2000e-004	0.0000	7.2000e-004	1.9000e-004	0.0000	2.0000e-004	0.0000	0.6427	0.6427	2.0000e-005	0.0000	0.6432
Total	**4.3000e-004**	**2.8000e-004**	**2.8000e-003**	**1.0000e-005**	**7.2000e-004**	**0.0000**	**7.2000e-004**	**1.9000e-004**	**0.0000**	**2.0000e-004**	**0.0000**	**0.6427**	**0.6427**	**2.0000e-005**	**0.0000**	**0.6432**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0407	0.0000	0.0407	0.0223	0.0000	0.0223	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0217	0.2279	0.1103	1.9000e-004		0.0120	0.0120		0.0110	0.0110	0.0000	17.0843	17.0843	5.4100e-003	0.0000	17.2195
Total	**0.0217**	**0.2279**	**0.1103**	**1.9000e-004**	**0.0407**	**0.0120**	**0.0526**	**0.0223**	**0.0110**	**0.0333**	**0.0000**	**17.0843**	**17.0843**	**5.4100e-003**	**0.0000**	**17.2195**

3.3 Site Preparation - 2019

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.3000e-004	2.8000e-004	2.8000e-003	1.0000e-005	7.2000e-004	0.0000	7.2000e-004	1.9000e-004	0.0000	2.0000e-004	0.0000	0.6427	0.6427	2.0000e-005	0.0000	0.6432
Total	**4.3000e-004**	**2.8000e-004**	**2.8000e-003**	**1.0000e-005**	**7.2000e-004**	**0.0000**	**7.2000e-004**	**1.9000e-004**	**0.0000**	**2.0000e-004**	**0.0000**	**0.6427**	**0.6427**	**2.0000e-005**	**0.0000**	**0.6432**

3.4 Grading - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0789	0.0000	0.0789	0.0258	0.0000	0.0258	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0308	0.3544	0.2170	4.0000e-004		0.0155	0.0155		0.0143	0.0143	0.0000	36.2059	36.2059	0.0115	0.0000	36.4922
Total	**0.0308**	**0.3544**	**0.2170**	**4.0000e-004**	**0.0789**	**0.0155**	**0.0944**	**0.0258**	**0.0143**	**0.0401**	**0.0000**	**36.2059**	**36.2059**	**0.0115**	**0.0000**	**36.4922**

3.4 Grading - 2019

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.1000e-004	4.0000e-004	4.0500e-003	1.0000e-005	1.0400e-003	1.0000e-005	1.0500e-003	2.8000e-004	1.0000e-005	2.8000e-004	0.0000	0.9284	0.9284	3.0000e-005	0.0000	0.9291
Total	**6.1000e-004**	**4.0000e-004**	**4.0500e-003**	**1.0000e-005**	**1.0400e-003**	**1.0000e-005**	**1.0500e-003**	**2.8000e-004**	**1.0000e-005**	**2.8000e-004**	**0.0000**	**0.9284**	**0.9284**	**3.0000e-005**	**0.0000**	**0.9291**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0355	0.0000	0.0355	0.0116	0.0000	0.0116	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0308	0.3544	0.2170	4.0000e-004		0.0155	0.0155		0.0143	0.0143	0.0000	36.2058	36.2058	0.0115	0.0000	36.4922
Total	**0.0308**	**0.3544**	**0.2170**	**4.0000e-004**	**0.0355**	**0.0155**	**0.0510**	**0.0116**	**0.0143**	**0.0259**	**0.0000**	**36.2058**	**36.2058**	**0.0115**	**0.0000**	**36.4922**

3.4 Grading - 2019

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.1000e-004	4.0000e-004	4.0500e-003	1.0000e-005	1.0400e-003	1.0000e-005	1.0500e-003	2.8000e-004	1.0000e-005	2.8000e-004	0.0000	0.9284	0.9284	3.0000e-005	0.0000	0.9291
Total	**6.1000e-004**	**4.0000e-004**	**4.0500e-003**	**1.0000e-005**	**1.0400e-003**	**1.0000e-005**	**1.0500e-003**	**2.8000e-004**	**1.0000e-005**	**2.8000e-004**	**0.0000**	**0.9284**	**0.9284**	**3.0000e-005**	**0.0000**	**0.9291**

3.4 Grading - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0910	0.0000	0.0910	0.0324	0.0000	0.0324	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0378	0.4267	0.2717	5.3000e-004		0.0185	0.0185		0.0170	0.0170	0.0000	46.3117	46.3117	0.0150	0.0000	46.6861
Total	**0.0378**	**0.4267**	**0.2717**	**5.3000e-004**	**0.0910**	**0.0185**	**0.1094**	**0.0324**	**0.0170**	**0.0494**	**0.0000**	**46.3117**	**46.3117**	**0.0150**	**0.0000**	**46.6861**

3.4 Grading - 2020

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	7.3000e-004	4.7000e-004	4.7200e-003	1.0000e-005	1.3600e-003	1.0000e-005	1.3700e-003	3.6000e-004	1.0000e-005	3.7000e-004	0.0000	1.1763	1.1763	3.0000e-005	0.0000	1.1771
Total	**7.3000e-004**	**4.7000e-004**	**4.7200e-003**	**1.0000e-005**	**1.3600e-003**	**1.0000e-005**	**1.3700e-003**	**3.6000e-004**	**1.0000e-005**	**3.7000e-004**	**0.0000**	**1.1763**	**1.1763**	**3.0000e-005**	**0.0000**	**1.1771**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0409	0.0000	0.0409	0.0146	0.0000	0.0146	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0378	0.4267	0.2717	5.3000e-004		0.0185	0.0185		0.0170	0.0170	0.0000	46.3116	46.3116	0.0150	0.0000	46.6861
Total	**0.0378**	**0.4267**	**0.2717**	**5.3000e-004**	**0.0409**	**0.0185**	**0.0594**	**0.0146**	**0.0170**	**0.0316**	**0.0000**	**46.3116**	**46.3116**	**0.0150**	**0.0000**	**46.6861**

3.4 Grading - 2020

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	7.3000e-004	4.7000e-004	4.7200e-003	1.0000e-005	1.3600e-003	1.0000e-005	1.3700e-003	3.6000e-004	1.0000e-005	3.7000e-004	0.0000	1.1763	1.1763	3.0000e-005	0.0000	1.1771
Total	**7.3000e-004**	**4.7000e-004**	**4.7200e-003**	**1.0000e-005**	**1.3600e-003**	**1.0000e-005**	**1.3700e-003**	**3.6000e-004**	**1.0000e-005**	**3.7000e-004**	**0.0000**	**1.1763**	**1.1763**	**3.0000e-005**	**0.0000**	**1.1771**

3.5 Building Construction - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.2597	2.3503	2.0639	3.3000e-003		0.1368	0.1368		0.1287	0.1287	0.0000	283.7222	283.7222	0.0692	0.0000	285.4527
Total	**0.2597**	**2.3503**	**2.0639**	**3.3000e-003**		**0.1368**	**0.1368**		**0.1287**	**0.1287**	**0.0000**	**283.7222**	**283.7222**	**0.0692**	**0.0000**	**285.4527**

3.5 Building Construction - 2020

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0362	1.1991	0.1915	2.7500e-003	0.0641	6.3600e-003	0.0705	0.0185	6.0900e-003	0.0246	0.0000	260.9884	260.9884	0.0323	0.0000	261.7948
Worker	0.1058	0.0671	0.6810	1.8800e-003	0.1959	1.2600e-003	0.1971	0.0521	1.1600e-003	0.0532	0.0000	169.5250	169.5250	4.5400e-003	0.0000	169.6385
Total	**0.1419**	**1.2662**	**0.8724**	**4.6300e-003**	**0.2600**	**7.6200e-003**	**0.2676**	**0.0706**	**7.2500e-003**	**0.0778**	**0.0000**	**430.5134**	**430.5134**	**0.0368**	**0.0000**	**431.4334**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.2597	2.3503	2.0639	3.3000e-003		0.1368	0.1368		0.1287	0.1287	0.0000	283.7219	283.7219	0.0692	0.0000	285.4524
Total	**0.2597**	**2.3503**	**2.0639**	**3.3000e-003**		**0.1368**	**0.1368**		**0.1287**	**0.1287**	**0.0000**	**283.7219**	**283.7219**	**0.0692**	**0.0000**	**285.4524**

3.5 Building Construction - 2020

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0362	1.1991	0.1915	2.7500e-003	0.0641	6.3600e-003	0.0705	0.0185	6.0900e-003	0.0246	0.0000	260.9884	260.9884	0.0323	0.0000	261.7948
Worker	0.1058	0.0671	0.6810	1.8800e-003	0.1959	1.2600e-003	0.1971	0.0521	1.1600e-003	0.0532	0.0000	169.5250	169.5250	4.5400e-003	0.0000	169.6385
Total	**0.1419**	**1.2662**	**0.8724**	**4.6300e-003**	**0.2600**	**7.6200e-003**	**0.2676**	**0.0706**	**7.2500e-003**	**0.0778**	**0.0000**	**430.5134**	**430.5134**	**0.0368**	**0.0000**	**431.4334**

3.5 Building Construction - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0523	0.4794	0.4558	7.4000e-004		0.0264	0.0264		0.0248	0.0248	0.0000	63.7003	63.7003	0.0154	0.0000	64.0845
Total	**0.0523**	**0.4794**	**0.4558**	**7.4000e-004**		**0.0264**	**0.0264**		**0.0248**	**0.0248**	**0.0000**	**63.7003**	**63.7003**	**0.0154**	**0.0000**	**64.0845**

3.5 Building Construction - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	6.5600e-003	0.2445	0.0373	6.1000e-004	0.0144	6.6000e-004	0.0151	4.1600e-003	6.3000e-004	4.7900e-003	0.0000	58.0375	58.0375	7.0000e-003	0.0000	58.2126
Worker	0.0219	0.0134	0.1387	4.1000e-004	0.0440	2.7000e-004	0.0442	0.0117	2.5000e-004	0.0119	0.0000	36.7525	36.7525	9.1000e-004	0.0000	36.7752
Total	**0.0285**	**0.2579**	**0.1760**	**1.0200e-003**	**0.0584**	**9.3000e-004**	**0.0593**	**0.0159**	**8.8000e-004**	**0.0167**	**0.0000**	**94.7900**	**94.7900**	**7.9100e-003**	**0.0000**	**94.9878**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0523	0.4794	0.4558	7.4000e-004		0.0264	0.0264		0.0248	0.0248	0.0000	63.7002	63.7002	0.0154	0.0000	64.0844
Total	**0.0523**	**0.4794**	**0.4558**	**7.4000e-004**		**0.0264**	**0.0264**		**0.0248**	**0.0248**	**0.0000**	**63.7002**	**63.7002**	**0.0154**	**0.0000**	**64.0844**

3.5 Building Construction - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	6.5600e-003	0.2445	0.0373	6.1000e-004	0.0144	6.6000e-004	0.0151	4.1600e-003	6.3000e-004	4.7900e-003	0.0000	58.0375	58.0375	7.0000e-003	0.0000	58.2126
Worker	0.0219	0.0134	0.1387	4.1000e-004	0.0440	2.7000e-004	0.0442	0.0117	2.5000e-004	0.0119	0.0000	36.7525	36.7525	9.1000e-004	0.0000	36.7752
Total	**0.0285**	**0.2579**	**0.1760**	**1.0200e-003**	**0.0584**	**9.3000e-004**	**0.0593**	**0.0159**	**8.8000e-004**	**0.0167**	**0.0000**	**94.7900**	**94.7900**	**7.9100e-003**	**0.0000**	**94.9878**

3.6 Paving - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0126	0.1292	0.1465	2.3000e-004		6.7800e-003	6.7800e-003		6.2400e-003	6.2400e-003	0.0000	20.0235	20.0235	6.4800e-003	0.0000	20.1854
Paving	0.0102					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0228**	**0.1292**	**0.1465**	**2.3000e-004**		**6.7800e-003**	**6.7800e-003**		**6.2400e-003**	**6.2400e-003**	**0.0000**	**20.0235**	**20.0235**	**6.4800e-003**	**0.0000**	**20.1854**

3.6 Paving - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.0000e-004	3.7000e-004	3.7800e-003	1.0000e-005	1.2000e-003	1.0000e-005	1.2100e-003	3.2000e-004	1.0000e-005	3.3000e-004	0.0000	1.0023	1.0023	2.0000e-005	0.0000	1.0030
Total	**6.0000e-004**	**3.7000e-004**	**3.7800e-003**	**1.0000e-005**	**1.2000e-003**	**1.0000e-005**	**1.2100e-003**	**3.2000e-004**	**1.0000e-005**	**3.3000e-004**	**0.0000**	**1.0023**	**1.0023**	**2.0000e-005**	**0.0000**	**1.0030**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0126	0.1292	0.1465	2.3000e-004		6.7800e-003	6.7800e-003		6.2400e-003	6.2400e-003	0.0000	20.0235	20.0235	6.4800e-003	0.0000	20.1854
Paving	0.0102					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0228**	**0.1292**	**0.1465**	**2.3000e-004**		**6.7800e-003**	**6.7800e-003**		**6.2400e-003**	**6.2400e-003**	**0.0000**	**20.0235**	**20.0235**	**6.4800e-003**	**0.0000**	**20.1854**

3.6 Paving - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.0000e-004	3.7000e-004	3.7800e-003	1.0000e-005	1.2000e-003	1.0000e-005	1.2100e-003	3.2000e-004	1.0000e-005	3.3000e-004	0.0000	1.0023	1.0023	2.0000e-005	0.0000	1.0030
Total	**6.0000e-004**	**3.7000e-004**	**3.7800e-003**	**1.0000e-005**	**1.2000e-003**	**1.0000e-005**	**1.2100e-003**	**3.2000e-004**	**1.0000e-005**	**3.3000e-004**	**0.0000**	**1.0023**	**1.0023**	**2.0000e-005**	**0.0000**	**1.0030**

3.7 Architectural Coating - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.5791					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.1900e-003	0.0153	0.0182	3.0000e-005		9.4000e-004	9.4000e-004		9.4000e-004	9.4000e-004	0.0000	2.5533	2.5533	1.8000e-004	0.0000	2.5576
Total	**0.5813**	**0.0153**	**0.0182**	**3.0000e-005**		**9.4000e-004**	**9.4000e-004**		**9.4000e-004**	**9.4000e-004**	**0.0000**	**2.5533**	**2.5533**	**1.8000e-004**	**0.0000**	**2.5576**

3.7 Architectural Coating - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.6000e-003	9.7000e-004	0.0101	3.0000e-005	3.2000e-003	2.0000e-005	3.2200e-003	8.5000e-004	2.0000e-005	8.7000e-004	0.0000	2.6729	2.6729	7.0000e-005	0.0000	2.6746
Total	**1.6000e-003**	**9.7000e-004**	**0.0101**	**3.0000e-005**	**3.2000e-003**	**2.0000e-005**	**3.2200e-003**	**8.5000e-004**	**2.0000e-005**	**8.7000e-004**	**0.0000**	**2.6729**	**2.6729**	**7.0000e-005**	**0.0000**	**2.6746**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.5791					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.1900e-003	0.0153	0.0182	3.0000e-005		9.4000e-004	9.4000e-004		9.4000e-004	9.4000e-004	0.0000	2.5533	2.5533	1.8000e-004	0.0000	2.5576
Total	**0.5813**	**0.0153**	**0.0182**	**3.0000e-005**		**9.4000e-004**	**9.4000e-004**		**9.4000e-004**	**9.4000e-004**	**0.0000**	**2.5533**	**2.5533**	**1.8000e-004**	**0.0000**	**2.5576**

3.7 Architectural Coating - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.6000e-003	9.7000e-004	0.0101	3.0000e-005	3.2000e-003	2.0000e-005	3.2200e-003	8.5000e-004	2.0000e-005	8.7000e-004	0.0000	2.6729	2.6729	7.0000e-005	0.0000	2.6746
Total	**1.6000e-003**	**9.7000e-004**	**0.0101**	**3.0000e-005**	**3.2000e-003**	**2.0000e-005**	**3.2200e-003**	**8.5000e-004**	**2.0000e-005**	**8.7000e-004**	**0.0000**	**2.6729**	**2.6729**	**7.0000e-005**	**0.0000**	**2.6746**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	2.5208	29.2385	16.6778	0.0748	3.2042	0.0640	3.2682	0.8638	0.0605	0.9244	0.0000	6,986.0394	6,986.0394	1.3879	0.0000	7,020.7377
Unmitigated	2.5208	29.2385	16.6778	0.0748	3.2042	0.0640	3.2682	0.8638	0.0605	0.9244	0.0000	6,986.0394	6,986.0394	1.3879	0.0000	7,020.7377

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Automobile Care Center	237.20	237.20	118.80	219,446	219,446
Fast Food Restaurant with Drive Thru	2,133.32	3,104.73	2333.70	2,149,616	2,149,616
Fast Food Restaurant with Drive Thru	1,537.97	2,238.29	1682.43	1,549,723	1,549,723
Gasoline/Service Station	3,371.20	3,371.20	3371.20	1,942,379	1,942,379
High Turnover (Sit Down Restaurant)	584.89	728.50	606.46	706,007	706,007
Hotel	980.40	982.80	714.00	1,791,038	1,791,038
Other Non-Asphalt Surfaces	0.00	0.00	0.00		
Parking Lot	0.00	0.00	0.00		
Parking Lot	0.00	0.00	0.00		
Parking Lot	0.00	0.00	0.00		
Parking Lot	0.00	0.00	0.00		
Total	8,844.98	10,662.72	8,826.59	8,358,207	8,358,207

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Automobile Care Center	9.50	7.30	7.30	33.00	48.00	19.00	21	51	28
Fast Food Restaurant with Drive	9.50	7.30	7.30	2.20	78.80	19.00	29	21	50
Fast Food Restaurant with Drive	9.50	7.30	7.30	2.20	78.80	19.00	29	21	50
Gasoline/Service Station	9.50	7.30	7.30	2.00	79.00	19.00	14	27	59
High Turnover (Sit Down	9.50	7.30	7.30	8.50	72.50	19.00	37	20	43
Hotel	9.50	7.30	7.30	19.40	61.60	19.00	58	38	4
Other Non-Asphalt Surfaces	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0
Parking Lot	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0
Parking Lot	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0
Parking Lot	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0
Parking Lot	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Automobile Care Center	0.487139	0.031901	0.169199	0.121386	0.017033	0.004732	0.033028	0.124746	0.002366	0.001590	0.005154	0.001097	0.000629
Fast Food Restaurant with Drive Thru	0.487139	0.031901	0.169199	0.121386	0.017033	0.004732	0.033028	0.124746	0.002366	0.001590	0.005154	0.001097	0.000629
Gasoline/Service Station	0.487139	0.031901	0.169199	0.121386	0.017033	0.004732	0.033028	0.124746	0.002366	0.001590	0.005154	0.001097	0.000629
High Turnover (Sit Down Restaurant)	0.487139	0.031901	0.169199	0.121386	0.017033	0.004732	0.033028	0.124746	0.002366	0.001590	0.005154	0.001097	0.000629
Hotel	0.487139	0.031901	0.169199	0.121386	0.017033	0.004732	0.033028	0.124746	0.002366	0.001590	0.005154	0.001097	0.000629
Other Non-Asphalt Surfaces	0.487139	0.031901	0.169199	0.121386	0.017033	0.004732	0.033028	0.124746	0.002366	0.001590	0.005154	0.001097	0.000629
Parking Lot	0.487139	0.031901	0.169199	0.121386	0.017033	0.004732	0.033028	0.124746	0.002366	0.001590	0.005154	0.001097	0.000629

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	277.0338	277.0338	0.0125	2.5900e-003	278.1193
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	277.0338	277.0338	0.0125	2.5900e-003	278.1193
NaturalGas Mitigated	0.0212	0.1925	0.1617	1.1600e-003		0.0146	0.0146		0.0146	0.0146	0.0000	209.5901	209.5901	4.0200e-003	3.8400e-003	210.8356
NaturalGas Unmitigated	0.0212	0.1925	0.1617	1.1600e-003		0.0146	0.0146		0.0146	0.0146	0.0000	209.5901	209.5901	4.0200e-003	3.8400e-003	210.8356

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Automobile Care Center	208700	1.1300e-003	0.0102	8.5900e-003	6.0000e-005		7.8000e-004	7.8000e-004		7.8000e-004	7.8000e-004	0.0000	11.1370	11.1370	2.1000e-004	2.0000e-004	11.2032
Fast Food Restaurant with Drive Thru	652302	3.5200e-003	0.0320	0.0269	1.9000e-004		2.4300e-003	2.4300e-003		2.4300e-003	2.4300e-003	0.0000	34.8093	34.8093	6.7000e-004	6.4000e-004	35.0162
Fast Food Restaurant with Drive Thru	904806	4.8800e-003	0.0444	0.0373	2.7000e-004		3.3700e-003	3.3700e-003		3.3700e-003	3.3700e-003	0.0000	48.2839	48.2839	9.3000e-004	8.9000e-004	48.5708
Gasoline/Service Station	187830	1.0100e-003	9.2100e-003	7.7300e-003	6.0000e-005		7.0000e-004	7.0000e-004		7.0000e-004	7.0000e-004	0.0000	10.0233	10.0233	1.9000e-004	1.8000e-004	10.0829
High Turnover (Sit Down Restaurant)	967932	5.2200e-003	0.0475	0.0399	2.8000e-004		3.6100e-003	3.6100e-003		3.6100e-003	3.6100e-003	0.0000	51.6525	51.6525	9.9000e-004	9.5000e-004	51.9595
Hotel	1.006e +006	5.4200e-003	0.0493	0.0414	3.0000e-004		3.7500e-003	3.7500e-003		3.7500e-003	3.7500e-003	0.0000	53.6840	53.6840	1.0300e-003	9.8000e-004	54.0030
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0212**	**0.1925**	**0.1617**	**1.1600e-003**		**0.0146**	**0.0146**		**0.0146**	**0.0146**	**0.0000**	**209.5901**	**209.5901**	**4.0200e-003**	**3.8400e-003**	**210.8356**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Automobile Care Center	208700	1.1300e-003	0.0102	8.5900e-003	6.0000e-005		7.8000e-004	7.8000e-004		7.8000e-004	7.8000e-004	0.0000	11.1370	11.1370	2.1000e-004	2.0000e-004	11.2032
Fast Food Restaurant with Drive Thru	904806	4.8800e-003	0.0444	0.0373	2.7000e-004		3.3700e-003	3.3700e-003		3.3700e-003	3.3700e-003	0.0000	48.2839	48.2839	9.3000e-004	8.9000e-004	48.5708
Fast Food Restaurant with Drive Thru	652302	3.5200e-003	0.0320	0.0269	1.9000e-004		2.4300e-003	2.4300e-003		2.4300e-003	2.4300e-003	0.0000	34.8093	34.8093	6.7000e-004	6.4000e-004	35.0162
Gasoline/Service Station	187830	1.0100e-003	9.2100e-003	7.7300e-003	6.0000e-005		7.0000e-004	7.0000e-004		7.0000e-004	7.0000e-004	0.0000	10.0233	10.0233	1.9000e-004	1.8000e-004	10.0829
High Turnover (Sit Down Restaurant)	967932	5.2200e-003	0.0475	0.0399	2.8000e-004		3.6100e-003	3.6100e-003		3.6100e-003	3.6100e-003	0.0000	51.6525	51.6525	9.9000e-004	9.5000e-004	51.9595
Hotel	1.006e +006	5.4200e-003	0.0493	0.0414	3.0000e-004		3.7500e-003	3.7500e-003		3.7500e-003	3.7500e-003	0.0000	53.6840	53.6840	1.0300e-003	9.8000e-004	54.0030
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0212**	**0.1925**	**0.1617**	**1.1600e-003**		**0.0146**	**0.0146**		**0.0146**	**0.0146**	**0.0000**	**209.5901**	**209.5901**	**4.0200e-003**	**3.8400e-003**	**210.8356**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Automobile Care Center	88200	25.6584	1.1600e-003	2.4000e-004	25.7589
Fast Food Restaurant with Drive Thru	124571	36.2391	1.6400e-003	3.4000e-004	36.3811
Fast Food Restaurant with Drive Thru	89807	26.1259	1.1800e-003	2.4000e-004	26.2283
Gasoline/Service Station	79380	23.0926	1.0400e-003	2.2000e-004	23.1830
High Turnover (Sit Down Restaurant)	133262	38.7674	1.7500e-003	3.6000e-004	38.9194
Hotel	317600	92.3935	4.1800e-003	8.6000e-004	92.7555
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Parking Lot	28000	8.1455	3.7000e-004	8.0000e-005	8.1774
Parking Lot	91476	26.6114	1.2000e-003	2.5000e-004	26.7157
Total		**277.0338**	**0.0125**	**2.5900e-003**	**278.1194**

5.3 Energy by Land Use - Electricity

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Automobile Care Center	88200	25.6584	1.1600e-003	2.4000e-004	25.7589
Fast Food Restaurant with Drive Thru	124571	36.2391	1.6400e-003	3.4000e-004	36.3811
Fast Food Restaurant with Drive Thru	89807	26.1259	1.1800e-003	2.4000e-004	26.2283
Gasoline/Service Station	79380	23.0926	1.0400e-003	2.2000e-004	23.1830
High Turnover (Sit Down Restaurant)	133262	38.7674	1.7500e-003	3.6000e-004	38.9194
Hotel	317600	92.3935	4.1800e-003	8.6000e-004	92.7555
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Parking Lot	28000	8.1455	3.7000e-004	8.0000e-005	8.1774
Parking Lot	91476	26.6114	1.2000e-003	2.5000e-004	26.7157
Total		**277.0338**	**0.0125**	**2.5900e-003**	**278.1194**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.3620	3.0000e-005	3.4100e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	6.6000e-003	6.6000e-003	2.0000e-005	0.0000	7.0400e-003
Unmitigated	0.3620	3.0000e-005	3.4100e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	6.6000e-003	6.6000e-003	2.0000e-005	0.0000	7.0400e-003

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0579					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.3038					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	3.2000e-004	3.0000e-005	3.4100e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	6.6000e-003	6.6000e-003	2.0000e-005	0.0000	7.0400e-003
Total	**0.3620**	**3.0000e-005**	**3.4100e-003**	**0.0000**		**1.0000e-005**	**1.0000e-005**		**1.0000e-005**	**1.0000e-005**	**0.0000**	**6.6000e-003**	**6.6000e-003**	**2.0000e-005**	**0.0000**	**7.0400e-003**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0579					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.3038					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	3.2000e-004	3.0000e-005	3.4100e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	6.6000e-003	6.6000e-003	2.0000e-005	0.0000	7.0400e-003
Total	**0.3620**	**3.0000e-005**	**3.4100e-003**	**0.0000**		**1.0000e-005**	**1.0000e-005**		**1.0000e-005**	**1.0000e-005**	**0.0000**	**6.6000e-003**	**6.6000e-003**	**2.0000e-005**	**0.0000**	**7.0400e-003**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	16.2624	0.2578	6.2000e-003	24.5557
Unmitigated	16.2624	0.2578	6.2000e-003	24.5557

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Automobile Care Center	0.940811 / 0.576626	2.3665	0.0308	7.4000e-004	3.3568
Fast Food Restaurant with Drive Thru	2.24615 / 0.143371	4.3943	0.0734	1.7600e-003	6.7535
Gasoline/Service Station	0.265638 / 0.16281	0.6682	8.6800e-003	2.1000e-004	0.9478
High Turnover (Sit Down Restaurant)	1.39626 / 0.0891227	2.7316	0.0456	1.1000e-003	4.1981
Hotel	3.04401 / 0.338224	6.1018	0.0994	2.3900e-003	9.2995
Other Non-Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**16.2624**	**0.2578**	**6.2000e-003**	**24.5557**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Automobile Care Center	0.940811 / 0.576626	2.3665	0.0308	7.4000e-004	3.3568
Fast Food Restaurant with Drive Thru	2.24615 / 0.143371	4.3943	0.0734	1.7600e-003	6.7535
Gasoline/Service Station	0.265638 / 0.16281	0.6682	8.6800e-003	2.1000e-004	0.9478
High Turnover (Sit Down Restaurant)	1.39626 / 0.0891227	2.7316	0.0456	1.1000e-003	4.1981
Hotel	3.04401 / 0.338224	6.1018	0.0994	2.3900e-003	9.2995
Other Non-Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**16.2624**	**0.2578**	**6.2000e-003**	**24.5557**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	51.6937	3.0550	0.0000	128.0689
Unmitigated	51.6937	3.0550	0.0000	128.0689

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Automobile Care Center	38.2	7.7543	0.4583	0.0000	19.2108
Fast Food Restaurant with Drive Thru	85.24	17.3030	1.0226	0.0000	42.8673
Gasoline/Service Station	10.78	2.1882	0.1293	0.0000	5.4213
High Turnover (Sit Down Restaurant)	54.74	11.1117	0.6567	0.0000	27.5288
Hotel	65.7	13.3365	0.7882	0.0000	33.0406
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Total		**51.6937**	**3.0550**	**0.0000**	**128.0689**

8.2 Waste by Land Use

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Automobile Care Center	38.2	7.7543	0.4583	0.0000	19.2108
Fast Food Restaurant with Drive Thru	85.24	17.3030	1.0226	0.0000	42.8673
Gasoline/Service Station	10.78	2.1882	0.1293	0.0000	5.4213
High Turnover (Sit Down Restaurant)	54.74	11.1117	0.6567	0.0000	27.5288
Hotel	65.7	13.3365	0.7882	0.0000	33.0406
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Total		**51.6937**	**3.0550**	**0.0000**	**128.0689**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Appendix B

Biological Resources Evaluation

2018

Buford Travel Center Project
2747 E. Manning Ave.
Fowler, California 93625

Alphabiota Environmental Consulting, LLC
1/12/2018

Buford Oil Travel Center Project

2747 E. Manning, Fowler

Fresno County, California 93625

January 12, 2018

Prepared For:

Technicon Engineering on behalf of

Tom Buford

Buford Oil Company

P.O. Box 104

Hanford, CA 93232

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January12, 2018

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List of Abbreviations

AEC	Alphabiota Environmental Consulting, LLC.
CDFW	California Department of Fish and Wildlife
CDNPA	California Desert Native Plants Act
CEQA	California Environmental Quality Act
CESA	California Endangered Species Act
CFR	Code of Federal Regulations
cm	centimeters
CNDDB	California Natural Diversity Database
CNPS	California Native Plant Society
Corps	Unites State Army Corps of Engineers
CRPR	California Rare Plant Ranks
CWA	Clean Water Act
CWHR	California Wildlife Habitat Relationships
Dbh	Diameter at Breast Height
EPA	Environmental Protection Agency
ESA	Endangered Species Act
FE	Federally endangered
FT	Federally threatened
FP	Fully protected
FR	Federal Register
ft.	feet
GIS	Geographic Information System
GPS	Global Positioning System
in	inches
LSA	Lake and Streambed Alteration Agreement
m	meters
MBTA	Migratory Bird Treaty Act
mi	miles
MSL	mean sea level
NMFS	National Marine Fisheries Service NPPA Native Plant Protection Act
NWI	National Wetlands Inventory
NWP	Nationwide Permit OHWM Ordinary High-Water Mark
RWQCB	Regional Water Quality Control Board
SSC	Species of Special Concern
SE	State Endangered
ST	State threatened
SWANCC	Solid Waste Agency of Northern Cook County
TNW	Traditional navigable water
USACE	U.S. Army Corps of Engineers USC U.S. Code
USFWS	U.S. Fish and Wildlife Service
WDR	Waste Discharge Requirements

1. Introduction

Alphabiota Environmental Consulting, LLC (Alphabiota, AEC) was retained by Technicon Engineering Inc. (Technicon) on behalf of Tom Buford of Buford Oil Company (Project Proponent) to provide biological resources services in support of the Buford Oil Travel Center Project (Project). AEC was tasked with providing a site survey and assessment of biological resources that could potentially occur at the project site, based upon desktop analysis and field surveys. AEC assessed biological conditions throughout the project survey area and reviewed relevant technical documents and agency maintained databases on biological resources to characterize the biological resources that could potentially be present or affected by the construction and use of the project. AEC also reviewed relevant federal, state, and county regulations; characterized the existing conditions and habitat with respect to biological resources that may occur within the project development. AEC's study provides observational information related to biological resources that may occur within the project vicinity.

AEC's desktop review and a site habitat survey of the project property site / study area identified no jurisdictional water features or riparian habitat within the project property. No State or Federally listed plant or animal species are documented to occur at the site or within the immediate vicinity. No State or Federally listed plant or animal species were observed at the site during field investigations. CNDDB GIS data identified one documented occurrence of Yellow-billed cuckoo (*Coccyzus americanus*) within 5-miles of the site with an occurrence date of 1898. None of the project land was deemed suitable for any listed special status species that may have the potential to occur in the region.

1.1 Project Description

It is understood by Alphabiota Environmental Consulting, LLC (Alphabiota, AEC) that the proposed project is the redevelopment and expansion of the current truck stop-fuel station and the undeveloped portions of the project property. The Buford Oil Company Travel Center currently consist of a fuel station, truck terminal, convenience store, and a restaurant occupying approximately eight (8) acres of an approximately 18-acre parcel within the Golden State Industrial corridor.

The proposed project would involve the development of additional fueling facilities, traveler amenities, and parking facilities for motorists and commercial truck operators. The site plan includes:

- 8 diesel fueling lanes (includes Diesel, Diesel Exhaust Fluid (DEF) and Bio Diesel).
- 6 gas fueling dispensers
- 107 truck parking spaces
- 367 passenger vehicle parking spaces
- One 100-foot-tall advertising sign (for SR-99)
- One 9,000 square foot building that will include: a driver's lounge, game room, ATM's. Western Union Check Cashing, and Wi-Fi, Restroom facilities, that include showers facilities and laundry, and 2 quick service restaurants
- One 4,397 square foot building that will have a quick service restaurant with drive-through
- One 4,656 square foot building that will have a quick service restaurant with drive-through
- One 5,081 square foot building that will have a 24-hour diner restaurant
- One 33,000 square foot building that will have a three story, 72 room hotel

1.2 Project Location

The property proposed for development contains a single parcel located at a representative address of is 2747 E. Manning Avenue, Fowler California 93625 (APN: 345-180-30).

FIGURE 1: APPROXIMATE PROJECT BOUNDARY OF THE NEW PROPOSED BUFORD TRAVEL CENTER

1.3 Site Characterization

The site is comprised of one lot of approximately 18-acres in total (figure 1, Plate 3, 4, 5). There is currently about 8-acres of developed lands utilized as a small travel center with fuel stations, a convenience store, and parking for autos and tractor trailer trucks. The current access is Manning west of Golden State Avenue with a single entrance for ingress and egress at a traffic control light intersection at the southeast corner of the site. The portion of the site that is developed occupies the southern portions of the project property. A single detention basin is located near the southwest property bounds just west of the existing parking lot. The basin is surrounded by dilapidated chain link fence and garbage. The basin's slopes and general integrity appear to be in poor shape. Litter, vehicle fluids, and oil sheened water were observed in the basin at the time of the survey. The northern portions of the site are vacant, fallow land with make-shift dirt roads, and annual weedy species of vegetation dominating most of the undeveloped areas of this site. For the purposes of this report this habitat is classified as ruderal disturbed grassland (this is a derived classification based on the current flora and conditions of the site). Observations of the surface soils indicate the site is disced at least once a year. Rutting and furrows consistent with discing activities were present during the survey. Soils of the site consist of a mix of sands and loams where one or the other is the parent material (Plate 3). The northern portion of the site is developed lands with pavement and buildings covering all the surfaces currently in use for the as built travel center. This area is not considered habitat for the purposes of this report.

2 Regulatory Setting

On-site natural resources or those with a high occurrence probability in the project area may require mitigation for impacts that would, or could, result from project development. Mitigation requirements are based on numerous federal, state, and local laws, regulations, and policies relating to listed and endangered plants and wildlife, migratory and nesting birds, environmental quality, and lake- or streambed alteration. The following discussion reviews these policies and how they pertain to any tasks implemented under the project.

2.1 Federal Regulations

1.1.1 National Environmental Policy Act (NEPA)

The National Environmental Policy Act (NEPA) was signed into law on January 1, 1970. NEPA requires federal agencies to assess the environmental effects of their proposed actions prior to making decisions. The range of actions covered by NEPA is broad and includes:

- making decisions on permit applications,
- adopting federal land management actions, and
- constructing highways and other publicly-owned facilities.

Using the NEPA process, agencies evaluate the environmental and related social and economic effects of their proposed actions. Agencies also provide opportunities for public review and comment on those evaluations.

Title I of NEPA contains a Declaration of National Environmental Policy. This policy requires the federal government to use all practicable means to create and maintain conditions under which man and nature can exist in productive harmony.

Section 102 in Title I of the Act requires federal agencies to incorporate environmental considerations in their planning and decision-making through a systematic interdisciplinary approach. Specifically, all federal agencies are to prepare detailed statements assessing the environmental impact of and alternatives to major federal actions significantly affecting the environment. These statements are commonly referred to as Environmental Impact Statements (EIS) and Environmental Assessments (EA).

Title II of NEPA established the President's Council on Environmental Quality (CEQ) to oversee NEPA implementation. The duties of CEQ include:

- Ensuring that federal agencies meet their obligations under NEPA
- Overseeing federal agency implementation of the environmental impact assessment process
- Issuing regulations and other guidance to federal agencies regarding NEPA compliance.

In 1978, CEQ issued regulations (40 CFR Parts 1500-1508) to implement NEPA. These regulations are binding on all federal agencies. The regulations address the procedural provisions of NEPA and the administration of the NEPA process, including the preparation of environmental impact statements. In addition to the CEQ NEPA regulations, CEQ has issued a variety of guidance documents on the implementation of NEPA.

Many federal agencies have also developed their own NEPA procedures that supplement the CEQ NEPA regulations. These NEPA procedures vary from agency to agency since they are tailored for the specific mission and activities of the agency.

The role of a federal agency in the NEPA process depends on the agency's expertise and relationship to the proposed action. The agency carrying out the federal action is responsible for complying with the requirements of NEPA. In some cases, there may be more than one federal agency involved in the proposed action. In this situation, a lead agency is designated to supervise the preparation of the environmental analysis. Federal agencies, together with state, tribal or local agencies, may act as joint lead agencies.

A federal, state, tribal or local agency having special expertise with respect to an environmental issue or jurisdiction by law may be a cooperating agency. A cooperating agency has the responsibility to:

- assist the lead agency by participating in the NEPA process at the earliest possible time
- participate in the scoping process
- develop information and prepare environmental analysis that the agency has special expertise in
- make staff support available

In addition, a federal agency may refer to CEQ interagency disagreements concerning proposed federal actions that might cause unsatisfactory environmental effects. CEQ's role, when it accepts a referral, is generally to develop findings and recommendations, consistent with the policy goals of Section 101 of NEPA.

The EPA is the responsible regulatory agency for NEPA and is authorized by Congress to write regulations that explain the technical, operational, and legal details necessary to implement the laws related to NEPA. These regulations are mandatory requirements that can apply to individuals, businesses, state or local governments, non-profit institutions, or others (https://www.epa.gov/nepa, 2016).

1.1.2 Federal Endangered Species Act

The U.S. Congress passed the Endangered Species Act (ESA) in 1973 to protect endangered species and species threatened with extinction (federally listed species). The ESA operates in conjunction with the National Environmental Policy Act to help protect the ecosystems upon which endangered and threatened species depend.

Section 9 of the ESA prohibits the "take" of endangered or threatened wildlife species. The legal definition of "take" for the ESA is to "harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct" (16 United States Code [USC] 1532 [19]). Harm is further defined to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing behavioral patterns (50 Code of Federal Regulations [CFR] 17.3). Harassment is defined as actions that create the likelihood of injury to listed species to such an extent as to significantly disrupt normal behavior patterns (50 CFR 17.3). Actions that result in take can result in civil or criminal penalties.

The ESA authorizes the U.S. Fish and Wildlife Service (USFWS) to issue permits under Sections 7 and 10 of that act. Section 7 mandates that all federal agencies consult with the USFWS for terrestrial species and/or National Marine Fisheries Service (NMFS) for marine species to ensure that federal agency actions do not jeopardize the continued existence of a listed species or adversely modify critical habitat for listed species. Any anticipated adverse effects require preparation of a biological assessment to determine potential effects of the project on listed species and critical habitat. If the project adversely affects a listed species or its habitat, the USFWS or NMFS prepares a Biological Opinion (BO). The BO may recommend "reasonable and prudent alternatives" to the project to avoid jeopardizing or adversely modifying habitat including "take" limits.

Sections 7 and 10 of the ESA include provisions to authorize take that is incidental to, but not the purpose of activities that are otherwise lawful. Federal agencies may seek permitting under

Section 7 of the ESA. Under Section 10(a)(1)(B), USFWS may issue permits (incidental take permits) for take of ESA-listed species to non-federal agencies if the take is incidental and does not jeopardize the survival and recovery of the species. To obtain an incidental take permit, an applicant must submit a habitat conservation plan outlining steps to minimize and mitigate permitted take impacts to listed species.

The ESA defines critical habitat as habitat deemed essential to the survival of a federally listed species. The ESA requires the federal government to designate "critical habitat" for any species it lists under the ESA. Under Section 7, all federal agencies must ensure that any actions they authorize, fund, or carry out are not likely to jeopardize the continued existence of a listed species, or destroy or adversely modify its designated critical habitat. These complementary requirements apply only to federal agency actions, and the latter only to specifically designated habitat. A critical habitat designation does not set up a preserve or refuge, and applies only when federal funding, permits, or projects are involved. Critical habitat requirements do not apply to activities on private land that does not involve a federal agency.

1.1.3 Clean Water Act

The federal CWA provides guidance for the restoration and maintenance of the chemical, physical, and biological integrity of the nation's waters.

The USACE and the US Environmental Protection Agency (EPA) regulate discharge of dredged or fill material into traditional navigable waters (TNW) of the United States under Section 404 of the CWA. The general definition of navigable waters of the U.S. includes those waters of the U.S. that are subject to the ebb and flow of the tide shoreward to the mean high-water mark and/or are presently used or have been used in the past, or may be susceptible to use, to transport interstate or foreign commerce. "Discharges of fill material" are defined as the addition of fill material into waters of the U.S., including, but not limited to the following: placement of fill that is necessary for the construction of any structure or impoundment requiring rock, sand, dirt, or other material for its construction; site-development fills for recreational, industrial, commercial, residential, and other uses; causeways or road fills; and fill for intake and outfall pipes and subaqueous utility lines (33 CFR 328.2(f)).

Additionally, Section 401 of the CWA (33 USC 1341) requires any applicant for a federal license or permit to conduct any activity that may result in a discharge of a pollutant into waters of the

U.S. to obtain a certification that the discharge will comply with applicable effluent limitations and water quality standards. Jurisdictional waters of the U.S. include jurisdictional wetlands as well as all other waters of the U.S. such as creeks, ponds, and intermittent drainages. Wetlands are defined as "those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support and under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions" (USACE 1987). The majority of jurisdictional wetlands in the United States meet three wetland assessment criteria: hydrophytic vegetation, hydric soils, and wetland hydrology. Jurisdictional waters of the U.S. can also be defined by exhibiting a defined bed and bank and ordinary high-water mark (OHWM). As discussed in Regulatory Framework, jurisdictional waters of the U.S. are subject to Section 404 of CWA and are regulated by the USACE. Methods for delineating wetlands and non-tidal waters are described below.

- Wetlands are defined as "those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support and under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions" [33 C.F.R.§328.3(b),1991]. Presently, to be a wetland, a site must exhibit three wetland criteria: hydrophytic vegetation, hydric soils, and wetland hydrology existing under the "normal circumstances" for the site.
- The lateral extent of non-tidal waters is determined by delineating the ordinary high-water mark (OHWM) [33 C.F.R. §328.4(c)(1)]. The OHWM is defined by the USACE as "that line on shore established by the fluctuations of water and indicated by physical character of the soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas" [33 C.F.R. §328.3(e)].

The USACE authorizes certain fill activities under the Section 404 Nationwide Permit (NWP) Program. NWPs do not authorize activities that are likely to jeopardize the existence of a threatened or endangered species or that may affect properties listed or eligible for listing in the National Register of Historic Places (56 Federal Register [FR] 59134, November 22, 1991). In addition to conditions outlined under each NWP, project-specific conditions may be required by the USACE as part of the Section 404 permitting process.

Waters of the U.S. do not include prior converted cropland. Notwithstanding the determination of an area's status as prior converted cropland by any other federal agency, for the purposes of the CWA, the final authority regarding CWA jurisdiction remains with the EPA (33 CFR § 328.3 (a)(8) added by 58 FR 45,035, August 25, 1993).

On January 9, 2001, the U.S. Supreme Court issued a decision in Solid Waste Agency of Northern Cook County v. U.S. Army Corps of Engineers, 531 U.S. 159 (2001) (SWANCC) that held that the language of the CWA cannot be interpreted as conferring authority for the federal government to regulate "isolated, intrastate, and non-navigable waters" merely because migratory birds may frequent them. The Court emphasized the states' responsibility for regulating such waters.

In response to the Court's decisions in Rapanos v. United States and Carabell v. United States, the USACE and the EPA issued joint guidance regarding USACE jurisdiction over waters of the U.S. under the CWA in 2008. Updated guidance in light of these cases and SWANCC was issued in 2011. The guidance summarizes the Supreme Court's findings and provides how and when the USACE should apply the "significant nexus" test in its jurisdictional determinations. This test determines whether a waterway is substantially connected to a TNW tributary and thus falls within USACE jurisdiction. The guidance provides the factors and summarizes the significant nexus test as an assessment of "the flow characteristics and functions of the tributary itself and the functions performed by all wetlands adjacent to the tributary to determine if they significantly affect the chemical, physical, and biological integrity of downstream traditional navigable waters." Flow characteristics include the volume, duration, and frequency of the flow. Additionally, ecological factors should be included, such as the shared hydrological and biological characteristics between a tributary and an adjacent wetland.

1.1.4 Migratory Bird Treaty Act

The federal Migratory Bird Treaty Act (MBTA), first enacted in 1918, prohibits any person, unless permitted by regulations, to

> *…pursue, hunt, take, capture, kill, attempt to take, capture or kill, possess, offer for sale, sell, offer to purchase, purchase, deliver for shipment, ship, cause to be shipped, deliver for transportation, transport, cause to be transported, carry, or cause to be carried by any means whatsoever, receive for shipment, transportation or carriage, or export, at any time, or in any manner, any migratory bird, included in the terms of this Convention*

> … for the protection of migratory birds ... or any part, nest, or egg of any such bird. (16 USC 703)

The list of migratory birds includes nearly all bird species native to the United States, and the statute was extended in 1974 to include parts of birds, as well as eggs and nests. The Migratory Bird Treaty Reform Act of 2004 further defined species protected under the act and excluded all non-native species. Thus, it is illegal under MBTA to directly kill, or destroy a nest of, nearly any native bird species, not just endangered species. Activities that result in removal or destruction of an active nest (a nest with eggs or young) would violate the MBTA. Removal of unoccupied nests and bird mortality resulting indirectly from disturbance activities are not considered violations of the MBTA.

1.1.5 Bald and Golden Eagle Protection Act

The Bald and Golden Eagle Protection Act (16 USC 668–668c), enacted in 1940, and amended several times since, prohibits "taking" bald eagles (*Haliaeetus leucocephalus*) and golden eagles (*Aquila chrysaetos*), including their parts, nests, or eggs without a permit issued by the Secretary of the Interior.

The act provides criminal penalties for persons who "take, possess, sell, purchase, barter, offer to sell, purchase or barter, transport, export or import, at any time or any manner, any bald eagle ... [or any golden eagle], alive or dead, or any part, nest, or egg thereof." The act defines "take" as "pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest or disturb."

In 2009, new USFWS rules were implemented requiring all activities that may disturb or incidentally take an eagle or its nest as a result of an otherwise legal activity to obtain permits from the USFWS.

Under USFWS rules (16 U.C.C. § 22.3; 72 Federal Register 31,132, June 5, 2007), "disturb" means "to agitate or bother a bald or golden eagle to a degree that causes, or is likely to cause, based on the best scientific information available, 1) injury to an eagle, 2) a decrease in its productivity, by substantially interfering with normal breeding, feeding, or sheltering behavior, or 3) nest abandonment, by substantially interfering with normal breeding, feeding, or sheltering behavior." In addition to immediate impacts, this definition also covers impacts that result from human-induced alterations initiated around a previously used nest site during a time when eagles are not present, if, upon the eagle's return, such alterations agitate or bother an eagle to a degree that interferes with or interrupts normal breeding, feeding, or sheltering habits, and causes injury, death, or nest abandonment.

1.2 State Regulations

1.2.1 California Endangered Species Act

The California Department of Fish and Wildlife (CDFW) administers the California Endangered Species Act (CESA), which prohibits the "taking" of listed species except as otherwise provided in state law.

Section 86 of Fish and Game Code defines *"take" as "hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill."* Under certain circumstances, the CESA applies these take prohibitions to species petitioned for listing (state candidates). Pursuant to the requirements of the CESA, state lead agencies (as defined under CEQA Public Resources Code Section 21067) are required to consult with the CDFW to ensure that any action or project is not likely to jeopardize the continued existence of any endangered or threatened species or result in destruction or adverse modification of essential habitat. Additionally, the CDFW encourages informal consultation on any proposed project that may impact a candidate species. The CESA requires the CDFW to maintain a list of threatened and endangered species. The CDFW also maintains a list of candidates for listing under the CESA and of species of special concern (or watch list species).

1.2.2 Fully Protected Species

The California Fish and Game Code provides protection from take for a variety of species, referred to as fully protected species. Section 5050 lists protected amphibians and reptiles, and Section 3515 prohibits take of fully protected fish species. Eggs and nests of fully protected birds are under Section 3511. Migratory nongame birds are protected under Section 3800, and mammals are protected under Section 4700. Except for take related to scientific research, all take of fully protected species is prohibited.

1.2.3 Nesting Birds and Raptors

Section 3503 of the Fish and Game Code states that it is unlawful to take, possess, or needlessly destroy the nest or eggs of any bird, except as otherwise provided by this code or any regulation made pursuant thereto. Section 3503.5 provides protection for all birds of prey, including their eggs and nests.

1.2.4 Migratory Bird Protection

Take or possession any migratory non-game bird as designated in the MBTA is prohibited by Section 3513 of the Fish and Game Code.

1.2.5 Native Plant Protection Act

The Native Plant Protection Act (NPPA) of 1977 (Fish and Game Code Section 1900-1913) directed the then-California Department of Fish and Game (now CDFW) to carry out the Legislature's intent to "preserve, protect and enhance rare and endangered plants in this State." The NPPA gave the California Fish and Game Commission the power to designate native plants as "endangered" or "rare" and protected endangered and rare plants from take. The NPPA thus includes measures to preserve, protect, and enhance rare and endangered native plants.

CESA has largely superseded NPPA for all plants designated as endangered by the NPPA. The NPPA nevertheless provides limitations on take of rare and endangered species as follows: "...no person will import into this state, or take, possess, or sell within this State" any rare or endangered native plant, except in compliance with provisions of the CESA. Individual land owners are required to notify the CDFW at least 10 days in advance of changing land uses to allow the CDFW to salvage any rare or endangered native plant material.

1.2.6 Lakes and Streambeds

Sections 1601 through 1616 of the Fish and Game Code prohibit alteration of any lake or streambed under CDFW jurisdiction, including intermittent and seasonal channels and many artificial channels, without execution of a Lake and Streambed Alteration Agreement (LSA) through the CDFW. This applies to any channel modifications that would be required to meet drainage, transportation, or flood control objectives of the project.

The following information is provided by CDFW and contains definitions as they apply to the purposes of this report and are effective as of October 1, 2016. (Note: Authority cited: Sections 713, 1609, and 12029, Fish and Game Code; and Section 21089, Public Resources Code. Reference: Sections 713, 1605, 1609, and 12029, Fish and Game Code; and Sections 4629.6(c) and 21089, Public Resources Code).

"California Department of Fish and Wildlife Lake and Streambed Alterations Agreement"

Definitions

*"**Activity**" means any activity that by itself would be subject to the notification requirement in subdivision (a) of Section 1602 of the Fish and Game Code.*

*"**Agreement**" means a lake or streambed alteration agreement issued by the department.*

*"**Agreement for routine maintenance**" means an agreement that:*

(A) *covers only multiple routine maintenance projects that the entity will complete at different time periods during the term of the agreement; and*

(B) *describes a procedure the entity shall follow to complete any maintenance projects the agreement covers.*

*"**Agreement for timber harvesting**" means an agreement of five years or less that covers one or more projects that are included in a timber harvesting plan approved by the California Department of Forestry and Fire Protection.*

*"**Department**" means the California Department of Fish and Wildlife.*

*"**Extension**" means either a renewal of an agreement executed prior to January 1, 2004, or an extension of an agreement executed on or after January 1, 2004.*

*"**Major amendment**" means an amendment that would significantly modify the scope or nature of any project covered by the agreement or any measure included in the agreement to protect fish and wildlife resources, or require additional environmental review pursuant to Section 21000 et seq. of the Public Resources Code or Section 15000 et seq., Title 14, California Code of Regulations, as determined by the department.*

*"**Master agreement**" means an agreement with a term of greater than five years that:*

(A) *covers multiple projects that are not exclusively projects to extract gravel, sand, or rock; not exclusively projects that are included in a timber harvesting plan approved by the California Department of Forestry and Fire Protection; or not exclusively* *routinemaintenance projects that the entity will need to complete separately at different time periods during the term of the agreement and for which specific detailed design plans have not been prepared at the time of the original notification; and*

(B) describes a procedure the entity shall follow for construction, maintenance, or other projects the agreement covers.

(C) An example of a project for which the department would issue a master agreement is a large-scale development proposal comprised of multiple projects for which specific, detailed design plans have not been prepared at the time of the original notification. The master agreement will specify a process the department and entity will follow before each project begins and may identify various measures the entity will be required to incorporate as part of each project in order to protect fish and wildlife resources. The process specified in the master agreement may require the entity to notify the department before beginning any project the agreement covers and to submit the applicable fee. After the department receives the notification, it will confirm that the master agreement covers the project and propose measures to protect fish and wildlife resources in addition to any included in the master agreement, if such measures are necessary for the specific project. By contrast, if the large-scale development proposal is comprised of, for example, multiple residences, golf courses, and associated infrastructure projects for which specific, detailed design plans have been prepared by the time the entity notifies the department and the entity is ready to begin those projects, the entity may obtain a standard agreement only.

"***Master agreement for timber operations***" *means an agreement with a term of greater than five years that:*

(A) covers timber operations on timberland that are not exclusively projects to extract gravel, sand, or rock; not exclusively projects that are included in a timber harvesting plan approved by the California Department of Forestry and Fire Protection; or not exclusively routine maintenance projects that the entity will need to complete separately at different time periods during the term of the agreement; and

(B) describes a procedure the entity shall follow for construction, maintenance, or other projects the agreement covers. For the purposes of this definition, "timberland" and "timber operations" have the same meaning as those terms are defined in sections 4526 and 4527 of the Public Resources Code, respectively.

"Minor amendment" *means an amendment that would not significantly modify the scope or nature of any project covered by the agreement or any measure included in the* *agreement to protect fish and wildlife resources, as determined by the department, or an amendment to transfer the agreement to another entity by changing the name of the entity to the name of the transferee.*

*"**Project**" means either of the following as determined by the department:*

(A) One activity. An example of such a project is one that is limited to the removal of riparian vegetation at one location along the bank of a river, stream, or lake that will substantially change the bank.

(B) Two or more activities that are interrelated and could or will affect similar fish and wildlife resources. An example of such a project is the construction of one bridge across a stream that requires the removal of riparian vegetation, the installation of abutments in or near the stream, and the temporary de-watering of the stream using a diversion structure. Each of those three activities together would constitute one project for the purpose of calculating the fee under this section because they are all related to the single purpose of constructing one bridge at one location. By contrast, the construction of three bridges and two culverts across a stream at five different locations would not constitute one project, but instead would constitute five projects, even if each structure were to provide access to a common development site or were physically connected to each other by a road.

"Project" does not mean project as defined in Section 21065 of the Public Resources Code or Section 15378 of Title 14 of the California Code of Regulations.

*"**Standard agreement**" means any agreement other than an agreement for gravel, rock, or sand extraction, an agreement for timber harvesting, an agreement for routine maintenance, a master agreement, or a master agreement for timber operations.*

1.2.7 California Porter-Cologne Water Quality Act

The Regional Water Quality Control Board (RWQCB) regulates discharge of waste in any region that could affect the Waters of the State under the California Porter-Cologne Water Quality. Under the Porter- Cologne Act, a Report of Waste Discharge must be submitted prior to discharging waste, or proposing to discharge waste, within any region that could affect the quality of the Waters of the State (California Water Code Section 13260). Waste Discharge Requirements (WDRs) or a waiver of WDRs will then be issued by the RWQCB. Waters of the State are defined as any surface water or groundwater, including saline waters that are within the boundaries of the state (California Codes: Public Resource Code Section 71200). This differs from the CWA definition of waters of the U.S. by its inclusion of groundwater and waters outside the ordinary high-water mark in its jurisdiction.

1.3 California Environmental Quality Act

The California Environmental Quality Act (CEQA) was adopted in 1970 and applies to actions directly undertaken, financed or permitted by State or local government lead agencies. CEQA requires that a project's effects on environmental resources be analyzed and assessed using criteria determined by the lead agency. CEQA defines a rare species in a broader sense than the definitions of threatened, endangered, or California species of concern. Under this definition, CDFW can request additional consideration of species not otherwise protected.

1.3.1 CEQA Significance Criteria

Section 15064.7 of the CEQA guidelines encourages local agencies to develop and publish the thresholds that the agency will use in determining the significance of environmental effects caused by projects or actions under its review. Appendix G of the CEQA guidelines provides thresholds to evaluate impacts that would normally be considered significant. Based upon these guidelines, impacts to biological resources would normally be considered significant if the project:

- Has a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the CDFW or USFWS;
- Has a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, and regulations, or by the CDFW or USFWS;
- Has a substantial adverse effect on federally protected wetlands as defined by Section 404 of the CWA (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means;

- Interferes substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impedes the use of native wildlife nursery sites; or
- Conflicts with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance, or conflicts with the provisions of an adopted habitat conservation plan, natural community conservation plan, or other approved local, regional, or state habitat conservation plan.

An evaluation of whether an impact to biological resources would be significant must consider both the resource itself and how that resource fits into a regional or local context. Significant impacts would be those that would diminish, or result in the loss of, an important biological resource, or those that would obviously conflict with local, state, or federal resource conservation plans, goals, or regulations. The evaluation of impacts considers direct impacts, indirect impacts, cumulative impacts, as well as temporary and permanent impacts.

1.4 California Native Plant Society

The California Native Plant Society (CNPS) is a non-profit organization operating within California dedicated to preservation, conservations, and documentation of rare, threatened, endangered, and at-risk plants and habitats of the State of California. As such the contributions of the organization have been a leading source in which CDFW and other regulatory authorities rely and defer to as their principal resource for special status plants and habitats within the State of California. CDFW commonly refers to the listing status of the CNPS as the de-facto identification for ranking at risk plants and therefore, commonly incorporates their listing classification as a standard when assessing impacts to plants of the State.

The CNPS has created a "California Rare Plant Ranking System" (CRPR) to categorize degrees of endangerment and / or concern (California Native Plant Society, 2016). As an additional qualifier to the ranking system a secondary marker extension identified as the "Threat Rank" defined here; "...is an extension added onto the CRPR and designates the level of endangerment by a 1 to 3 ranking, with 1 being the most endangered and 3 being the least endangered (California Native Plant Society, 2016). The "California Rare Plant Ranking System" and "Threat Ranks" are presented below.

California Rare Plant Ranking

- 1A = Plants Presumed Extirpated in California and Either Rare or Extinct Elsewhere
- 1B = Plants Rare, Threatened, or Endangered in California and Elsewhere
- 2A = Plants Presumed Extirpated in California, But More Common Elsewhere
- 2B = Plants Rare, Threatened, or Endangered in California, But More Common Elsewhere
- 3 = Plants About Which More Information is Needed - Review List
- 4 = Plants of Limited Distribution - Watch List

Threat Rank

- .1 = Seriously threatened in California (high degree of threat of becoming extinct within the State)
- .2 = Fairly threatened in California (moderate degree of threat)
- .3 = Not very threatened in California (low degree/immediacy of threats or no current threats known)

2 Methodology

2.1 Desktop Research and Review and Literature Review

Prior to conducting a field survey of the site AEC conducted research and review of desktop and database resources. Information regarding the biological resources in the vicinity of the project study area was obtained by reviewing available data from a number of resources. The data review included a search of existing databases, inventories, lists, and collections that contain information regarding the occurrence of special- status species. Resources used in this review included the following:

- *California Natural Diversity Database (CNDDB) for records of sensitive plants, animals, and vegetation communities.*
- *California Native Plant Society (CNPS) online inventory of rare and endangered plants of California.*
- *Consortium of California Herbaria (available on-line at http://ucjeps.berkeley.edu/consortium/).*
- *USFWS online Critical Habitat Portal.*
- *California Wildlife Habitat Relationships (CWHR) life history and range maps.*
- *Aerial photographs on Google Earth, (Google Earth, Inc 2017).*

- *USFWS National Wetlands Inventory (NWI) database (available online at: http://www.fws.gov/wetlands).*
- *Natural Resources Conservation Services: Web Soil Survey page (NRCS, 2017)*
- *The Corps of Engineers Wetlands Delineation Manual (USACE 1987);*
- *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (Version 2.0) (USACE 2008);*
- *A Field Guide to the Identification of the Ordinary High-Water Mark (OHWM) in the Arid West Region of the Western United States (Lichvar and McColley 2008);*
- *Hydric Soils List of California, 2017 (Natural Resources Conservation Service 2017*

The California Natural Diversity Database (CNDDB) GIS (geographic information system) data sets were utilized on Environmental Systems Research Institute(Esri) mapping platform (licensed professional subscription) to identify documented natural resources within the immediate vicinity and within and up to a five-mile radius of the site. These natural resources may consist of flora, fauna, water features, habitats, soils and or any type of special status natural resource that has been documented by the CNDDB or other agencies or organization that collect and provide scientific data for review and use through GIS.

2.1.1 Definition of Sensitive Biological Resources

For the purposes of this study, sensitive plants and animals were defined to include species, subspecies, varieties, and populations recognized by CDFW or USFWS, and which have been classified into one or more of the following categories:

- Species, subspecies, and populations listed or proposed for listing as threatened or endangered pursuant to the federal Endangered Species Act (ESA), and species that are candidates for such listing.
- Species and subspecies listed or proposed for listing by the State of California as threatened or endangered pursuant to the California Endangered Species Act (CESA).
- Plants included in the California Vascular Plants, Bryophytes, and Lichens List.
- Plants assigned California Rare Plant Ranks (CRPR) by the California Native Plant Society (CNPS).
- Animals listed as species of special concern, fully protected, or watchlist on the California Special Animals List, and for invertebrates, all species on the California Special Animals List regardless of the reason for inclusion.
- Plants and animals identified by CDFW and/or USFWS in letters, emails, or in-person communications regarding the project.

In addition, natural communities recognized by CDFW as being of special concern were considered sensitive, along with riparian habitats and water bodies under the jurisdiction of CDFW, USACE, and/or RWQCB.

Throughout this document, species, subspecies, varieties, and populations are broadly referred to as "species," a term which is used here to encompass whichever pertinent taxonomic level is recognized by the state and federal authorities with jurisdiction over plants and animals.

The information obtained from the literature and database searches were reviewed to identify a list of sensitive biological resources with the potential to occur at the project property.

2.2 On-Site Survey Methodology

The on-site field survey was conducted by AEC senior biologists / botanist Mr. Yancey Bissonnette on the day of December 18, 2017. The survey of the site was conducted by walking meandering pedestrian transects throughout the entire site area. The site was visually observed with the naked eye and with the use of binoculars when needed. Mr. Bissonnette was able to observe most of the site ground surface and vegetation at the time of the survey. Areas not surveyed included the developed portions of the site with pavement and structures utilized by the current travel center. Weather conditions at the time of arrival were recorded with a Kestrel 2000 weather meter.

3 Results – Evaluation / Assessment

3.1 Research and Literature

Review of GIS CNDDB map data indicate that no special status plant or animal species or critical habitat have been documented to occur at the site (Plate 4). No wetlands or wetland features, currently or historically, were documented to occur within the site. CNDDB GIS data identified one documented occurrence of Yellow-billed cuckoo (*Coccyzus americanus*) within 5-miles of the site with an occurrence date of 1898. The following is a simple list of the special status endangered or threatened species identified within 5-miles of the project vicinity.

Species	**Federal Listing**	**State Listing**
Yellow-billed Cuckoo	Threatened	Endangered

3.2 Field Survey

On December 18, 2017 Mr. Bissonnette conducted an on-site field survey of all accessible areas of the project. The weather conditions recorded at the beginning of the survey recorded a starting survey temperature of 65.0° Fahrenheit (°F). The observed % cloud cover was estimated at 0% - 1% with mostly clear blue-sky visibility. Visible clouds were identified as high cirrus wisps. Wind was identified as a 1(light air) on the Beaufort scale (National Oceanic and Atmospheric Administration, 2016)(slight breeze).

The Beaufort Wind Scale was developed by Sir Francis Beaufort of England in 1805, and is a system that contains 12 classes of wind. Only classes 0 through 5 are described here given that most biological surveys should not be conducted during the wind speeds experienced for lasses 6 through 12.

0 - Calm Winds (0 to <1mph): Smoke rises vertically
1 - Light Air (1 to 3 mph): Smoke drifts with air
2 - Light Breeze (4 to 7 mph): Weather vanes become active
3 - Gentle Breeze (8 to 12 mph): Leaves and small twigs move
4 - Moderate Breeze (13 to 18 mph): Small branches sway
5 - Fresh Breeze (19 to 24 mph): Small trees sway - Waves break

The site is comprised of one lot that is partially developed in its southern portions. Access is via the ingress from Manning Avenue or from Valley Road west of Golden State Blvd. The site is unfenced and easily accessed from either vantage. The undeveloped landform is a visually flat open, vacant, and fallow lot consisting of annual grasses, forbs, and four trees. Two remnant Chinaberry trees (*Melia azedarach*) occupy this area and appeared to be stressed to the point of barely appearing alive. Two very old Olive trees, also barely alive, occupied an area near the south-eastern bounds of the undeveloped open space. The open space vegetation consisted of weedy species of grasses and forbs. Naturalized non-native grasses of Bromes (*Bromus diandrus and Bromus madritensis ssp. rubens*), and Wild Oats (*Avena sp.*) appear to have been the dominant grasses, while Mustard (*Hirschfeldia incana*), Tumbleweed / Russian Thistle (*Salsola tragus*), and Yarrow (*Achillea millefolium*) were also plentifully extant. At the time of the survey most annual plants had already fulfilled their lifecycle and were well past fruiting. No Federal, State or CNPS listed species of plants (identified for the project in the database review) were observed during the survey. No Federal or State special status species were observed during the survey. Burrows and sign of commonly occurring fossorial mammals were observed at the site and were abundant.

FIGURE 2 ; VIEW LOOKING NORTH NEAR THE WEST BOUNDS OF THE PROJECT PROPERTY.

FIGURE 3 : VIEW LOOKING NORTHEAST OF THE PROPOSED PROJECT DEVELOPMENT AREA.

FIGURE 4 : VIEW LOOKING SOUTHWEST OF THE CURRENT DETENTION BASIN.

FIGURE 5 : VIEW LOOKING SOUTH WITHIN THE DETENTION BASIN.

FIGURE 6 : VIEW LOOKING SOUTHWEST FROM NORTHEAST CORNER OF THE PROPERTY.

FIGURE 7 : VIEW LOOKING WEST ATOP THE FILL SLOPE NEAR THE OLIVE TREES ALONG THE EAST BOUNDS OF THE PROJECT PROPERTY.

3.2.1 Wildlife

The following species of wildlife were observed at the site during the survey: House Finches (*Haemorhous mexicanus*), and Mourning Doves (*Zenaida macroura*).

Cottontail rabbit (*Sylvilagus audubonii*) scat was observed throughout the site. Ground Squirrel (*Spermophilus beecheyi*) burrows and Pocket gopher (*Thomomys bottae*) burrows were extremely dominant and were observed in most locations throughout the site. Mice burrows were observed but little evidence was available to indicate the genus or species occurring at the site.

Other species utilizing the site and identified by the presence of scat, tracks, burrow, or other indications include pocket gophers, domestic cats (*Felis catus*) and domestic dogs (*Canis lupus familiaris*). No other macro wildlife was observed during the survey. Burrow mounds of a small species of ant were observed periodically throughout the site. No other significant invertebrates were noted or observed at the time.

3.2.2 Habitat

For this report, habitat is defined by the physical area characterized by an assemblage of botanical species, substrate features, or aquatic environment. Habitat types comprised of botanical assemblages illustrate a community typically associated or classified by the dominant vegetation type present in the locale where the survey is being conducted. Habitat may be utilized by organisms that may occupy the area and may provide some subset of essential or preferred ecological and biological needs for those species that may be found in a described habitat. Habitat types are utilized to classify elements of nature associated with the physical, biological, and ecological conditions in an area. These habitat characteristics may be utilized as indicators of the potential for special-status species and or plant communities to occur, to be associated with, or may be affected by a project. The following paragraph(s) describe the major vegetation alliances identified for this project. Habitats were identified and characterized based on current excepted habitat descriptions. Habitat descriptions follow and or integrate types that have been described by Holland (Holland R. F., 1986), Sawyer Keeler-Wolfe (Keeler-Wolfe & Sawyer, 2007, 2008), Holland (Holland & Keil, 1989), the CDFW maintained publication of "A Guide to Wildlife Habitats of California" (CWHR), and or by derived descriptions that best characterize the general habitat as it was observed during the survey.

The habitat identified for this site is best described as ruderal or disturbed annual grassland habitat characterized by routine maintenance and fallow landscape use. The developed lands of the travel center are not considered for this report and have no other designation than commercially developed property. The following table is a list of the botanical species readily identifiable and observed at the time of the survey. Note that the survey did not include a floristic survey and the timing of the survey was not conducive for identifying all potential occurring species of plants that could be present at the site.

TABLE 1 : OBSERVED BOTANICAL SPECIES

FAMILY	SCIENTIFIC NAME	COMMON NAME	HABITAT TYPE	HABIT OR LIFE CYCLE	NATIVE OR NON-NATIVE
Oleaceae	*Olea europaea*	olive	disturbed habitat	tree	non-native
Amaranthaceae	*Amaranthus sp.**	pigweed	disturbed habitat	annual-perennial	native/non-native
Asteraceae	*Achillea millefolium*	common yarrow	many habitats	perennial	native
Asteraceae	*Centaurea sp.*		disturbed areas	annual	non-native
Asteraceae	*Erigeron canadensis*	Horse Weed	disturbed places	annual	native
Asteraceae	*Heterotheca grandiflora*	telegraph weed	disturbed grassland	perennial	native
Brassicaceae	*Hirschfeldia incana*	Hoary Mustard	cultavated/disturbed places	perennial	non-native
Chenopodiaceae	*Chenopodium album*	Pigweed, Lambs Quarter's	disturbed places, fields, roadsides	annual	non-native
Chenopodiaceae	*Salsola tragus*	Russian thistle	disturbed grassland	perennial	non-native
Euphorbiaceae	*Croton setigerus*	Turkey Mullein; Dove Weed	many habitats	annual	native
Meliaceae	*Melia azedarach*	Chinaberry tree	Washes, riparian areas, coastal scrub, or persisting near old habitations	tree	naturalized
Poaceae	*Avena sp.*	oat grass	annual grasslands	annual	non-native
Poaceae	*Bromus diandrus*	Rip-gut Brome	disturbed areas	annual-perennial	non-native
Poaceae	*Bromus madritensis* ssp. *rubens*	Red Brome	disturbed areas	annual	non-native

3.2.3 Site Soils and Topography

Site topography consist of flat, zero to low gradient lands. The topography is mostly flat with a fill pad near the middle west portion of the site that is elevated approximately two feet above the surrounding grade elevations. The site occurs within the middle boundaries of the Great Central Valley of California. Typically, the land form in these areas consist of low gradient flat lands within the valley to rolling hills rising into the mountains of the Sierra Nevada range. The site is surrounded by lands consisting of commercial and industrial properties and or commercial agriculture where most of the natural habitat has been degraded for anthropogenic uses and infrastructure.

Soil structure at the site consist of three NRCS soil types identified as DhA-Delhi loamy sand, Dm-Dello loamy sand, and HsR-Hesperia fine sandy loam (Plate 3, Appendix3). As there are no documented wetlands, or botanical species of concern for the project area, specifics of the soils will not be discussed in detail for this report as they have no relevance to the presence or absence of listed species potentially occurring within the site. Appendix 3 provides some additional general information regarding the identified soil structures of site.

3.2.4 Wetlands and Regulated Waters

No Jurisdictionally regulated USACE and or CDFW waters were observed at the site. The site survey and database review confirm that no wetlands and or habitat associated with wetlands exist within the property bounds of the site (Plate 5).

4 Conclusions

The site as it was observed during the survey consists of an old travel center and undeveloped vacant lot land. The vacant lands consist of annual weedy species of grasses and forbs with little value as viable habitat for most special status species occurring within the Central Valley. The City of Fowler has designated zoning of the project parcel as C-3 general commercial development. Based on the observations of the survey and findings of the database review, it is the opinion of AEC that the project is unlikely to affect any special status species, or regulated waters of the U.S. or State.

5 Recommendations

The following are actions that could be utilized to help further reduce the risk of "take" with regards to due diligence and general compliance during permit development and regulatory review or during ground disturbance activities and development:

1. If construction activities are scheduled to occur during the breeding or nesting season for MBTA birds than a preconstruction survey for nesting birds should be implemented. If surveys identify nesting birds, then the appropriate agency should be notified, and temporary buffers implemented.
2. Conduct a general preconstruction survey prior to any ground disturbing activities for general wildlife and botanical species of concern.
3. Additional nesting surveys should be conducted if there are delays in work greater than a week during the nesting season. (For example; if work were to occur for a period of five days and then there is a delay of a week or greater before crew's schedule to come back to the site, then additional pre-construction nesting surveys

are recommended to determine if any birds are still nesting or if any birds have begun new nesting clutches).

4. Monitoring could be utilized if special status species or nests of MBTA protected species are found during any surveys and or during the nesting season if needed to help reduce the risk of take.
5. Best Management Practices (BMP's) to protect against attracting wildlife during construction activities should be implemented.

6 Limitations

The site survey is conducted with consideration for current existing environmental laws, regulations, and policies for the time that the survey was conducted. The results provided represent observations of the site at a particular point in time. The habitat(s), topography, resources, and conditions on-site can exhibit seasonal and permanent changes after the survey has been completed. Therefore, the survey report can only represent the site as it was observed during the survey period. No warranty is expressed or implied.

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8 Appendices

1. **Plates**
   1. **Site Regional Map**
   2. **Site Vicinity Map**
   3. **Site Soils Map (NRCS)**
   4. **Site Natural Resources Map (CNDDB)**
   5. **Site NWI Wetlands Map**
2. **Tables**
   1. **Observed Botanical Species**
3. **NRCS General Soils Information of the Site**

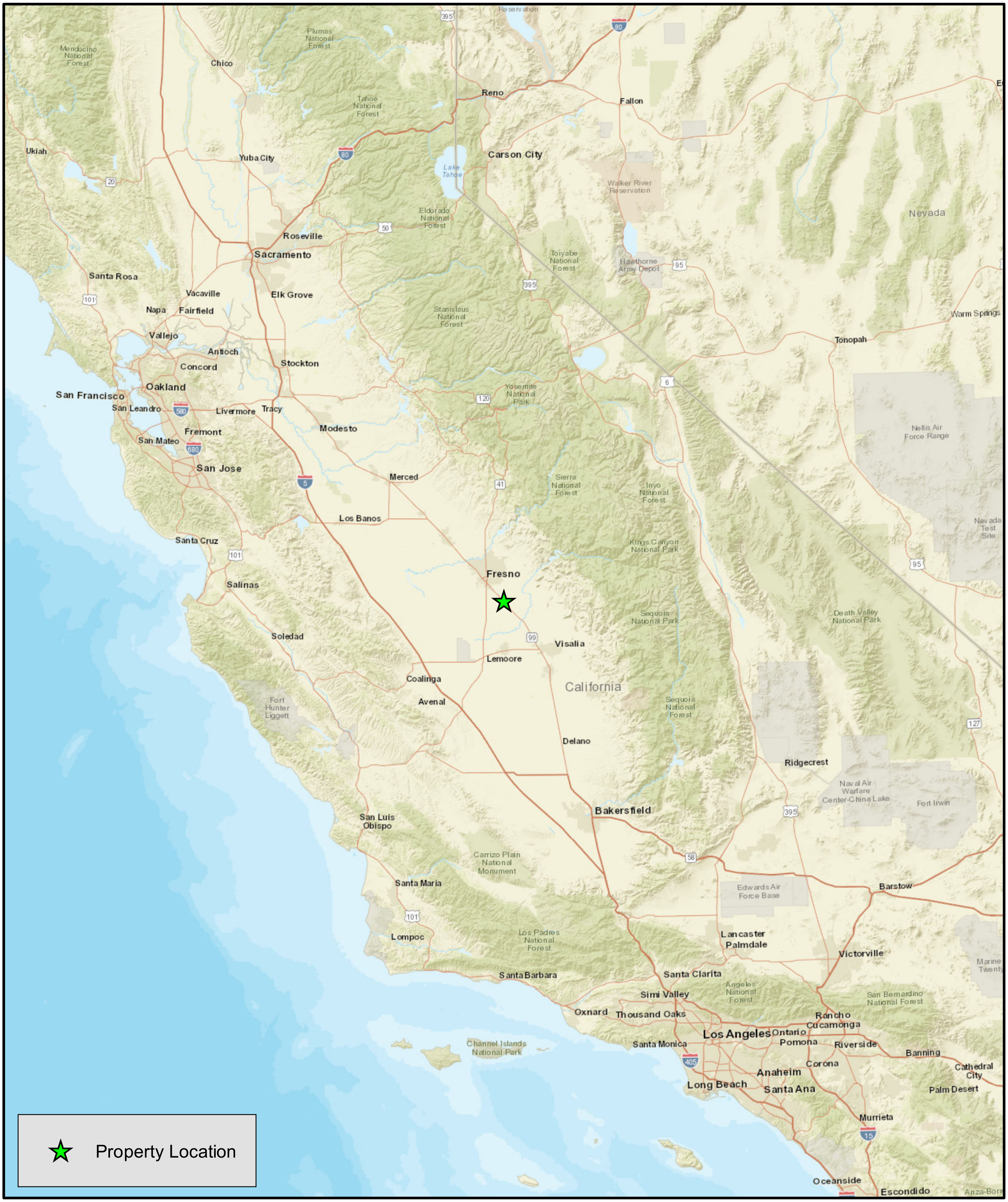


PLATE 1
Regional Map

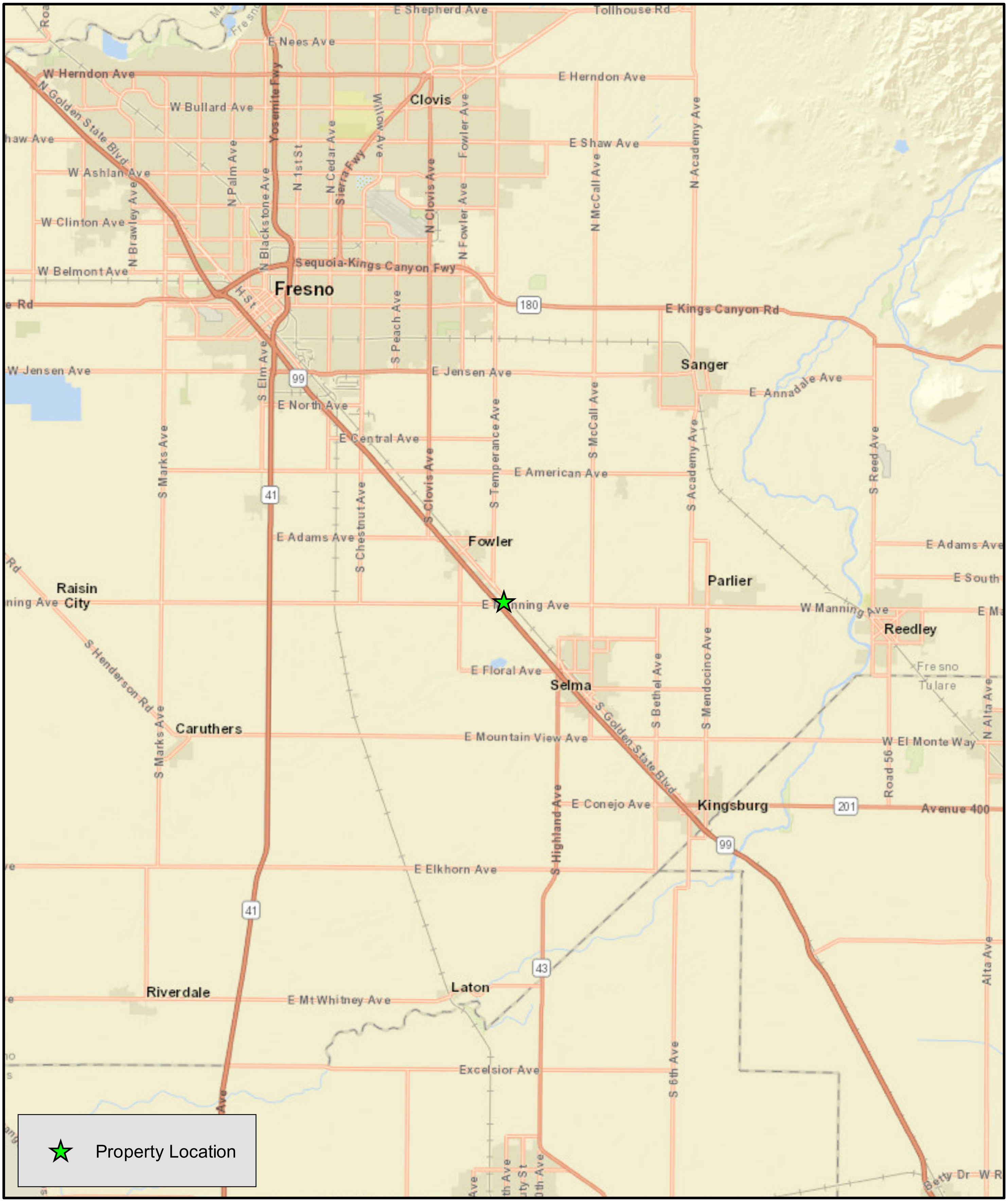
AlphabiotA
BIOLOGICAL CONSULTING

N W E S

0 35 70 140 Miles
1:3,300,000

DATE: January 9, 2018
COORDINATE SYSTEM: NAD 1983 California Teale Albers
SOURCE: ESRI World Street Map

Buford Oil Co. - Buford Truck Stop



N
W E
S

0 2.5 5 10 Miles

1:250,000

PLATE 2
Vicinity Map

AlphabiotA
BIOLOGICAL CONSULTING

DATE: January 9, 2018
COORDINATE SYSTEM: NAD 1983 State Plane Zone IV (feet)
SOURCE: ESRI World Street Map

Buford Oil Co. - Buford Truck Stop

AlphabiotA
BIOLOGICAL CONSULTING

N W E S

0 50 100 200 300 400 Feet

1 inch = 167 feet

PLATE 3
NRCS Soils

DATE: January 9, 2018
COORDINATE SYSTEM: NAD 1983 State Plane Zone IV (feet)
SOURCE: ESRI Imagery and Transportation Basemaps,
NRCS Web Soil Survey Eastern Fresno Area, California

Buford Oil Co. - Buford Truck Stop

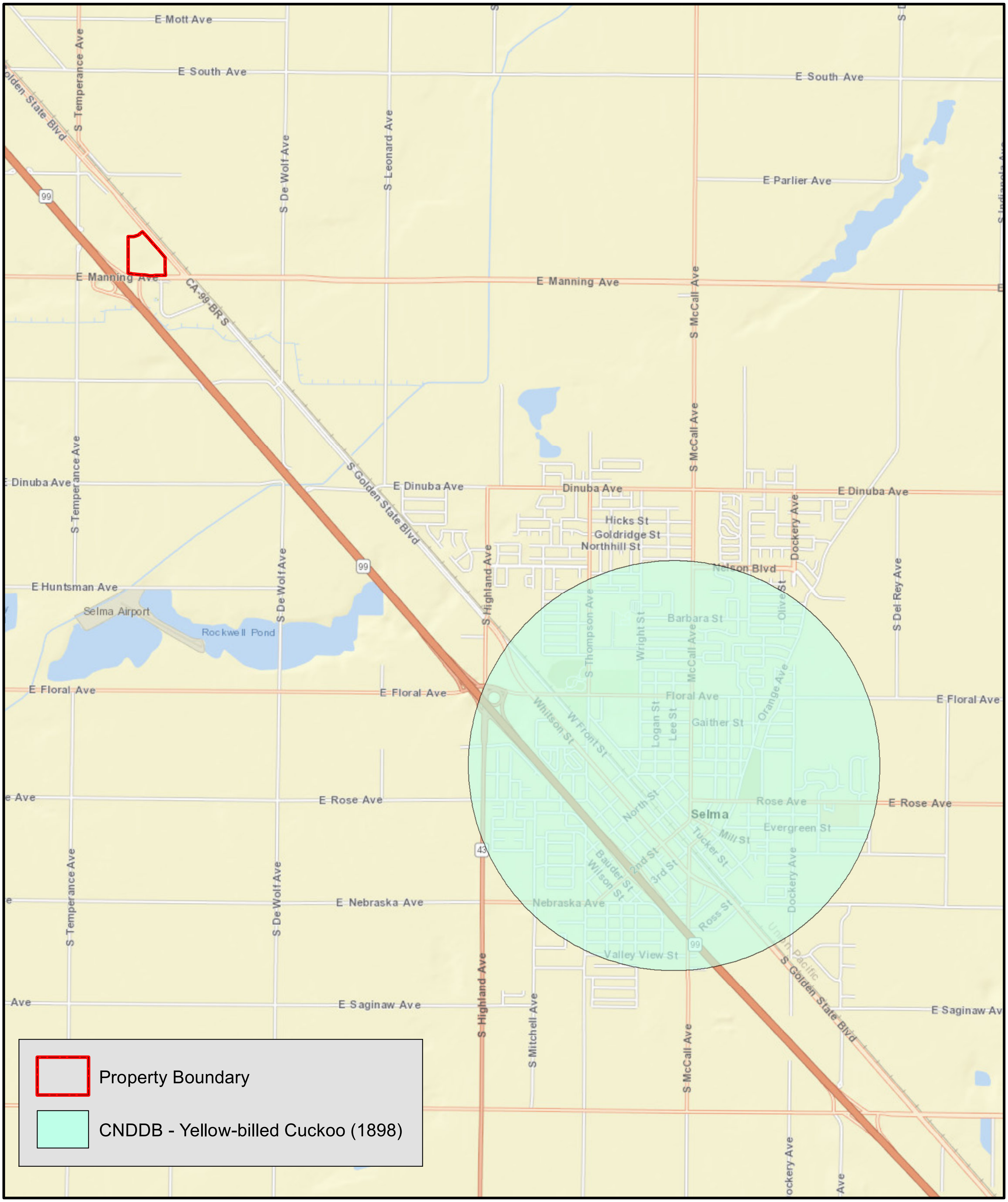


PLATE 4
CNDDB 5 Mile Query

AlphabiotA
BIOLOGICAL CONSULTING

N
W E
S

0 0.5 1 2 Miles

1:40,000

DATE: January 9, 2018
COORDINATE SYSTEM: NAD 1983 State Plane Zone IV (feet)
SOURCE: ESRI World Street Map, CNDDB (Jan. 2018 Data)

Buford Oil Co. - Buford Truck Stop

AlphabiotA
BIOLOGICAL CONSULTING

N
W E
S

0 150 300 600 900 1,200
Feet
1 inch = 500 feet

PLATE 5
USFWS National Wetlands Inventory

DATE: January 10, 2018
COORDINATE SYSTEM: NAD 1983 State Plane Zone IV (feet)
SOURCE: ESRI Imagery Basemap, USFWS NWI

Buford Oil Co. - Buford Truck Stop

The following data is provided via the NRCS Websoil Survey website and can be found at this link:

https://casoilresource.lawr.ucdavis.edu/soil_web/ssurgo.php?action=list_mapunits&areasymbol=ca654

The information below is for reference purposes and is only intended for that purpose.

Component Name	Geomorphic Position	Area Fraction	Component Type	Horizon Data
Soil Type 1 ***Delhi***	*valleys / Toeslope dunes*	*85%*	*Major Soil Type*	*YES*

Map Unit Data *What is a Map Unit?*

Cartographic information about this map unit.

Map Unit Name:	*Delhi sand, 0 to 3 percent slopes, MLRA 17*
Map Unit Type:	*Consociation*
Map Unit Symbol:	*DhA*

Map Unit Aggregated Data

Generalized soils information within this map unit.

Farmland Class:	*Farmland of statewide importance*
Available Water Storage (0-100cm):	*7 cm*
Max Flood Freq:	*None*
Drainage Class (Dominant Condition):	*Somewhat excessively drained*
Drainage Class (Wettest Component):	*Somewhat excessively drained*
Hydric Conditions:	*3*
[Annual] Min. Water Table Depth:	*n/a*
[April-June] Min. Water Table Depth:	*n/a*
Min Bedrock Depth:	*n/a*
Raw Aggregated Map Unit Data	

Associated Point Data

Links to any NSSL point data within this map unit.

Map Unit Composition

Map units consist of 1 or more soil types, commonly referred to as "components".

Component Name	Geomorphic Position	Area Fraction	Component Type	Horizon Data
Soil Type 1 ***Delhi***	*dunes / Toeslope fan remnants / Shoulder*	*85%*	*Major Soil Type*	*YES*
Soil Type 2 ***Hanford***	*depressions fan remnants*	*6%*	*Inclusion*	*Similar Data [12] **
Soil Type 3 ***Dello***	*depressions fan remnants*	*6%*	*Inclusion*	*Similar Data [1] **
Soil Type 4 ***Grangeville***		*1%*	*Inclusion*	*Similar Data [7] **
Soil Type 5 ***Hilmar***		*1%*	*Inclusion*	*Similar Data [6] **
Soil Type 6 ***Dinuba***		*1%*	*Inclusion*	*Similar Data [12] **

Map Unit Data *What is a Map Unit?*

Cartographic information about this map unit.

Map Unit Name:	*Delhi loamy sand, 0 to 3 percent slopes, MLRA 17*
Map Unit Type:	*Consociation*
Map Unit Symbol:	*DeA*
Map Unit Area:	*4847 acres total in survey area*
Raw Map Unit Data	
Raw Component Data (All Components)	

Map Unit Aggregated Data

Generalized soils information within this map unit.

Farmland Class:	*Prime farmland if irrigated*
Available Water Storage (0-100cm):	*7 cm*
Max Flood Freq:	*None*
Drainage Class (Dominant Condition):	*Somewhat excessively drained*
Drainage Class (Wettest Component):	*Somewhat excessively drained*
Hydric Conditions:	*6*
[Annual] Min. Water Table Depth:	*n/a*
[April-June] Min. Water Table Depth:	*n/a*
Min Bedrock Depth:	*n/a*
Raw Aggregated Map Unit Data	

Map Unit Composition

Map units consist of 1 or more soil types, commonly referred to as "components".

Component Name	Geomorphic Position	Area Fraction	Component Type	Horizon Data
Soil Type 1 ***Dello***	*alluvial fans / Footslope depressions / Toeslope depressions / Toeslope flood plains / Toeslope*	*85%*	*Major Soil Type*	*YES*
Soil Type 2 ***Unnamed***	*depressions flood plains*	*13%*	*Inclusion*	*None*
Soil Type 3 ***Unnamed***	*alluvial fans flood plains hummocks levees*	*2%*	*Inclusion*	*None*

Note: links to horizon data marked with an ***** *are approximate.*

Map Unit Data *What is a Map Unit?*

Cartographic information about this map unit.

Map Unit Name:	*Dello loamy sand*
Map Unit Type:	*Consociation*
Map Unit Symbol:	*Dm*
Map Unit Area:	*4001 acres total in survey area*
Raw Map Unit Data	
Raw Component Data (All Components)	

Map Unit Aggregated Data

Generalized soils information within this map unit.

Farmland Class:	*Farmland of statewide importance*
Available Water Storage (0-100cm):	*7.93 cm*
Max Flood Freq:	*Rare*
Drainage Class (Dominant Condition):	*Somewhat poorly drained*
Drainage Class (Wettest Component):	*Somewhat poorly drained*
Hydric Conditions:	*98*
[Annual] Min. Water Table Depth:	*122 cm*
[April-June] Min. Water Table Depth:	*122 cm*
Min Bedrock Depth:	*n/a*
Raw Aggregated Map Unit Data	

Map Unit Composition

Map units consist of 1 or more soil types, commonly referred to as "components".

Component Name	Geomorphic Position	Area Fraction	Component Type	Horizon Data
Soil Type 1 ***Hesperia***	*alluvial fans / Footslope*	*85%*	*Major Soil Type*	*YES*
Soil Type 2 ***Unnamed***	*alluvial fans*	*10%*	*Inclusion*	*None*
Soil Type 3 ***Unnamed***	*alluvial fans*	*5%*	*Inclusion*	*None*

Note: links to horizon data marked with an ***** *are approximate.*

Map Unit Data ***What is a Map Unit?***

Cartographic information about this map unit.

Map Unit Name:	*Hesperia fine sandy loam*
Map Unit Type:	*Consociation*
Map Unit Symbol:	*Hsr*
Map Unit Area:	*20380 acres total in survey area*
Raw Map Unit Data	
Raw Component Data (All Components)	

Map Unit Aggregated Data

Generalized soils information within this map unit.

Farmland Class:	*Prime farmland if irrigated*
Available Water Storage (0-100cm):	*13 cm*
Max Flood Freq:	*Rare*
Drainage Class (Dominant Condition):	*Well drained*
Drainage Class (Wettest Component):	*Well drained*
Hydric Conditions:	*0*
[Annual] Min. Water Table Depth:	*n/a*
[April-June] Min. Water Table Depth:	*n/a*
Min Bedrock Depth:	*n/a*
Raw Aggregated Map Unit Data	

Appendix C

Cultural Resources Evaluation

Cultural Resource Inventory and Evaluation for the Buford Oil Travel Center Project in Fowler, Fresno County, California

Ward Stanley and Jessica Jones

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Prepared For
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December 2018

USGS Conejo, CA, 7.5′ quadrangle; T7S, R21E, Sec. 23
18-acre Project area; 8 acres surveyed
Keywords: P-10-007090 (CA-FRE-3854H)

MANAGEMENT SUMMARY

The Buford Oil Company plans to expand an existing fuel station at the northeast intersection of Highway 99 and Manning Avenue within the City of Fowler in Fresno County, California. The proposed expansion includes additional fueling facilities, traveler amenities, and parking stalls for motorist and commercial truck operators. The proposed Buford Oil Travel Center Project (Project) requires a Conditional Use Permit from the City of Fowler, thus it is subject to the regulations of the California Environmental Quality Act (CEQA), which requires that government agencies consider the impacts of their actions on the cultural environment. Applied EarthWorks, Inc. (Æ) conducted a cultural resource inventory to identify cultural resources present within the 18-acre Project area. Æ's inventory included background research, a records search at the Southern San Joaquin Valley Information Center (SSJVIC) of the California Historical Resources Information System, a search of the Native American Heritage Commission's Sacred Lands File and outreach with local Native American tribal representatives, a pedestrian survey of all open ground within the Project area, and preparation of this technical report.

The results of the Sacred Lands File search and SSJVIC records search did not reveal any known cultural resources or sacred sites within the Project area. Æ's pedestrian survey resulted in the identification of abandoned irrigation equipment, ornamental trees, and a slightly raised mound marking the location of a previous homestead. Review of aerial photographs, historical maps, and Google Earth imagery depict that a house surrounded by trees was standing in the same location as the observed debris between 1937 and 2006. No other archaeological sites, isolated artifacts, or features were identified during the pedestrian survey.

Because the Project will not avoid the remains of the previous homestead, Æ evaluated the site (CA-FRE-3854H) for historical significance and eligibility for listing in the California Register of Historical Resources. Æ found little historical information about the previous owners, and the remaining debris lacks data potentials. Thus, Æ evaluated the site as not eligible for the California Register of Historical Resources.

Æ advises that if cultural remains are encountered at any time during ground-disturbing activities within any portion of the work area, all work in the vicinity of the find should be halted until a qualified archaeologist can assess the discovery. Finally, if human remains are uncovered during construction, the Fresno County Coroner is to be notified to arrange their proper treatment and disposition. If the remains are determined to be Native American, California Health and Safety Code 7050.5 and Public Resource Code 5097.98 require that the coroner notify the Native American Heritage Commission within 24 hours of discovery.

Field notes and photographs for this project are on file at Æ's office in Fresno, California. A copy of this report will be transmitted to the SSJVIC at California State University, Bakersfield, for inclusion in the California Historical Resources Information System.

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1
INTRODUCTION

The Buford Oil Company plans to expand an existing fuel station at the northeast corner of the intersection of Highway 99 and Manning Avenue within the City of Fowler in Fresno County, California (Figures 1-1 and 1-2). The proposed expansion includes additional fueling facilities, traveler amenities, and parking stalls for motorist and commercial truck operators. The Buford Oil Travel Center Project (Project) area is in Section 23 of Township 7 South, Range 21 East, as depicted on the U.S. Geological Survey (USGS) Conejo, CA, 7.5-minute topographic quadrangle within Assessor's Parcel No. (APN) 345-180-30 (Figure 1-3).

The proposed Project requires a Conditional Use Permit from the City of Fowler, thus it is subject to the California Environmental Quality Act (CEQA) statute (California Public Resources Code [PRC] 21000–21189) and guidelines (Title 14, California Code of Regulations [CCR], Sections 15000–15387), which mandate that government bodies consider the impacts of discretionary projects on the environment. If a project has the potential to cause substantial adverse change in the characteristics of an important cultural resource or "historical resource"—either through demolition, destruction, relocation, alteration, or other means—then the project is judged to have a significant effect on the environment (CEQA Guidelines Section 15064.5[b]). Section 15064.5(a) of the CEQA Guidelines defines a historical resource as one that: (1) is listed or determined eligible for listing in the California Register of Historical Resources (PRC 5024.1; 14 CCR 4852); (2) is included in a local register of historical resources (pursuant to PRC 5020.1[k]), or identified as significant in a historical resource survey per the California Register eligibility criteria (PRC 5024.1[c]); or (3) is considered eligible by a lead agency under PRC Section 5020.1(j) or 5024.1. The definition subsumes a variety of resources, including prehistoric and historical archaeological sites, structures, buildings, and objects (CEQA Guidelines Section 15064.5[a][3] and 15064.5[c]).

Cultural resources include prehistoric or historical archaeological sites, isolated artifacts, or features as well as built-environment resources (i.e., a historical building, structure, or object). The term "historical" applies to archaeological artifacts and features as well as standing buildings, structures, or objects that are 50 years of age or older. The importance or significance of a cultural resource depends on whether it qualifies for inclusion in the California Register of Historical Resources (CRHR). Cultural resources determined eligible for the CRHR are called "historical resources" (CEQA Guidelines Section 15064.5). In order to be considered a historical resource, a cultural resource must possess both historical significance and integrity according to the criteria defined in the implementing regulations of the CEQA (CEQA Guidelines Section 15064.5[a][3]).

To meet the requirements under CEQA, Applied EarthWorks, Inc. (Æ) conducted a cultural resource inventory of the proposed Project area. Æ's inventory included a records search at the regional information center of the California Historical Resources Information System (CHRIS) at California State University, Bakersfield, to identify previously recorded cultural resources in and around the proposed development; a Sacred Lands File search and outreach with local tribes

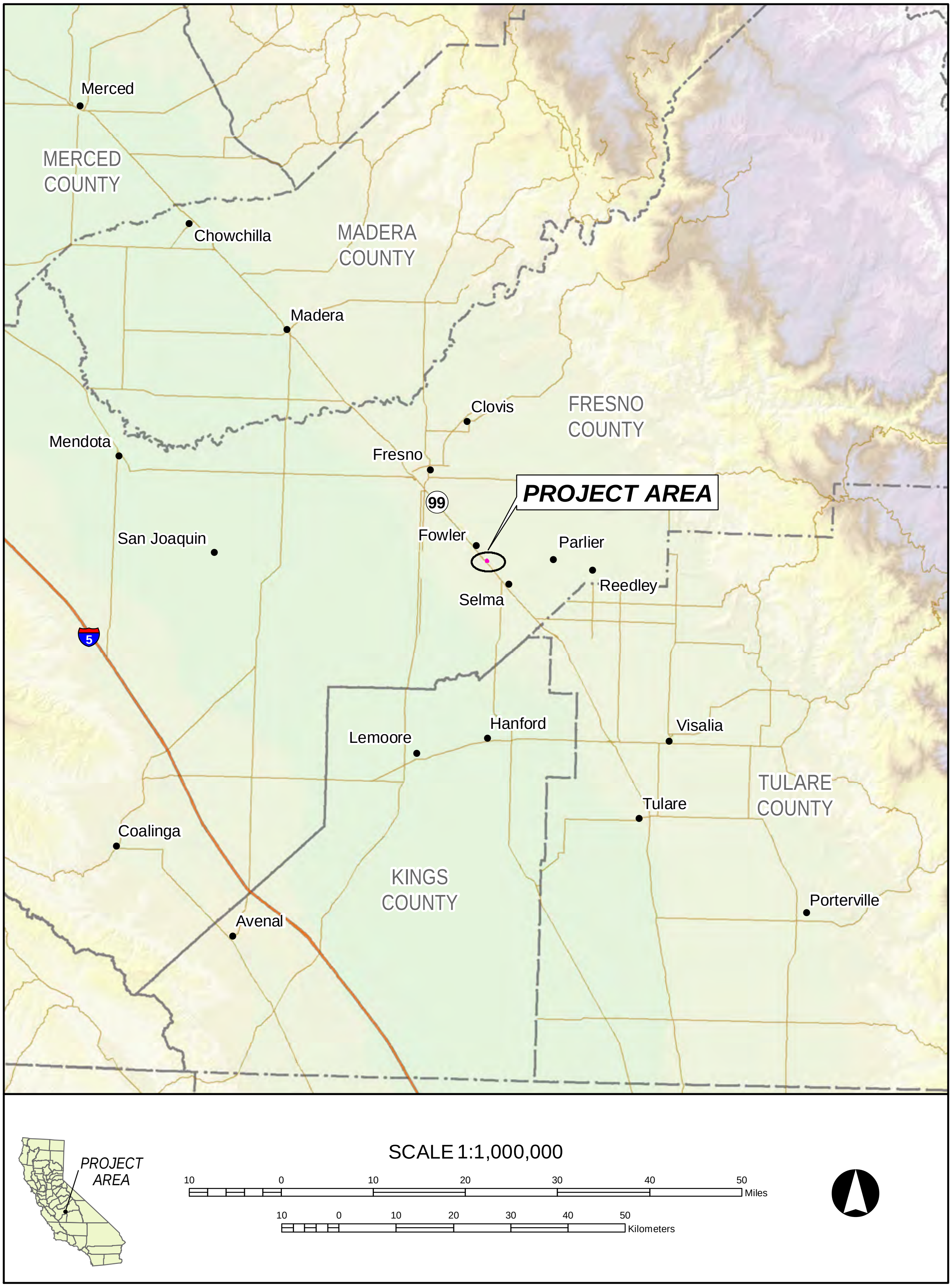

Figure 1-1 **Project vicinity in Fresno County, California.**

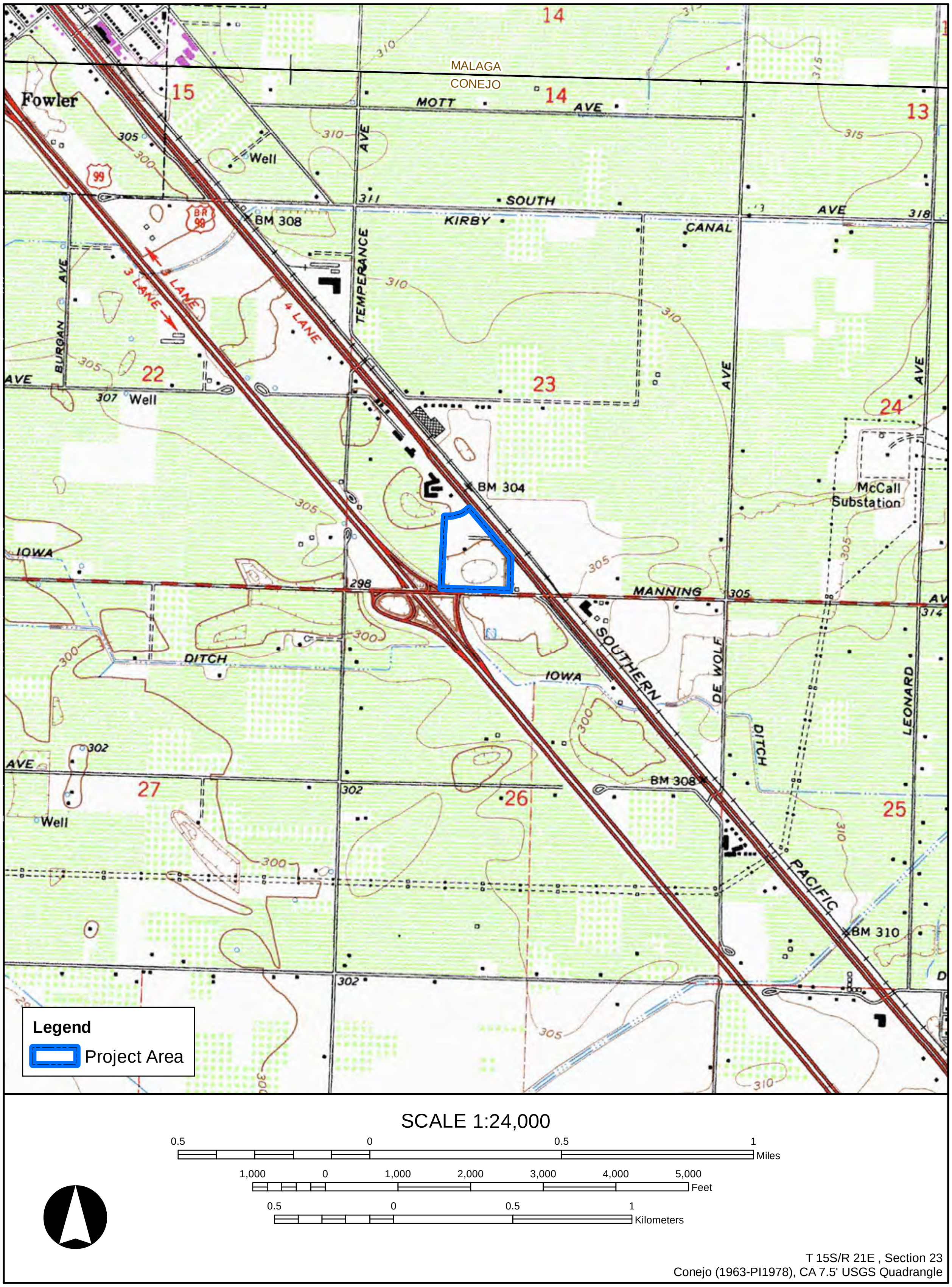

Figure 1-2 Project location on the USGS Conejo, CA 7.5-minute quadrangle.

Figure 1-3 Aerial view of the Project area.

and individuals; historical research to better understand the history of land use in the Project area and assess the likelihood for significant buried cultural deposits; and a pedestrian survey of the 18-acre Project area. Additionally, Æ evaluated the eligibility of one historic-era archaeological site (CA-FRE-3854H) discovered in the Project area for inclusion in the California Register of Historical Resources.

Æ Senior Archaeologist Mary Baloian (Ph.D.), a Registered Professional Archaeologist (RPA 15189), served as project manager for this investigation, providing quality oversight and technical guidance. Æ Staff Archaeologist Ward Stanley (B.A.) led the pedestrian survey, reviewed the records search results, conducted the Native American outreach, and co-authored the technical report. Æ Staff Archaeologist/Geographic Information Systems (GIS) Technician Jessica Jones conducted the historical research and site evaluation, managed the GIS data, prepared all maps and graphics, and served as second author on this report. Personnel qualifications are provided in Appendix A.

2
SETTING

2.1 ENVIRONMENT

The Project area is near the eastern periphery of the San Joaquin Valley near the base of the Sierra Nevada foothills, approximately 12 miles west of the Kings River. The San Joaquin Valley is the southern half of an elongated trough called the Great Valley, a 50-mile-wide lowland that extends approximately 500 miles south from the Cascade Range to the Tehachapi Mountains (Norris and Webb 1990:412). The San Joaquin Valley parallels the 400-mile stretch of the Sierra Nevada geomorphic province, which encompasses a 40- to 100-mile-wide area ranging in elevation from 400 feet above mean sea level (amsl) along the western boundary to more than 14,000 feet amsl in the east (Norris and Webb 1990:63).

Between the Mesozoic and Cenozoic eras, the Great Valley served as a shallow marine embayment containing numerous lakes, primarily within the San Joaquin Valley (Norris and Webb 1990:412). As a result, the upper levels of the Great Valley floor are composed of alluvium and flood materials. Below these strata are layers of marine and nonmarine rocks, including claystone, sandstone, shale, basalt, andesite, and serpentine. Waters began to diminish about 10 million years ago, eventually dwindling to the drainages, tributaries, and small lakes that exist today (Hill 1984:28). Playas, remnants of the extinct lakes, are currently used for agricultural activities in the valley (Norris and Webb 1990:431).

The San Joaquin River is the prominent hydrologic feature that drains the southern half of the Great Valley into San Francisco Bay. The tall steep peaks of the Sierra Nevada effectively block moisture moving eastward from the coast, resulting in a higher level of precipitation on the western slopes. Smaller east-west–trending rivers, like the Kings River just west of the Project area, drain the Sierra Nevada range before converging on the San Joaquin River. The Kings River and its smaller tributaries would have provided habitat for an abundance of food resources such as aquatic plants, fish, beaver, and other animals hunted prehistorically and historically. The annual rainfall for this area averages about 6–14 inches. Winters are cool and wet with average low temperatures between 40° and 50°F; snow is uncommon (Hill 1984:29). Summers are generally hot and dry, with temperatures often exceeding 100°F.

The development of agriculture within the Great Valley has resulted in the replacement of native plants and animals with domesticated species. Common native plants would have included white, blue, and live oak as well as walnut, cottonwood, salix, and tule, many of which still occur along the Kings River drainage east of the Project. The Project area specifically occupies the Lower Sonoran life zone, marked by prairie grassland communities that cover the plains and low rolling hillocks that border the Sierra Nevada. These grasslands are interspersed with narrow bands of riparian woodland that follow the valley stream corridors. The land in and around the Project area has been intensively farmed for many years. No areas of original grassland remain within the Project area.

The previously swampy valley floor provided a lush habitat for a variety of animals. Large herds of mule deer, tule elk, and pronghorn once roamed the valley. Historical accounts indicate that, due to their vast numbers, the tule elk and pronghorn were a major food source for the Yokuts Indians, explorers, trappers, and others (Clough and Secrest 1984:27–28; Wallace 1978a:449). Grizzly and black bears, wolves, and mountain lions also were once prominent valley species (Preston 1981:245–247). Other mammals noted are the valley coyote, bobcat, gray and kit foxes, and rabbits. The valley's large variety of birds consists of the American osprey, redwing blackbird, marsh hawk, willow and Nuttall's woodpeckers, western meadowlark, and quail. Water sources such as the Kings River supported anadromous and freshwater fish species that include salmon, golden trout, river lamprey eel, and white sturgeon.

2.2 ETHNOGRAPHY

The study area lies within the Wechikit and Wimilichi tribelet areas; they are two of the many autonomous tribes that made up the Northern Valley Yokuts who inhabited the marshy regions of the upper half of the San Joaquin Valley (Wallace 1978b). The Yokuts language belongs to the broader Penutian family, which includes a relatively diverse group of languages including Miwok, Costanoan, Maiduan, and Wintuan (Silverstein 1978). Their linguistically related brethren, the Southern Valley Yokuts, lived to the south, and the Miwok occupied areas to the north and east.

The Wechikit occupied lands along the Kings River near Sanger (Kroeber 1976:483, Plate 47; Latta 1999:171; Wallace 1978a: 448) (both Wallace and Kroeber uses the alternate names Wechihit/Wechahit and Wetehit). Latta notes that there is some doubt as to whether the Wechikit were a group distinct from surrounding Yokuts tribelets, but both Kroeber and Wallace identify them as an independent and distinct group. The primary settlements attributed to the Wechikit were *Musanau*, between the channels of the Kings River near Sanger, and *Wewio*, on Wahtoke Creek (Latta 1999:171). Little is known regarding these villages, and Kroeber (1976:483) claims that the Wechikit population had died off before he performed his fieldwork in the early twentieth century. The Wimilchi, a neighboring tribe also resided along the lower Kings River. One of their known villages, *Ugona, ?uko na(?)* ("drinking place") lies about 7 miles south of Laton (Latta 1977:163).

The Kings River and its tributaries provided food (fish and waterfowl), riparian plants for building and basket making (Figure 2-1), and avenues of travel for small watercraft. Not surprisingly, Yokuts villages were situated near major waterways and built on low mounds to prevent spring flooding. Ethnographic evidence indicates that these villages were occupied for the majority of the year and abandoned for short periods as the residents left to engage in seasonal resource gathering (McCarthy 1995). The Northern Valley Yokuts were defined by individual autonomous villages (Latta 1949:3) composed of single-family structures (Moratto 1988:174; Wallace 1978b:451). The structures were small and usually built from woven tule mats. Other structures included sweathouses and ceremonial chambers. Most stone artifacts were fashioned from cherts, although obsidian was imported from other locations (Wallace 1978a:465). Mortars and pestles were the dominant ground stone tools; bone was used to manufacture awls for making coiled baskets. The Northern Valley Yokuts did not manufacture ceramic items, although given the presence of ceramics in the nearby hills and reportedly at some San Joaquin Valley sites, it is likely that ceramics were brought to the region via trade.

Figure 2-1 Lucy Charlie gathering and processing plant materials near Sanger in 1946 (photo courtesy of Lorrie Planas Beck).

The material culture of the Wechikit was largely consistent with that of the Yokuts in general, although McCarthy (1995) has pointed out that the tendency to treat all Northern Valley Yokuts people as a whole in the ethnographic literature may mask regional variations. For this reason, the notes of Oscar Noren are of great value in describing the local archaeological and ethnographic record.

Noren (1988) found a variety of artifacts at several sites along the Kings River, including stone gaming balls, beads, and pendants along with such functional items as net weights, arrow shaft straighteners, milling stones, handstones, mortars, and pestles. The presence of *Olivella*, clam shell, and abalone shell from the coast as well as obsidian and steatite from the Sierra Nevada indicate that the Wechikit were part of the regional trade network. Among the 20 habitation sites that Noren identified were *Wewayo*, located 5 miles northeast of Reedley, *Mosahau*, which translates to “sweathouse place,” and a site named “Noren-76” located northwest of the Project area (Noren 1988).

As with other Indian groups in California, the lifeway of the Northern Valley Yokuts was dramatically altered as a result of contact with Spanish explorers and missionaries, miners, ranchers, and other European immigrants who entered the San Joaquin Valley after 1700. The introduction of European culture and new diseases proved devastating to the native population. Traditional lifestyles were diminished, and numerous people died from disease (Moratto 1988:174).

2.3 PREHISTORY

Archaeological studies in the San Joaquin Valley began in the early 1900s with a series of investigations primarily in the Stockton and Kern County areas (Gifford and Schenck 1926; Schenck and Dawson 1929). By the late 1930s, efforts were made to link the more well-known southern and northern valley areas through an exploration of the central San Joaquin Valley. University of California Berkeley’s Gordon Hewes surveyed the Central Valley region and discovered 107 sites, most near streams and marshes on the east side of the valley (Moratto 1984:186).

Archaeological investigations in the San Joaquin Valley intensified during the 1960s with the advent of cultural resources management work (Olsen and Payen 1968, 1969; Riddell and Olsen 1969; Treganza 1960). Based on these and other archaeological investigations conducted throughout the valley (Latta 1977; McCarthy 1995; McGuire 1995; Moratto 1988; Price 1992; Roper 2005), it is apparent that the Yokuts occupied most of the San Joaquin Valley over a period extending as long as 2,000 years (Spier 1978; Wallace 1978a, 1978b).

Prehistoric sequences developed from these excavations provide a fairly clear understanding of culture change during the last 2,000–3,000 years; however, archaeological investigations in the Tulare Lake and Buena Vista Lake localities south of the project vicinity suggest that people occupied the San Joaquin Valley as early as 11,000–12,000 years ago (Fredrickson and Grossman 1977; Riddell and Olson 1969).

Archaeological evidence suggests that the valley’s initial occupants settled in lakeshore and streamside environments, visiting the foothills periodically to harvest seasonally available resources. These early Paleoindian sites are typified by fluted points, stemmed dart points, scrapers, and crescents. As compared with their predecessors, the Archaic groups in the middle and late Holocene utilized a broader resource base, supplementing their subsistence with small game and hard seeds. Handstones, milling slabs, mortars, and pestles are common in Archaic assemblages, as are atlatl dart points. Favorable climatic conditions between 3,000 and 3,500 years ago instigated widespread settlement along the western Sierran slopes. The late Holocene witnessed various technological and social changes, including the adoption of the bow and arrow, expansion of trade, increasing use of acorns, and improved food storage techniques. As populations grew, social relations became more complex. Violence among many Sierran and foothill groups was common as economic stress and social instability became more pronounced during a period of xeric climates between circa A.D. 450 and 1250. Thereafter, new levels of population growth were achieved, resulting in part from movement of new Sierran groups. By circa A.D. 1600–1700, most groups claimed the territories that would identify them ethnographically.

2.4 HISTORY

2.4.1 Early Exploration

The first Europeans known to have entered the San Joaquin Valley were Spanish soldiers led by Pedro Fages, who came to the valley through Tejon Pass in 1772 (Wallace 1978a:459). Other Europeans followed in 1806 when Lieutenant Gabriel Moraga led a group of Spanish explorers into the San Joaquin Valley to locate new lands for missions (Clough and Secrest 1984:25–27).

The expansion of missions in California ceased by the early 1820s as a result of Mexico's independence from Spain (Clough and Secrest 1984:26). Fur trappers discovered the California interior soon after and began their forays into the San Joaquin Valley. Jedediah S. Smith may have been the first to enter the area during a fur trapping expedition in 1827. Smith's adventures included friendly encounters with the Yokuts while trapping and camping along the San Joaquin River (Clough and Secrest 1984:27). After Smith's visit, other trappers followed until about 1837 when fur-bearing animals were nearly gone from the valley. These trappers included Kit Carson, Peter Skene Ogden of the Hudson's Bay Company, and Joseph Reddeford Walker.

Compared to the California coastal regions, Euro-Americans settled in the Central Valley relatively late. The Mexican government issued land grants in the Fresno County area on three occasions in the 1840s (Clough and Secrest 1984:32–36). In order to satisfy the conditions of the contract and receive full ownership of the property, the grantee had to fulfill certain residency and improvement requirements; however, this was easier said than done. Early Euro-American efforts to settle the Central Valley often met with resistance from the indigenous tribes, who were probably aware of the harsh treatment given to the coastal tribes by Spanish missionaries. In addition, most regions of the valley were not well suited either for agriculture or cattle ranching and required a certain level of development (e.g., transportation routes, irrigation) before their potential could be realized. As part of the terms of the Treaty of Guadalupe Hidalgo, which formally concluded the Mexican-American War and ceded California to the United States, the claims on grants would be respected by the federal government provided that they complied with Mexican colonization laws. After the war, a series of legal disputes ensued that extended into the 1860s. Testimonies from these cases demonstrated that in only very few instances did the grantee actually reside on the land long enough to satisfy his contractual obligations (Clough and Secrest 1984:32–39). Aside from a small Hispanic presence, located primarily in the western part of the Fresno County area (Clough and Secrest 1984:39–43), it was not until after 1849 and the early stages of the gold rush that Euro-Americans seriously considered establishing permanent residency in the valley.

The gold rush, which is perhaps best known as a northern California phenomenon, extended to the state's central highlands. Prospectors first established camps at Coarse Gold (presently the town of Coarsegold) and Fine Gold (Clough and Secrest 1984:46). For the speculators that came to the Sierra Nevada and its foothills from the west coast, the Central Valley probably represented little more than a dry stretch of land to be traversed before reaching the gold fields to the east. The first settlements in the valley emerged along the valley's major waterways—the Chowchilla, Fresno, San Joaquin, and Kings rivers—largely to meet the transportation and material needs of the miners. These were untamed and temperamental rivers that were prone to unexpected flooding, not the dry lifeless channels that mark the valley's present-day landscape. These waterways could be crossed only via ferry. Outposts such as Fort Miller, Fort Bishop, and Campbells Ferry offered river crossing points, supplies, lodging, and, in the case of the first two, fortification from Indian attacks. It is perhaps telling that the history of the area focuses not on the miners who arrived during the gold rush but rather the entrepreneurs who profited from them.

The momentum of the gold rush could not be sustained, and by the early 1850s most of the miners and the merchants who relied on their patronage began to look to other pursuits. William Mayfield and his family arrived in the valley in 1850 to find their fortune in the deposits of the San Joaquin River. After floods wiped out his gold mining operation, he settled near the future site of Centerville to raise horses and cattle (Clough and Secrest 1984:47–48). Similarly, William Campbell, co-founder of Campbell's Ferry, eventually left the ferry business to become a rancher (Clough and Secrest 1984:53).

2.4.2 Central Valley Agriculture to 1920

The Central Valley has long been synonymous with agriculture, but the early settlers in the 1850s could not have imagined the extent and diversity of crops presently covering the valley floor. With the gold rush in decline, most miners descended from the foothills to pursue other professions. The town of Centerville—located along the Kings River in a relatively lush portion of the valley—became an early agricultural and cattle center in the 1850s and 1860s. During this time, farms were generally located near a perennial water source. This constraint on early agriculture kept the valley's two major industries—farming and ranching—in balance. Competition for real estate was minimized since agricultural interests had little reason to expand into pasturelands that were unsuitable for farming. The successful development of irrigation systems led to the agricultural boom as more tracts of land became suitable for crops. The increase in agricultural products also spurred the development of related industries, including nurseries and farm implement manufacturing. The immigration of a large number of farmers also promoted expansion of commercial ventures that offered food, clothing, and other staples.

Although a variety of crops were grown on the small farms, the majority of the valley was covered in wheat fields in the 1870s. When several small grape growers began turning huge profits on raisin production in the 1880s, however, the dominance of wheat fields was quickly challenged by vineyards. This trend gained steam when a nationwide glut in the grain market and attendant drop in the price of wheat caused valley farmers to shift their attention to newer crops. Although many fields were covered with vineyards, citrus, apricot, peach, and fig orchards became more common in Fresno County.

The Reclamation Act of 1902 facilitated the further proliferation of smaller farms. This law granted subsidized irrigation water to farmers, provided that the agricultural lands did not exceed 160 acres and that the recipient of the water resided on the property. The bill was intended to assist small farmers while at the same time establishing a legal structure to restrain the accumulation of agricultural lands by wealthy property owners. However, difficulties in enforcing the act, loopholes inherent within the statute, and changes to the law over the years have allowed individual farmers to receive cheap irrigation water well beyond the 160-acre limitation. Much of the San Joaquin Valley has been converted into arable land under the provisions of the 1902 Reclamation Act.

With farms and irrigation firmly established, agricultural production in the county boomed, although market forces would drive farmers to continue to alter and diversify their crops. In the early 1900s, a glut in the grape and raisin market—one of several that would occur in the century—caused many farmers to turn to peaches and other tree fruit (Hall 1986:170). During this same time, cotton served as a rotation crop for dairy farmers or an alternative row crop when prices for food commodities were low (Hall 1986:182). Such decisions, however, are not always driven exclusively by supply and demand. In the 1910s, many grape and raisin growers switched from the muscat variety to Thompson seedless, presently the most popular table grape in the nation. Compared to the muscat, the Thompson grape was less sticky and, more importantly, seedless—two factors which facilitated the packaging and marketing of the product (Hall 1986:169).

2.4.3 Agricultural Evolution (1920–1950)

Market demands continued to dictate the types of crops grown in the valley. Wheat was revived to meet the demands of World War I, and production continued until the 1921 depression. The war also spurred the cotton industry. The burgeoning olive industry was stifled for more than a decade when an outbreak of botulism was traced to California olives, resulting in a significant decrease in demand. Grape producers were flush as a result of a booming war economy and the successful Thompson seedless grape. However, market saturation and the onset of Prohibition produced such widespread bankruptcies and foreclosures that the grape and raisin industry did not fully recover until World War II.

The ever-increasing expanses of agricultural fields required vast quantities of water for irrigation. By 1920, the rate of water being pumped from the aquifer was greater than the recharge rate. During the 1920s, a state water plan that called for the construction of dams, canals, and other water facilities was drafted. Because of this plan, the San Joaquin Valley received assistance through the Central Valley Project (CVP) Act of 1933. The CVP was a massive water conveyance system constructed to alleviate local shortages and balance water supply throughout much of the state (JRP Historical Consulting Services and California Department of Transportation 2000). Construction of the CVP was delayed by World War II, but by the early 1950s the project, which includes the Delta-Mendota Canal, the Madera Canal, the Friant-Kern Canal, and Friant Dam, was functioning as an integrated system.

2.4.4 Modern Agriculture (1950–Present)

Even with federal subsidies, farming was a risky and expensive venture. In the 1950s, mechanization and scientific advances contributed to the consolidation of farmland and allowed farmers to easily expand the number of acres in production. Hundreds if not thousands of acres, which previously required numerous workers to sow and harvest, could now be cultivated and managed with only a fraction of the labor. On the west side of Fresno County, farms averaged more than 2,000 acres. However, because of the 1902 Reclamation Act, getting water for these large farms became a hotbed issue and a political focus until the 1980s. Much of this land was irrigated by water derived from federal projects such as the San Luis Dam, Pine Flat Dam, or Friant Dam, and, therefore, in theory was subject to the Reclamation Act. Although most farms were technically too large to qualify for federally subsidized water, various political machinations have allowed corporate farms to thrive. In 1982, Congress was finally persuaded to update the Reclamation Act to reflect more modern times. The Reclamation Reform Act, which raised the limitation for federally subsidized water to 960 acres and eliminated the residency restriction, allowed small farmers to increase production. However, farming still remains a speculative venture that is vulnerable to violent market fluctuations. Active interest by the federal government in the form of subsidies, infrastructural projects, and extensive federally funded scientific research has increased stability, allowing smaller farms to maintain a competitive edge (Clough 1986). In 2000, the average farm comprised 374 acres, with families or individuals, not corporations, driving production (Pollock 2000).

2.4.5 Transportation in the Central Valley

2.4.5.1 Southern Pacific Railroad

The arrival of the railroad at the lonely Fresno depot in April 1872 was truly a watershed moment in county history. At the time, the line was known as the San Joaquin Division of the Central Pacific Railroad (Clough and Secrest 1984:end sheets). The Central Pacific Railroad was established in 1862 in large part through government loans and land grants with the primary objective to build the western leg of the first transcontinental railroad in the United States. In 1885, the Southern Pacific Transportation Company leased the Central Pacific Railroad's lines, which have since been commonly known as the Southern Pacific Railroad.

Following the completion of the transcontinental railroad in 1869, the Central Pacific Railroad set out to build a line through the sparsely populated Central Valley, connecting the Bay Area with Southern California. The tracks reached what would become the town of Fresno in April 1872; the segment adjacent to the Project area would have thus been laid shortly afterward (Clough and Secrest 1984:121). The railroad arrived in Bakersfield 2 years later and in Los Angeles in 1876.

The effect of the railroad was all-encompassing for the region in general. Although agriculture existed in the valley long before the railroad, it emerged as the region's dominant industry because of the Southern Pacific. Certainly, the railroad was the necessary ingredient for commercial agriculture, considering that farmers would have no other feasible way to transport their products to the markets of the Bay Area.

The Southern Pacific Railroad enjoyed a monopoly in the Central Valley until 1896 when the competing San Francisco & San Joaquin Valley Railroad (later acquired by Atchison, Topeka and Santa Fe Railway) reached Fresno County (Clough and Secrest 1984:333). The valley branch of the historical Southern Pacific Railroad is presently owned and operated by the Union Pacific Railroad.

2.4.5.2 Golden State Highway

Adjacent to the Project area, Golden State Boulevard, also known as "Old Highway 99," was once the Central Valley's first highway, parts of which were eventually incorporated into U.S. Highway 99 (US 99). The roadway was laid over centuries of previously traveled corridors, blazed initially by a series of millennia-old Native American trails. These old pathways would lead the way for horse travel, stagecoach, and finally the railroad during the early pioneer years. In 1909 the California State Legislature passed the first $18 million State Highway Bond Act, in response to the introduction of the Model T. The plan was to increase travel to other cities by automobile, which at the time was only possible by rail (Provost 2017:4–5).

The Golden State Highway, initially named State Route 4, connected a 359-mile stretch between Sacramento and Los Angeles. Groundbreaking began in 1912, with the first sections of the highway (the Ridge Route) opening in the mountains above Los Angeles 2 years later (Livingston 2010:15; Windmiller 2011). The highway began as a two-lane dirt road needing constant repairs and maintenance (Warwick 2014:7). Building methods were very crude. Mule teams pulled Fresno Scrapers to create the grade, and men moved soil with wheelbarrows. The first road was a 15-foot-wide concrete slab that was later widened to 20 feet and covered with a 2-inch-thick layer of asphalt (Livingston 2010:20). From the very beginning, landscaping was a feature of the highway. Livingston (2010:58) notes that as its first civic project in 1916, the Fresno Rotary Club planted olive trees along the section of the highway between Fresno and Herndon. An even more familiar sight along the Golden State Highway (now Golden State Boulevard) was the hearty and ubiquitous oleander bushes, which actually serve as light, sound, and (to some extent) vehicle barriers (Livingston 2010:66).

In 1927, State Route 4 was renamed the Golden State Highway by James S. Anderson of Fresno, California, who won a naming contest for the highway (Provost 2017:4–6). At this time Ford replaced the Model T with the Model A, which had a top speed of 65 miles per hour. Not only were vehicle speeds increasing, but the number of vehicles on the road were too, and between 1920 and 1925 traffic counts tripled (Provost 2017:21). More businesses appeared along the roadside, fueled by travelers who ventured across the state. Folks whose cars broke down or those who simply needed dinner and a place to sleep found comfort in the full-service gas stations, restaurants, and motels just off the highway. Some individuals who owned land along the corridor sold or gave it to the state and profited later by running gas stations or rest stops (Provost 2017:12).

Soon the growth of cities from Redding to Los Angeles demanded a need for more efficient travel, resulting in multiple lane segments, bypasses, overpasses, and freeways that allowed uninterrupted travel through urbanized areas (Provost 2017:19). By 1965, the Golden State Highway, renamed US 99, would be further enlarged and shifted from its original alignment to its current route. Today, roads following the route of Old Highway 99 still retain the “Golden State” designation, now followed by “Boulevard” or “Avenue.” The existing Buford Oil Company gas station lies on the north side of Manning Avenue between Old Highway 99 (Golden State Boulevard) and the current US 99. The land was acquired by Buford in 1963, and the gas station was developed shortly thereafter.

3
METHODS

3.1 RECORDS SEARCH AND BACKGROUND RESEARCH

On December 27, 2017, Æ requested a records search from the Southern San Joaquin Valley Information Center (SSJVIC) of the CHRIS at California State University, Bakersfield. The records search encompassed the 18-acre Project area plus all land within a 0.5 mile radius of the Project area. SSJVIC staff consulted cultural resource location and survey base maps, reports of previous investigations, cultural resource records, the listings of the Office of Historic Preservation Historic Properties Directory, Archaeological Determinations of Eligibility, and the California Inventory of Historic Resources (Appendix B).

In addition to the SSJVIC records search, Æ consulted General Land Office land patent records and survey plats available online and reviewed a series of historical atlases dating between 1891 and 1935 as well as aerial photographs of the Project area dating between 1937 and 1999 from the online collection maintained by the Henry Madden Library at California State University, Fresno. Æ also reviewed online historical USGS topographic maps and accessed recent aerials (dating from 1998 to the present) on Google Earth. County histories, city directories, genealogybank.com and Ancestry.com provided biographical and demographic information about the owners of the Project parcel and neighboring properties. Æ also visited the Fresno County Recorders/Assessors records for property information. These sources provided a better understanding of the history of land use in the Project area. References for historical USGS topographic maps and aerial photographs consulted are provided in Appendix B.

3.2 NATIVE AMERICAN OUTREACH

On December 27, 2017, Æ contacted the Native American Heritage Commission (NAHC) requesting a search of its Sacred Lands File and the contact information for local Native American representatives who may have information about the Project area. The NAHC responded on January 12, 2018, with its findings and attached a list of 12 Native American tribes and individuals culturally affiliated with the Project area. Æ prepared and sent a letter to each of the contacts identified by the NAHC and kept a log of all responses. This record of correspondence is included in Appendix C.

3.3 PEDESTRIAN SURVEY

Æ's pedestrian survey entailed walking systematic transects spaced at 15–20 meter intervals over accessible areas of the 18-acre Project area. Æ photographed the survey area using a digital camera to document the environmental setting and ground visibility at the time of survey. Upon discovery of cultural material, Æ closely inspected the ground and surrounding area to identify the nature and extent of the site. Æ recorded information about the site on California Department of Parks and Recreation (DPR) Primary and Archaeological Site Record forms and used a Trimble Global Positioning System (GPS) unit to collect spatial information. Photographs and field notes are on file at Æ’s office in Fresno, California. DPR forms prepared for this inventory are provided in Appendix D.

3.4 SITE EVALUATION AND ASSESSMENT OF IMPACTS

The purpose of evaluating the eligibility of an identified cultural resource for inclusion in the California Register of Historical Resources (CRHR) is to determine if the resource meets the criteria of a significant historical resource and, if so, to assess whether the Project will cause a significant impact to the resource.

In this regard, the National Park Service (NPS) has established a process for identifying, evaluating, and assessing impacts to cultural resources. Practically speaking, determinations made within a federal regulatory context are almost universally accepted for purposes of identifying, evaluating, and assessing impacts under CEQA.

The first threshold in this process is to ascertain whether an archaeological site or built environment resource is old enough to be considered a cultural resource and, accordingly, eligible for the state register. To be eligible for the CRHR, an archaeological or built environment resource must be 50 years old or older. Except under exceptional circumstances (National Park Service [NPS] 2002:25–43), sites and properties less than 50 years old are dismissed from further consideration. If a cultural resource is found to meet this age criterion, the following sequential steps apply:

- Classifying the resource as a district, archaeological site, building, structure, or object;
- Determining the theme, context, and relevant thematic period of significance with which the resource is associated;
- Determining whether the resource is historically important under a set of significance criteria; and
- If significant, determining whether the resource retains integrity.

In California, cultural resources are usually classified according to *Instructions for Recording Historical Resources*, published by the California Office of Historic Preservation in 1995. This handbook contains listings of resource categories for historical and prehistoric sites as well as standing structures.

For historic-era resources, a historic context establishes the framework within which decisions about significance are based (NPS 2002:9). The evaluation process essentially weighs the relative importance of events, people, and places against the larger backdrop of history. Within this process, the context provides the comparative standards and/or examples as well as the theme(s) necessary for this assessment. According to the NPS (2002:9), a theme is a pattern or trend that has influenced the history of an area for a certain period. A theme is typically couched in geographic (i.e., local, state, or national) and temporal terms to focus and facilitate the evaluation process.

Significance is based on how well a subject resource represents one or more themes through its associations with important events or people and/or through its inherent qualities. A resource must demonstrate more than just association with a theme; it must be a good representative of the theme, capable of illustrating the various thematic elements of a particular time and place in history. According to the CEQA Guidelines, in order for a resource to be eligible for the CRHR, it must meet at least one of the criteria defined in California PRC 5024.1:

> (1) Is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage.
>
> (2) Is associated with the lives of persons important in our past.
>
> (3) Embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values.
>
> (4) Has yielded, or may be likely to yield, information important in history or prehistory.

To be included in the CRHR, a resource must not only possess historical significance but also the physical means to convey such significance—that is, it must possess integrity. Integrity refers to the degree to which a resource retains its original character. To facilitate this assessment, the NPS provides the following definition of the seven aspects of integrity.

> Location is the place where the historic property was constructed or the place where the historic event occurred. . . .
>
> Design is the combination of elements that create the form, plan, space, structure, and style of a property. . . .
>
> Setting is the physical environment of a historic property. . . .
>
> Materials are the physical elements that were combined or deposited during a particular period of time and in a particular pattern or configuration to form a historic property. . . .
>
> Workmanship is the physical evidence of the crafts of a particular culture or people during any given period in history or prehistory. . . .
>
> Feeling is a property's expression of the aesthetic or historic sense of a particular period of time. . . .
>
> Association is the direct link between an important historic event or person and a historic property. . . [NPS 2002:44–45].

4
FINDINGS

4.1 RECORDS SEARCH AND BACKGROUND RESEARCH

The SSJVIC provided the results of the records search in a letter dated January 16, 2018 (Appendix B). The records search revealed that no cultural resource studies have occurred within the Project area and there are no previously recorded sites in the Project area. One historic-era resource, the Southern Pacific Railroad Goshen Division Segment (P-10-003930), has been documented within 0.5 mile of the Project area. Four prior cultural resource investigations have been conducted within 0.5 mile of the Project area for road and highway expansion projects (Appendix B).

Review of historical topographic maps shows that in 1924 a structure existed within the Project area. A 1937 aerial photograph of the area (Figure 4-1) depicts what appears to be a residence surrounded by mature trees and agricultural fields adjacent to the “Old” Highway 99 corridor. This building is still visible in a 1992 aerial photograph as well as on 2006 Google Earth imagery; the building is no longer present on 2009 Google Earth imagery, suggesting it was removed between 2006 and 2009.

Figure 4-1 1937 aerial photograph of Project area depicting homestead (Agricultural Adjustment Administration 1937).

4.2 NATIVE AMERICAN OUTREACH

In its January 12, 2018, response to Æ's request, the NAHC stated that the search of the Sacred Lands File did not indicate the presence of resources within the Project area (see Appendix C). However, the NAHC cautioned that the absence of specific site information in its file does not indicate the absence of cultural resources in the area. The NAHC supplied a list of parties to be contacted for information regarding locations of sacred or special sites of cultural and spiritual significance in the study locale:

- Elizabeth D. Kipp, Chairperson, Big Sandy Rancheria of Western Mono Indians;
- Carol Bill, Chairperson, Cold Springs Rancheria;
- Robert Ledger Sr., Tribal Chairperson, Dumna Wo-Wah Tribal Government;
- Stan Alec, Kings River Choinumni Farm Tribe;
- Ron Goode, Chairperson, North Fork Mono Tribe;
- Claudia Gonzalez, Chairperson, Picayune Rancheria of Chukchansi Indians;
- Rueben Barrios Sr., Chairperson, Santa Rosa Indian Community of the Santa Rosa Rancheria;
- Leanne Walker-Grant, Chairperson, Table Mountain Rancheria of California;
- Bob Pennell, Cultural Resources Director, Table Mountain Rancheria of California;
- David Alvarez, Chairperson, Traditional Choinumni Tribe; and
- Kenneth Woodrow, Chairperson, Wuksache Indian Tribe/Eshom Valley Band

On January 17, 2018, Æ sent a letter describing the Project to each of the individuals and groups identified in the NAHC response, except the Dunlap Band of Mono Indians. In late 2017, Tribal Secretary Dirk Charley of the Dunlap Band of Mono Indians informed Æ that the tribe did not want to be contacted unless the project falls within their traditional territory in the foothills of eastern Fresno County. Because the Project lies outside of the band's traditional territory, Æ did not reach out to the tribe. An example of Æ's contact letter is provided in Appendix C. Æ placed follow-up telephone calls or sent an email on February 5, 2018.

Table Mountain Cultural Resources Director Bob Pennell, responding on behalf of Chairperson Walker-Grant, stated in a letter dated February 8, 2018 that the tribe declined to participate. Stan Alec of the Kings River Choinumni Farm Tribe responded that he had no specific concerns but wanted to be informed if any discoveries were made during construction. Similarly, Chairperson David Alvaraz of the Kings River Choinumni Farm Tribe stated that he has no concerns. No other responses have been received to date. A contact log and Native American outreach correspondence are included in Appendix C.

4.3 PEDESTRIAN SURVEY

On January 4, 2018, Æ archaeologist Ward Stanley conducted an intensive pedestrian survey of the Project area, which consists of the existing fuel station and commercial truck rest area as well as a vacant field (Figures 4-2 and 4-3). A water basin along the western boundary of the Project area was fenced off and inaccessible during the January survey (Figure 4-4). Additionally, the ground surface within the paved area of the operating fuel station was completely obscured and could not be examined (Figure 4-5). On October 11, 2018, Æ archaeologist Randy Ottenhoff returned to the Project area to survey the fence-enclosed water basin. Thus, excluding the paved areas, Æ surveyed approximately 8 acres of the 18-acre Project area.

Much of the vacant field was covered in tall grasses and weeds, offering less than 10 percent ground visibility. In the northeast corner of the fallow field, ground visibility was 100 percent as the result of a recent brush fire (Figure 4-6). To take advantage of increased surface visibility, survey transect spacing was narrowed to 5-meter intervals. The fence-enclosed water basin was dry at the time of survey and covered with short grasses; visibility was good (approximately 80 percent). North of the paved area, Æ observed a large flat-topped earthen mound, an assortment of concrete irrigation pipes, and a water pump amidst unidentified ornamental trees and two olive trees (Figures 4-7 and 4-8). Scattered atop and adjacent to the mound is a moderate amount of modern trash; however, no historic-era artifacts were noted. The mound matches the location of the residence and mature trees depicted on the aerial photographs from 1937 to 2006 (see Figure 4-1). Æ recorded the site on the appropriate DPR record forms. Æ did not observe any prehistoric or Native American artifacts, features, or deposits within the Project area.

Figure 4-2 Unpaved portion of Project area; view to the northeast.

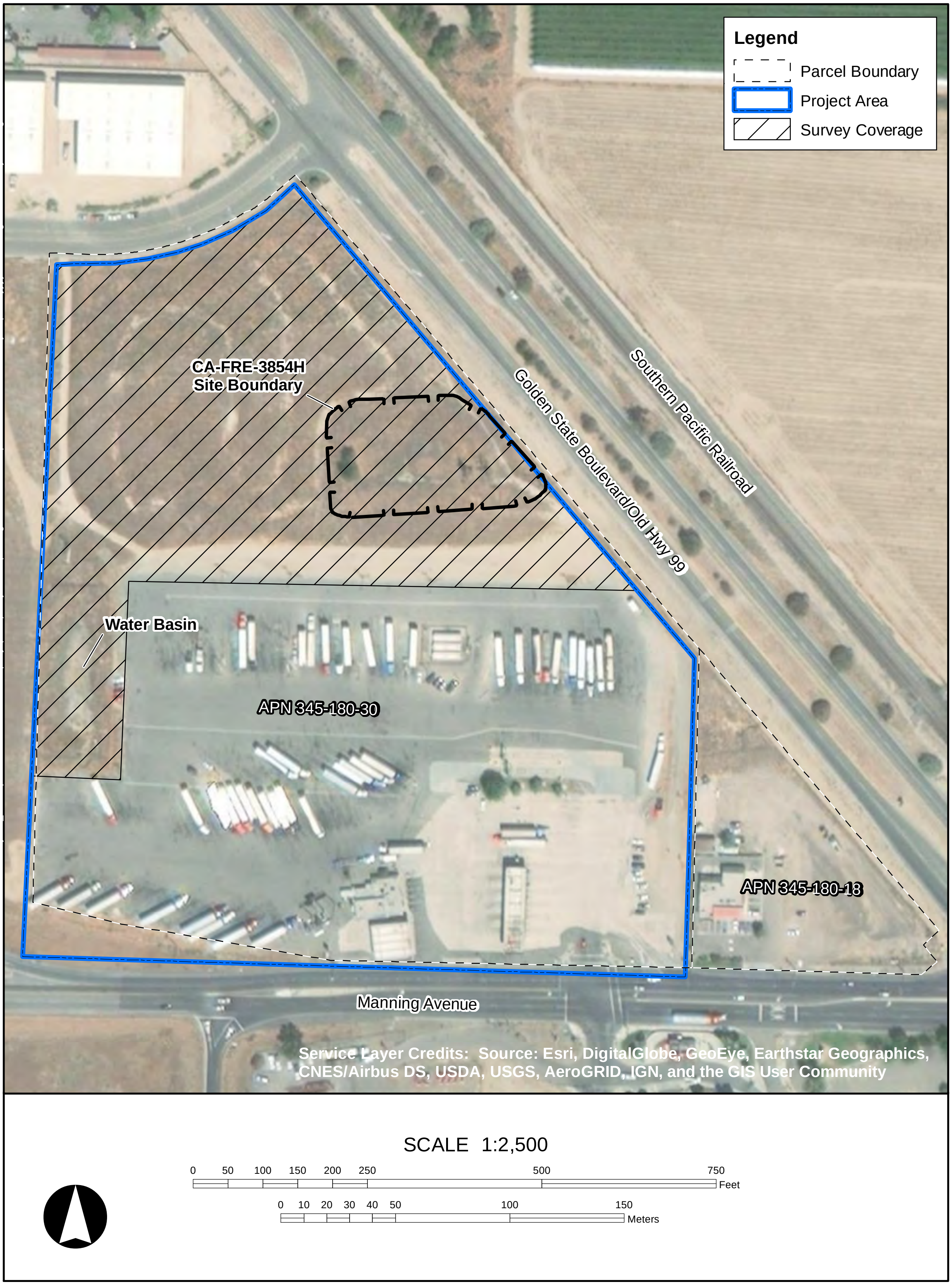

Figure 4-3 Aerial view of the Project area showing survey coverage and CA-FRE-3854H.

Figure 4-4 Water basin enclosed by a fence west of the parking lot; view to the southwest.

Figure 4-5 Commercial truck rest area; view to the northeast.

Figure 4-6 Ground exposed by recent fire in the northeast corner of the Project area; view to the north.

Figure 4-7 Overview of CA-FRE-3854H; view to the north.

Figure 4-8 Remnant irrigation and pump equipment; view to the west.

5
CRHR ELIGIBILITY EVALUATION OF CA-FRE-3854H

5.1 SITE DESCRIPTION

As discussed in Section 4.3, CA-FRE-3854H is a historic-era archaeological site that covers approximately 1 acre in the southeast corner of APN 345-180-30 (see Figure 4-3). The site includes a flat-topped earthen mound with several ornamental trees and the remains of a water-pumping system. The water pump and concrete and metal piping do not bear any temporally diagnostic characteristics and are not visible on modern or historical aerial photographs or maps. Historical aerial photographs indicate the presence of a building at the site; however, no artifacts or building remains were observed.

5.2 INTERPRETATION

CA-FRE-3854H occurs on APN 345-180-30, which encompasses 18 acres of land between State Route 99 and Golden State Boulevard (Golden State Highway/Old Highway 99). In 1877, the General Land Office (GLO) granted the land patent for all of Section 23 to the Southern Pacific Railroad Company (GLO 1877). Sometime between 1877 and 1891, land ownership within Section 23 passed from the Southern Pacific Railroad Company to private citizens, who subdivided the land (Thompson 1891). Few details are available regarding ownership of the land within APN 345-180-30 prior to 1911. The 1891 and 1907 Fresno County atlases provide landowner names; however, archival research yielded no further information about these individuals' relationship to the property (Guard 1907; Thompson 1891).

Between 1907 and 1911, Charles L. Berkland assumed ownership of APN 345-180-30 and an adjoining 2-acre parcel (APN 345-180-18) on the corner of Manning Avenue and Golden State Highway (Guard 1907, 1911). He retained it until about 1929, when he granted it to his daughter Madonna (Donna) L. Pope and her husband Virgil Pope (Progressive Map Service 1930). Archival research on Charles L. Berkland and Donna Pope revealed that the family at one time may have resided on or immediately adjacent to CA-FRE-3854H. In 1937, Berkland submitted advertisements for purebred Pointer dogs to the *Fresno Bee* and listed "99 Highway and Manning Ave." as the location of sale (*Fresno Bee* 1937). Additionally, Berkland's obituary states that, prior to his death, he resided with his daughter Donna on her property south of Fowler and adjacent to the Golden State Highway (*Fresno Bee* 1938).

While records indicate Berkland and Pope resided in general proximity to CA-FRE-3854H, property and census records do not identify the parcel on which their residence was located. As buildings were present on both parcels owned by Berkland and Pope, it is difficult to determine if the building that existed at site CA-FRE-3854H served as a residence for either of these individuals, or if they resided at the corner of Manning and Golden State on adjoining APN 345-180-18.

Historical and modern aerial photographs indicate the presence of a residence at CA-FRE-3854H from 1937 to 2006 and regular-to-periodic cultivation of the land surrounding the site from 1937 to 2009. Historical aerial photos and land-use patterns in rural Fresno County in the early to mid twentieth century suggest that CA-FRE-3854H was likely the site of a farmhouse whose occupants cultivated the surrounding property. Several joint tenancy land agreements were recorded in the mid twentieth century; however, investigations into the tenants did not reveal any information useful for determining association between CA-FRE-3854H and specific individuals.

A 1929 deed of trust for the two parcels discussed above names J. A. Kieffer and Katie Stiears as trustees of the property, with Donna Pope and her husband Virgil listed as trustors (Fresno County 1929). The terms of the deed demanded that the trustors install an electric water pump system on the property and maintain it for the life of the trust.

A joint-tenancy land deed between the Popes and F. Buford was signed in 1963 (Fresno County 1963). Descendants of F. Buford currently own APN 345-180-30, which suggests that complete ownership of the parcel passed to the Buford family sometime after 1963.

5.3 APPLICATION OF SIGNIFICANCE CRITERIA

5.3.1 Criteria 1 and 2

The primary obstacle in assessing the significance of CA-FRE-3854H under CRHR Criteria 1 and 2 is confidently determining its association, which provides the basis for the evaluation. The cultural constituents of the site in themselves do not provided details that could be used to determine their source. Assessor's records and newspapers from the early to mid twentieth century indicate that the Berkland and Pope families occupied the land; however, historical aerial photographs and maps depict other structures in proximity to CA-FRE-3854H (Figure 4-1). The 1929 deed of trust between the Popes and J. A. Kieffer and Katie Stiears indicates that an electrical water pump system was to be installed on the property; however, the record does not indicate a date or location of installation. Without a concrete timeline of occupancy and installation of the water pump system, a confident determination of association between these families and the constituents of CA-FRE-3854H cannot be made. Archival records do not suggest that the site is associated with any events (Criterion 1) or individuals (Criterion 2) important to the broad patterns of California history or cultural heritage. Because the site cannot be associated with a specific theme related to a significant event or individual, CA-FRE-3854H is not considered significant under Criterion 1 or 2.

5.3.2 Criterion 3

Criterion 3 is usually applied to standing buildings or other structures with architectural qualities. The water pump system observed at CA-FRE-3854H could be considered an engineered structure; however, it lacks context and association and does not embody the distinctive characteristics of a type, period, region, or method of construction. Consequently, CA-FRE-3854H is not considered significant under Criterion 3.

5.3.3 Criterion 4

The significance of CA-FRE-3854H under Criterion 4 is measured by the availability, or potential availability, of specific data classes necessary to address relevant research domains. Æ did not observe any temporally diagnostic artifacts or feature characteristics from which inferences about land-use and ownership could be derived. Archival research confirmed that the site had been the location of a homestead in the early twentieth century and revealed that an electric water pump system was proposed to be installed on the property around 1929 (*Fresno Bee* 1938; Fresno County 1929). However, the age of the water pump features observed at CA-FRE-3854H cannot be accurately determined, and the system cannot be directly associated with any one individual or period of significance. The lack of clear temporal association limits the site's ability to provide important information relating to agricultural development in the San Joaquin Valley in the early to mid twentieth century. Therefore, CA-FRE-3854H is not considered significant under Criterion 4.

5.4 ELIGIBILITY

Because the site does not lend any information, evidence, or context to further understanding of important themes in history, it is not significant under any of the four CRHR criteria, thus it is not considered eligible for the CRHR. An assessment of exclusionary characteristics and the site's integrity is not necessary.

6
CONCLUSION

The Buford Oil Company plans to expand an existing fuel station at the northeast intersection of Highway 99 and Manning Avenue in Fowler within Fresno County, California. Æ's inventory, consisting of a records search, Native American outreach, historical research, and a pedestrian survey, revealed that one cultural resource—the remains of a historic-era homestead CA-FRE-3854H)–occurs in the Project area. Æ did not observe any other prehistoric archaeological sites, artifacts, features, or historical built environment cultural resources within the Project area.

Æ recorded archaeological site CA-FRE-3854H and evaluated its eligibility for listing in the CRHR. Although archival research confirmed that the site had been the location of a homestead in the early twentieth century and revealed that an electric water pump system was proposed to be installed on the property around 1929 (*Fresno Bee* 1938; Fresno County 1929), Æ could not determine the age of the existing water pump features observed at the site or directly associate the remains of the homestead with a specific prior owner of the property. Because Æ did not observe any temporally diagnostic artifacts or feature characteristics, the site is not considered significant under any of the four CRHR evaluation criteria.

However, given the possibility of encountering archaeological materials during construction, Æ offers the following general recommendations:

- In the event that archaeological remains are encountered at any time during development or ground-moving activities within the Buford Oil Travel Center Project area, all work in the vicinity of the find should be halted until a qualified archaeologist can assess the discovery.

- If human remains are uncovered, or in any other case when human remains are discovered during construction, the Fresno County Coroner is to be notified to arrange their proper treatment and disposition. If the remains are identified—on the basis of archaeological context, age, cultural associations, or biological traits—as those of a Native American, California Health and Safety Code 7050.5 and Public Resource Code 5097.98 require that the coroner notify the NAHC within 24 hours of discovery. The NAHC will then identify the Most Likely Descendant who will be afforded the opportunity to make recommendations about the manner in which the remains are treated.

7
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2011 Golden State Boulevard/US 99—American Avenue to Mission Street. Department of Parks and Recreation forms. On file, California Historical Resources Information System, Southern San Joaquin Valley Information Center, California State University, Bakersfield.

APPENDIX A

Personnel Qualifications

Applied EARTHWORKS Inc.

MARY CLARK BALOIAN

President/Principal Archaeologist

Areas of Expertise

- Cultural resource management
- Prehistoric archaeology
- Project management

Years of Experience

- 28

Education

Ph.D., Anthropology, Southern Methodist University, 2003

M.A., Anthropology, Southern Methodist University, 1995

B.A., Anthropology, University of California, Davis, 1989

Registrations/Certifications

- Register of Professional Archaeologist No. 15189

Permits/Licensure

- Principal Investigator, California BLM Statewide Cultural Resources Use Permit CA-15-29
- Crew Chief, Nevada BLM Statewide Cultural Resources Use Permit N-85878

Professional Affiliations

- Society for American Archaeology
- Society for California Archaeology

Professional Experience

2000–	President (2015–), Regional Manager (2012–2014), Assistant Division Manager (2010–2011), Senior Archaeologist (2000–), Applied EarthWorks, Inc., Fresno, California
1998–2001	Adjunct Faculty Member, Fresno City College, Fresno, California
1995–1996	Staff Archaeologist, Applied EarthWorks, Inc., Fresno, California
1994–1995	Staff Archaeologist, INFOTEC Research, Inc., Fresno, California
1992–1994	Teaching Assistant, Southern Methodist University, Dallas, Texas
1989–1991	Archaeological Project Leader, California Department of Transportation, Sacramento

Technical Qualifications

Dr. Clark Baloian has been involved in archaeology in California and the western United States since 1987. Her areas of expertise include the prehistory of the San Joaquin Valley, Sierra Nevada, Great Basin, central California coast, and the Iron Age of West Africa. Dr. Baloian has served as Project Manager, Field Supervisor, Crew Chief, or Field Technician for projects throughout California, Oregon, Nevada, New Mexico, Texas, Hawaii, and West Africa. Her experience in cultural resources management includes research design, data acquisition, laboratory analysis, and preparation of technical reports and compliance documents; she also has completed the Advisory Council on Historic Preservation course in National Historic Preservation Act Section 106 compliance policies and procedures. Her analytic skills include lithic and ceramic analyses as well as settlement pattern studies and spatial analysis, which were the foci of her doctoral research. As a Senior Archaeologist for Applied EarthWorks, Dr. Baloian directs professional staff and subcontractors and provides quality assurance for all project work. She has directed numerous surveys, testing and data recovery excavations as well as prepared dozens of technical reports and compliance documents. She administers both large, complex, multiyear, multiphase projects as well as smaller.

Applied EARTHWORKS Inc.

JESSICA JONES

GIS Technician/Staff Archaeologist

Areas of Expertise

- Geographic Information Systems (GIS) in archaeology
- Computer-generated maps and graphics
- Archaeological survey and excavation

Years of Experience

- 5

Education

B.A., Anthropology, California State University, Sacramento, 2013

Archaeological Technician Certificate, Anthropology Department, Fresno City College, Fresno, California, 2011

Professional Experience

2015–	Geographic Information Systems (GIS) Technician/Staff Archaeologist, Applied EarthWorks, Inc., Fresno, California
2012–2013	Laboratory Technician (volunteer), Archaeological Research Center, California State University, Sacramento
2009–2010	Laboratory Technician (volunteer), Fresno City College, Fresno, California

Technical Qualifications

As a staff archaeologist, Ms. Jones performs archival research, pedestrian archaeological and built environment survey, site recordation, and excavation on projects throughout the Central Valley and Sierra Nevada foothills. She also is a primary author or contributor for cultural resource inventory reports and is familiar with the preparation of California Department of Parks and Recreation cultural resource record forms (DPR 523 series) and California Department of Transportation documents. In her role as a GIS technician, Ms. Jones serves as cartographer and has participated in large and small projects involving both prehistoric and historic-era cultural resources. Using ESRI ArcGIS software, she has prepared maps and illustrations for documentation and technical reports encompassing archaeological and built environment resources for a variety of projects in California and Oregon. Additionally, she assists in the management and maintenance of the company's GPS data/units and cultural resources database system. She has extensive experience volunteering in archaeological repositories and is well versed in laboratory methodology related to the processing, cataloging, and management of archaeological collections.

WARD STANLEY

Staff Archaeologist

Areas of Expertise

- California archaeology—Sierra Nevada
- Survey, excavation, and Geographic Information System applications
- Project administration support

Years of Experience

- 8

Education

B.A., Kansas State University, 2008

Registrations/Certifications

Wildland Firefighter Qualified (Arduous)

Professional Experience

2015–	Staff Archaeologist, Applied EarthWorks, Inc., Fresno, California
2011–2017	Archaeological Field Technician/Crew Supervisor, Sierra National Forest and Lassen National Forest
2009–2011	Archaeological Field Technician/Crew Supervisor, Malheur National Forest
2008–	Archaeological Field Technician, Plumas National Forest

Technical Qualifications

Mr. Stanley's archaeological experience includes survey, archaeological testing, data recovery excavation, and documentation of both prehistoric and historical resources in the Central Valley and Sierra National Forest in California. He has supervised field crews for several large-scale projects for the Sierra, Lassen, and Malheur National Forests. This work included prefield research, pedestrian survey, site recording, and report preparation. Mr. Stanley is knowledgeable about Section 106 of the National Historic Preservation Act and associated regulations and processes, and working with local Native American tribes. He is well versed in the use of Geographic Information System (GIS) applications, including those for data gathering and modeling, and has prepared maps using ESRI ArcGIS software for use in technical reports and in the field. In addition to working for the Sierra National Forest, he has served as lead archaeological resource advisor on three separate wildland fires and was responsible for coordinating protection of archaeological resources from suppression efforts. Additionally, he produced assessment damage reports for all fires. For Applied EarthWorks, Mr. Stanley has served as field supervisor for implementation of the Crane Valley Hydroelectric Power Project Historic Properties Management Plan, which includes monitoring of impacts to resources and implementing management measures to avoid or minimize adverse effects to historic properties within the Crane Valley Archaeological District.

APPENDIX B

Records Search Results

California
Historical
Resources
Information
System

Fresno
Kern
Kings
Madera
Tulare

Southern San Joaquin Valley Information Center
California State University, Bakersfield
Mail Stop: 72 DOB
9001 Stockdale Highway
Bakersfield, California 93311-1022
(661) 654-2289
E-mail: ssjvic@csub.edu
Website: www.csub.edu/ssjvic

1/16/2018

Mary Baloian
Applied EarthWorks, Inc.
1391 W. Shaw Ave., Suite C
Fresno, CA 93711

Re: Buford Oil Compant Travel Center
Records Search File No.: 18-008

The Southern San Joaquin Valley Information Center received your record search request for the project area referenced above, located on the Conejo USGS 7.5's quad. The following reflects the results of the records search for the project area and the 0.5 mile radius:

As indicated on the data request form, the locations of resources and reports are provided in the following format: ☐ custom GIS maps ☒ shapefiles ☐ hand-drawn maps

Resources within project area:	None
Resources within 0.5 mile radius:	P-10-003930
Reports within project area:	None
Reports within 0.5 mile radius:	FR-00135, 00338, 00778, 02287, 02452

Resource Database Printout (list): ☒ enclosed ☐ not requested ☐ nothing listed

Resource Database Printout (details): ☒ enclosed ☐ not requested ☐ nothing listed

Resource Digital Database Records: ☒ enclosed ☐ not requested ☐ nothing listed

Report Database Printout (list): ☒ enclosed ☐ not requested ☐ nothing listed

Report Database Printout (details): ☒ enclosed ☐ not requested ☐ nothing listed

Report Digital Database Records: ☒ enclosed ☐ not requested ☐ nothing listed

Resource Record Copies: ☒ enclosed ☐ not requested ☐ nothing listed

Report Copies: ☐ enclosed ☒ not requested ☐ nothing listed

OHP Historic Properties Directory: ☐ enclosed ☐ not requested ☒ nothing listed

Archaeological Determinations of Eligibility: ☐ enclosed ☐ not requested ☒ nothing listed

CA Inventory of Historic Resources (1976): ☐ enclosed ☐ not requested ☒ nothing listed

Caltrans Bridge Survey: Not available at SSJVIC; please see
http://www.dot.ca.gov/hq/structur/strmaint/historic.htm

Ethnographic Information: Not available at SSJVIC

Historical Literature: Not available at SSJVIC

Historical Maps: Not available at SSJVIC; please see
http://historicalmaps.arcgis.com/usgs/

Local Inventories: Not available at SSJVIC

GLO and/or Rancho Plat Maps: Not available at SSJVIC; please see
http://www.glorecords.blm.gov/search/default.aspx#searchTabIndex=0&searchByTypeIndex=1 and/or
http://www.oac.cdlib.org/view?docId=hb8489p15p;developer=local;style=oac4;doc.view=items

Shipwreck Inventory: Not available at SSJVIC; please see
http://www.slc.ca.gov/Info/Shipwrecks.html

Soil Survey Maps: Not available at SSJVIC; please see
http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx

Please forward a copy of any resulting reports from this project to the office as soon as possible. Due to the sensitive nature of archaeological site location data, we ask that you do not include resource location maps and resource location descriptions in your report if the report is for public distribution. If you have any questions regarding the results presented herein, please contact the office at the phone number listed above.

The provision of CHRIS Data via this records search response does not in any way constitute public disclosure of records otherwise exempt from disclosure under the California Public Records Act or any other law, including, but not limited to, records related to archeological site information maintained by or on behalf of, or in the possession of, the State of California, Department of Parks and Recreation, State Historic Preservation Officer, Office of Historic Preservation, or the State Historical Resources Commission.

Due to processing delays and other factors, not all of the historical resource reports and resource records that have been submitted to the Office of Historic Preservation are available via this records search. Additional information may be available through the federal, state, and local agencies that produced or paid for historical resource management work in the search area. Additionally, Native American tribes have historical resource information not in the CHRIS Inventory, and you should contact the California Native American Heritage Commission for information on local/regional tribal contacts.

Should you require any additional information for the above referenced project, reference the record search number listed above when making inquiries. Invoices for Information Center services will be sent under separate cover from the California State University, Bakersfield Accounting Office.

Thank you for using the California Historical Resources Information System (CHRIS).

Sincerely,

Celeste M. Thomson
Coordinator

Resource List

SSJVIC Record Search 18-008

Primary No.	Trinomial	Other IDs	Type	Age	Attribute codes	Recorded by	Reports
P-10-003930	CA-FRE-003109H	Resource Name - Southern Pacific Railroad	Structure	Historic	AH07 (Roads/trails/railroad grades)	1998 (W.L. Norton, Jones & Stokes); 1999 (S. Hooper, S. Flint, Applied EarthWorks, Inc.); 2002 (Peggy B. Murphy, Three Girls and a Shovel); 2004 (Bryan Larson, Cindy Toffelmier, JRP Historical Consulting); 2009 (Joseph Freeman, Rebecca Flores, JRP Historical Consulting); 2009 (Joseph Freeman, Rebecca Flores, JRP Historical Consulting); 2009 (Joseph Freeman, Rebecca Flores, JRP Historical Consulting); 2010 (Michael Hibma, LSA Associates); 2013 (Randy Baloian, Applied Earthworks, Inc.); 2015 (Randy Baloian, Applied Earthworks, Inc.); 2016 (J. Tibbet, Applied EarthWorins, Inc.)	FR-00238, FR-01770, FR-01771, FR-01772, FR-02642, FR-02726, FR-02769, FR-02847

Report List

SSJVIC Record Search 18-008

Report No.	Other IDs	Year	Author(s)	Title	Affiliation	Resources
FR-00135	NADB-R - 1140863	1995	Hatoff, Brian, Voss, Barb, Waechter, Sharon, Benté, Vance, and Wee, Stephen	Cultural Resources Inventory Report for the Proposed Mojave Northward Expansion Project.	Woodward-Clyde Consultants	
FR-00338		1979	Cursi, Kathleen L.	Archaeological Reconnaissance for Manning Avenue Between HWY 99 and McCall Avenue, Fresno County, California (near Sanger/Selma)	California State University, Fresno	
FR-00778	NADB-R - 1140711	1994	Varner, Dudley M.	An Archaeological Study of a Property On State Highway 99 At Manning Avenue In Fresno County, California	Varner Associates	
FR-02287	Submitter - SWCA Cultural Resources Report Database No. 06-507; Submitter - SWCA Project No. 10715-180	2006	Arrington, Cindy, Bass, Bryon, Brown, Joan, Corey, Chris, and Hunt, Kevin	Cultural Resources Final Report of Monitoring and Findings for the Qwest Network Construction Project, State of California	SWCA Environmental Consultants	
FR-02452		2011	Windmiller, Ric	Golden State Corridor Project Cultural Resources Assessment Fresno County, California	Individual Consultant	

Historical Topographic Maps and Aerial Images Consulted

Date	Name	Author	Hyperlink
1937	Fresno County Aerial Survey 13-ABI 67-53	Agricultural Adjustment Administration	http://cdmweb.lib.csufresno.edu/cdm/ref/collection/aerial/id/911
1942	Fresno County Aerial Survey ABI-8B-177	Agricultural Adjustment Administration	http://cdmweb.lib.csufresno.edu/cdm/singleitem/collection/aerial/id/23010
1950	Fresno County Aerial Survey ABI-4G-106	United States Department of Agriculture	http://cdmweb.lib.csufresno.edu/cdm/singleitem/collection/aerial/id/1861
1957	Fresno County Aerial Survey ABI-53T-34	United States Commodity Stabilization Service	http://cdmweb.lib.csufresno.edu/cdm/ref/collection/aerial/id/3192
1961	Fresno County Aerial Survey ABI-3BB-270	United States Commodity Stabilization Service	http://cdmweb.lib.csufresno.edu/cdm/ref/collection/aerial/id/4782
1965	Fresno County Aerial Survey FRE-1-158	United States Soil Conservation Service	http://cdmweb.lib.csufresno.edu/cdm/ref/collection/aerial/id/5635
1973	Fresno County Aerial Survey 06019 173-11 L	United States Agricultural Stabilization and Conservation Service	http://cdmweb.lib.csufresno.edu/cdm/ref/collection/aerial/id/7667
1987	Fresno County Aerial Survey NAPP 463-34	Agricultural Adjustment Administration	http://cdmweb.lib.csufresno.edu/cdm/ref/collection/aerial/id/7702
1992	Fresno County Aerial Survey BR-CVHAB 10-201	Agricultural Adjustment Administration	http://cdmweb.lib.csufresno.edu/cdm/ref/collection/aerial/id/11591
1999	Fresno County Highways Aerial Survey NAPP 10566-30	Agricultural Adjustment Administration	http://cdmweb.lib.csufresno.edu/cdm/ref/collection/aerial/id/19186
1924	Conejo, CA	USGS	https://ngmdb.usgs.gov/topoview/
1947	Conejo, CA	USGS	https://ngmdb.usgs.gov/topoview/
1964	Conejo, CA	USGS	https://ngmdb.usgs.gov/topoview/
1985	Conejo, CA	USGS	https://ngmdb.usgs.gov/topoview/

APPENDIX C

Native American Outreach

Native American Outreach Log

Buford Oil Travel Center

Organization	Name	Position	Letter	E-mail	Phone	Summary of Contact
Native American Heritage Commission				12/27/17		AE Requested search on 12/27/2017. Received an email dated 1/12/2018 that stated a serach of the sacred lands file failed to indicate any resources. The NACHC included a list of 12 tirbes and individuals to contact.
Big Sandy Rancheria	Elizabeth D. Kipp	Chairperson	01/17/18			Outreach letter sent 1/17/18; AE sent a follow up email on 2/5/18; No reply received to date.
Cold Springs Rancheria of Mono Indians	Carol Bill	Chairperson	01/17/18		02/05/18	Outreach letter sent 1/17/18; AE left a follow up voicemail 2/5/18; No response received to date.
Dumna Wo-Wah Tribal Government	Robert Ledger Sr.	Tribal Chairperson	01/17/18	02/05/18		Outreach letter sent 1/17/18; AE left a follow up voicemail 2/5/18; No response received to date.
Dunlap Band of Mono Indiatns		Chairperson	01/17/18			Per Dunlap Mono Indians Dirk Charley's request, AE did not send an outreach letter because the project lies outside the tribe's traditional area.
Kings River Choinumni Farm Tribe	Stan Alec		01/17/18		02/05/18	Outreach letter sent1/17/18; AE spoke with Stan Alec via telephone on 2/5/18 and he stated there are no concerns.
North Fork Mono Tribe	Ron Goode	Chairperson	01/17/18	02/05/18		Outreach letter sent 1/17/18; AE sent follow up email on 2/5/18; No reply received to date.
Santa Rosa Rancheria Tachi Yokut Tribe	Rueben Barrios Sr.	Chairperson	01/17/18	02/05/18		Outreach letter sent 1/17/18; AE sent a follow up email to baria@tachi-yokut-nsn.gov as requested by receptionist on 2/5/18. No response received to date.
Table Mountain Rancheria	Bob Pennell	Cultural Resources Director	01/17/18	02/05/18		Outreach letter sent 1/17/18; AE sent follow up email on 2/5/18; No reply received to date.
Traditional Choinumni Tribe	David Alvarez	Chairperson	01/17/18		2/5/18; 2/6/18	Outreach letter sent 1/17/2018; AE left a voice mail on cell phone 2/5/2018; Dave Alvarez Returned call on 2/6/2018 and stated that the Tribe has no concerns. He also provided a correction to his email address.
Wuksache Indian Tribe/Eshom Valley Band	Kenneth Woodrow	Chairperson	01/17/18	02/05/18		Outreach letter sent 1/17/18; AE sent a follow up email on 2/5/18; No reply received to date.
Picayune Rancheria of Chukchansi	Jennifer Ruiz	Chairperson	01/17/18	02/05/18		Outreach letter sent 1/17/18; AE sent a follow up email on 2/5/18; No reply received to date.

NATIVE AMERICAN HERITAGE COMMISSION
Environmental and Cultural Department
1550 Harbor Blvd., Suite 100
West Sacramento, CA 95691
(916) 373-3710

January 12, 2018

Mary Baloian
Applied Earth Works

Sent by Email: mbaloian@appliedearthworks.com
Number of Pages: 2

RE: Buford Oil Company Travel Center, Conejo, Fresno County

Dear Ms. Boloian:

A record search of the Native American Heritage Commission (NAHC) *Sacred Lands File* was completed for the area of potential project effect (APE) referenced above with negative results. **Please note that the absence of specific site information in the *Sacred Lands File* does not indicate the absence of Native American cultural resources in any APE.**

I suggest you contact all of those listed, if they cannot supply information, they might recommend others with specific knowledge. The list should provide a starting place to locate areas of potential adverse impact within the APE. **By contacting all those on the list, your organization will be better able to respond to claims of failure to consult**. If a response has not been received within two weeks of notification, the NAHC requests that you follow-up with a telephone call to ensure that the project information has been received.

If you receive notification of change of addresses and phone numbers from any of these individuals or groups, please notify me. With your assistance we are able to assure that our lists contain current information. If you have any questions or need additional information, please contact via email: Sharaya.souza@nahc.ca.gov or (916) 573-0168.

Sincerely,

Sharaya Souza
Staff Services Analyst
(916) 573-0168

Native American Heritage Commission
Native American Contacts
1/12/2018

Big Sandy Rancheria of Western Mono Indians
Elizabeth D. Kipp, Chairperson
PO. Box 337 37387 Auberry Mission Rd.
Auberry , CA 93602
lkipp@bsrnation.com
(559) 374-0066
(559) 374-0055
Western Mono

Cold Springs Rancheria
Carol Bill, Chairperson
P.O. Box 209
Tollhouse , CA 93667
(559) 855-5043
(559) 855-4445 Fax
Mono

Dumna Wo-Wah Tribal Goverment
Robert Ledger SR., Chairperson
2216 East Hammond Street
Fresno , CA 93703
ledgerrobert@ymail.com
(559) 519-1742 Office
Dumna/Foothill Yoku
Mono

Dunlap Band of Mono Indians
Chairperson
Box 44
Dunlap , CA 93621
(559) 338-2545
Mono

Kings River Choinumni Farm Tribe
Stan Alec
3515 East Fedora Avenue
Fresno , CA 93726
(559) 647-3227 Cell
Foothill Yokuts
Choinumni

North Fork Mono Tribe
Ron Goode, Chairperson
13396 Tollhouse Road
Clovis , CA 93619
rwgoode911@hotmail.com
(559) 299-3729 Home
(559) 355-1774 - cell
Mono

Picayune Rancheria of Chukchansi Indians
Jennifer Ruiz, Chairperson
P.O. Box 2226
Oakhurst , CA 93644
jruiz@chukchansitribe.net
(559) 412-5590
Chukchansi / Yokut

Santa Rosa Indian Community of the Santa Rosa Rancheria
Rueben Barrios Sr., Chairperson
P.O. Box 8
Lemoore , CA 93245
(559) 924-1278
(559) 924-3583 Fax
Tache
Tachi
Yokut

Table Mountain Rancheria of California
Leanne Walker-Grant, Chairperson
P.O. Box 410
Friant , CA 93626
(559) 822-2587
(559) 822-2693 Fax
Yokuts

Table Mountain Rancheria of California
Bob Pennell, Cultural Resources Director
P.O. Box 410
Friant , CA 93626
rpennell@tmr.org
(559) 325-0351
(559) 217-9718 - cell
(559) 325-0394 Fax
Yokuts

This list is current only as of the date of this document and is based on the information available to the Commission on the date it was produc ed.

Distribution of this list does not relieve any person of statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resource Section 5097.98 of the Public Resources Code.

This list is only applicable for contacting local Native American Tribes with regard to cultural resources assessments for the proposed: Buford Oil Company Travel Center, Conejo, Fresno County.

Native American Heritage Commission
Native American Contacts
1/12/2018

Traditional Choinumni Tribe David Alvarez, Chairperson 2415 E. Houston Avenue Fresno , CA 93720 davealvarez@sbcglobal.net (559) 323-6231 (559) 217-0396 Cell (559) 292-5057 Fax	Choinumni
Wuksache Indian Tribe/Eshom Valley Band Kenneth Woodrow, Chairperson 1179 Rock Haven Ct. Salinas , CA 93906 kwood8934@aol.com (831) 443-9702	Foothill Yokuts Mono Wuksache

This list is current only as of the date of this document and is based on the information available to the Commission on the date it was produc ed.

Distribution of this list does not relieve any person of statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resource Section 5097.98 of the Public Resources Code.

This list is only applicable for contacting local Native American Tribes with regard to cultural resources assessments for the proposed: Buford Oil Company Travel Center, Conejo, Fresno County.

EXAMPLE

Applied EARTHWORKS Inc.

1391 W. Shaw Ave., Suite C
Fresno, CA 93711-3600
O: (559) 229-1856 | F: (559) 229-2019

January 16, 2018

RE: Buford Oil Travel Center Project, City of Fowler, Fresno County, California.

Dear Sir or Madam,

Applied EarthWorks, Inc. (Æ) is providing cultural resources services for the Buford Oil Travel Center Project, City of Fowler, Fresno County, California. The project is at the intersection of Highway 99 and Manning Avenue and consists of expanding the existing gas station to include additional fueling facilities, traveler amenities, and parking stalls for motorist and commercial truck operators. The City of Fowler is held accountable by the California Environmental Quality Act (CEQA), which mandates that government entities consider the impacts of the discretionary action on the cultural environment. Under the conditions of approval for the Buford Oil Travel Center Project, the City requires multiple tasks corresponding to the identification of cultural resources. These include a records search, pedestrian survey, search of the Native American Heritage Commission's (NAHC) *Sacred Lands File*, and outreach with local Native American tribes and individuals.

The project is in Section 23 in Township 7 South, Range 21 East, as depicted on the Conejo, California, 7.5 minute topographic quadrangle (see attached map). A search of the NAHC Sacred Lands File did not identify any Native American traditional cultural places in the vicinity of the project area. Æ requested a records search from the Southern San Joaquin Information Center of the California Historical Resources Information System. The record search is still pending. An intensive pedestrian survey of the project area was conducted on January 4, 2018 by staff Archeologist Ward Stanley. One historic-era cultural resource was discovered and recorded on Department of Parks and Recreation Site Record Forms. The site consists of a large flattened mound with associated historic debris. Aerial photographs from 1937 through 1999 depict a homestead with mature trees in the same location as the resource. No prehistoric or Native American resources were discovered during the pedestrian survey

The NAHC provided your name and address as someone who might have information regarding any sacred or special sites in the project area unknown to the NAHC. If you have any information on the location and character of any Native American cultural resources in the area, please phone (559) 229-1856, email (mbaloian@appliedearthworks.com), or send a letter to my attention. I would appreciate any information you might provide. Be assured that any locations of archaeological sites, cemeteries, or sacred places will be treated confidentially, as required both by law and Æ's professional standards. Æ will not disclose this information in any document available to the general public.

Sincerely,

Mary Baloian

Mary Baloian, Ph.D., RPA
Principal Archaeologist

encl.: Project Map

CONFIDENTIAL APPENDIX*
Not for Public Distribution

APPENDIX D

Cultural Resource Records

*Archaeological site location information is exempt from the Freedom of Information Act (FOIA) and California Public Records Act (CPRA).

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
PRIMARY RECORD

Primary # 10-007090
HRI #
Trinomial CA-FRE-3854H
NRHP Status Code

Other Listings
Review Code | Reviewer | Date

Page 1 **of** 9 **Resource Name or #** AE-3814-01

P1. Other Identifier:

*** P2. Location: a. County:** Fresno ☒ **Not for Publication** ☐ **Unrestricted**

b. USGS 7.5′ Quad: Conejo, CA **Date:** 1965 T7S, R21E; Section 23 MD **B.M.**

c. Address: n/a

d. UTM: NAD 83, Zone 11; 262224 **mE /** 4054617 **mN**

e. Other Locational Data: The resource is at the northwest corner of Manning Avenue and Golden State Boulevard in Assessor's Parcel No. 345-180-30.

*** P3a. Description:** The site consists of a flat-topped mound, concrete pipes, water pump, unidentified ornamental trees and two olive trees. Scattered atop and adjacent to the mound is a moderate amount of modern trash; no historic-era artifacts were noted. The U.S. Geological Survey 1924 Conejo, CA, quadrangle shows a structure plotted in the same location as the resource. Additionally, aerial photos from 1937 to 2006 depict a residence and mature trees within the site boundary.

*** P3b. Resource Attributes:** AH2, Foundations/structure pads; AH6, Water conveyance system; AH10, Machinery; HP30, Trees/vegetation

*** P4. Resources Present:** ☐ Building ☐ Structure ☐ Object ☒ Site ☐ District ☐ Element of District ☐ Other:

*** P5a. Photograph or Drawing:**

P5b. Description of Photo: Overview of vertical concrete pipe and ornamental trees (F2 and F4), facing north; Southern Pacific Railroad in background at right (Photo P1030030). (For additional photos, see **Continuation Sheets**.)

*** P6. Date Constructed/Age and Sources:** ☐ Prehistoric ☒ Historic ☐ Both

*** P7. Owner and Address:**
Buford Oil Co.
9925 8 3/4 Avenue
Hanford, CA 93230

*** P8. Recorded By:** Ward Stanley
Applied EarthWorks, Inc.
1391 W. Shaw Ave., Suite C
Fresno, CA 93711

*** P9. Date Recorded:** 1/4/2018

*** P10. Survey Type:** ☒ Intensive ☐ Reconnaissance ☐ Other

Describe: 10–15 meter transect intervals

*** P11. Report Citation:** Ward Stanley and Jessica Jones
2018 *Cultural Resource Inventory for the Buford Oil Travel Center Project in Fowler, Fresno County, California.* Applied EarthWorks, Inc., Fresno, California. Prepared for Buford Oil Company, Hanford, California.

*** Attachments:** ☐ NONE ☒ Location Map ☒ Sketch Map ☒ Continuation Sheet ☐ Building, Structure, and Object Record ☒ Archaeological Record ☐ District Record ☐ Linear Feature Record ☐ Milling Station Record ☐ Rock Art Record ☐ Artifact Record ☐ Photograph Record ☐ Other (list):

Resource Name or # AE-3814-01

***A1. Dimensions: a. Length** 93 m (E/W) **x b. Width** 52 m (N/S)

Method of Measurement: ☐ Paced ☐ Taped ☐ Visual estimate ☒ Other: GPS

Method of Determination: ☐ Artifacts ☒ Features ☒ Soil ☒ Vegetation
☐ Topography ☐ Cut bank ☐ Animal burrow ☐ Excavation ☐ Property boundary
☒ Other (explain): Historic aerial photographs and maps.

Reliability of Determination: ☒ High ☐ Low Explain: Historical aerial photographs depict a structure present at this location between 1937 and 2006.

Limitations: ☐ Restricted access ☐ Paved/built over ☐ Site limits incompletely defined ☐ Disturbances
☐ Vegetation ☐ Other (explain):

A2. Depth: ☐ None ☒ Unknown
Method of determination: Not tested.

***A3. Human Remains:** ☐ Present ☐ Absent ☐ Possible ☒ Unknown (explain): Not tested.

***A4. Features** (Number, describe, indicate size, list associated cultural constituents, and show location of each on sketch map)**:**

Feature 1: Flat-topped earthen mound measuring 305 ft (E/W) x 170 ft (N/S) and approximately 4–6 ft tall. Grass and vegetation are growing atop the mound.

Feature 2: Concrete pipe exposed 7 ft above ground and measuring 3 ft in diameter. The top of the pipe tapers to a conical shape, and a metal tube protrudes from the side of the pipe wall. The feature serves the site datum.

Feature 3: Exposed metal pipe with valve 1.5 ft above ground.

Feature 4: Small grouping of unidentified ornamental trees.

Feature 5: Two dead olive trees adjacent to each other. A sapling is growing out the base of one of the trees.

Feature 6: Water pump with attached metal tube extends to a vertical concrete pipe exposed above ground.

***A5. Cultural Constituents (not associated with features):** Only modern debris was noted adjacent and atop the mound. One concrete fragment was noted adjacent to the olive trees (F5), see Photo P1030029.

***A6. Were Specimens Collected?** ☒ No ☐ Yes (If yes, attached Artifact Record or catalog.)

***A7. Site Condition:** ☐ Good ☐ Fair ☒ Poor ☐ Disturbances:
The mound appears intact; however, there is little evidence of the residence that was once present. Trash dumping is ongoing, and branches from the ornamental trees have been removed for firewood by the homeless. Æ observed a homeless camp and a recent fire pit with charcoal was seen adjacent to the trees.

***A8. Nearest Water (type, distance, and direction):** Unknown.

***A9. Elevation:** 642 ft

A10. Environmental Setting (vegetation, fauna, soils, geology, landform, slope, aspect, exposure, etc.):

A11. Historical Information (full citations in A15 below): A structure appears on the 1924 Conejo, CA USGS 7.5-minute quadrangle in the same location as the mound (F2). Aerial photographs dating between 1937 and 2006 show a structure with ornamental trees.

***A12. Age:** ☐ Prehistoric ☐ Protohistoric ☐ 1542–1769 ☐ 1769–1848 ☐ 1848–1880 ☐ 1880–1914 ☒ 1914–1945
☐ Post 1945 ☐ Undetermined Describe position in regional prehistoric chronology or factual historic dates if known:

A13. Interpretations: The mound, trees, and residual irrigation features relate to a non-extant farm homestead. The historical aerial photographs depict agricultural fields surrounding the homestead.

A14. Remarks: Feature 2/concrete pipe serves as the site datum (262224 mE/ 4054617 mN).

A15. References:

U.S. Agricultural Stabilization and Conservation Service

1937 Fresno County, California, Aerial Survey 1937 13-ABI 67-51, http://cdmweb.lib.csufresno.edu/cdm/ref/collection/aerial/id/902, accessed through Map and Aerial Locator Tool (MALT), Henry Madden Library, California State University, Fresno, January 4, 2017.

1942 Fresno County, California, Aerial Survey 1942 ABI-8B-177, http://cdmweb.lib.csufresno.edu/cdm/ref/collection/aerial/id/23010, accessed through Map and Aerial Locator Tool (MALT), Henry Madden Library, California State University, Fresno, January 4, 2017.

1950 Fresno County, California, Aerial Survey 1950 ABI-4G-106, http://cdmweb.lib.csufresno.edu/cdm/ref/collection/aerial/id/1861, accessed through Map and Aerial Locator Tool (MALT), Henry Madden Library, California State University, Fresno, January 4, 2017.

1965 Fresno County, California, Aerial Survey 1965 FRE-1-158, http://cdmweb.lib.csufresno.edu/cdm/ref/collection/aerial/id/5635, accessed through Map and Aerial Locator Tool (MALT), Henry Madden Library, California State University, Fresno, January 4, 2017.

1977 Fresno County, California, Aerial Survey 1977 FRE CO 15-8 R, http://cdmweb.lib.csufresno.edu/cdm/ref/collection/aerial/id/23319, accessed through Map and Aerial Locator Tool (MALT), Henry Madden Library, California State University, Fresno, January 4, 2017.

1987 Fresno County, California, Aerial Survey 1987 NAPP 463-34, http://cdmweb.lib.csufresno.edu/cdm/ref/collection/aerial/id/7702, accessed through Map and Aerial Locator Tool (MALT), Henry Madden Library, California State University, Fresno, January 4, 2017.

1999 Fresno County, California, Aerial Survey 1999 NAPP 10566-30, http://cdmweb.lib.csufresno.edu/cdm/ref/collection/aerial/id/19186, accessed through Map and Aerial Locator Tool (MALT), Henry Madden Library, California State University, Fresno, January 4, 2017.

U.S. Geological Survey (USGS)

1924 *Conejo, Calif.*, 1:31,680 scale. U.S. National Geologic Map Database, Historical Topographic Map Collection (topoView), https://ngmdb.usgs.gov/topoview/, accessed January 4, 2018.

A16. Photographs: P1030022–P1030041
Original media/negatives kept at: Applied EarthWorks, Inc., Fresno, CA

***A17. Form Prepared By:** Ward Stanley **Date:** 1/4/2018
Affiliation and Address: Applied EarthWorks, Inc., 1391 W. Shaw Ave., Suite C, Fresno, CA 93711

Site overview showing mound (Feature 1). Note tall olive trees (Feature 5) and unidentified ornamental trees (Feature 4) in the left frame of picture; view to the north (Photo P1030035).

Olive trees (Feature 5) and cement fragment, looking north (Photo P1030029).

Resource Name or # AE-3814-01

Unidentified ornamental trees (Feature 4) and homeless encampment, looking northwest (Photo P1030033).

Feature 2: concrete pipe, looking northwest (Photo P1030031).

Feature 3: metal pipe with valve (Photo P1030032).

Feature 6: water pump with attached metal pipe extended to a concrete pipe, looking east (Photo P1030037).

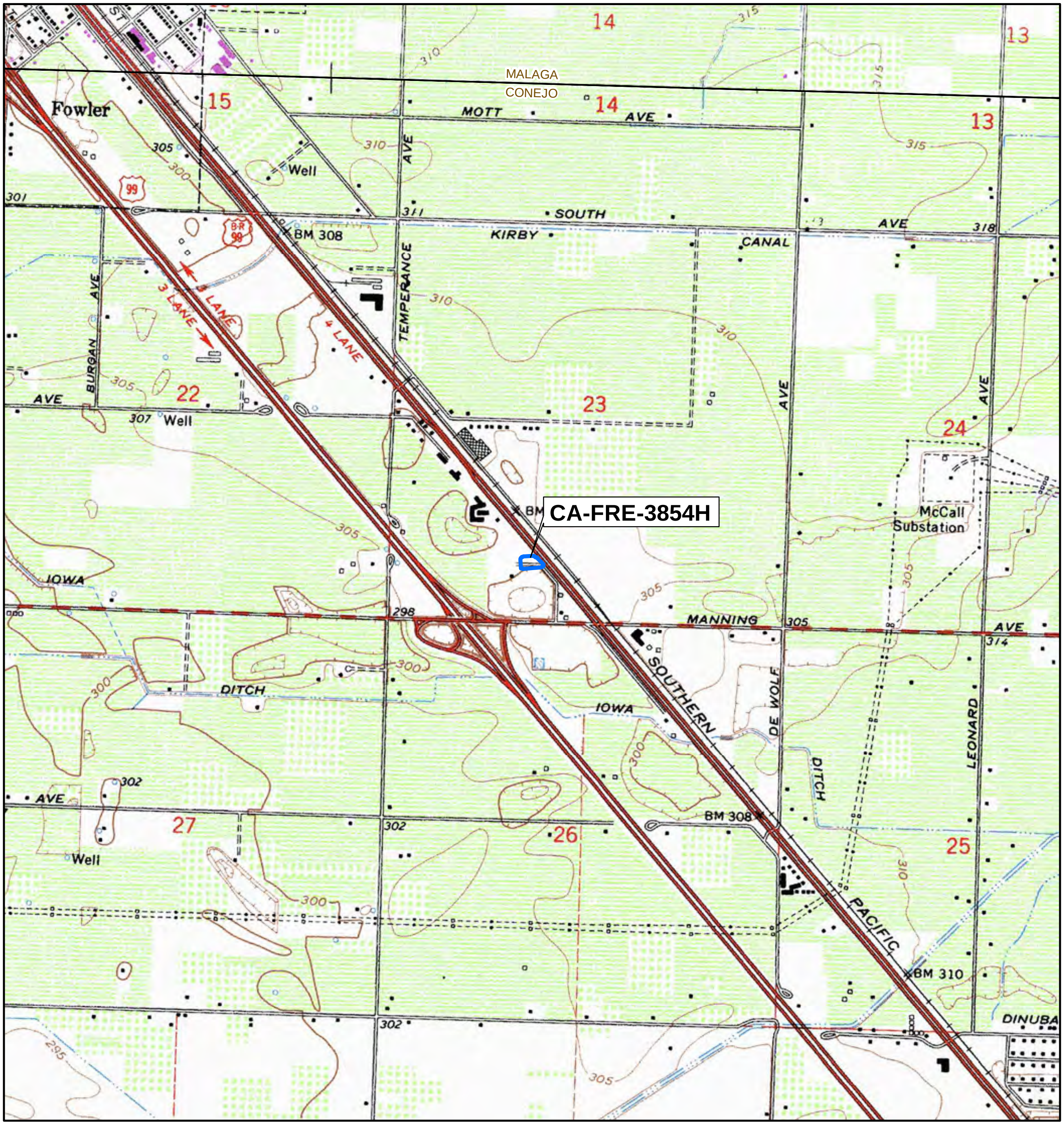
Close up of water pump (Feature 6), looking north (Photo P1030038).

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
LOCATION MAP

Primary # 10-007090
HRI#
Trinomial CA-FRE-3854H

Page 8 **of** 9 **Resource Name or #:** AE-3814-01 **Scale:** 1:24,000

Map Name: Conejo, CA, USGS 7.5' quadrangle **Date:** 1963 (1978)



SCALE 1:24,000

1 0.5 0 1 Miles

1,000 0 1,000 2,000 3,000 4,000 5,000 6,000 7,000 Feet

1 0.5 0 1 Kilometers

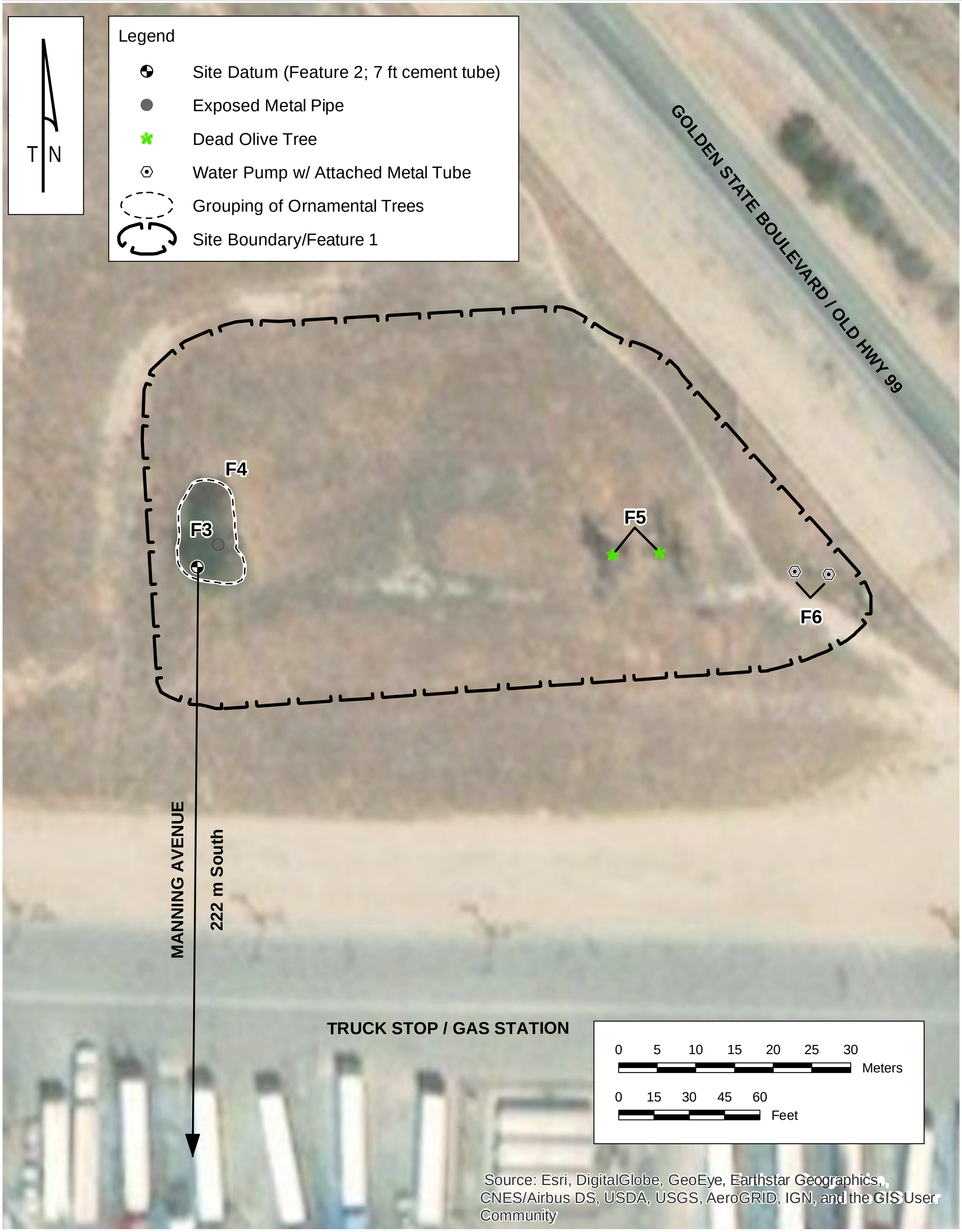
TRUE NORTH

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
SKETCH MAP

Primary # 10-007090
HRI#
Trinomial CA-FRE-3854H

Page 9 **of** 9 ***Resource Name or #:** AE-3814-01

***Drawn by:** J. JONES ***Scale:** 1 inch equals 18 meters ***Date of map:** 2/14/2018



Appendix D

Geo-Technical Evaluation

TECHNICON
ENGINEERING SERVICES, INC.

GEOTECHNICAL INVESTIGATION REPORT
PROPOSED OIL AND TRAVEL CENTER
2747 E. MANNING AVENUE
FOWLER, CALIFORNIA

Prepared For:

Buford Oil Co.
P.O. Box 104
Hanford, California 93232

February 12, 2018
Revised: October 15, 2018

TES No. 170748.001

GEOTECHNICAL & ENVIRONMENTAL ENGINEERING – CONSTRUCTION TESTING & INSPECTION

TECHNICON
ENGINEERING SERVICES, INC.

GEOTECHNICAL & ENVIRONMENTAL ENGINEERING ⁃ CONSTRUCTION TESTING & INSPECTION

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GEOTECHNICAL INVESTIGATION REPORT
PROPOSED OIL AND TRAVEL CENTER
2747 E. MANNING AVENUE
FOWLER, CALIFORNIA

TECHNICON PROJECT
TES No. 170748.001

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GEOTECHNICAL INVESTIGATION REPORT
PROPOSED OIL AND TRAVEL CENTER
2747 E. MANNING AVENUE
FOWLER, CALIFORNIA

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1 INTRODUCTION

1.1 GENERAL

This report presents the results of a geotechnical investigation for the proposed Oil and Travel Center to be located at 2747 E. Manning Avenue in Fowler, California. The purpose of the investigation was to explore and evaluate the subsurface conditions at the site and develop geotechnical engineering recommendations to aid in project design and construction.

The Vicinity Map, presented on Figure 1, shows the location of the project and the Site Map, presented on Figure 2, shows the proposed improvements and the approximate locations of the borings and R-values performed for this study.

1.2 PROPOSED CONSTRUCTION

The project involves the design and construction of an oil and travel center to be located at 2747 E. Manning Avenue in Fowler, California. The oil and travel center is anticipated to consist of six (6) structures including a travel center, tire and lube shop, a 4-story motel, and three buildings yet to be determined encompassing 9,000; 7,500; 30,000; 4,397; 4,656; and 5,080 square feet, respectively. All the buildings, other than the motel, are anticipated to be single-story and all buildings are anticipated to consist of wood/steel-framed structures utilizing conventional spread footings and concrete-slab-on-grade floors. The hotel's maximum wall and column loads are anticipated to be less than 7 kips/ft and 75 kips, respectively and all other buildings maximum wall and column loads are anticipated to be less than 3 kips/ft and 30 kips, respectively. Cuts and fills are anticipated to be less than 1 to 2 feet in order to achieve a level building pad and positive site drainage. Appurtenant improvements are anticipated to include fueling canopies, a truck scale, above grade tanks, asphalt and Portland cement concrete pavements, underground utilities, hardscape, and landscaping.

1.3 PURPOSE AND SCOPE OF SERVICES

The purpose of this investigation was to explore the site subsurface conditions to allow for development of recommendations and opinions regarding site development. The report includes the following:

- ❑ A description of the proposed project including a Vicinity Map showing the location of the site and a Site Map showing the locations of the exploration points for this study.
- ❑ A description of the site surface and subsurface conditions encountered during the field investigation, including boring log.
- ❑ A summary of the field exploration and laboratory testing program.
- ❑ Discussion of regional and local geology including faults, seismicity, and liquefaction potential and associated effects.
- ❑ Recommended seismic design criteria.
- ❑ Recommendations for site preparation and earthwork, including the use of on-site soils for engineered fill and recommended import fill criteria.
- ❑ Recommended E'_n for trench wall soil and E'_b and density of backfill for use in initial pipe deformation analysis.
- ❑ Recommendations for spread foundation design including bearing capacity of foundation soil for sustained loading, total combined loading, and anticipated settlement.
- ❑ Recommendations for resistance of lateral loads, including passive pressure and coefficient of friction.
- ❑ Recommendations to aid in design of the concrete slabs-on-grade for building areas, including a modulus of subgrade reaction.
- ❑ Recommendations to aid in design of pier foundations.
- ❑ Comments on the corrosion potential of on-site soils to buried metal and concrete.
- ❑ Recommendations for asphalt concrete pavements and Portland cement concrete pavements for a range of traffic indexes.
- ❑ Comments on general site drainage.

The scope of services consisted of a field exploration program, laboratory testing, design analysis, preparation of this written report as outlined in **TECHNICON's** proposal dated October 17, 2017 (TES No. GP17-272).

2 FIELD EXPLORATION AND LABORATORY TESTING

2.1 FIELD EXPLORATION

The field exploration, conducted on November 15 and 16, 2017 consisted of drilling twelve (12) exploratory test borings and a site reconnaissance by a staff engineer. The test borings were drilled with a CME 55 truck-mounted drill rig using hollow stem augers. The borings extended to depths of 16.5, 21.5 and 36.5 feet below the existing ground surface (bgs). The location of the proposed improvements and the approximate locations of the test borings and R-values are indicated on the Site Map, Figure 2.

The soils encountered in the borings were visually classified in the field and a continuous log was recorded. Relatively undisturbed samples were collected from the test borings at selected depths by driving a 2.5-inch I.D. split barrel sampler containing brass liners into the undisturbed soil with a 140-pound automatic hammer free falling a distance of 30 inches. In addition, samples of the subsurface material were obtained using a 1.4-inch I.D. standard penetrometer, driven 18 inches in accordance with ASTM D1586 test procedures. The sampler was used without liners. Resistance to sampler penetration was noted as the number of blows per foot over the last 12 inches of sampler penetration on the boring logs. The blow counts listed in the boring logs have not been corrected for the effects of overburden pressure, boring diameter, rod length, sampler size, or hammer efficiency. Bulk samples were also retained from auger cuttings of the near surface soils.

2.2 FIELD AND LABORATORY TESTING

Penetration rates, determined in general accordance with ASTM D1586, were used to aid in evaluating the consistency, compression, and strength characteristics of the foundation soils.

Laboratory tests were performed on selected near surface samples to evaluate their physical characteristics. The following laboratory tests were used to develop the design geotechnical parameters:

- ❑ Unit weight (ASTM D2937)
- ❑ Moisture Content (ASTM D2216)
- ❑ Sieve Analysis (ASTM C136)

- Direct Shear (ASTM D3080)
- Soluble Sulfate and Soluble Chloride Contents (California Test Method No's 417 & 422)
- pH and Minimum Resistivity (California Test Method No. 643)
- Resistance Value (California Test Method No. 301)

The dry density and moisture content test results are shown on the boring logs in Appendix A. The soluble sulfate, soluble chloride, pH, and minimum resistivity are discussed in the "Corrosion Potential" Section (Section 6.6). The remaining test results are provided in Appendix B.

3 SITE CONDITIONS

3.1 SURFACE CONDITIONS

The project site consists of approximately 20 acres of partially developed land. The northern half of the project site is currently vacant and the southern half of the project site is currently occupied by an existing truck stop/fueling station. The project site is generally bounded by S. Temperance Avenue to the north, S. Golden State Boulevard to the east, N. Manning Avenue to the south, and vacant land to the west. The overall site topography was observed to be relatively flat and at a relative elevation approximately 1-foot above the adjacent street grades. Although the site elevation varies, on average elevation of the site is approximately 305 feet above mean sea level according to Google Earth. At the time of the investigation, the vacant northern half of the lot supported a moderate growth of annual weeds and grasses and the southern half of the lot was paved with asphalt and Portland cement concrete.

3.2 FLOOD INSURANCE RATE MAP

According to the Federal Emergency Management Agency (FEMA), the project site lies within a Zone X flood designation (Map Number 06019C2650H, dated February 18, 2009), indicating areas determined to be outside the 0.2 percent annual chance (500-year) floodplain.

3.3 EARTH MATERIALS

The natural site soil consists of Holocene age Great Valley fan deposits. The general earth material profile depicted by the subsurface exploration generally consisted of silty sand extending to a depth of approximately 8 to 11 feet bgs. Two borings, B-1 and B-2 consisted of silty clay and poorly graded sand extending to a depth of 11 feet. All borings were underlain by sandy clay, clayey sand, sandy silt, and poorly graded sand soils to the depth of exploration 36.5 feet bgs. The granular soils generally had a relative consistency of medium dense to very dense and the fine grained soils generally had a relative consistency of stiff to hard.

The above is a general description of the earth material profile. A more detailed representation of the stratigraphy at the specific exploration locations is provided on the boring logs in Appendix A.

3.4 GROUNDWATER CONDITIONS

Groundwater was not encountered within the depth of exploration, 36.5 feet below existing ground surface. The California Department of Water Resources "Lines of Equal Elevation in Water Wells," Spring 2011, indicates the depth to groundwater exceeds 50 feet below grade. It is possible that groundwater conditions at the site could change at some time in the future due to variations in the rainfall, groundwater withdrawal, construction activities, or other factors not apparent at the time our field reconnaissance. Based on the boring data collected for this study, groundwater is not anticipated to impact design or construction.

4 GEOLOGIC CONDITIONS

4.1 FAULTS LOCAL TO THE PROPOSED SITE

The project site and its vicinity are located in an area traditionally characterized by relatively low to moderate seismic activity. The site is not located in an Alquist-Priolo Earthquake Fault Zone as established by the Alquist-Priolo Fault Zoning Act (Section 2622 of Chapter 7.5, Division 2 of the California Public Resources Code).

Based on review of published data and current understanding of the geologic framework and tectonic setting of the proposed improvements, the primary sources of seismic shaking at this site are anticipated to be the Coast Ranges Sierran Block (M_w6.5), the Foothills Fault System (M_w6.5), the San Andreas (M_w8.0), and the Independence (M_w7.1) faults, which are located approximately 67, 82, 111, and 122 kilometers, respectively, from the site. The San Andreas Fault located west of the site, is considered the governing fault.

4.2 SEISMIC DESIGN CRITERIA

There are no geotechnical factors at this site that are unique and would necessitate special seismic consideration for design of the improvements. Use of 2016 CBC and ASCE 7-10 design criteria would be appropriate, unless the designer deems more specific data (e.g. elastic response spectra or characteristic site period) necessary. Table 4.2-1 provides the recommended design parameters.

TABLE 4.2-1
2016 CBC and ASCE 7-10 SEISMIC DESIGN PARAMETERS

Seismic Item	Design Value	Seismic Item	Design Value
Site Class	D	S_{MS}	0.822
S_S	0.638	S_{M1}	0.486
S_1	0.258	S_{DS}	0.548
Site Coefficient, F_a	1.290	S_{D1}	0.324
Site Coefficient, F_v	1.884		

4.3 LIQUEFACTION POTENTIAL AND SEISMIC SETTLEMENT

In order for liquefaction, and possible associated effects, of soils due to ground shaking to occur, it is generally accepted that four conditions will exist:

- ❑ The subsurface soils are in a relatively loose state,
- ❑ The soils are saturated,
- ❑ The soils are fine, granular, and uniform,
- ❑ Ground shaking of sufficient intensity should occur to act as a triggering mechanism.

Saturated granular sediments can experience liquefaction if subject to seismically induced ground motion of sufficient intensity and duration. The absence of groundwater would preclude the occurrence of liquefaction. Based on the ground shaking which may be expected at this site, the relative density and geologic age of the sediments, analysis utilizing Youd (2001) indicates liquefaction, seismically induced settlement, or bearing loss is considered unlikely, even if there should be a substantial increase in groundwater levels.

5 EARTHWORK

5.1 GENERAL

Based on the laboratory data, field exploration, and geotechnical analyses conducted for this study, it is geotechnically feasible to construct the proposed Oil and Travel Center as currently envisioned. Provided that the recommendations presented in this report are incorporated into the project design and construction, use of shallow spread and continuous reinforced concrete footings bearing on undisturbed native soil or approved engineered fill are considered appropriate for structure support.

Recommendations regarding site grading are presented in subsequent sections of this report. All reference to relative compaction, maximum density, and optimum moisture is based on ASTM Test Method D1557. Earthwork should extend a minimum of 5 feet beyond the perimeter of the buildings and 3 feet beyond the perimeter of site hardscape and pavements.

5.2 SITE PREPARATION

5.2.1 Demolition of Existing Structures

Existing structures, foundation systems (i.e. concrete slabs/footings), associated underground utilities, and other unsuitable structures that will not remain, should be entirely removed during the site preparation.

Following removal of underground utilities, and structure demolition, disturbed soils should be mitigated as described in Section 5.2.3.

5.2.2 Stripping

All surface vegetation and any miscellaneous surface obstructions should be removed from the project area prior to any site grading. It is anticipated stripping of vegetation may involve the upper 1 to 3 inches. Surface strippings should not be incorporated into structural fill unless they can be sufficiently blended to result in an organic content of less than 3 percent by weight (ASTM D 2974). Stripped topsoil, with an organic content between 3 and 12 percent by weight, may be stockpiled and used as non-structural fill (i.e. landscaped areas). If placed in landscape areas, strippings and organic rich soil should be placed within 2 feet of finished grade and at least 5 feet outside of building and pavement areas. Soils with an organic content greater than 12 percent should be excluded from all fill.

5.2.3 Disturbed Soil, Undocumented Fill and Subsurface Obstructions

Initial site grading should include a reasonable search to locate soil disturbed by previous activity, tree removals, any undocumented fill soils, abandoned underground structures, or existing utilities that may exist within the area of construction. All subsurface obstructions (e.g. buried structures, utilities, etc.) should be removed from the project area. Any areas or pockets of soft or loose soils, void spaces made by burrowing animals, undocumented fill, or other disturbed soil that are encountered, should be excavated to expose firm native material approved by a representative of the Geotechnical Engineer.

Borings B-1 and B-2 were observed to have surface soils differing from the remainder of the project site. Boring B-1 consisted of silty clay in the upper 5 feet or until firmed conditions are exposed, and Boring B-2 consisted of poorly graded sand in the upper 10 feet. These soils are anticipated to consist of undocumented fill and should be excavated if encountered within areas of proposed structures or pavements. The removal of the undocumented fill should extend to a depth of approximately 5 feet and extend a minimum of 5 feet beyond the perimeter of the proposed improvements.

Excavations for removal of any unsuitable conditions should be dish-shaped and backfilled with engineered fill (see Section 5.3).

5.2.4 Over-excavation

Demolition of the existing structures will likely disturb the near surface soils. As such, after performing the removals described in Sections 5.2.1 through 5.2.3, the footing lines and pad areas of the existing structures, should be over-excavated to a depth of 18 inches. The over-excavation is recommended to remove the majority of the loose/disturbed soils and any remaining loose soils may be excavated or recompacted in place if less than 6 inches thick. The final depth of over-excavation to mitigate loose soil conditions should be determined at the time of grading.

The undisturbed foundations soils are capable of supporting the proposed improvements, therefore, foundations that extend below the recompaction depth discussed in Sections 5.2.4 and 5.2.5 may bear on firm, undisturbed soils approved by the geotechnical engineer without further over-excavation

5.2.5 Scarification and Compaction

After performing any necessary stripping over-excavation and removals, all areas to receive fill or to support improvements should be scarified at least 8 inches below exposed subgrade elevation. The subgrade soil should be uniformly moisture conditioned to at, or above optimum moisture, proof rolled to detect soft or pliant areas, and compacted to the requirements of section 5.3.2. Soft or pliant areas should be mitigated in accordance with Section 5.2.3.

5.2.6 Construction Considerations

Should site grading be performed during or subsequent to wet weather, near-surface site soils may be significantly above optimum moisture content. These conditions could hamper equipment maneuverability and efforts to compact site soils to the recommended compaction criteria. Disking to aerate, chemical treatment, replacement with drier material, stabilization with a geotextile fabric or grid, or other methods may be required to mitigate the effects of excessive soil moisture and facilitate earthwork operations. Any consideration of chemical treatment (e.g. lime) to facilitate construction would require additional soil chemistry evaluation and could affect landscape areas and some construction materials (e.g. aluminum).

5.3 ENGINEERED FILL

5.3.1 Materials

All engineered fill soils should be nearly free of organic or other deleterious debris and less than 3 inches in maximum dimension. The on-site soil exclusive of debris may be used as engineered fill, provided it contains less than 3 percent organics by weight (ASTM D2974).

Should any imported material be used for engineered fill, it should be sampled and tested by a representative of the project Geotechnical Engineer prior to being transported to the site. Table 5.3-1 provides general criteria for imported soil.

TABLE 5.3-1
IMPORT FILL CRITERIA

Gradation (ASTM C136)			
Sieve Size		**Percent Passing**	
76 mm (3-inch)		100	
19 mm (¾-inch)		80 – 100	
No. 4		60 – 100	
No. 200		20 – 50	
Expansion Index (ASTM D4829)		**Plasticity (ASTM D4318)**	
		Liquid Limit	**Plasticity Index**
< 20		< 25	< 9
Organic Content (ASTM D 2974)			
< 3% by dry weight			
Corrosivity			
pH	**Minimum Resistivity (ohm-cm)**	**Soluble Sulfate (ppm)**	**Soluble Chloride (ppm)**
6 to 8	> 2,000	< 2,000	< 500
Resistance Value California Test Method No. 301			
Minimum R-value = 50			

The import criteria for corrosion are typical threshold limits for non-corrosive soil. Should corrosion concentrations of import soils fall outside of the threshold limits indicated above, revised protection measures will be necessary.

5.3.2 Compaction Criteria

Soils used as engineered fill should be uniformly moisture-conditioned at, or above optimum moisture, placed in horizontal lifts less than 8 inches in loose thickness, and compacted to at least 90 percent relative compaction. Disking and/or blending may be required to uniformly moisture-condition soils used for engineered fill.

5.4 TEMPORARY EXCAVATIONS

5.4.1 General

All excavations must comply with applicable local, State, and Federal safety regulations including the current OSHA Excavation and Trench Safety Standards. Construction site safety generally is the responsibility of the Contractor, who shall also be solely responsible for the means, methods, and sequencing of construction operations. The information provided is a service to the client. Under no circumstances should the information provided be interpreted to mean that **TECHNICON**'s assuming responsibility for construction site safety or the Contractor's activities; such responsibility is not being implied and should not be inferred.

5.4.2 Excavations and Slopes

The Contractor should be aware that slope height, slope inclination, or excavation depths (including utility trench excavations) should in no case exceed those specified in local, State, and/or Federal safety regulations (e.g., OSHA Health and Safety Standards for Excavations, 29 CFR Part 1926, or successor regulations). Such regulations are strictly enforced and, if they are not followed, the Owner, Contractor, and/or earthwork and utility subcontractors could be liable for substantial penalties.

All excavations should be constructed and maintained in conformance with current OSHA requirements (29 CFR Part 1926) for a Type C soil (Silty Sand).

5.4.3 Construction Considerations

Heavy construction equipment, building materials, excavated soil, and vehicular traffic should be kept sufficiently away from the top of any excavation to prevent any unanticipated surcharging. If it is necessary to encroach upon the top of an excavation, **TECHNICON** can provide comments on slope gradients or loads on shoring to address surcharging, if provided with the geometry. Shoring, bracing, or underpinning required for the project (if any), should be designed by a professional engineer registered in the State of California.

During wet weather, earthen berms or other methods should be used to prevent run-off water from entering all excavations. All run-offs should be collected and disposed of outside the construction limits.

5.5 TRENCH BACKFILL

5.5.1 Materials

Pipe zone backfill (i.e., material beneath and in the immediate vicinity of the pipe) should consist of soil compatible with design requirements for the specific types of pipes. It is recommended the project designer or pipe supplier develops the material specifications based on planned pipe types, bedding conditions, and other factors beyond the scope of this study. Randomly excavated on-site soil will likely be Class III material per ASTM D2321.

Trench zone backfill (i.e., material placed between the pipe zone backfill and finished subgrade) may consist of native soil which meets the requirements for engineered fill.

5.5.2 Compaction Criteria

All trench backfill should be placed and compacted in accordance with recommendations provided for engineered fill. Reduced compaction (85 percent minimum) could be specified for trench zone backfill in non-structural areas located a distance equal to twice the depth of the trench from any structures and appurtenant improvements. Mechanical compaction is recommended; ponding or jetting should not be used. Table 5.5-1 provides estimated geotechnical parameters for designers to consider in evaluating pipe zone backfill criteria that is compatible with pipe types and deformation tolerances.

TABLE 5.5-1
PIPE ZONE BACKFILL PARAMETERS

Soil Stiffness Modulus (psi)			Backfill Density (pcf)	
E'_n (Trench Sidewall)	E'_b (Backfill)		85% Compaction	90% Compaction
	85% Compaction	90% Compaction		
3,000	900	1,350	115	121

E'_n represents the modulus for the undisturbed natural soil and is based on relative density, and data by Howard (1996). E'_b is the modulus for backfill derived from random excavation of on-site soil and is based on data by Hartley and Duncan (1982) and Watkins and Anderson (2000). The design E' will be dependent upon the pipe diameter and trench width, which dictates the relative influence of E'_n and E'_b. Methods by Howard (1996) are suggested for evaluating the design E'. **TECHNICON** can furnish a recommended design E', if provided with pipe diameter and specifications for trench construction.

6 DESIGN RECOMMENDATIONS

6.1 GENERAL

The proposed structures may be supported by shallow spread or continuous reinforced concrete footings bearing on undisturbed native soil or approved engineered fill. The following recommendations are based on the assumption that the recommendations in Section 5, "Earthwork," have been implemented. Recommendations regarding the geotechnical aspects of design are presented in subsequent sections.

6.2 SPREAD FOUNDATIONS

6.2.1 Allowable Vertical Bearing Pressures and Settlements

Generally two geotechnical issues determine the design bearing pressure for conventional spread footing foundations; (1) strength of the foundation soil and (2) tolerable settlement. For lightly loaded structures, design bearing may be dictated by code-required minimum footing geometry or constructability considerations.

The available bearing capacity, based only on the shear strength of the soil, will be dependent upon the footing geometry. Presented in Table 6.2-1 are the expressions for the allowable available bearing capacity (shear strength considerations only) for static loading (D.L. + L.L.), total combined loading (D.L. + L.L. + transient loading, such as wind or seismic), and unfactored ultimate bearing.

TABLE 6.2-1
AVAILABLE ALLOWABLE BEARING

	Available Allowable Bearing (psf)
Static Loading	730 B + 1,400 D
Total Combined Loading	1,095 B + 2,100 D
Unfactored Ultimate Bearing	2,185 B + 4,200 D

Note: B is footing width in feet and D is footing embedment depth in feet.

The above expressions are appropriated for design using the Basic and Alternate Load Combinations in Section 1605.3 of the 2016 CBC. Analysis, based on methods by Schmertmann, determined the following estimated static settlement based on a range of assumed design bearing and estimated structural loads. Settlement is expected to occur rapidly with load application. The estimated settlements presented in Table 6.2-2 are based on the assumption that the earthwork recommendations provided in Section 5 have been performed, and the sustained load of footings is equal to 80 percent of the total load.

TABLE 6.2-2
ESTIMATED SETTLEMENT

Footing Configuration	Loading (DL +LL)	Design Bearing (psf)	Estimated Settlement (inch)
Strip	To 7 kips/ft	To 3,070	0.26
Square	To 75 kips	To 4,400	0.50

To simplify design, an allowable bearing pressure of 2,000 psf (static loading, D.L. + L.L.) could be considered. The bearing pressure could be increased 50 percent for evaluating transient loads, such as, wind or seismic. The differential settlement between similarly loaded footings is anticipated to be less than 50 percent of the total settlement. **TECHNICON** can provide the estimated settlement for other loading conditions.

The foundation soil is anticipated to have a low expansive potential. Therefore, foundation embedment should be consistent with structural or architectural considerations and the 2016 CBC. A modulus of subgrade reaction, K_p (B_p = 1 foot), of 375 pci can be used for undisturbed on-site and engineered fill soils. The subgrade modulus is most appropriately applicable to consideration of static loads with deformations within an elastic range.

6.2.2 Lateral Resistance

Lateral loads applied to foundations can be resisted by a combination of passive lateral bearing and base friction. The allowable and ultimate passive pressures and frictional coefficients for the footings are presented in Table 6.2-3.

TABLE 6.2-3
PASSIVE PRESSURES AND FRICTIONAL COEFFICIENTS

	Allowable		Ultimate
	Static	Total Combined	
Frictional Coefficient	0.45	0.54	0.67
Passive Pressure (psf/ft of depth)	350	465	700
Lateral Translation Needed to Develop Passive Pressure	0.004 D	0.011 D	0.023 D

Note: D is the footing depth

If the deflection resulting from the strain necessary to develop the passive pressure is beyond structural tolerance, additional passive pressure values could be provided based on tolerable deflection. The passive pressure and frictional resistance can be used in combination. The allowable values already incorporate a factor of safety and, as such, would be compared directly to the driving loads.

6.3 RETAINING STRUCTURES

The lateral earth pressure against retaining structures will be dependent upon the ability of the wall to deflect. Presented in Table 6.3-1 are the active, at-rest and braced lateral earth pressures. The active pressure is applicable to walls able to translate 0.0005 radians at the top or bottom. The at-rest soil pressure is applicable to retaining structures that are fully fixed against both rotation and translation.

TABLE 6.3-1
LATERAL EARTH PRESSURES

Loading Condition	Earth Pressure
Active Pressure (psf/ft of depth)	36
Braced Pressure (psf)	23 H
At-Rest Pressure (psf/ft of depth)	57

H in the expression represents the retained height in feet (measured from finished grade to bottom of footing). The above recommended values consider saturated soil conditions, however, they do not include the lateral pressures due to hydrostatic forces. Therefore, wall backfill should be adequately drained.

Retaining wall foundation design can utilize the passive pressures and sliding resistance given in Table 6.2-3 and the bearing capacities given in Table 6.2-1. When utilizing the available allowable bearing capacities of Table 6.2-1, the value for static loading would represent the average bearing for the footing and the value for total combined loading would represent the allowable maximum toe pressure.

6.4 CONCRETE SLABS-ON-GRADE

6.4.1 Subgrade Preparation

The slabs-on-grade should be supported on engineered fill placed as described in Section 5 of this report. The slab subgrade, to a depth of 12 inches, should have a moisture content within 2 percent of optimum immediately prior to pouring the slab.

6.4.2 Capillary and Moisture/Vapor Break

Considering the soil type and regional groundwater depth, a capillary break (i.e. clean sand or gravel layer) is not considered necessary.

In areas to receive moisture-sensitive floor coverings, it is recommended that the subgrade be covered by a vapor retarding membrane meeting the specifications of ASTM E1745, (Class C with minimum puncture resistance of 475 grams) such as, Fortifiber Building Systems Group 10 Mil, “Moistop Ultra®”, Stego Industries 10 mil “Stego Wrap™”, W.R. Meadows Sealtight 10 mil “Perminator®”, or approved equivalent. The subgrade surface should be smooth and care should be exercised to avoid tearing, ripping, or otherwise puncturing the vapor retarding membrane. If the vapor retarding membrane becomes torn or disturbed, it should be removed and replaced or properly patched.

The vapor retarding membrane could be covered with approximately 1 to 2 inches of saturated surface dry (SSD) sand to protect it during construction. Concrete should not be placed if sand overlying the vapor barrier has been allowed to attain a moisture content greater than about 5 percent (due to precipitation or excessive moistening). In addition, penetrations through the concrete slab shall be sealed or protected to prevent inadvertently introducing excess water into the sand cushion layer due to curing water, wash-off water, rainfall, etc. Excessive water beneath interior floor slabs could result in future significant vapor transmission through the slab, adversely affecting moisture-sensitive floor coverings and could inhibit proper concrete curing.

According to American Concrete Institute ACI 302.2R-06, concrete could be placed directly on the vapor retarding membrane to minimize the potential for developing a reservoir of moisture in the sand layer, which could lead to future moisture entrapment and potential moisture and flooring problems. If concrete is placed directly on the membrane, care shall be taken to not damage the membrane and special concrete curing methods implemented to minimize potential slab curing problems. If the protective sand layer is not used, the building designer should be in agreement. Many slab designers feel the sand cushion is important to proper concrete curing as well as minimizing slab curling issues.

It should be noted that, although the slab support discussed above is currently the industry standard, this system might not be completely effective in preventing floor slab moisture vapor transmission problems. This system will not necessarily assure that floor slab moisture transmission rates will meet floor-covering manufacturer standards and that indoor humidity levels will not inhibit mold growth. A qualified specialist(s) with knowledge of slab moisture protection systems, flooring design and other potential components that may be influenced by moisture, should address these post-construction conditions separately. The purpose of a geotechnical study is to address subgrade conditions only, and consequently, it does not evaluate future potential conditions.

6.4.3 Conventional Slab Design

There are no geotechnical considerations (e.g. expansive soil), which would require special design of slabs. Therefore, the thickness and reinforcement of slabs-on-grade should be determined by structural considerations and should be designed by the project structural engineer or building designer. A modulus of subgrade reaction, K_p (B_p = 1 foot), of 400 pci may be used for elastic analysis of slabs on properly compacted subgrade.

Slab concrete should have good density, a low water/cement ratio, and proper curing. A water/cement ratio of 0.45 to 0.5 is recommended to minimize vapor transfer.

6.5 PIER FOUNDATIONS

6.5.1 Allowable Vertical Axial Capacity and Settlements

Structures such as light poles, signs, canopies, etc., can be supported by pier foundations. Should design incorporate the use of pier foundations, Table 6.5-1 provides expressions for the allowable and ultimate axial capacity using friction to resist axial loads. If the design of the pier foundations includes end bearing to resist axial loads, the design may utilize the bearing capacity expressions given in Table 6.2-1, up to an allowable bearing capacity of 2,000 psf for static loading (D.L. + long term L.L.). The end bearing capacity may be increased 50 percent for total combined loading (D.L. + L.L. + transient loading, such as wind or seismic).

TABLE 6.5-1
ALLOWABLE AXIAL CAPACITY

	Frictional Resistance for Vertical Loads in Compression (lbs)
Static Loading	$60\ DL^2$
Total Combined Loading	$80\ DL^2$
Unfactored Ultimate Capacity	$120\ DL^2$

Note: 1) D is pier diameter in feet and L is embedment length in feet.
2) The allowable uplift resistance would be 70 percent of the compressional resistance.

The total settlement of friction piers designed in accordance with the above recommendations should be less than 0.002 times the pier diameter in inches. If design incorporates end bearing to resist axial loading, the estimated settlement would increase to approximately 0.018 times the pier diameter in inches. The concrete mix and reinforcement for drilled pier/caisson foundations should be designed by the project structural engineer.

6.5.2 Lateral Resistance

Methods by AASHTO and Caltrans can be used to evaluate the lateral capacity of pier footings. The allowable passive pressure to resist lateral loads on isolated piers for use in these methods may be taken as 610 psf/ ft of embedment. The passive pressure may be increased by one-third for the total combined loads, including wind and seismic. The passive pressure values already consider arching and, as such, should not be increased further.

The allowable passive pressure provided above would not be appropriate for use in place of the values given in Table No. 1806.2 of the 2016 California Building Code (CBC) if pier foundation design utilizes the pole formulas in the CBC. If design uses the pole formulas in the CBC, the appropriate class of material in Table 1806.2 would be No. 4 (Silty Sand). Based on the strength of the on-site soils, a lateral bearing pressure of 200 psf/ft of embedment below the site grade may be used in place of the value given in Table 1806.2.

The passive pressure only considers soil strength. Tolerable pier deflection may govern the design lateral resistance. If provided with pier geometry, lateral load, and loading eccentricity, **TECHNICON** can provide the estimated pier head deflection.

6.5.3 Design and Construction Considerations

Prior to placing steel or concrete, footing excavations should be cleaned of all debris, loose or soft soil, and water. All footing excavations should be observed by the project Geotechnical Engineer just prior to placing steel or concrete. The purpose of these observations is to check that the bearing soils actually encountered in the foundation excavations are similar to those assumed in analysis and to verify the recommendations contained herein are implemented during construction.

6.6 CORROSION POTENTIAL

Two (2) soil samples obtained from the upper 3 feet of soil was tested to evaluate pH, minimum electrical resistivity, and soluble sulfate and soluble chloride content.

The pH of the soil tested was 6.82 and 7.34 and the minimum electrical resistivity was 1,012 and 4,899 ohm-cm, respectively. These values are generally representative of an environment that is slightly to moderately corrosive to buried unprotected metals. Utilizing methods provided in Caltrans California Test 643, “Method for Estimating the Service Life of Steel Culverts”, an 18-gauge steel zinc-coated culvert is estimated to have a maintenance-free service life (years to perforation) of 14 and 47 years. Therefore, if project improvements will involve metal that comes into contact with the on-site soil, the design should consider the potential soil corrosiveness described.

Test results suggest that a low level of soluble sulfates (16 and 8 ppm) and soluble chlorides (31 and 6 ppm) are present in on-site soils. Normal cement (Type II) and reinforcement cover should be adequate in foundation concrete that comes in contact with the foundation soils. Reinforcement cover need not be increased for concrete that comes in contact with the on-site soil.

Corrosion is dependent upon a complex variety of conditions, which are beyond the geotechnical practice. Consequently, a qualified corrosion engineer should be consulted if the owner desires more specific recommendations.

6.7 PAVEMENTS

6.7.1 Design R-value and Traffic Assumptions

The subgrade R-value for the on-site soil was evaluated in the laboratory on bulk samples of subgrade soil taken at six (6) locations within the proposed pavement areas of the site. The laboratory tests were performed in conformance to Caltrans Test Method 301. The soils tested had measured R-values of 61, 67, 68, 69, 70, and 71. An R-value of 50 is recommended for design of on-site pavements.

Detailed vehicular load and frequency information is not available for the on-site pavements. Traffic on the site is anticipated to consist of parking and drives for automobiles large commercial diesel trucks, and regular delivery truck traffic and trash collection. Consequently, a range of pavement sections have been provided for the on-site based on Traffic Indexes (T.I.'s) of 4.5, 5.0, 5.5, 6.0, 6.5, 7.0, 7.5, 8.0, 8.5, and 9.0. These traffic design assumptions should be reviewed for compatibility with the actual development, and revised pavement sections developed, as necessary.

6.7.2 Asphalt Concrete Pavement Design

The flexible pavement design recommendations presented are based upon the California Department of Transportation (Caltrans) design procedures and design R-value of 50. The flexible, asphalt concrete pavement sections associated with the given T.I.’s are summarized in Table 6.7-1.

TABLE 6.7-1
RECOMMENDED MINIMUM PAVEMENT SECTIONS

Traffic Index	Asphalt Concrete (inches)	Aggregate Base – Class 2 (inches)
Up to 5.0	2.5	4.0
5.5	3.0	4.0
6.0	3.0	4.5
6.5	3.5	4.0
7.0	4.0	4.5
7.5	4.0	6.0
8.0	4.5	6.0
8.5	5.0	6.0
9.0	5.5	6.5

The design criteria assumes a 20-year design period and that normal maintenance (crack sealing, etc.) is performed. The traffic index is a measure of the volume of truck traffic that will be applied to a pavement section in the design life. The allowable average daily truck traffic (ADTT) for the assumed traffic indexes is presented in Table 6.7-2.

TABLE 6.7-2
AVERAGE DAILY TRUCK TRAFFIC

Traffic Index	2-Axle Vehicle	Or	3-Axle Vehicle	Or	5-Axle Vehicle
4.5	2.2		0.8		0.2
5.0	5.2		2.0		0.5
5.5	11.6		4.4		1.2
6.0	24.1		9.0		2.4
6.5	47.3		17.7		4.7
7.0	88.1		33.0		8.8
7.5	157.3		59.0		15.8
8.0	270.6		101.5		27.1
8.5	450.4		168.9		45.1
9.0	728.0		273.0		72.9

The flexible pavement should conform to, and be placed in accordance with the Caltrans Standard Specifications, 2015. The aggregate base (Class 2) should comply with the specifications in Sections 26. The aggregate base and upper 12 inches of subgrade should be compacted to a minimum of 95 percent relative compaction as determined by Caltrans No 216 (dry weight determination) or ASTM D 1557 test procedures.

6.7.3 Portland Cement Concrete Pavement Recommendations

Portland cement concrete pavement (PCCP) may be desirable at entry points, delivery areas, trash collection areas, car wash drive thru, and other locations where tight-turning heavy vehicles may be maneuvering. Design recommendations for PCCP are based on standards developed by the Portland Cement Association. Considering areas subject to truck traffic, Table 6.7-3 provides Portland cement concrete pavement sections for light to moderate usage. If desired, a design analysis could be performed based on actual estimated vehicle volumes and axle loading.

TABLE 6.7-3
RECOMMENDED MINIMUM PAVEMENT SECTIONS

Truck Usage	Average Daily Truck Traffic (ADTT)	Portland Cement Concrete (inches)	Aggregate Base – Class 2 (inches)
Auto Parking Only		4.0	4.0
Light Duty	1	4.5	6.0
Medium Duty	10	5.0	6.0
Heavy Duty	100	6.0	6.0

The aggregate base and upper 12 inches of subgrade should be compacted to 95 percent relative compaction as determined by Caltrans Test Method No 216 (dry weight determination) or ASTM D1557 test procedures. If desired, a design analysis could be performed based on actual estimated vehicle volumes and axle loading.

The concrete mix design should provide a 28-day compressive strength of at least 4,000 pounds per square inch. The concrete mix should also be designed for a slump not exceeding 4 inches. Thickened edges should be used along outside edges of concrete pavements. Edge thickness should be at least 2 inches greater than the concrete pavement thickness and taper to the actual concrete pavement thickness 36 inches inward from the edge. Integral curbs may be used in lieu of thickened edges.

There are no geotechnical considerations (e.g. expansive soil), which would require special reinforcement of pavement. Therefore, the reinforcement of concrete pavement should be determined by structural, curing (i.e. thermal), etc. considerations and should be designed by the project civil designer.

Continuous sections of concrete pavement should have construction or control joints in an approximately 12-foot square grid system or less. If a square system is impractical, rectangular panels having a maximum dimension of 12 feet can be used. Construction or control joints should be located at each grid line location, a maximum of 12 feet apart. All longitudinal or transverse control joint should be constructed by saw-cutting, hand forming (e.g. deep grooving) or placing pre-molded fillers, such as zip strips. Longitudinal or transverse construction joints should be keyed or doweled to mitigate against differential movement. Expansion joints should be used to isolate fixed objects abutting or within the pavement area. The expansion joints should extend the full depth of the pavement. Joints should run continuously and extend through integral curbs and thickened edges. It is recommended that joint layout be adjusted to coincide with the corner of objects and structures.

6.7.4 Moisture Considerations

The pavement design should consider both the vehicular loading, as well as the environmental factors. The vehicular loading will depend on the amount and type of traffic anticipated for the pavement design life. Environmental factors include the potential for moisture variations beneath the pavement structural section. It is recommended that all pavement areas conform to the following criteria:

- ❑ All trench backfill, including utility and sprinkler lines, should be properly placed and adequately compacted to provide a stable subgrade.
- ❑ Adequate drainage should be provided to prevent ponding of surface water which could lead to saturation of the subgrade soil.
- ❑ A periodic maintenance program should be incorporated.

- ❑ All concrete curbs separating pavement and landscaped areas should extend to the subgrade.

6.7.5 Construction Considerations

In the event unstable (pumping) subgrades are encountered within planned pavement areas, it is recommended a heavy, rubber-tired vehicle (typically a loaded water truck) be used to test the load/deflection characteristics of the finished subgrade materials. It is recommended this vehicle have a minimum rear axle load (at the time of testing) of 16,000 pounds with tires inflated to at least 65 psi pressure. If the tested surface shows a visible deflection extending more than 6 inches from the wheel track at the time of loading, or a visible crack remains after loading, corrective measures should be implemented. Such measures could include disking to aerate, chemical treatment, replacement with drier material, or other methods. It is recommended **TECHNICON** be retained to assist in developing which method (or methods) would be applicable for this project.

6.8 SITE DRAINAGE

Providing and maintaining adequate site drainage to prevent entrapment and ponding of surface water and excessive moisture migration into subgrade soil is very important. Poor perimeter or surface drainage could cause reduced subgrade support. The improvements should incorporate the basis for good drainage. This includes:

- ❑ Sufficient pad height to allow for proper drainage.
- ❑ Defined drainage gradients away from the structure to points of conveyance, such as drainage swales and/or area drains and discharge pipe.
- ❑ Proper discharge of roof drainage.

The maintenance personnel must maintain the established drainage by not blocking or obstructing gradients away from structures without providing some alternative drainage means (e.g. area drains and subsurface pipes). If planter areas are established near the structure, it is important to prevent surface run-off from entering the planter and care must be taken not to over irrigate and to maintain a leak-free sprinkler piping system. Consideration should be given to use of low volume emitter irrigation systems for planters. Well-maintained low-volume emitter irrigation (drip system) is best suited for planters adjacent to structures. Watering practices must strive to use only sufficient water to sustain and promote plant growth.

7 ADDITIONAL SERVICES

7.1 DESIGN REVIEW AND CONSULTATION

It is recommended that **TECHNICON** be retained to review those portions of the contract drawings and specifications that pertain to earthwork, foundations, and pavements prior to finalization to determine whether they are consistent with our recommendations.

7.2 CONSTRUCTION OBSERVATION AND TESTING

It is recommended that a representative of **TECHNICON** observe the excavation, earthwork, foundation, and pavement phases of work to determine that the subsurface conditions are compatible with those used in the analysis and design. **TECHNICON** can conduct the necessary field testing and provide results on a timely basis so that action necessary to remedy indicated deficiencies can be taken in accordance with the plans and specifications. Upon completion of the work, a written summary of observations, field testing, and conclusions regarding the conformance of the completed work to the intent of the plans and specifications will be provided. This additional service is not part of this current contractual agreement. **TECHNICON** will not be responsible for establishing or confirming building or foundations depths or locations unless retained to do so.

8 LIMITATIONS

The conclusions and recommendations presented in this report are based on the information provided regarding the proposed construction, and the results of our field and laboratory investigation, combined with interpolation of the subsurface conditions between boring locations. The nature and extent of the variations between borings may not become evident until construction. If variations or undesirable conditions are encountered during construction, our firm should be notified promptly so that these conditions can be reviewed and our recommendations reconsidered where necessary. The unexpected conditions frequently require additional expenditures for proper construction of the project. **TECHNICON Engineering Services, Inc.** will not assume any responsibility for errors or omissions if the final extent and depth of earthwork is not determined by our firm at the time of construction due to said variations or undesirable conditions encountered.

If the proposed construction is relocated or redesigned, or if there is a substantial lapse of time between the submission of our report and the start of work at the site, or if conditions have changed due to natural causes, or construction operations at or adjacent to the site, the conclusions and recommendations contained in this report should be considered invalid unless the changes are reviewed and our conclusions and recommendations modified or approved in writing. Such conditions may require additional field and laboratory investigations to determine if our conclusions and recommendations are applicable considering the changed conditions or time lapse.

It is the responsibility of the contractor to provide safe working conditions with respect to excavation slope stability. This report does not relieve the contractors of responsibility for temporary excavation construction, bracing and shoring in accordance with CAL OSHA requirements.

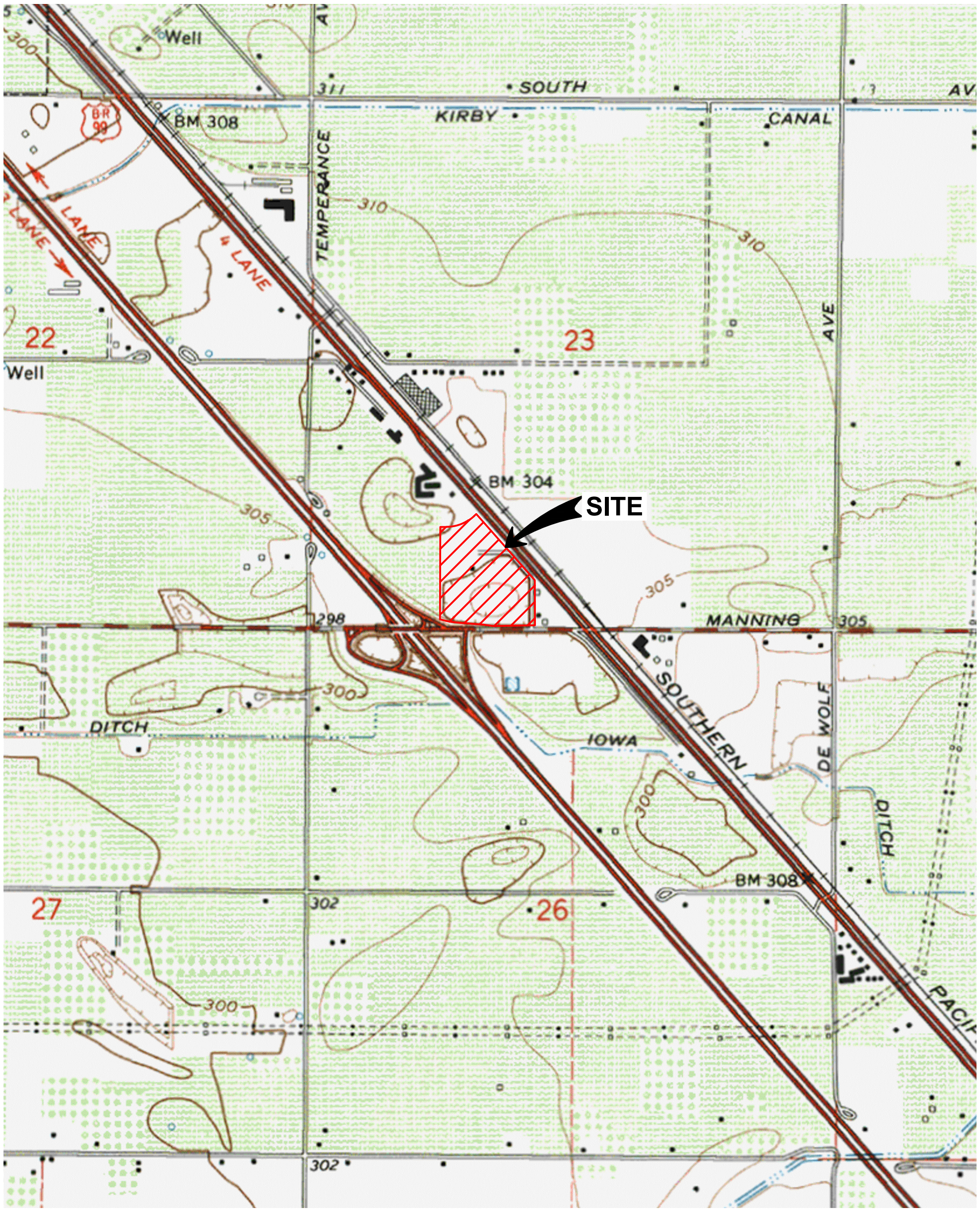
Our professional services were performed, our findings obtained, and our recommendations prepared in accordance with generally accepted engineering principles and practices. This warranty is in lieu of all other warranties either expressed or implied. This report should not be construed as an environmental audit or study.

This report has been prepared for the sole use by Buford Oil Co. and any designated consultants for the proposed Oil and Travel Center to be located at 2747 E. Manning Avenue in Fowler, California. Recommendations presented in this report should not be extrapolated to other areas or used for other projects without prior review. This report has been prepared with the intent that the firm of **TECHNICON** will be performing the construction testing and observation for the complete project. If, however, another firm or individual(s) should be retained or employed to use this geotechnical investigation report for the purpose of construction testing and observation, notice is hereby given that **TECHNICON** will not assume any responsibility for errors or omissions, if any, which may occur and which could have been avoided, corrected, or mitigated if **TECHNICON**, had performed the work. This notice also applies to the misuse or misinterpretation of the conclusions and recommendations outlined in this report. Furthermore, the other firm or individual(s) performing construction testing and observation should accept transfer of responsibility of the work, as required by the California Building Code, in writing to the project owner and **TECHNICON**. The firm accepting transfer of responsibility should perform additional investigation(s) as may be necessary to develop their own conclusions, evaluations, and recommendations for design and construction.

FIGURE 1

&

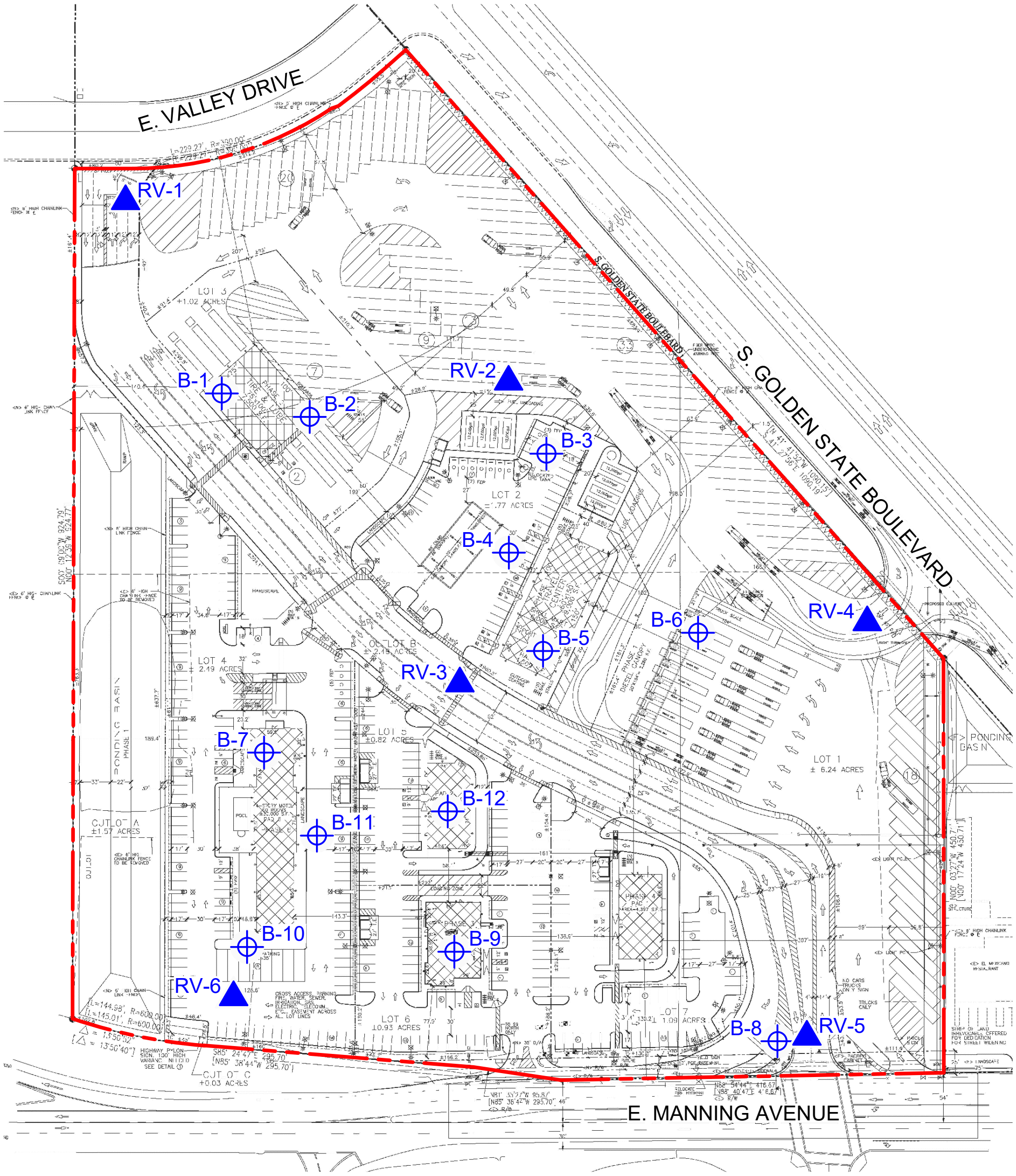
FIGURE 2



LAT.: 36.6069°N, LONG.: 119.6584°W, 23-T15S-R21E, MDB&M,
USGS MAP: CONEJO, DATE: 1963, PHOTO REV.: 1978

NORTH

TECHNICON ENGINEERING SERVICES, INC.	PROJECT: 170748	VICINITY MAP PROPOSED OIL AND TRAVEL CENTER 2747 E. MANNING AVENUE FOWLER, CALIFORNIA	FIGURE 1 NTS
	SOURCE: USGS TOPOGRAPHIC MAPS		



RV-6 =R-VALUE LOCATIONS

B-12 =SOIL BORING LOCATIONS

TECHNICON ENGINEERING SERVICES, INC.	PROJECT: 170748 SOURCE: AESTHETICS DESIGNS	SITE MAP PROPOSED OIL AND TRAVEL CENTER 2747 E. MANNING AVENUE FOWLER, CALIFORNIA	FIGURE 2

BORING LOGS AND LOG KEY

APPENDIX A

Technicon Engineering Services, Inc.
4539 N. Brawley Avenue #108
Fresno, CA 93722
Telephone: 559-276-9311

KEY TO SYMBOLS

PROJECT NAME Proposed Oil and Travel Center
DATE OF EXPLORATION 11/15/2017
PROJECT LOCATION Fowler, California
PROJECT NUMBER 170748

LITHOLOGIC SYMBOLS (Unified Soil Classification System)

	FILL
SW	WELL GRADED SAND
SP	POORLY GRADED SAND
SM	SILTY SAND
SC	CLAYEY SAND
PT	PEAT
OL	LOW PLASTICITY ORGANIC SILT
OH	HIGH PLASTICITY ORGANIC SILT
ML	LOW PLASTICITY SILT
MH	HIGH PLASTICITY SILT
GW	WELL GRADED GRAVEL
GP	POORLY GRADED GRAVEL
GM	SILTY GRAVEL
GC	CLAYEY GRAVEL
CL	LOW PLASTICITY CLAY
CH	HIGH PLASTICITY CLAY

SAMPLER SYMBOLS

STANDARD PENETRATION TEST

CALIFORNIA SAMPLER

MODIFIED CALIFORNIA SAMPLER

SHELBY TUBE SAMPLER

ROCK CORE BARREL

BULK SAMPLE

Water Level at Time of Drilling

Water Level at End of Drilling

Water Level After 24 Hours

Assumed stratum line

Observed stratum line

Note 1: The degree of saturation shown on the boring logs is based on an assumed specific gravity of 2.65. The actual degree of saturation may vary.

Note 2: The stratum lines shown on the logs represent the approximate boundary between soil types; the actual in-situ transition may be gradual.

ABBREVIATIONS

LL - LIQUID LIMIT (%)
PI - PLASTIC INDEX (%)
W - MOISTURE CONTENT (%)
DD - DRY DENSITY (PCF)
S - DEGREE OF SATURATION (%)
NP - NON PLASTIC
-200 PERCENT PASSING NO. 200 SIEVE
PP - POCKET PENETROMETER (TSF)

TV - TORVANE
PID - PHOTOIONIZATION DETECTOR
UC - UNCONFINED COMPRESSION
ppm - PARTS PER MILLION

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BORING B- 1

PROJECT NAME Proposed Oil and Travel Center
PROJECT NUMBER 170748
PROJECT LOCATION Fowler, California
SURFACE DESCRIPTION Flat Soil Surface
DATE STARTED 11/15/17 **COMPLETED** 11/15/17
GROUND ELEVATION
DRILLING CONTRACTOR TECHNICON Engineering Services
GROUND WATER LEVEL No groundwater encountered.
DRILL RIG TYPE CME 55
BORING DEPTH 16.5 ft
DRILLING METHOD 7.5-inch Hollow Stem Auger
LOGGED BY Y.Mendoza **CHECKED BY** S. Alvarez

DEPTH (ft)	SAMPLE TYPE	BLOWS/ft	GRAPHIC LOG	MATERIAL DESCRIPTION	DRY DENSITY (pcf)	MOISTURE (%)	OTHER TESTS	REMARKS
0	CAL	6-15-16 (31)		**Clayey SILT (CL-ML)** - very stiff, light brown to yellowish brown, moist, trace fine sand, iron oxide staining	93.3	5.7	S = 20 %	
5	SPT	2-3-2 (5)		**Poorly Graded SAND (SP)** - loose, light brown, moist, fine to medium grained, iron oxide staining				
	CAL	3-5-6 (11)		Medium dense				
10	SPT	7-28-38 (66)		**Clayey SAND (SC)** - very dense, brown, moist, fine to medium grained				
				Sandy SILT (ML) - very stiff, brown brown, moist, no clay				
15	CAL	5-12-17 (29)						

NOTES:
1. Bottom of boring at 16.5 feet.
2. No groundwater encountered.
3. Boring backfilled with soil cuttings 11/15/17.

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BORING B- 2

PROJECT NAME Proposed Oil and Travel Center
PROJECT NUMBER 170748
PROJECT LOCATION Fowler, California
SURFACE DESCRIPTION Flat Soil Surface
DATE STARTED 11/15/17 **COMPLETED** 11/15/17
GROUND ELEVATION
DRILLING CONTRACTOR TECHNICON Engineering Services
GROUND WATER LEVEL No groundwater encountered.
DRILL RIG TYPE CME 55
BORING DEPTH 21.5 ft
DRILLING METHOD 7.5-inch Hollow Stem Auger
LOGGED BY Y.Mendoza **CHECKED BY** S. Alvarez

DEPTH (ft)	SAMPLE TYPE	BLOWS/ft	GRAPHIC LOG	MATERIAL DESCRIPTION	DRY DENSITY (pcf)	MOISTURE (%)	OTHER TESTS	REMARKS
0				**Poorly Graded SAND (SP)** - medium dense, brown, moist, fine to medium grained, trace silt, trace clay				
	GB							
	CAL	5-9-10 (19)			101.8	1.5	S = 6 %	
5	CAL	3-4-5 (9)		Fine to coarse grained, increased moisture	91.4	2.4	S = 8 %	
10	SPT	14-38-50/4"		**Clayey SAND (SC)** - very dense, brown, moist, fine to medium grained, with silt, trace mica, moderate cementation				
				Sandy SILT (ML) - stiff, light brown, moist, fine sand, trace mica, iron oxide staining				
15	CAL	10-8-9 (17)						
20	SPT	6-9-11 (20)		Very stiff, grayish brown to light brown				

NOTES:
1. Bottom of boring at 21.5 feet.
2. No groundwater encountered.
3. Boring backfilled with soil cuttings 11/15/17.

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BORING B- 3

PROJECT NAME Proposed Oil and Travel Center
PROJECT NUMBER 170748
PROJECT LOCATION Fowler, California
SURFACE DESCRIPTION Flat Soil Surface
DATE STARTED 11/15/17 **COMPLETED** 11/15/17
GROUND ELEVATION
DRILLING CONTRACTOR TECHNICON Engineering Services, Inc.
GROUND WATER LEVEL No groundwater encountered.
DRILL RIG TYPE CME 55
BORING DEPTH 16.5 ft
DRILLING METHOD 7.5-inch Hollow Stem Auger
LOGGED BY Yvan Mendoza **CHECKED BY** S. Alvarez

DEPTH (ft)	SAMPLE TYPE	BLOWS/ft	GRAPHIC LOG	MATERIAL DESCRIPTION	DRY DENSITY (pcf)	MOISTURE (%)	OTHER TESTS	REMARKS
0	CAL	3-5-6 (11)		**Silty SAND (SM)** - medium dense, brown, moist, fine to medium grained, trace clay	110.8	2.3	S = 12 %	
				Sandy SILT (ML) - very stiff, light brown, moist, with fine sand				
5	CAL	10-13-13 (26)		**Silty SAND (SM)** - medium dense, brown to light brown, moist, fine to medium grained	103.5	6.2	S = 28 %	
10	SPT	1-2-2 (4)		**Poorly Graded SAND (SP)** - loose, brown, moist, fine to medium grained, some mica				
	CAL	2-4-5 (9)						
15	CAL	14-46-50/3"		**Clayey SAND (SC)** - very dense, dark brown, moist, fine grained, some silt, iron oxide staining				

NOTES:
1. Bottom of boring at 16.5 feet.
2. No groundwater encountered.
3. Boring backfilled with soil cuttings 11/15/17.

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BORING B- 4

PROJECT NAME Proposed Oil and Travel Center
PROJECT NUMBER 170748
PROJECT LOCATION Fowler, California
SURFACE DESCRIPTION Flat Soil Surface
DATE STARTED 11/15/17 **COMPLETED** 11/15/17
GROUND ELEVATION
DRILLING CONTRACTOR TECHNICON Engineering Services, Inc.
GROUND WATER LEVEL No groundwater encountered.
DRILL RIG TYPE CME 55
BORING DEPTH 16.5 ft
DRILLING METHOD 7.5-inch Hollow Stem Auger
LOGGED BY Yvan Mendoza **CHECKED BY** S. Alvarez

DEPTH (ft)	SAMPLE TYPE	BLOWS/ft	GRAPHIC LOG	MATERIAL DESCRIPTION	DRY DENSITY (pcf)	MOISTURE (%)	OTHER TESTS	REMARKS
0	CAL	9-8-12 (20)		**Silty SAND (SM)** - medium dense, brown, moist, fine to medium grained, trace clay	111.0	3.2	S = 17 %	
	GB							
				Poorly Graded SAND (SP) - medium dense, light brown, moist, fine to coarse grained				
5	SPT	3-4-5 (9)						
10	CAL	4-12-22 (34)		**Clayey SAND (SC)** - medium dense, brown to dark brown, moist, fine to medium grained, some silt, iron oxide staining				
				Poorly Graded SAND (SP) - medium dense, brown, moist, fine to coarse grained				
15	SPT	9-13-15 (28)		**Clayey SAND (SC)** - medium dense, reddish brown, moist, fine to medium grained				
				Sandy SILT (ML) - very stiff, light brown, moist, with fine sand, white staining				

NOTES:
1. Bottom of boring at 16.5 feet.
2. No groundwater encountered.
3. Boring backfilled with soil cuttings 11/15/17.

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BORING B- 5

PROJECT NAME Proposed Oil and Travel Center
PROJECT NUMBER 170748
PROJECT LOCATION Fowler, California
SURFACE DESCRIPTION Asphalt Pavement
DATE STARTED 11/15/17 **COMPLETED** 11/15/17
GROUND ELEVATION
DRILLING CONTRACTOR TECHNICON Engineering Services, Inc.
GROUND WATER LEVEL No groundwater encountered.
DRILL RIG TYPE CME 55
BORING DEPTH 16 ft
DRILLING METHOD 7.5-inch Hollow Stem Auger
LOGGED BY Yvan Mendoza **CHECKED BY** S. Alvarez

DEPTH (ft)	SAMPLE TYPE	BLOWS/ft	GRAPHIC LOG	MATERIAL DESCRIPTION	DRY DENSITY (pcf)	MOISTURE (%)	OTHER TESTS	REMARKS
0				**ASPHALT**				
	CAL	22-23-19 (42)		**Silty SAND (SM)** - dense, brown, moist, fine to medium grained, trace mica, trace clay	120.0	5.0	S = 35 %	
5	CAL	4-6-7 (13)		Medium to coarse grained, increased moisture, no clay, iron oxide staining	102.8	3.7	S = 16 %	
				Poorly Graded SAND (SP) - medium dense, brown, moist, some mica				
10	SPT	3-4-6 (10)						
				Sandy SILT (ML) - stiff, brown, moist, some clay, iron oxide staining				
				Clayey SAND (SC) - very dense, dark brown, moist, some silt, moderate cementation				
15	CAL	30-50/1"						
	SPT	50						

NOTES:
1. Bottom of boring at 16.0 feet.
2. No groundwater encountered.
3. Boring backfilled with soil cuttings 11/15/17.

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BORING B- 6

PROJECT NAME Proposed Oil and Travel Center
PROJECT NUMBER 170748
PROJECT LOCATION Fowler, California
SURFACE DESCRIPTION Asphalt Pavement
DATE STARTED 11/15/17 **COMPLETED** 11/15/17
GROUND ELEVATION
DRILLING CONTRACTOR TECHNICON Engineering Services, Inc.
GROUND WATER LEVEL No groundwater encountered.
DRILL RIG TYPE CME 55
BORING DEPTH 21.5 ft
DRILLING METHOD 7.5-inch Hollow Stem Auger
LOGGED BY Yvan Mendoza **CHECKED BY** S. Alvarez

DEPTH (ft)	SAMPLE TYPE	BLOWS/ft	GRAPHIC LOG	MATERIAL DESCRIPTION	DRY DENSITY (pcf)	MOISTURE (%)	OTHER TESTS	REMARKS
0				**ASPHALT**				
				AGGREGATE BASE				
	GB CAL	14-15-12 (27)		**Silty SAND (SM)** - medium dense, dark brown, moist, trace clay	106.8	3.4	S = 17 %	
5	SPT	3-4-4 (8)		**Poorly Graded SAND (SP)** - medium dense, brown, moist, fine to medium grained, trace silt				
10	CAL	4-7-8 (15)		Trace clay, increased moisture				
15	SPT	9-24-32 (56)		**Clayey SAND (SC)** - very dense, dark brown, moist, fine to medium grained				
				Clayey SILT (ML) - very stiff, brown to grayish brown, moist, iron oxide staining				
20	CAL	10-13-15 (28)		Very stiff				
				Poorly Graded SAND (SP) - medium dense, brown, moist, fine to coarse grained				

NOTES:
1. Bottom of boring at 21.5 feet.
2. No groundwater encountered.
3. Boring backfilled with soil cuttings 11/15/17.

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BORING B- 7

PROJECT NAME Proposed Oil and Travel Center
PROJECT NUMBER 170748
PROJECT LOCATION Fowler, California
SURFACE DESCRIPTION Asphalt Pavement
DATE STARTED 11/15/17 **COMPLETED** 11/15/17
GROUND ELEVATION
DRILLING CONTRACTOR TECHNICON Engineering Services, Inc.
GROUND WATER LEVEL No groundwater encountered.
DRILL RIG TYPE CME 55
BORING DEPTH 16 ft
DRILLING METHOD 7.5-inch Hollow Stem Auger
LOGGED BY Yvan Mendoza **CHECKED BY** S. Alvarez

DEPTH (ft)	SAMPLE TYPE	BLOWS/ft	GRAPHIC LOG	MATERIAL DESCRIPTION	DRY DENSITY (pcf)	MOISTURE (%)	OTHER TESTS	REMARKS
0				**ASPHALT**				
				AGGREGATE BASE				
	CAL	14-21-22 (43)		**Silty SAND (SM)** - dense, brown, moist, fine to medium grained, some clay	118.8	5.9	S = 40 %	
				Poorly Graded SAND (SP) - medium dense, brown, moist, trace silt, trace clay, iron oxide staining				
5	CAL	14-7-7 (14)			109.2	3.8	S = 20 %	
10	SPT	4-5-6 (11)		**Clayey SAND (SC)** - medium dense, reddish brown, moist, fine to medium grained, some silt				
				Very dense, moderate cementation				
15	CAL	22-50/3"						

NOTES:
1. Bottom of boring at 16.0 feet.
2. No groundwater encountered.
3. Boring backfilled with soil cuttings 11/15/17.

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BORING B- 8

PROJECT NAME Proposed Oil and Travel Center
PROJECT NUMBER 170748
PROJECT LOCATION Fowler, California
SURFACE DESCRIPTION Asphalt Pavement
DATE STARTED 11/16/17 **COMPLETED** 11/16/17
GROUND ELEVATION
DRILLING CONTRACTOR TECHNICON Engineering Services, Inc.
GROUND WATER LEVEL No groundwater encountered.
DRILL RIG TYPE CME 55
BORING DEPTH 21.5 ft
DRILLING METHOD 7.5-inch Hollow Stem Auger
LOGGED BY Y.Mendoza **CHECKED BY** S. Alvarez

DEPTH (ft)	SAMPLE TYPE	BLOWS/ft	GRAPHIC LOG	MATERIAL DESCRIPTION	DRY DENSITY (pcf)	MOISTURE (%)	OTHER TESTS	REMARKS
0				**ASPHALT**				
				AGGREGATE BASE				
	CAL	9-14-18 (32)		**Silty SAND (SM)** - medium dense, brown, moist, fine to medium grained, trace clay	118.0	6.2	S = 41 %	
5	CAL	4-6-7 (13)		Increased moisture, decreased silt, decreased clay, iron oxide staining	99.3	3.3	S = 13 %	
10	SPT	8-9-12 (21)		Increased silt, increased clay				
				Clayey SAND (SC) - medium dense, brown to reddish brown, moist, some silt, iron oxide staining				
15	CAL	5-26-25 (51)		Dense, trace gravel, moderate cementation				
20	SPT	6-10-12 (22)		Medium dense, fine to coarse grained, with silt, some clay, trace fine gravel				

NOTES:
1. Bottom of boring at 21.5 feet.
2. No groundwater encountered.
3. Boring backfilled with soil cuttings 11/16/17.

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BORING B- 9

PROJECT NAME Proposed Oil and Travel Center
PROJECT NUMBER 170748
PROJECT LOCATION Fowler, California
SURFACE DESCRIPTION Asphalt Pavement
DATE STARTED 11/16/17 **COMPLETED** 11/16/17
GROUND ELEVATION
DRILLING CONTRACTOR TECHNICON Engineering Services, Inc.
GROUND WATER LEVEL No groundwater encountered.
DRILL RIG TYPE CME 55
BORING DEPTH 16.5 ft
DRILLING METHOD 7.5-inch Hollow Stem Auger
LOGGED BY Yvan Mendoza **CHECKED BY** S. Alvarez

DEPTH (ft)	SAMPLE TYPE	BLOWS/ft	GRAPHIC LOG	MATERIAL DESCRIPTION	DRY DENSITY (pcf)	MOISTURE (%)	OTHER TESTS	REMARKS
0				**ASPHALT**				
				AGGREGATE BASE				
	GB CAL	18-21-20 (41)		**Silty SAND (SM)** - dense, brown, moist, fine to medium grained, trace clay	117.0	4.5	S = 29 %	
5	SPT	3-5-4 (9)		Medium dense, dark brown, increased moisture				
				Clayey SAND (SC) - dense, brown to reddish brown, moist, fine to medium grained, some silt, iron oxide staining				
10	CAL	11-25-21 (46)						
15	SPT	11-8-9 (17)		**Silty SAND (SM)** - medium dense, brown to reddish brown, moist, fine to medium grained, trace clay				

NOTES:
1. Bottom of boring at 16.5 feet.
2. No groundwater encountered.
3. Boring backfilled with soil cuttings 11/16/17.

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BORING B-10

PROJECT NAME Proposed Oil and Travel Center
PROJECT NUMBER 170748
PROJECT LOCATION Fowler, California
SURFACE DESCRIPTION Asphalt Pavement
DATE STARTED 11/16/17 **COMPLETED** 11/16/17
GROUND ELEVATION
DRILLING CONTRACTOR TECHNICON Engineering Services, Inc.
GROUND WATER LEVEL No groundwater encountered.
DRILL RIG TYPE CME 55
BORING DEPTH 21.25 ft
DRILLING METHOD 7.5-inch Hollow Stem Auger
LOGGED BY Y.Mendoza **CHECKED BY** S. Alvarez

DEPTH (ft)	SAMPLE TYPE	BLOWS/ft	MATERIAL DESCRIPTION	DRY DENSITY (pcf)	MOISTURE (%)	OTHER TESTS	REMARKS
0			**ASPHALT**				
			AGGREGATE BASE				
			Silty SAND (SM) - medium dense, brown, moist, fine to medium grained, trace clay				
	CAL	9-11-12 (23)		113.8	5.3	S = 31 %	
5	CAL	5-8-8 (16)	Iron oxide staining	112.8	5.0	S = 28 %	
			Reddish brown, trace fine gravel				
10	SPT	5-4-3 (7)					
			Poorly Graded SAND (SP) - medium dense, light brown, moist, fine to coarse grained				
15	CAL	7-11-11 (22)					
20	SPT	30-46-50/3"	**Sandy SILT (ML)** - hard, light brown to brown, moist, trace clay, with fine sand, trace mica, iron oxide staining				

NOTES:
1. Bottom of boring at 21.3 feet.
2. No groundwater encountered.
3. Boring backfilled with soil cuttings 11/16/17.

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BORING B-11

PROJECT NAME Proposed Oil and Travel Center
PROJECT NUMBER 170748
PROJECT LOCATION Fowler, California
SURFACE DESCRIPTION Asphalt Pavement
DATE STARTED 11/16/17 **COMPLETED** 11/16/17
GROUND ELEVATION
DRILLING CONTRACTOR TECHNICON Engineering Services, Inc.
GROUND WATER LEVEL No groundwater encountered.
DRILL RIG TYPE CME 55
BORING DEPTH 36.5 ft
DRILLING METHOD 7.5-inch Hollow Stem Auger
LOGGED BY Yvan Mendoza **CHECKED BY** S. Alvarez

DEPTH (ft)	SAMPLE TYPE	BLOWS/ft	GRAPHIC LOG	MATERIAL DESCRIPTION	DRY DENSITY (pcf)	MOISTURE (%)	OTHER TESTS	REMARKS
0				**ASPHALT**				
				AGGREGATE BASE				
	CAL	5-10-15 (25)		**Silty SAND (SM)** - medium dense, dark brown, moist, fine grained, trace clay, fine sand	114.6	7.8	S = 47 %	
5	SPT	6-4-4 (8)		Reddish brown, fine to medium grained, iron oxide staining				
10	CAL	11-11-14 (25)		Increased clay				
				Sandy CLAY (CL) - hard, light brown, moist, with silt, iron oxide staining				
15	SPT	50						
				Poorly Graded SAND (SP) - medium dense, light brown to tan, moist				
20	CAL	7-10-12 (22)						
	CAL	8-15-24 (39)						
				Sandy SILT (ML) - very stiff, brown to reddish brown, moist, medium plasticity, trace fine sand, with clay, iron oxide staining				
25	SPT	5-8-11 (19)						
				Poorly Graded SAND (SP) - dense, light brown to tan, moist, trace silt, iron oxide staining				
30	CAL	10-22-30 (52)						
35								

(Continued Next Page)

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BORING B-11

PROJECT NAME Proposed Oil and Travel Center
PROJECT NUMBER 170748
PROJECT LOCATION Fowler, California
SURFACE DESCRIPTION Asphalt Pavement
DATE STARTED 11/16/17 **COMPLETED** 11/16/17
GROUND ELEVATION
DRILLING CONTRACTOR TECHNICON Engineering Services, Inc.
GROUND WATER LEVEL No groundwater encountered.
DRILL RIG TYPE CME 55
BORING DEPTH 36.5 ft
DRILLING METHOD 7.5-inch Hollow Stem Auger
LOGGED BY Yvan Mendoza **CHECKED BY** S. Alvarez

DEPTH (ft)	SAMPLE TYPE	BLOWS/ft	GRAPHIC LOG	MATERIAL DESCRIPTION	DRY DENSITY (pcf)	MOISTURE (%)	OTHER TESTS	REMARKS
35	SPT	3-4-6 (10)		**Poorly Graded SAND (SP)** - dense, light brown to tan, moist, trace silt, iron oxide staining *(continued)* Medium dense				

NOTES:
1. Bottom of boring at 36.5 feet.
2. No groundwater encountered.
3. Boring backfilled with soil cuttings 11/16/17.

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BORING B-12

PROJECT NAME	Proposed Oil and Travel Center	**PROJECT NUMBER**	170748
PROJECT LOCATION	Fowler, California	**SURFACE DESCRIPTION**	Asphalt Pavement
DATE STARTED	11/16/17 **COMPLETED** 11/16/17	**GROUND ELEVATION**	
DRILLING CONTRACTOR	TECHNICON Engineering Services, Inc.	**GROUND WATER LEVEL**	No groundwater encountered.
DRILL RIG TYPE	CME 55	**BORING DEPTH**	16.5 ft
DRILLING METHOD	7.5-inch Hollow Stem Auger	**LOGGED BY**	Yvan Mendoza **CHECKED BY** S. Alvarez

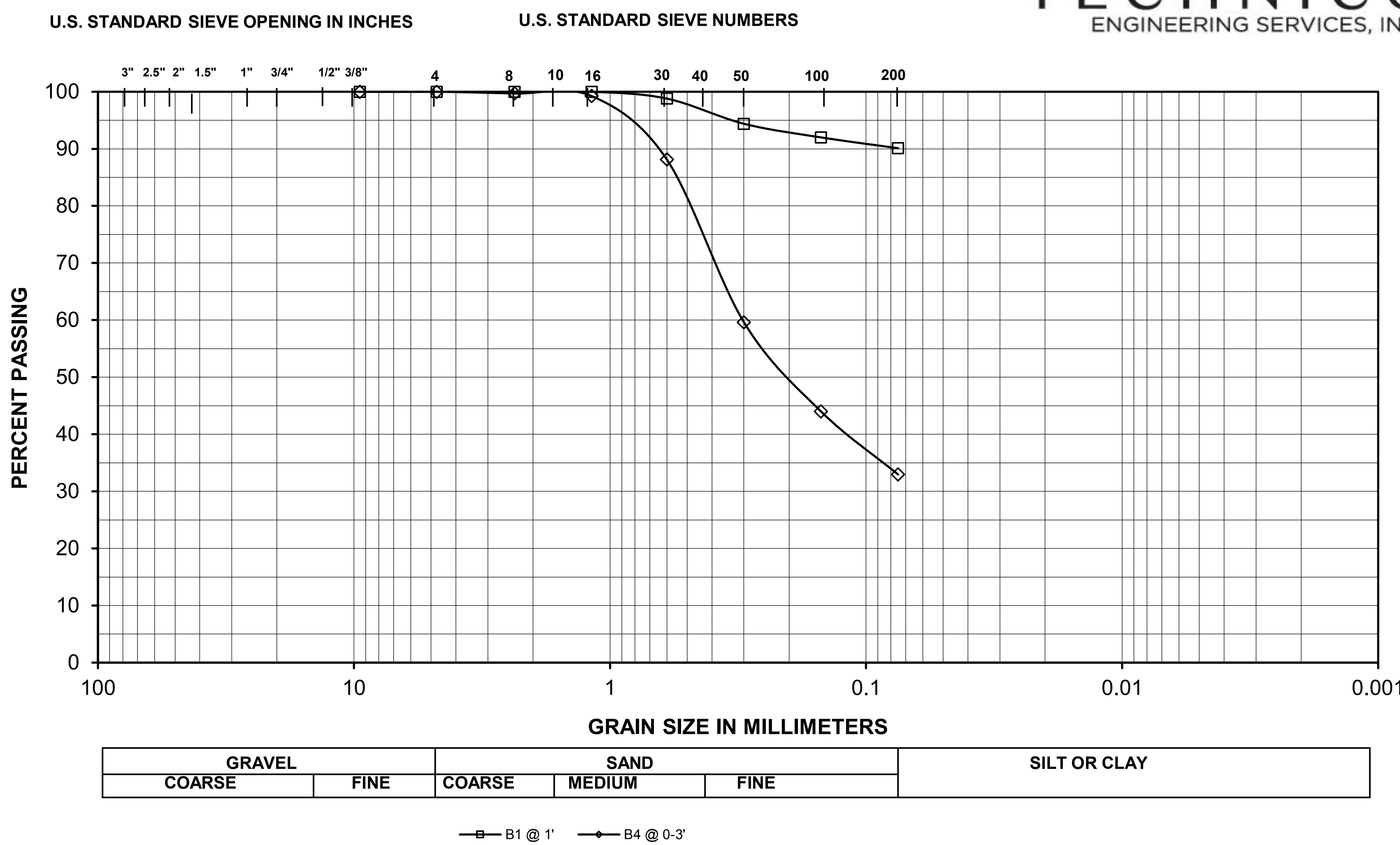
DEPTH (ft)	SAMPLE TYPE	BLOWS/ft	GRAPHIC LOG	MATERIAL DESCRIPTION	DRY DENSITY (pcf)	MOISTURE (%)	OTHER TESTS	REMARKS
0				**ASPHALT**				
				AGGREGATE BASE				
	CAL	9-15-21 (36)		**Silty SAND (SM)** - dense, brown to dark brown, moist, fine to medium grained, trace clay	116.6	7.8	S = 49 %	
5	CAL	6-10-7 (17)		Medium dense, dark brown, increased moisture, some clay, iron oxide staining	108.8	4.6	S = 24 %	
10	SPT	8-7-5 (12)		**Clayey SAND (SC)** - medium dense, reddish brown, moist, fine to medium grained, trace fine gravel, some silt				
15	CAL	14-18-26 (44)		**Sandy SILT (ML)** - hard, light brown, moist, some fine sand, iron oxide staining				

NOTES:
1. Bottom of boring at 16.5 feet.
2. No groundwater encountered.
3. Boring backfilled with soil cuttings 11/16/17.

LABORATORY TESTS

APPENDIX B

TECHNICON
ENGINEERING SERVICES, INC.



Sample No.	Classification	% Gravel	% Sand	% Fines	% Moist.	LL	PL	PI	Project	Oil and Travel Center
B1 @ 1'	Silty CLAY (CL-ML)	0	9.9	90.1	5.7					Fowler, CA
B4 @ 0-3'	Silty SAND (SM)	0	67.0	33.0	0.6				TES No.	170748
									Date	12/6/2017

TECHNICON
ENGINEERING SERVICES, INC.

Sieve Analysis for Coarse and Fine Aggregate
ASTM C 136

Project	Oil and Travel Center	Technician	K.W.
	Fowler, CA	Date	12/6/2017
TES No.	170748	Sample No.	B1 @ 1'
Lab No.		Remarks	Silty CLAY (CL-ML)

	Weight (lbs. or grams)	Maximum Sieve Size	Minimum Weight of Test Specimen, lbs. (kg)
Total Dry Sample + Tare Wt.		Sand	1.0 (0.5)
Tare Weight		3/8"	2.0 (1.0)
Total Dry Sample Wt.	189.2	1/2"	4.0 (2.0)
Initial Weight Fine Aggregate Before Wash		3/4"	11.0 (5.0)
		1"	22.0 (10.0)
Final Weight Fine Aggregate After Wash	19.72	1 1/2"	33.0 (15.0)
		2"	44.0 (20.0)

Sieve Size	Cumulative Weight Retained	Individual % Retained	Cumulative % Retained	Cumulative % Passing	Specs.
3 in.		0.0	0.0	100.0	
2 1/2 in.		0.0	0.0	100.0	
2 in.		0.0	0.0	100.0	
1 1/2 in.		0.0	0.0	100.0	
1 in.		0.0	0.0	100.0	
3/4 in.		0.0	0.0	100.0	
1/2 in.		0.0	0.0	100.0	
3/8 in.		0.0	0.0	100.0	
#4	0.0	0.0	0.0	100.0	
#8	0.0	0.0	0.0	100.0	
#16	0.0	0.0	0.0	100.0	
#30	2.3	1.2	1.2	98.8	
#50	10.6	4.4	5.6	94.4	
#100	15.1	2.4	8.0	92.0	
#200	18.7	1.9	9.9	90.1	
Pan	19.72				

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TECHNICON
ENGINEERING SERVICES, INC.

Sieve Analysis for Coarse and Fine Aggregate
ASTM C 136

Project	Oil and Travel Center	Technician	K.W.
	Fowler, CA	Date	12/6/2017
TES No.	170748	Sample No.	B4 @ 0-3'
Lab No.		Remarks	Silty SAND (SM)

	Weight (lbs. or grams)	Maximum Sieve Size	Minimum Weight of Test Specimen, lbs. (kg)
Total Dry Sample + Tare Wt.		Sand	1.0 (0.5)
Tare Weight		3/8"	2.0 (1.0)
Total Dry Sample Wt.	198.8	1/2"	4.0 (2.0)
Initial Weight Fine Aggregate Before Wash		3/4"	11.0 (5.0)
		1"	22.0 (10.0)
Final Weight Fine Aggregate After Wash	135.29	1 1/2"	33.0 (15.0)
		2"	44.0 (20.0)

Sieve Size	Cumulative Weight Retained	Individual % Retained	Cumulative % Retained	Cumulative % Passing	Specs.
3 in.		0.0	0.0	100.0	
2 1/2 in.		0.0	0.0	100.0	
2 in.		0.0	0.0	100.0	
1 1/2 in.		0.0	0.0	100.0	
1 in.		0.0	0.0	100.0	
3/4 in.		0.0	0.0	100.0	
1/2 in.		0.0	0.0	100.0	
3/8 in.		0.0	0.0	100.0	
#4	0.0	0.0	0.0	100.0	
#8	0.6	0.3	0.3	99.7	
#16	1.5	0.4	0.8	99.2	
#30	23.6	11.1	11.9	88.1	
#50	80.3	28.5	40.4	59.6	
#100	111.3	15.6	56.0	44.0	
#200	133.3	11.0	67.0	33.0	
Pan	135.29				

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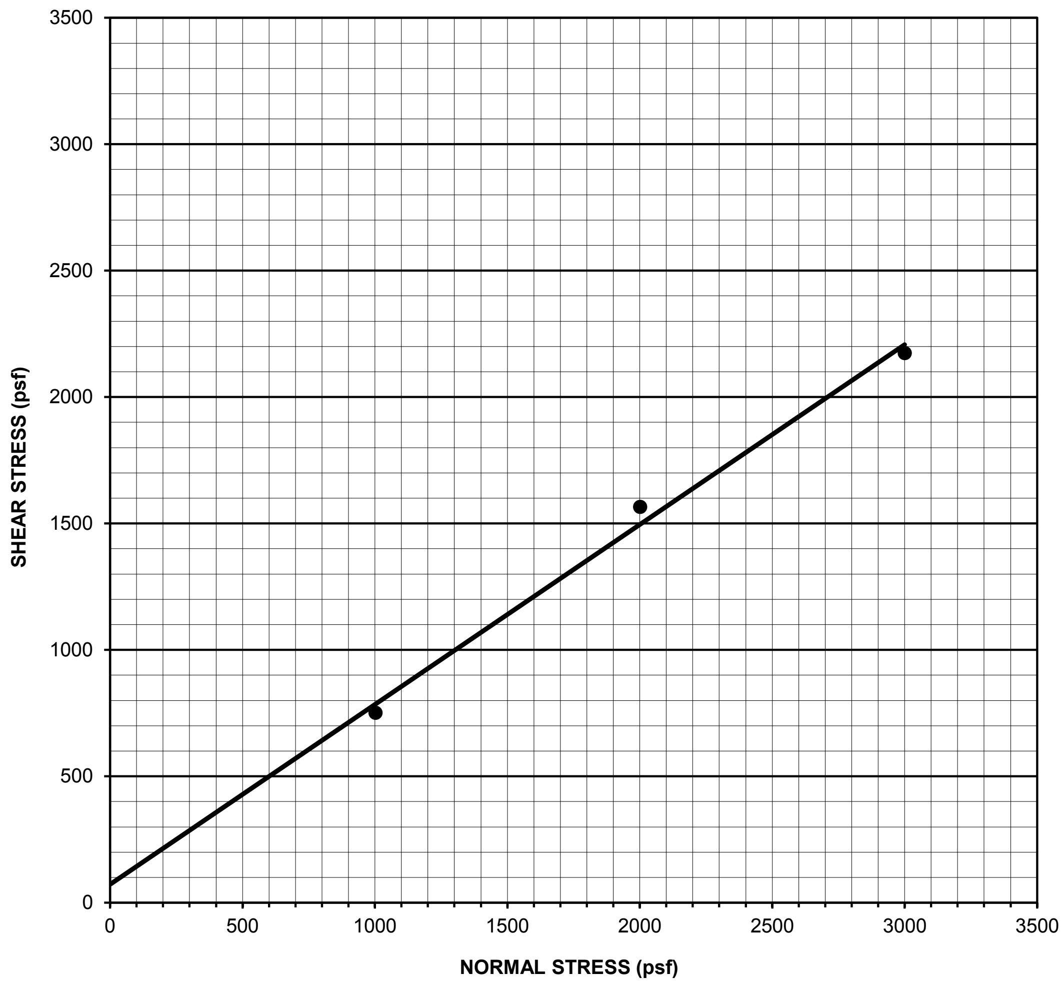
Direct Shear Test

ASTM D3080



Project	Oil and Travel Center
TES No.	170748
Sample Date	11/15/2017
Sample No.	B-1 @ 1'
Description	Silty CLAY (CL-ML)

Cohesion (psf)	**70**
Internal Friction Angle (ϕ)	**35**

Specimen	A	B	C	D	E
Dry Density (pcf)	121.6	121.6	121.6	---	---
Initial Water Content (%)	6.5	6.5	6.5	---	---
Final Water Content (%)	12.3	11.7	11.6	---	---
Normal Stress (pcf)	1002	2001	3000	---	---
Maximum Shear (pcf)	751	1565	2173	---	---

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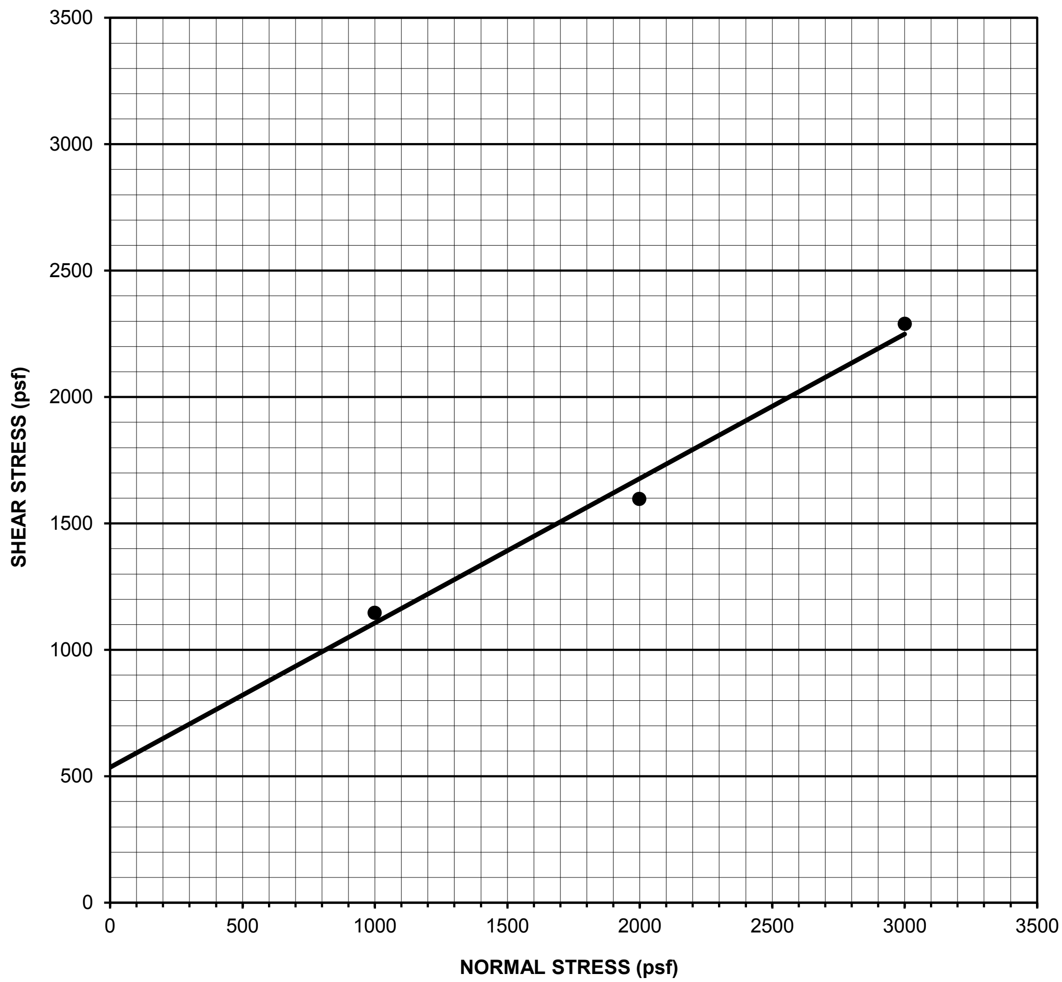
Direct Shear Test
ASTM D3080



Project	Oil and Travel Center
TES No.	170748
Sample Date	11/15/2017
Sample No.	B-5 @ 2'
Description	Silty SAND (SM)

Cohesion (psf)	**540**
Internal Friction Angle (ϕ)	**30**

Specimen	A	B	C	D	E
Dry Density (pcf)	121.6	121.6	121.6	---	---
Initial Water Content (%)	6.5	6.5	6.5	---	---
Final Water Content (%)	12.3	11.7	11.6	---	---
Normal Stress (pcf)	999	1998	3000	---	---
Maximum Shear (pcf)	1146	1597	2289	---	---

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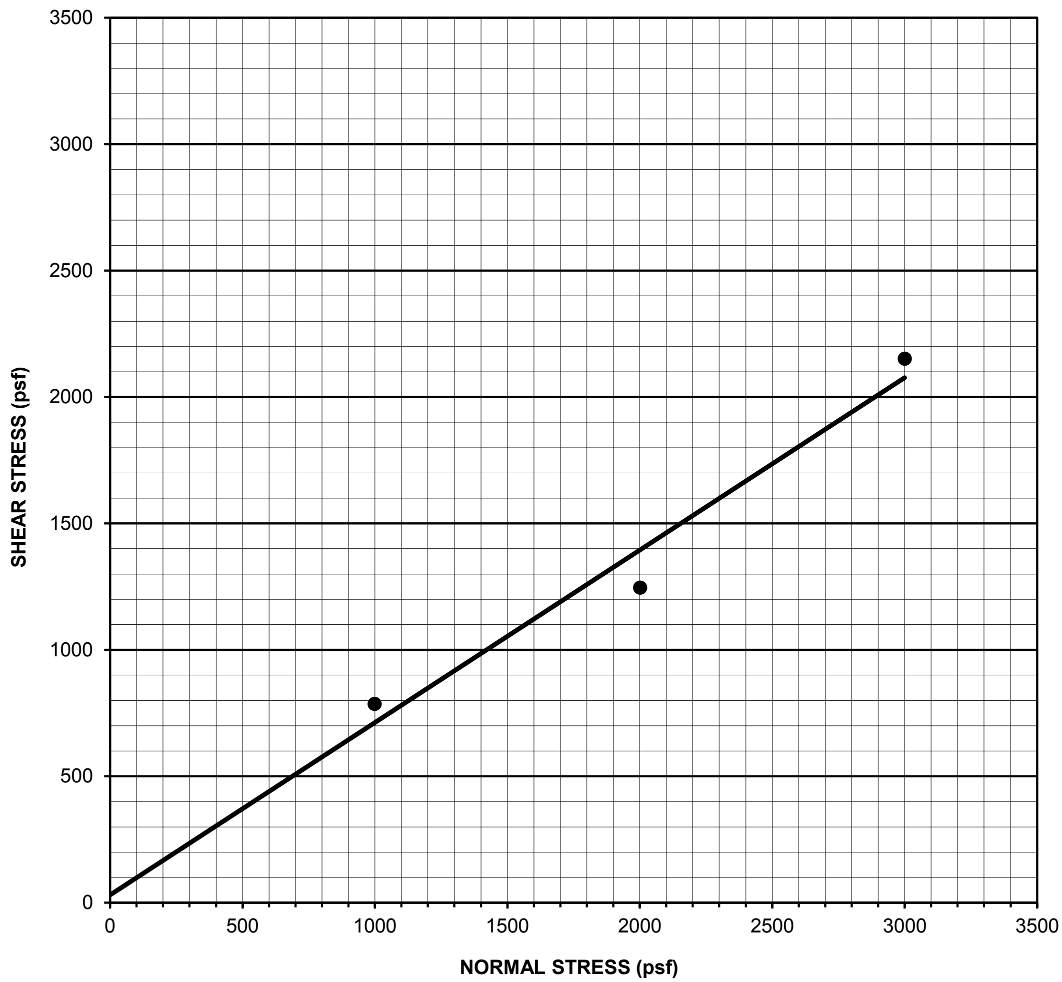
Direct Shear Test
ASTM D3080



Project	Oil and Travel Center
TES No.	170748
Sample Date	3/1/2016
Sample No.	B-1 @ 1'
Description	Silty SAND (SM)

Cohesion (psf)	**30**
Internal Friction Angle (ϕ)	**34**

Specimen	A	B	C	D	E
Dry Density (pcf)	121.6	121.6	121.6	---	---
Initial Water Content (%)	6.5	6.5	6.5	---	---
Final Water Content (%)	12.3	11.7	11.6	---	---
Normal Stress (pcf)	999	2001	3000	---	---
Maximum Shear (pcf)	786	1246	2151	---	---

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Method for Estimating the Service Life of Steel Culverts
Caltrans California Test 643

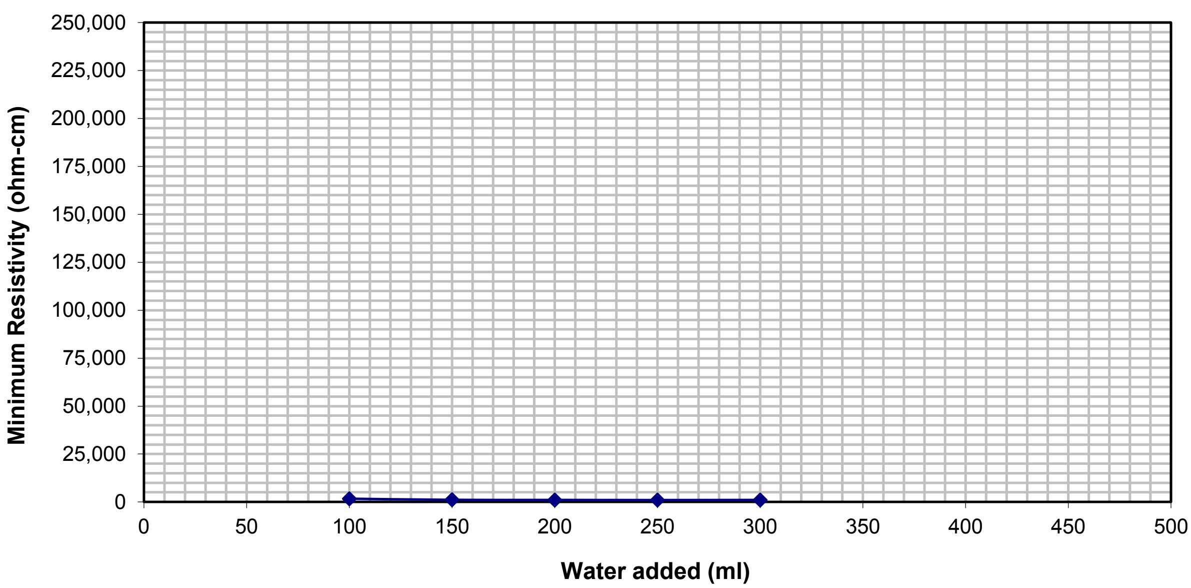
Project Name	Oil and Travel Center	Sample Location	B4 @ 0-3'
Project Number	170748	Test Date	12/4/2017
Sample Date	11/15/2017	Tested By	J.W.
Sampled By	Y. Mendoza	Material Description	Silty SAND (SM)

Sample Condition	**As Received**	**Minimum Resistivity**					
Water Added (ml)	0	100	150	200	250	300	
Resistance (ohm)	1,000,000	1,600	1,050	1,000	950	1,000	
Resistivity (ohm-cm)	1,065,000	1,704	1,118	1,065	1,012	1,065	

Minimum Resistivity (ohm-cm)	**1,012**	**Field Resistivity (ohm-cm)**

pH = 6.82 **EC =**

Box Constant=1.065



Years to perforation*	14

* Caltrans California Test 643 - Method for Estimating the Service Life of Steel Culverts

TECHNICON
ENGINEERING SERVICES, INC.

Chemical Analysis

SO_4 - Modified Caltrans 417 & CL - Modified Caltrans 417/422

Project	Oil and Travel Center	Technician	K.W.
	Fowler, CA	Date	12/4/2017
TES No.	170748	Remarks	Silty SAND (SM)

Sample Location	Soluble Sulfate SO_4-S		Soluble Chloride Cl	
B-4 @ 0'-3'	13.7	mg/Kg	31.9	mg/Kg
B-4 @ 0'-3'	15.9	mg/Kg	30.1	mg/Kg
B-4 @ 0'-3'	17.3	mg/Kg	28.4	mg/Kg
Average	**15.63**	**mg/Kg**	**30.13**	**mg/Kg**

Method for Estimating the Service Life of Steel Culverts
Caltrans California Test 643

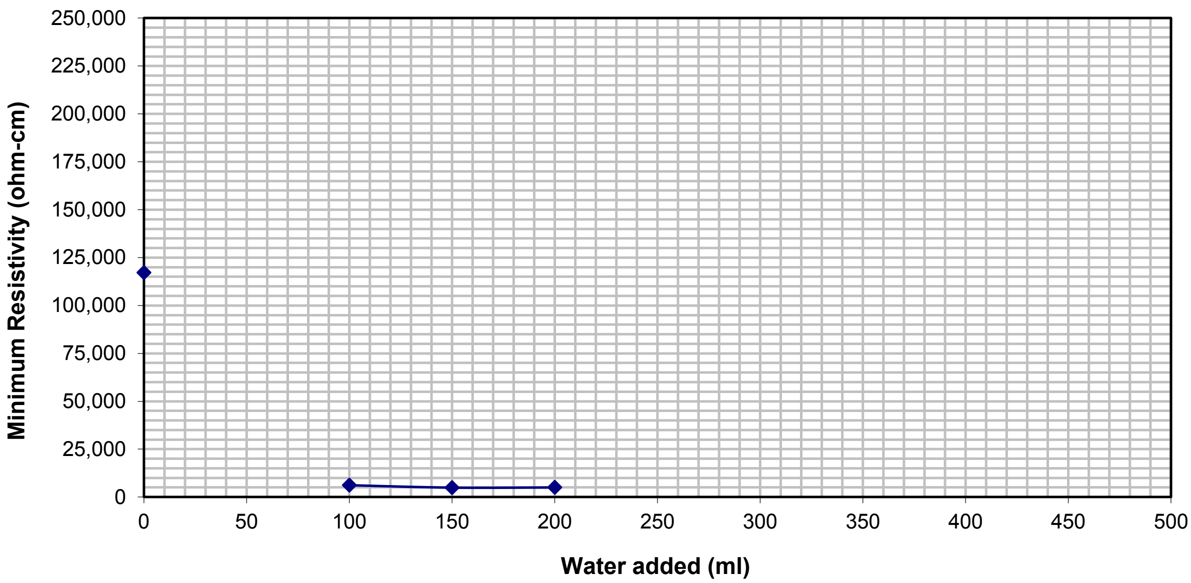
Project Name	Oil and Travel Center	Sample Location	B-9 @ 0'-3'
Project Number	170748	Test Date	12/4/2017
Sample Date	11/15/2017	Tested By	J.W.
Sampled By	Y. Mendoza	Material Description	Silty SAND (SM)

Sample Condition	**As Received**	**Minimum Resistivity**					
Water Added (ml)	0	100	150	200			
Resistance (ohm)	110,000	5,800	4,600	4,700			
Resistivity (ohm-cm)	117,150	6,177	4,899	5,006			

Minimum Resistivity (ohm-cm)	**4,899**	**Field Resistivity (ohm-cm)**

pH = 7.34 **EC =**

Box Constant=1.065



Years to perforation*	47

* Caltrans California Test 643 - Method for Estimating the Service Life of Steel Culverts

TECHNICON
ENGINEERING SERVICES, INC.

Chemical Analysis

SO_4 - Modified Caltrans 417 & CL - Modified Caltrans 417/422

Project	Oil and Travel Center	Technician	K.W.
	Fowler, CA	Date	12/4/2017
TES No.	170748	Remarks	Silty SAND (SM)

Sample Location	Soluble Sulfate SO_4-S		Soluble Chloride Cl	
B-9 @ 0'-3'	8.4	mg/Kg	5.3	mg/Kg
B-9 @ 0'-3'	7.5	mg/Kg	5.3	mg/Kg
B-9 @ 0'-3'	7.5	mg/Kg	5.3	mg/Kg
Average	**7.80**	**mg/Kg**	**5.30**	**mg/Kg**

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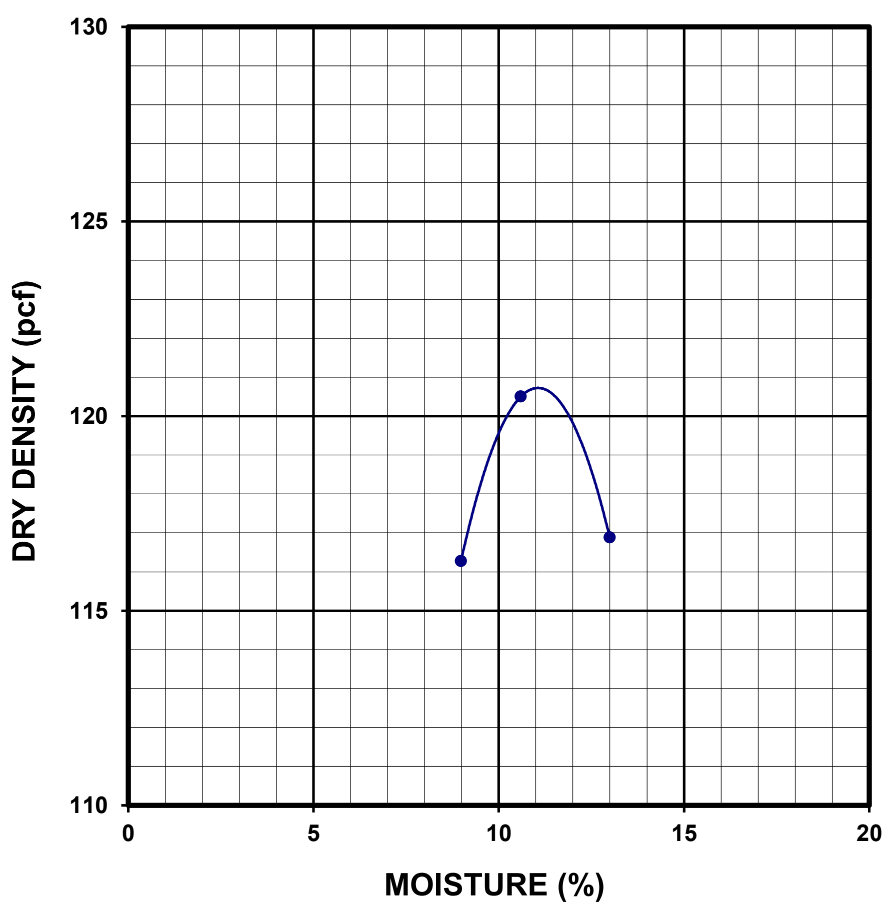
ENGINEERING SERVICES, INC.

Laboratory Compaction Characteristics of Soil using Modified Effort (56,000 ft - lbf/ft^3) (D1557-07)

Project: Oil and Travel Center TES # : 170748
Sample No.: B-6 @ 0-3' Tested By: D.F. Date: 1/2/2018
Sample Location:
Soil Classification: Clayey SILT (ML) Specific Gravity: Undetermined Method: **A** B C

		1	2	3	4	5
A.	As Recieved Moisture Content					
B.	Mass of Moist Specimen & Mold, gm	3951.1	4020.2	4027.0		
C.	Mass of Compaction Mold, gm	1976.0	2007.3	2007.3		
D.	Mass of Moist Specimen, gm	1914.1	2013.0	1995.0		
E.	Volume of Mold, ft.^{3}	0.0333	0.0333	0.0333		
F.	Wet Density, lb/ft^3 [D/(E*453.6)]	126.7	133.3	132.1		
G.	Mass of Moisture (wet), gm	200.0	500.0	500.0		
H.	Mass of Moisture (dry), gm	188.2	185.0	182.3		
I.	Moisture Content, % [100*(G-H)/H]	9.0	10.6	13.0		
J.	Dry Density, lb/ft^3 [F/(1+I/100)]	116.3	120.5	116.9		
K.	Moisture for 100% saturation					



Maximum Wet Density, lb/ft^3

134.0

Maximum Dry Density, lb/ft^3

120.8

Optimum Moisture Content,%

11.0

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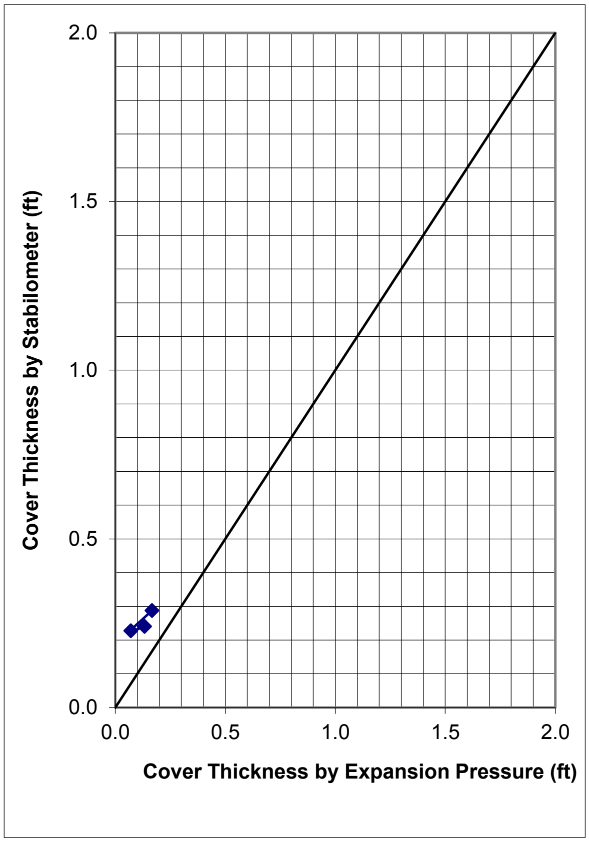
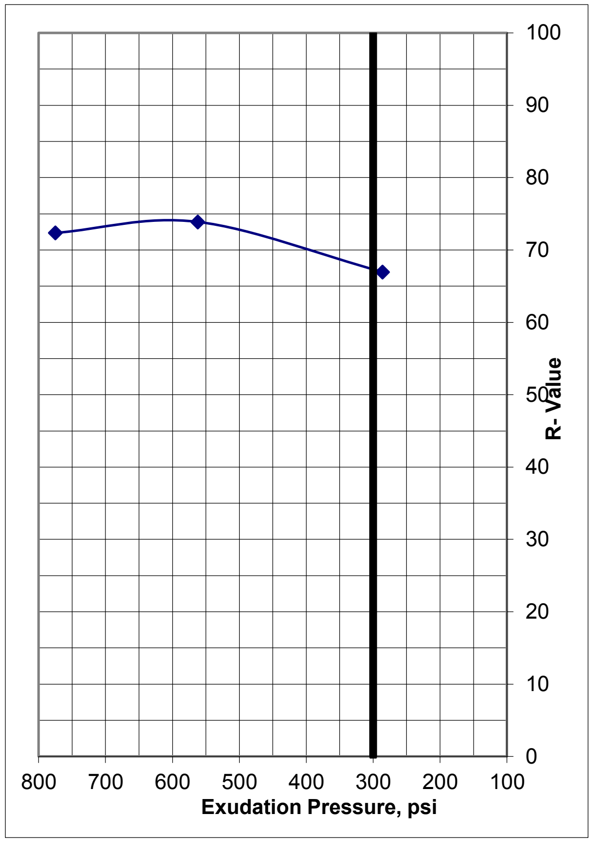
Resistance *R* - Value and Expansion Pressure of Compacted Soils

ASTM D2844-94, Cal 301

Project Name	Oil and Travel Center	Lab ID Number	17-6335
Project Number	170748	Sample Location	RV-1
Sample Date	11/16/17	Tested By	G.N.
Sampled By	Y. Mendoza	Date Tested	12/27/2017
Material Description	Silty SAND (SM)		





Specimen	1	2	3
Exudation Pressure, psi	286	562	775
Moisture at Test, %	9.9	9.6	9.4
Dry Density, pcf	117.5	118.1	118.1
Expansion Pressure, psf	22	9	17
Thickness by Stabilometer, ft.	0.3	0.2	0.2
Thickness by Expansion Pressure, ft.	0.2	0.1	0.1
R-Value by Stabilometer	67	74	72
R-Value by Expansion Pressure (TI=4.5)	NA		
R-Value at 300 psi Exudation Pressure	67		

Controlling R-Value	**67**

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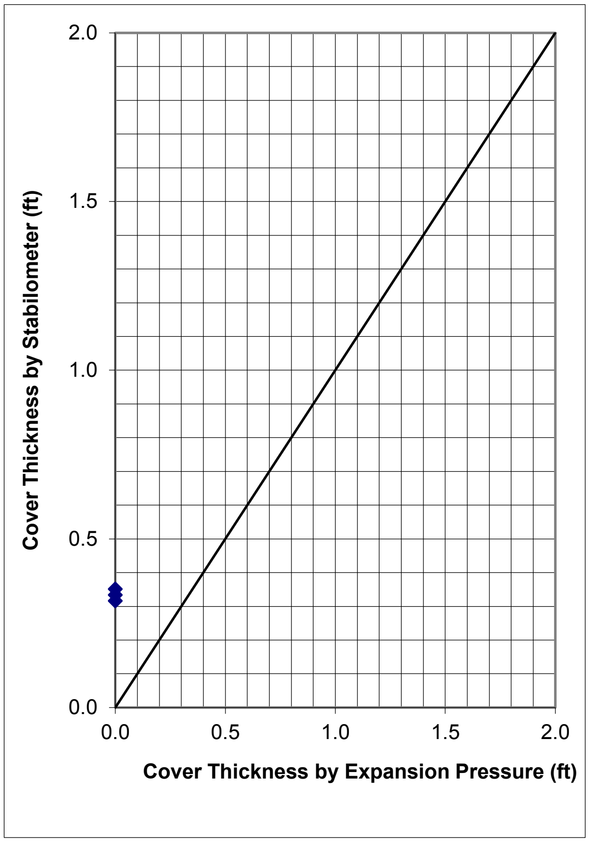
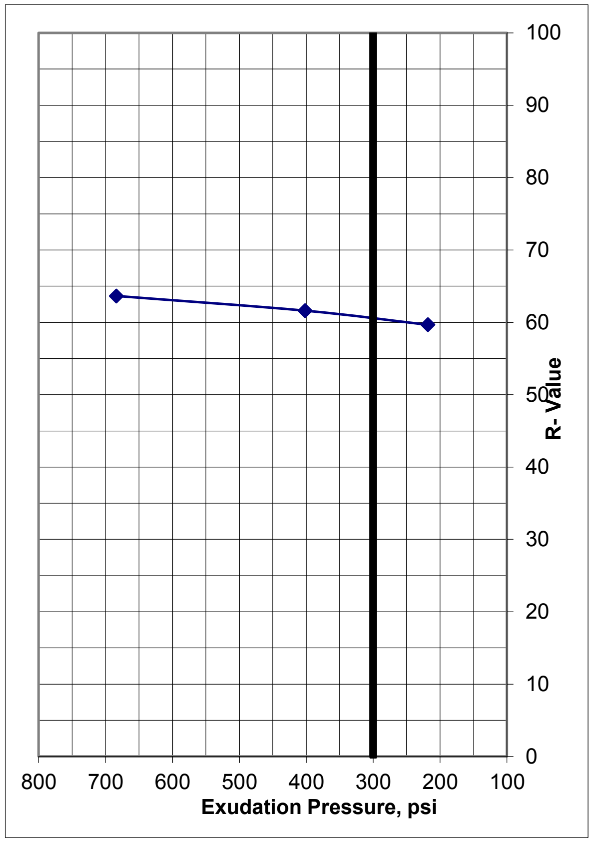
Resistance *R* - Value and Expansion Pressure of Compacted Soils

ASTM D2844-94, Cal 301

Project Name	Oil and Travel Center	Lab ID Number	17-6335
Project Number	170748	Sample Location	RV-2
Sample Date	11/16/17	Tested By	G.N.
Sampled By	Y. Mendoza	Date Tested	12/27/2017
Material Description	Silty SAND (SM)		





Specimen	1	2	3
Exudation Pressure, psi	218	402	684
Moisture at Test, %	9.0	8.8	8.6
Dry Density, pcf	118.6	119.4	118.8
Expansion Pressure, psf	0	0	0
Thickness by Stabilometer, ft.	0.4	0.3	0.3
Thickness by Expansion Pressure, ft.	0.0	0.0	0.0
R-Value by Stabilometer	60	62	64
R-Value by Expansion Pressure (TI=4.5)	NA		
R-Value at 300 psi Exudation Pressure	61		

Controlling R-Value	**61**

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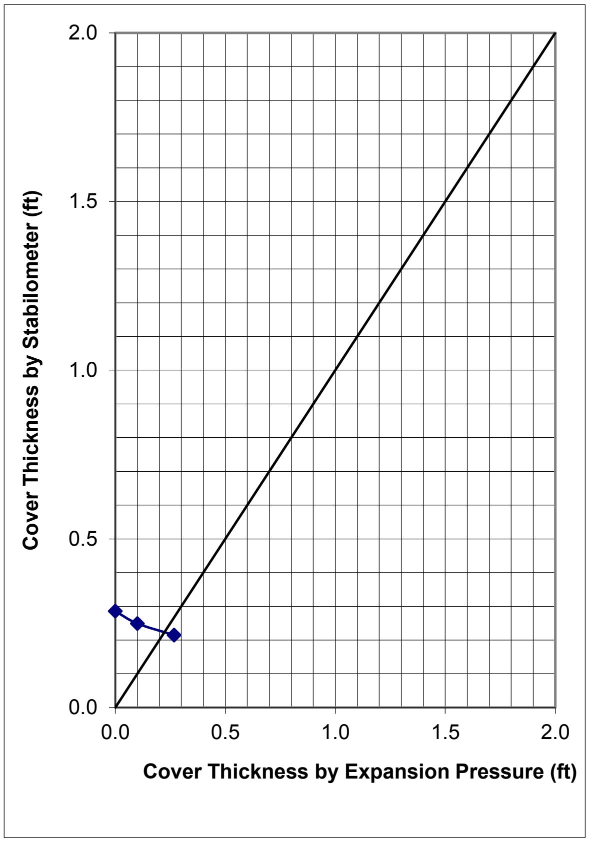
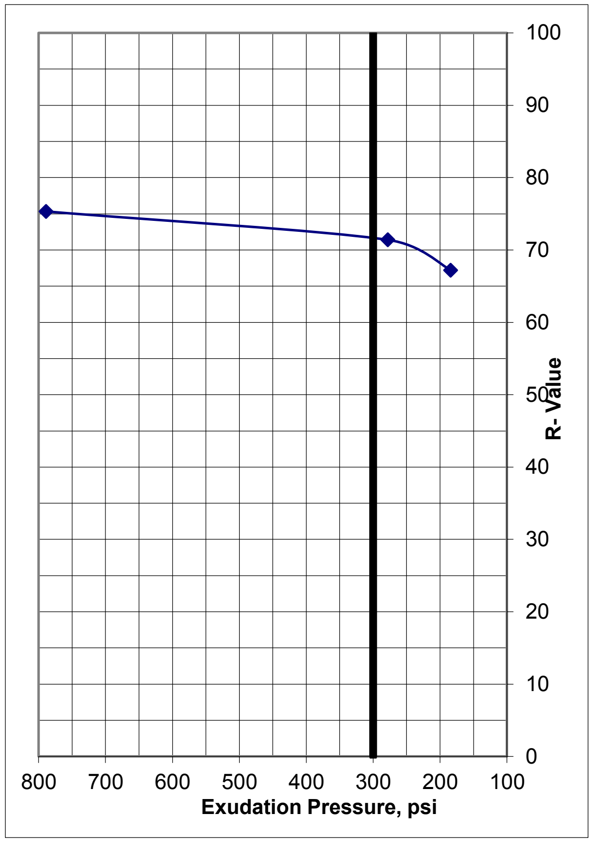
Resistance *R* - Value and Expansion Pressure of Compacted Soils

ASTM D2844-94, Cal 301

Project Name	Oil and Travel Center	Lab ID Number	17-6335
Project Number	170748	Sample Location	RV-3
Sample Date	11/16/17	Tested By	G.N.
Sampled By	Y. Mendoza	Date Tested	12/27/2017
Material Description	Silty SAND (SM)		





Specimen	1	2	3
Exudation Pressure, psi	184	278	789
Moisture at Test, %	8.0	7.8	7.6
Dry Density, pcf	125.5	126.5	126.7
Expansion Pressure, psf	0	13	35
Thickness by Stabilometer, ft.	0.3	0.2	0.2
Thickness by Expansion Pressure, ft.	0.0	0.1	0.3
R-Value by Stabilometer	67	71	75
R-Value by Expansion Pressure (TI=4.5)	NA		
R-Value at 300 psi Exudation Pressure	71		

Controlling R-Value	**71**

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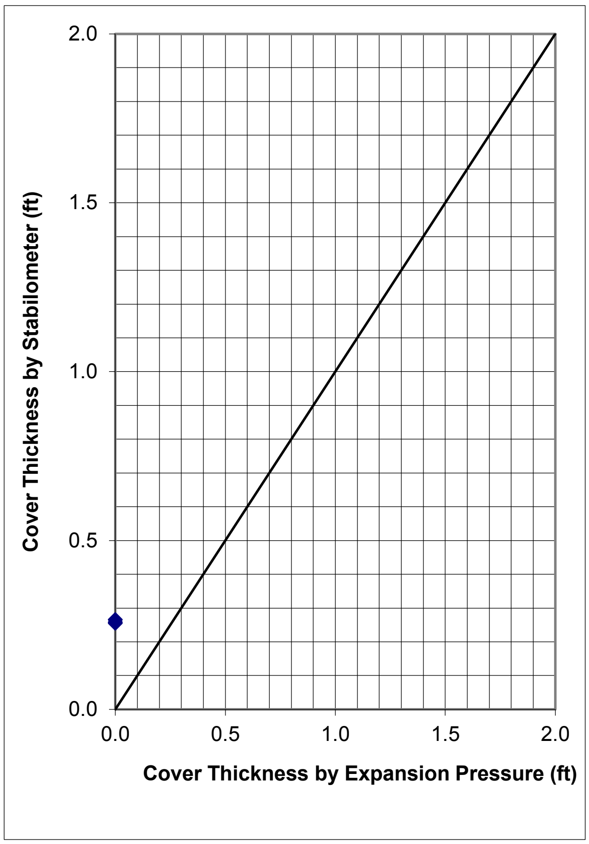
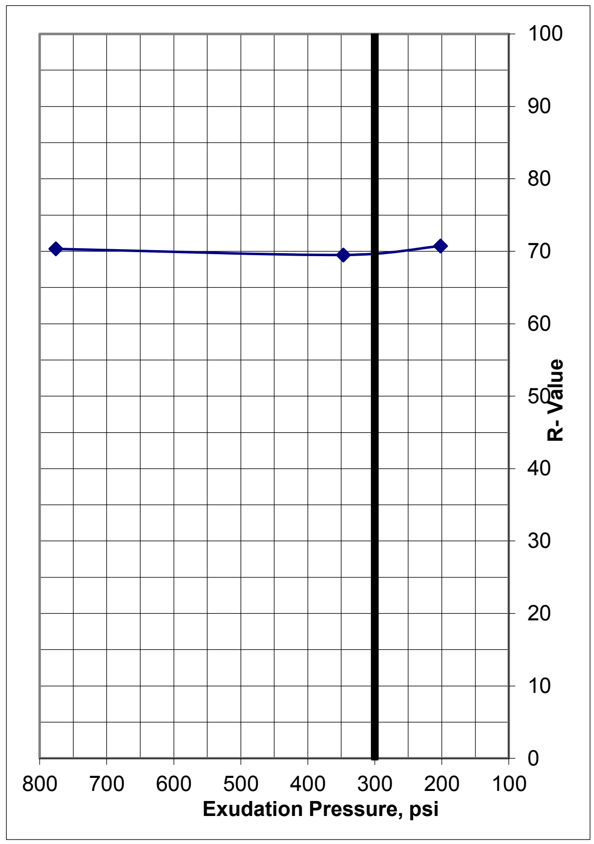
Resistance *R -* Value and Expansion Pressure of Compacted Soils
ASTM D2844-94, Cal 301

Project Name	Oil and Travel Center	Lab ID Number	17-6335
Project Number	170748	Sample Location	RV-4
Sample Date	11/16/17	Tested By	G.N.
Sampled By	Y. Mendoza	Date Tested	12/27/2017
Material Description	Silty SAND (SM)		





Specimen	1	2	3
Exudation Pressure, psi	202	347	776
Moisture at Test, %	15.0	14.5	14.0
Dry Density, pcf	112.4	114.8	114.1
Expansion Pressure, psf	0	0	0
Thickness by Stabilometer, ft.	0.3	0.3	0.3
Thickness by Expansion Pressure, ft.	0.0	0.0	0.0
R-Value by Stabilometer	71	69	70
R-Value by Expansion Pressure (TI=4.5)	NA		
R-Value at 300 psi Exudation Pressure	70		

Controlling R-Value	**70**

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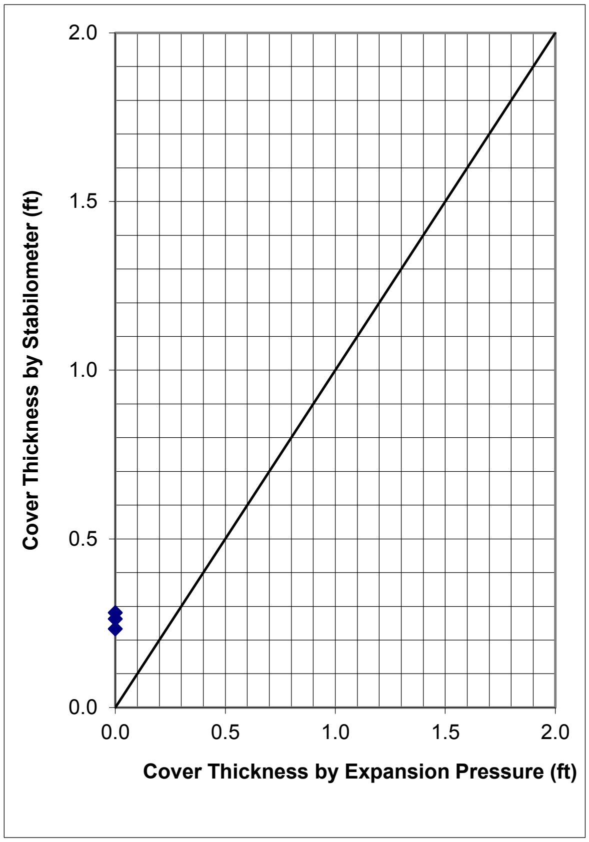
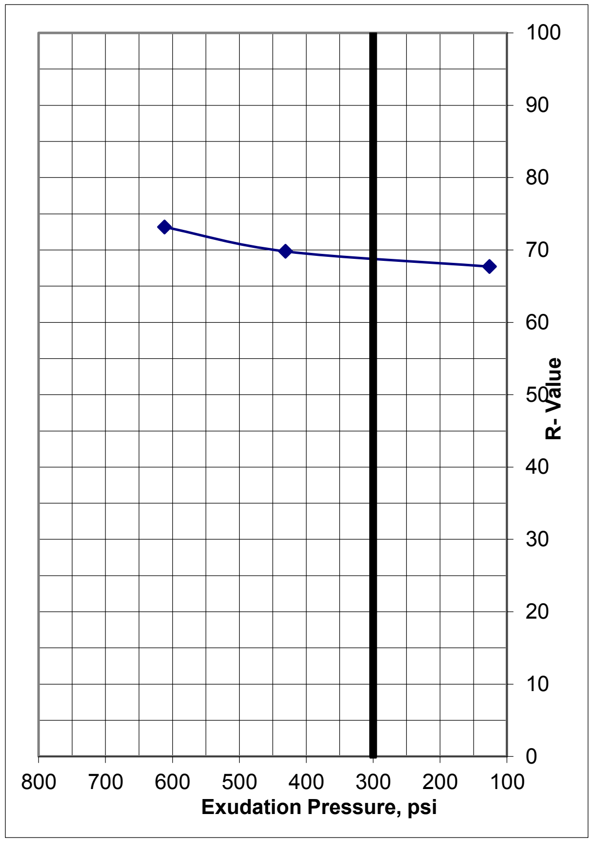
Resistance *R* - Value and Expansion Pressure of Compacted Soils
ASTM D2844-94, Cal 301

Project Name	Oil and Travel Center	Lab ID Number	17-6335
Project Number	170748	Sample Location	RV-5
Sample Date	11/16/17	Tested By	G.N.
Sampled By	Y. Mendoza	Date Tested	12/27/2017
Material Description	Silty SAND (SM)		





Specimen	1	2	3
Exudation Pressure, psi	126	431	612
Moisture at Test, %	9.2	8.6	7.9
Dry Density, pcf	121.8	121.0	122.7
Expansion Pressure, psf	0	0	0
Thickness by Stabilometer, ft.	0.3	0.3	0.2
Thickness by Expansion Pressure, ft.	0.0	0.0	0.0
R-Value by Stabilometer	68	70	73
R-Value by Expansion Pressure (TI=4.5)	NA		
R-Value at 300 psi Exudation Pressure	68		

Controlling R-Value	**68**

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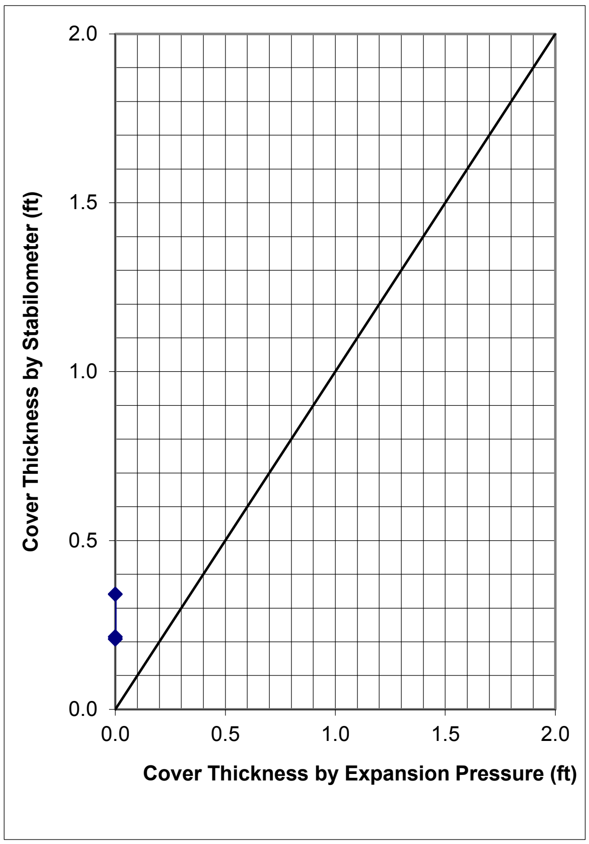
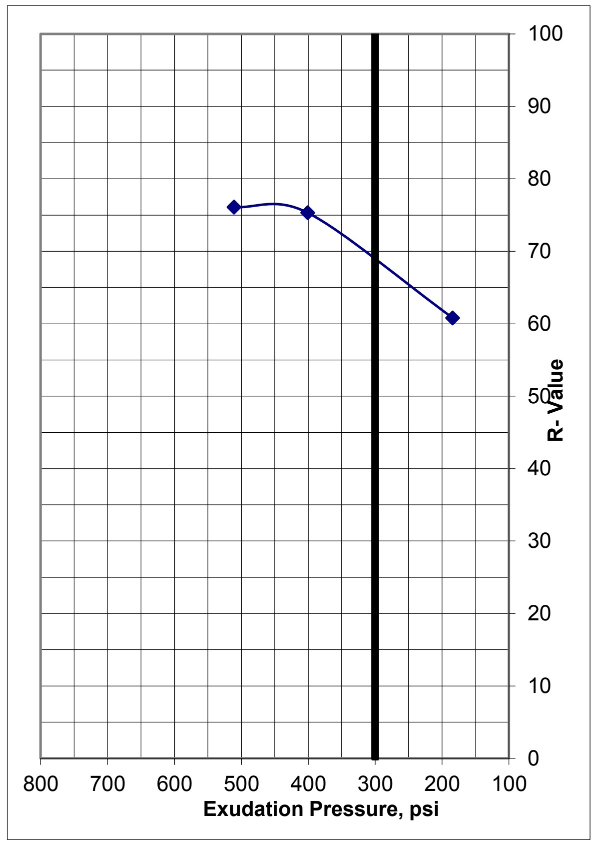
Resistance *R* - Value and Expansion Pressure of Compacted Soils

ASTM D2844-94, Cal 301

Project Name	Oil and Travel Center	Lab ID Number	17-6335
Project Number	170748	Sample Location	RV-6
Sample Date	11/16/17	Tested By	G.N.
Sampled By	Y. Mendoza	Date Tested	12/27/2017
Material Description	Silty SAND (SM)		





Specimen	1	2	3
Exudation Pressure, psi	184	401	511
Moisture at Test, %	7.7	7.2	7.0
Dry Density, pcf	127.4	127.5	128.3
Expansion Pressure, psf	0	0	0
Thickness by Stabilometer, ft.	0.3	0.2	0.2
Thickness by Expansion Pressure, ft.	0.0	0.0	0.0
R-Value by Stabilometer	61	75	76
R-Value by Expansion Pressure (TI=4.5)	NA		
R-Value at 300 psi Exudation Pressure	69		

Controlling R-Value	**69**

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Appendix B

CEQA Notices

Print Form

Appendix C

Notice of Completion & Environmental Document Transmittal

Mail to: State Clearinghouse, P.O. Box 3044, Sacramento, CA 95812-3044 (916) 445-0613
For Hand Delivery/Street Address: 1400 Tenth Street, Sacramento, CA 95814

SCH #

Project Title: Buford Oil Company Travel Center - Conditional Use Permit 17-03

Lead Agency: City of Fowler — Contact Person: Dawn E. Marple
Mailing Address: 128 S 5th Street — Phone: (559) 834-3113
City: Fowler — Zip: 93625 — County: Fresno

Project Location: County: Fresno — City/Nearest Community: Fowler
Cross Streets: E Manning Avenue between State Route 99 and Golden State Boulevard — Zip Code: 93625
Longitude/Latitude (degrees, minutes and seconds): 36 ° 36 ′ 26.5 ″ N / 119 ° 39 ′ 30.6 ″ W — Total Acres: 18.72
Assessor's Parcel No.: 345-180-30 — Section: 23 — Twp.: 15 — Range: 21 — Base: MDB&M
Within 2 Miles: State Hwy #: 99 — Waterways: Fowler Switch Canal
Airports: Selma Airport — Railways: Union Pacific RR — Schools: John Sutter Middle Schoo

Document Type:

CEQA: ☒ NOP ☐ Early Cons ☐ Neg Dec ☐ Mit Neg Dec ☐ Draft EIR ☐ Supplement/Subsequent EIR (Prior SCH No.) ______ Other: ______
NEPA: ☐ NOI ☐ EA ☐ Draft EIS ☐ FONSI
Other: ☐ Joint Document ☐ Final Document ☐ Other: ______

Local Action Type:

☐ General Plan Update ☐ General Plan Amendment ☐ General Plan Element ☐ Community Plan
☐ Specific Plan ☐ Master Plan ☐ Planned Unit Development ☐ Site Plan
☐ Rezone ☐ Prezone ☒ Use Permit ☐ Land Division (Subdivision, etc.)
☐ Annexation ☐ Redevelopment ☐ Coastal Permit ☐ Other: ______

Development Type:

☐ Residential: Units ______ Acres ______
☐ Office: Sq.ft. ______ Acres ______ Employees ______
☒ Commercial: Sq.ft. ______ Acres 18.72 Employees ______
☐ Industrial: Sq.ft. ______ Acres ______ Employees ______
☐ Educational: ______
☐ Recreational: ______
☐ Water Facilities: Type ______ MGD ______
☐ Transportation: Type ______
☐ Mining: Mineral ______
☐ Power: Type ______ MW ______
☐ Waste Treatment: Type ______ MGD ______
☐ Hazardous Waste: Type ______
☐ Other: ______

Project Issues Discussed in Document:

☒ Aesthetic/Visual
☒ Agricultural Land
☒ Air Quality
☒ Archeological/Historical
☒ Biological Resources
☐ Coastal Zone
☐ Drainage/Absorption
☐ Economic/Jobs
☐ Fiscal
☒ Flood Plain/Flooding
☒ Forest Land/Fire Hazard
☒ Geologic/Seismic
☒ Minerals
☒ Noise
☒ Population/Housing Balance
☒ Public Services/Facilities
☒ Recreation/Parks
☒ Schools/Universities
☒ Septic Systems
☒ Sewer Capacity
☒ Soil Erosion/Compaction/Grading
☒ Solid Waste
☒ Toxic/Hazardous
☒ Traffic/Circulation
☒ Vegetation
☒ Water Quality
☒ Water Supply/Groundwater
☒ Wetland/Riparian
☒ Growth Inducement
☒ Land Use
☒ Cumulative Effects
☐ Other: ______

Present Land Use/Zoning/General Plan Designation:

Zoning: C-3 (General Commercial) General Plan Designation: General Commercial

Project Description: *(please use a separate page if necessary)*

The applicant proposes to design and construct the Buford Oil Company Travel Center on approximately 18 acres located in the Golden State Industrial corridor, APN 345-180-30. The proposed project would involve the development of additional fueling facilities, traveler amenities, 2 drive-thru restaurants, a 24-hour diner, a 4-story hotel with 120 rooms, and parking facilities for motorists and commercial truck operators classified under a Conditional Use Permit Application.

Note: The State Clearinghouse will assign identification numbers for all new projects. If a SCH number already exists for a project (e.g. Notice of Preparation or previous draft document) please fill in.

Reviewing Agencies Checklist

Lead Agencies may recommend State Clearinghouse distribution by marking agencies below with and "**X**".
If you have already sent your document to the agency please denote that with an "**S**".

____	Air Resources Board	____	Office of Historic Preservation
____	Boating & Waterways, Department of	____	Office of Public School Construction
____	California Emergency Management Agency	____	Parks & Recreation, Department of
____	California Highway Patrol	____	Pesticide Regulation, Department of
x	Caltrans District # 6	____	Public Utilities Commission
____	Caltrans Division of Aeronautics	____	Regional WQCB # ____
____	Caltrans Planning	____	Resources Agency
____	Central Valley Flood Protection Board	____	Resources Recycling and Recovery, Department of
____	Coachella Valley Mtns. Conservancy	____	S.F. Bay Conservation & Development Comm.
____	Coastal Commission	____	San Gabriel & Lower L.A. Rivers & Mtns. Conservancy
____	Colorado River Board	____	San Joaquin River Conservancy
____	Conservation, Department of	____	Santa Monica Mtns. Conservancy
____	Corrections, Department of	____	State Lands Commission
____	Delta Protection Commission	____	SWRCB: Clean Water Grants
____	Education, Department of	____	SWRCB: Water Quality
____	Energy Commission	____	SWRCB: Water Rights
____	Fish & Game Region # ____	____	Tahoe Regional Planning Agency
____	Food & Agriculture, Department of	____	Toxic Substances Control, Department of
____	Forestry and Fire Protection, Department of	____	Water Resources, Department of
____	General Services, Department of		
____	Health Services, Department of	____	Other: ____
____	Housing & Community Development	____	Other: ____
____	Native American Heritage Commission		

Local Public Review Period (to be filled in by lead agency)

Starting Date 6/11/2018 Ending Date 7/11/2018

Lead Agency (Complete if applicable):

Consulting Firm: Provost & Pritchard Consulting Group
Address: 286 W Cromwell Avenue
City/State/Zip: Fresno/CA/93711
Contact: Dawn E. Marple
Phone: (559) 449-2700

Applicant: Tom Buford, Buford Oil Company
Address: P.O. Box 104
City/State/Zip: Hanford, CA 93232
Phone: (559) 582-9028

Signature of Lead Agency Representative: Dawn E. Marple **Date:** June 8, 2018

Authority cited: Section 21083, Public Resources Code. Reference: Section 21161, Public Resources Code.

NOTICE OF PREPARATION OF ENVIRONMENTAL IMPACT REPORT AND

NOTICE OF PUBLIC SCOPING MEETING REGARDING

PROPOSED BUFORD OIL COMPANY TRAVEL CENTER

The City of Fowler (City) will be the Lead Agency and will have an Environmental Impact Report (EIR) prepared for Conditional Use Permit (CUP) Application No. 17-03 for the Buford Oil Company Travel Center Project (Project), described below. The City of Fowler has hired a consultant to prepare the EIR for the Project in accordance with the California Environmental Quality Act (CEQA). The City will consider the EIR in its action on the Project at a later date to be determined and announced.

Your participation as a responsible/trustee agency/cooperating agency or interested person is requested in the preparation and review of the Draft EIR. We are seeking your views at the time regarding the scope and content of the environmental information that is relevant to you or to your agency's statutory responsibilities.

The Project may require actions or approvals by other agencies. Please inform us of any applicable permit and environmental requirements of your agency with respect to the Project. Your agency may need to use the EIR when considering your permit or other approval for the Project.

Project Title: Buford Oil Company Travel Center

Project Applicant: Buford Oil Company
P O Box 104
9925 8 3/4 Ave
Hanford, CA 93232

Project Location: The Project is located in the City of Fowler within Section 23, Township 15S South, Range 21E East, MDB&M (APN 345-180-03). The Project site is located just north of East Manning Avenue between State Route 99 and Golden State Boulevard. The parcel is bounded by East Valley Drive to the north, Golden State Boulevard to the east, East Manning Avenue to the south, and vacant parcels to the west.

Project Description: The Project includes the design and construction of the Buford Oil Company Travel Center on approximately 18 acres located in the Golden State Industrial corridor, on APN 345-180-30. The Project would involve the development of additional fueling facilities, traveler amenities such as: restrooms, a lounge, and seating, 2 drive-through restaurants, a 24-hour diner, a 4-story hotel with 120 rooms, and parking facilities for motorists and commercial truck operators classified under a Conditional Use Permit Application

Potential Environmental Effects: Potentially significant environmental impacts of the Project include, but are not limited to the following: (1) Air Quality; (2) Greenhouse Gases;(3) Hydrology and Water Quality; and (4) Transportation and Traffic.

The Operational Statement and associated maps are available for review at the City of Fowler Planning and Community Development Department, 128 S 5th Street, Fowler, CA 93625, during normal business hours Monday through Friday, 8AM to 5PM.

Written Comments: Comments in response to the Notice of Preparation will be accepted through 5:00 P.M., July 11, 2018. Please send your written comments to:

Dawn E. Marple, Contract City Planner
City of Fowler Planning and Community Development Department
128 South 5th Street
Fowler, CA 93625
Phone: (559) 834-3113
Fax: (559) 834-1284
Email: dmarple@ci.fowler.ca.us

All written comments should reference CUP 17-03, Buford Oil Company Travel Center Project Environmental Impact Report. Please include your name, address, and phone number, and/or email so that we may contact you for clarification, if necessary.

Persons with questions or requests for information may call Dawn E. Marple at (559) 834-3113 or email at dmarple@ci.fowler.ca.us

Public Scoping Meeting: The CEQA process encourages comments and questions from the public throughout the planning process. Pursuant to Section 15083 of the CEQA Guidelines, a Public Scoping Meeting will be held to solicit public comments on the scope and content of the EIR. The Public Scoping Meeting will be held on:

Date: Wednesday, June 20, 2018
Time: 6:30 P.M. to 8:00 P.M.
Place: City of Fowler, Council Chambers. Located at 128 S. 5th Street, Fowler, CA 93625

Newspaper Notice of Preparation Published: The Fresno Business Journal, June 11, 2018.

Aerial Map

6/6/2018 : G:\Fowler City of-2619\261917012-Buford Oil CUP\GIS\Map\Aerial.mxd

NOTICE OF PREPARATION OF ENVIRONMENTAL IMPACT REPORT AND NOTICE OF PUBLIC SCOPING MEETING REGARDING PROPOSED BUFORD OIL COMPANY TRAVEL CENTER

NOTICE IS HEREBY GIVEN THAT the City of Fowler will be the Lead Agency and will prepare an environmental impact report as required by the California Environmental Quality Act (CEQA) and State Guidelines implementing the Act for the project identified below. The views of Responsible, Trustee and other interested agencies, organizations and individuals as to the scope and content of the environmental information germane to your areas of concerns or your agency's statutory responsibilities in connection with the environmental effects of the proposed project are encouraged and welcomed. Under circumstances expressly allowed under Government Code Section 15096 of the State CEQA Guidelines, Responsible Agencies will be able to use the EIR prepared by City of Fowler when considering their respective permits or other approvals for the project. Further information about the Project may be available upon request from the Lead Agency by contacting Dawn E. Marple, Contract City Planner, City of Fowler, Planning and Community Development Department, 128 S. 5th Street, Fowler, CA 93625, 559-834-4832

Pursuant to CEQA Guidelines Government Code Sections 15082 and 15083, early consultation, also called scoping, provides the Lead agency opportunity to consult with other persons, organizations, trustee agencies, adjoining cities and counties that may be concerned with the environmental effects of the proposed Project. The City of Fowler will also hold a Public Scoping Meeting at the Fowler City Council Chambers, 128 S. 5th Street, Fowler, CA, to introduce the proposed Project, and gather public agency, interested party and community stakeholder comments, questions, and concerns regarding environmental impacts that could potentially result from the Project. All interested individuals are invited to appear to give oral or written testimony regarding the proposed Project's potential significant environmental impacts, mitigation measures, and alternatives. The Scoping Meeting will be held on June 20, 2018 starting at 6:30PM.

The applicant proposes to design and construct the Buford Oil Company Travel Center on approximately 18 acres located in the Golden State Industrial corridor, APN 345-180-30. The proposed project would involve the development of additional fueling facilities, traveler amenities, 2 drive-thru restaurants, a 24-hour diner, a 4-story hotel with 120 rooms, and parking facilities for motorists and commercial truck operators classified under a Conditional Use Permit Application. The EIR will analyze potential significant environmental impacts associated with construction, operation and maintenance of the proposed project. Specific areas of analysis will include all resource categories included in Appendix G to the State California Environmental Quality Act (CEQA) Guidelines for which potential significant impacts from the project may result. If you feel there are specific significant impacts that could result from the project we invite you to describe the nature of those impacts, as well as offer feasible and reasonable mitigation for that impact that should be considered in the EIR. As the terms are defined in CEQA, the EIR is required to assess impacts for which there is substantial evidence or fair argument of its potential to be significant and will also identify reasonable and feasible mitigation measures that may help avoid or reduce the impact to a less than significant level.

Due to the time limits mandated by State law, your response must be received no later than 30 days after receipt of this notice or by close of business, 5:00 p.m. on July 11, 2018 by the City of Fowler's Planning and Community Development Department, Attention: Dawn E. Marple, Contract City Planner, City of Fowler, Planning and Community Development Department, 128 S. 5th Street, Fowler, CA 93625, email: dmarple@ci.fowler.ca.us, or via phone at 559-834-4832. Comments may also be submitted orally or in writing at the scoping meeting.

To appear once in English in the Fresno Business Journal, a newspaper of general daily distribution, on Monday, June 11, 2018.

Appendix C

CalEEMod Output files

Buford Oil Existing Conditions

Fresno County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Parking Lot	100.00	Space	0.90	40,000.00	0
Fast Food Restaurant w/o Drive Thru	3.90	1000sqft	0.09	3,900.00	0
Gasoline/Service Station	22.00	Pump	0.07	3,105.85	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	45
Climate Zone	3			**Operational Year**	2021
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	641.35	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Total of 10 acres currently developed.

Table Name	Column Name	Default Value	New Value

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2019	0.2345	1.7512	1.4015	2.5200e-003	0.0345	0.0948	0.1292	0.0131	0.0910	0.1041	0.0000	214.4220	214.4220	0.0398	0.0000	215.4162
2020	0.0940	0.2726	0.2501	4.5000e-004	3.5500e-003	0.0141	0.0177	9.6000e-004	0.0136	0.0145	0.0000	38.0246	38.0246	7.1200e-003	0.0000	38.2026
Maximum	**0.2345**	**1.7512**	**1.4015**	**2.5200e-003**	**0.0345**	**0.0948**	**0.1292**	**0.0131**	**0.0910**	**0.1041**	**0.0000**	**214.4220**	**214.4220**	**0.0398**	**0.0000**	**215.4162**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2019	0.2345	1.7512	1.4015	2.5200e-003	0.0345	0.0948	0.1292	0.0131	0.0910	0.1041	0.0000	214.4218	214.4218	0.0398	0.0000	215.4160
2020	0.0940	0.2726	0.2501	4.5000e-004	3.5500e-003	0.0141	0.0177	9.6000e-004	0.0136	0.0145	0.0000	38.0245	38.0245	7.1200e-003	0.0000	38.2025
Maximum	**0.2345**	**1.7512**	**1.4015**	**2.5200e-003**	**0.0345**	**0.0948**	**0.1292**	**0.0131**	**0.0910**	**0.1041**	**0.0000**	**214.4218**	**214.4218**	**0.0398**	**0.0000**	**215.4160**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Buford Oil Existing Conditions - Fresno County, Annual

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	3-29-2019	6-28-2019	0.6964	0.6964
2	6-29-2019	9-28-2019	0.6411	0.6411
3	9-29-2019	12-28-2019	0.6347	0.6347
4	12-29-2019	3-28-2020	0.3799	0.3799
		Highest	0.6964	0.6964

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.0358	1.0000e-005	1.1600e-003	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.2500e-003	2.2500e-003	1.0000e-005	0.0000	2.4000e-003
Energy	4.7700e-003	0.0434	0.0365	2.6000e-004		3.3000e-003	3.3000e-003		3.3000e-003	3.3000e-003	0.0000	92.1613	92.1613	2.9400e-003	1.2900e-003	92.6181
Mobile	1.7943	20.8776	12.2305	0.0556	2.4641	0.0479	2.5119	0.6643	0.0453	0.7096	0.0000	5,189.4389	5,189.4389	0.9784	0.0000	5,213.8987
Waste						0.0000	0.0000		0.0000	0.0000	11.5258	0.0000	11.5258	0.6812	0.0000	28.5548
Water						0.0000	0.0000		0.0000	0.0000	0.4683	2.5827	3.0509	0.0482	1.1600e-003	4.6018
Total	**1.8348**	**20.9210**	**12.2681**	**0.0558**	**2.4641**	**0.0512**	**2.5152**	**0.6643**	**0.0486**	**0.7129**	**11.9941**	**5,284.1851**	**5,296.1792**	**1.7107**	**2.4500e-003**	**5,339.6757**

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.0358	1.0000e-005	1.1600e-003	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.2500e-003	2.2500e-003	1.0000e-005	0.0000	2.4000e-003
Energy	4.7700e-003	0.0434	0.0365	2.6000e-004		3.3000e-003	3.3000e-003		3.3000e-003	3.3000e-003	0.0000	92.1613	92.1613	2.9400e-003	1.2900e-003	92.6181
Mobile	1.7943	20.8776	12.2305	0.0556	2.4641	0.0479	2.5119	0.6643	0.0453	0.7096	0.0000	5,189.4389	5,189.4389	0.9784	0.0000	5,213.8987
Waste						0.0000	0.0000		0.0000	0.0000	11.5258	0.0000	11.5258	0.6812	0.0000	28.5548
Water						0.0000	0.0000		0.0000	0.0000	0.4683	2.5827	3.0509	0.0482	1.1600e-003	4.6018
Total	**1.8348**	**20.9210**	**12.2681**	**0.0558**	**2.4641**	**0.0512**	**2.5152**	**0.6643**	**0.0486**	**0.7129**	**11.9941**	**5,284.1851**	**5,296.1792**	**1.7107**	**2.4500e-003**	**5,339.6757**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	3/29/2019	4/25/2019	5	20	
2	Site Preparation	Site Preparation	4/26/2019	4/29/2019	5	2	
3	Grading	Grading	4/30/2019	5/3/2019	5	4	
4	Building Construction	Building Construction	5/4/2019	2/7/2020	5	200	
5	Paving	Paving	2/8/2020	2/21/2020	5	10	
6	Architectural Coating	Architectural Coating	2/22/2020	3/6/2020	5	10	

Acres of Grading (Site Preparation Phase): 1

Acres of Grading (Grading Phase): 1.5

Acres of Paving: 0.9

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 10,509; Non-Residential Outdoor: 3,503; Striped Parking Area: 2,400 (Architectural Coating – sqft)

<u>OffRoad Equipment</u>

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Rubber Tired Dozers	1	8.00	247	0.40
Demolition	Tractors/Loaders/Backhoes	3	8.00	97	0.37
Site Preparation	Graders	1	8.00	187	0.41
Site Preparation	Rubber Tired Dozers	1	7.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Grading	Graders	1	6.00	187	0.41
Grading	Rubber Tired Dozers	1	6.00	247	0.40
Grading	Tractors/Loaders/Backhoes	1	7.00	97	0.37
Building Construction	Cranes	1	6.00	231	0.29
Building Construction	Forklifts	1	6.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	1	6.00	97	0.37
Building Construction	Welders	3	8.00	46	0.45
Paving	Cement and Mortar Mixers	1	6.00	9	0.56
Paving	Pavers	1	6.00	130	0.42
Paving	Paving Equipment	1	8.00	132	0.36
Paving	Rollers	1	7.00	80	0.38
Paving	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Architectural Coating	Air Compressors	1	6.00	78	0.48

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	5	13.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	3	8.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	3	8.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	7	19.00	8.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	5	13.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	4.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Demolition - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0230	0.2268	0.1489	2.4000e-004		0.0129	0.0129		0.0120	0.0120	0.0000	21.4161	21.4161	5.4500e-003	0.0000	21.5524
Total	**0.0230**	**0.2268**	**0.1489**	**2.4000e-004**		**0.0129**	**0.0129**		**0.0120**	**0.0120**	**0.0000**	**21.4161**	**21.4161**	**5.4500e-003**	**0.0000**	**21.5524**

3.2 Demolition - 2019

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.1000e-004	4.0000e-004	4.0500e-003	1.0000e-005	1.0400e-003	1.0000e-005	1.0500e-003	2.8000e-004	1.0000e-005	2.8000e-004	0.0000	0.9284	0.9284	3.0000e-005	0.0000	0.9291
Total	**6.1000e-004**	**4.0000e-004**	**4.0500e-003**	**1.0000e-005**	**1.0400e-003**	**1.0000e-005**	**1.0500e-003**	**2.8000e-004**	**1.0000e-005**	**2.8000e-004**	**0.0000**	**0.9284**	**0.9284**	**3.0000e-005**	**0.0000**	**0.9291**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0230	0.2268	0.1489	2.4000e-004		0.0129	0.0129		0.0120	0.0120	0.0000	21.4161	21.4161	5.4500e-003	0.0000	21.5524
Total	**0.0230**	**0.2268**	**0.1489**	**2.4000e-004**		**0.0129**	**0.0129**		**0.0120**	**0.0120**	**0.0000**	**21.4161**	**21.4161**	**5.4500e-003**	**0.0000**	**21.5524**

3.2 Demolition - 2019

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.1000e-004	4.0000e-004	4.0500e-003	1.0000e-005	1.0400e-003	1.0000e-005	1.0500e-003	2.8000e-004	1.0000e-005	2.8000e-004	0.0000	0.9284	0.9284	3.0000e-005	0.0000	0.9291
Total	**6.1000e-004**	**4.0000e-004**	**4.0500e-003**	**1.0000e-005**	**1.0400e-003**	**1.0000e-005**	**1.0500e-003**	**2.8000e-004**	**1.0000e-005**	**2.8000e-004**	**0.0000**	**0.9284**	**0.9284**	**3.0000e-005**	**0.0000**	**0.9291**

3.3 Site Preparation - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					5.8000e-003	0.0000	5.8000e-003	2.9500e-003	0.0000	2.9500e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.7100e-003	0.0195	7.8900e-003	2.0000e-005		8.8000e-004	8.8000e-004		8.1000e-004	8.1000e-004	0.0000	1.5467	1.5467	4.9000e-004	0.0000	1.5589
Total	**1.7100e-003**	**0.0195**	**7.8900e-003**	**2.0000e-005**	**5.8000e-003**	**8.8000e-004**	**6.6800e-003**	**2.9500e-003**	**8.1000e-004**	**3.7600e-003**	**0.0000**	**1.5467**	**1.5467**	**4.9000e-004**	**0.0000**	**1.5589**

3.3 Site Preparation - 2019

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.0000e-005	2.0000e-005	2.5000e-004	0.0000	6.0000e-005	0.0000	6.0000e-005	2.0000e-005	0.0000	2.0000e-005	0.0000	0.0571	0.0571	0.0000	0.0000	0.0572
Total	**4.0000e-005**	**2.0000e-005**	**2.5000e-004**	**0.0000**	**6.0000e-005**	**0.0000**	**6.0000e-005**	**2.0000e-005**	**0.0000**	**2.0000e-005**	**0.0000**	**0.0571**	**0.0571**	**0.0000**	**0.0000**	**0.0572**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					5.8000e-003	0.0000	5.8000e-003	2.9500e-003	0.0000	2.9500e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.7100e-003	0.0195	7.8900e-003	2.0000e-005		8.8000e-004	8.8000e-004		8.1000e-004	8.1000e-004	0.0000	1.5467	1.5467	4.9000e-004	0.0000	1.5589
Total	**1.7100e-003**	**0.0195**	**7.8900e-003**	**2.0000e-005**	**5.8000e-003**	**8.8000e-004**	**6.6800e-003**	**2.9500e-003**	**8.1000e-004**	**3.7600e-003**	**0.0000**	**1.5467**	**1.5467**	**4.9000e-004**	**0.0000**	**1.5589**

3.3 Site Preparation - 2019

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.0000e-005	2.0000e-005	2.5000e-004	0.0000	6.0000e-005	0.0000	6.0000e-005	2.0000e-005	0.0000	2.0000e-005	0.0000	0.0571	0.0571	0.0000	0.0000	0.0572
Total	**4.0000e-005**	**2.0000e-005**	**2.5000e-004**	**0.0000**	**6.0000e-005**	**0.0000**	**6.0000e-005**	**2.0000e-005**	**0.0000**	**2.0000e-005**	**0.0000**	**0.0571**	**0.0571**	**0.0000**	**0.0000**	**0.0572**

3.4 Grading - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					9.8300e-003	0.0000	9.8300e-003	5.0500e-003	0.0000	5.0500e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.8400e-003	0.0321	0.0132	3.0000e-005		1.4700e-003	1.4700e-003		1.3600e-003	1.3600e-003	0.0000	2.5336	2.5336	8.0000e-004	0.0000	2.5536
Total	**2.8400e-003**	**0.0321**	**0.0132**	**3.0000e-005**	**9.8300e-003**	**1.4700e-003**	**0.0113**	**5.0500e-003**	**1.3600e-003**	**6.4100e-003**	**0.0000**	**2.5336**	**2.5336**	**8.0000e-004**	**0.0000**	**2.5536**

3.4 Grading - 2019

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	8.0000e-005	5.0000e-005	5.0000e-004	0.0000	1.3000e-004	0.0000	1.3000e-004	3.0000e-005	0.0000	3.0000e-005	0.0000	0.1143	0.1143	0.0000	0.0000	0.1144
Total	**8.0000e-005**	**5.0000e-005**	**5.0000e-004**	**0.0000**	**1.3000e-004**	**0.0000**	**1.3000e-004**	**3.0000e-005**	**0.0000**	**3.0000e-005**	**0.0000**	**0.1143**	**0.1143**	**0.0000**	**0.0000**	**0.1144**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					9.8300e-003	0.0000	9.8300e-003	5.0500e-003	0.0000	5.0500e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.8400e-003	0.0321	0.0132	3.0000e-005		1.4700e-003	1.4700e-003		1.3600e-003	1.3600e-003	0.0000	2.5336	2.5336	8.0000e-004	0.0000	2.5536
Total	**2.8400e-003**	**0.0321**	**0.0132**	**3.0000e-005**	**9.8300e-003**	**1.4700e-003**	**0.0113**	**5.0500e-003**	**1.3600e-003**	**6.4100e-003**	**0.0000**	**2.5336**	**2.5336**	**8.0000e-004**	**0.0000**	**2.5536**

3.4 Grading - 2019

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	8.0000e-005	5.0000e-005	5.0000e-004	0.0000	1.3000e-004	0.0000	1.3000e-004	3.0000e-005	0.0000	3.0000e-005	0.0000	0.1143	0.1143	0.0000	0.0000	0.1144
Total	**8.0000e-005**	**5.0000e-005**	**5.0000e-004**	**0.0000**	**1.3000e-004**	**0.0000**	**1.3000e-004**	**3.0000e-005**	**0.0000**	**3.0000e-005**	**0.0000**	**0.1143**	**0.1143**	**0.0000**	**0.0000**	**0.1144**

3.5 Building Construction - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1954	1.3743	1.1599	1.9000e-003		0.0788	0.0788		0.0761	0.0761	0.0000	157.4418	157.4418	0.0303	0.0000	158.1985
Total	**0.1954**	**1.3743**	**1.1599**	**1.9000e-003**		**0.0788**	**0.0788**		**0.0761**	**0.0761**	**0.0000**	**157.4418**	**157.4418**	**0.0303**	**0.0000**	**158.1985**

3.5 Building Construction - 2019

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	3.1700e-003	0.0930	0.0159	2.0000e-004	4.5600e-003	6.7000e-004	5.2300e-003	1.3200e-003	6.5000e-004	1.9600e-003	0.0000	18.7151	18.7151	2.3800e-003	0.0000	18.7746
Worker	7.7200e-003	5.0800e-003	0.0509	1.3000e-004	0.0131	9.0000e-005	0.0132	3.4700e-003	8.0000e-005	3.5500e-003	0.0000	11.6689	11.6689	3.5000e-004	0.0000	11.6776
Total	**0.0109**	**0.0981**	**0.0668**	**3.3000e-004**	**0.0176**	**7.6000e-004**	**0.0184**	**4.7900e-003**	**7.3000e-004**	**5.5100e-003**	**0.0000**	**30.3840**	**30.3840**	**2.7300e-003**	**0.0000**	**30.4522**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1954	1.3743	1.1599	1.9000e-003		0.0788	0.0788		0.0761	0.0761	0.0000	157.4417	157.4417	0.0303	0.0000	158.1983
Total	**0.1954**	**1.3743**	**1.1599**	**1.9000e-003**		**0.0788**	**0.0788**		**0.0761**	**0.0761**	**0.0000**	**157.4417**	**157.4417**	**0.0303**	**0.0000**	**158.1983**

3.5 Building Construction - 2019

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	3.1700e-003	0.0930	0.0159	2.0000e-004	4.5600e-003	6.7000e-004	5.2300e-003	1.3200e-003	6.5000e-004	1.9600e-003	0.0000	18.7151	18.7151	2.3800e-003	0.0000	18.7746
Worker	7.7200e-003	5.0800e-003	0.0509	1.3000e-004	0.0131	9.0000e-005	0.0132	3.4700e-003	8.0000e-005	3.5500e-003	0.0000	11.6689	11.6689	3.5000e-004	0.0000	11.6776
Total	**0.0109**	**0.0981**	**0.0668**	**3.3000e-004**	**0.0176**	**7.6000e-004**	**0.0184**	**4.7900e-003**	**7.3000e-004**	**5.5100e-003**	**0.0000**	**30.3840**	**30.3840**	**2.7300e-003**	**0.0000**	**30.4522**

3.5 Building Construction - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0284	0.2070	0.1846	3.1000e-004		0.0111	0.0111		0.0108	0.0108	0.0000	25.4159	25.4159	4.7200e-003	0.0000	25.5339
Total	**0.0284**	**0.2070**	**0.1846**	**3.1000e-004**		**0.0111**	**0.0111**		**0.0108**	**0.0108**	**0.0000**	**25.4159**	**25.4159**	**4.7200e-003**	**0.0000**	**25.5339**

3.5 Building Construction - 2020

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	4.2000e-004	0.0139	2.2200e-003	3.0000e-005	7.4000e-004	7.0000e-005	8.2000e-004	2.1000e-004	7.0000e-005	2.8000e-004	0.0000	3.0205	3.0205	3.7000e-004	0.0000	3.0298
Worker	1.1500e-003	7.3000e-004	7.3900e-003	2.0000e-005	2.1300e-003	1.0000e-005	2.1400e-003	5.7000e-004	1.0000e-005	5.8000e-004	0.0000	1.8406	1.8406	5.0000e-005	0.0000	1.8418
Total	**1.5700e-003**	**0.0146**	**9.6100e-003**	**5.0000e-005**	**2.8700e-003**	**8.0000e-005**	**2.9600e-003**	**7.8000e-004**	**8.0000e-005**	**8.6000e-004**	**0.0000**	**4.8610**	**4.8610**	**4.2000e-004**	**0.0000**	**4.8716**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0284	0.2070	0.1846	3.1000e-004		0.0111	0.0111		0.0108	0.0108	0.0000	25.4159	25.4159	4.7200e-003	0.0000	25.5338
Total	**0.0284**	**0.2070**	**0.1846**	**3.1000e-004**		**0.0111**	**0.0111**		**0.0108**	**0.0108**	**0.0000**	**25.4159**	**25.4159**	**4.7200e-003**	**0.0000**	**25.5338**

3.5 Building Construction - 2020

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	4.2000e-004	0.0139	2.2200e-003	3.0000e-005	7.4000e-004	7.0000e-005	8.2000e-004	2.1000e-004	7.0000e-005	2.8000e-004	0.0000	3.0205	3.0205	3.7000e-004	0.0000	3.0298
Worker	1.1500e-003	7.3000e-004	7.3900e-003	2.0000e-005	2.1300e-003	1.0000e-005	2.1400e-003	5.7000e-004	1.0000e-005	5.8000e-004	0.0000	1.8406	1.8406	5.0000e-005	0.0000	1.8418
Total	**1.5700e-003**	**0.0146**	**9.6100e-003**	**5.0000e-005**	**2.8700e-003**	**8.0000e-005**	**2.9600e-003**	**7.8000e-004**	**8.0000e-005**	**8.6000e-004**	**0.0000**	**4.8610**	**4.8610**	**4.2000e-004**	**0.0000**	**4.8716**

3.6 Paving - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	4.2000e-003	0.0423	0.0444	7.0000e-005		2.3500e-003	2.3500e-003		2.1600e-003	2.1600e-003	0.0000	5.8829	5.8829	1.8600e-003	0.0000	5.9295
Paving	1.1800e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**5.3800e-003**	**0.0423**	**0.0444**	**7.0000e-005**		**2.3500e-003**	**2.3500e-003**		**2.1600e-003**	**2.1600e-003**	**0.0000**	**5.8829**	**5.8829**	**1.8600e-003**	**0.0000**	**5.9295**

3.6 Paving - 2020

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.8000e-004	1.8000e-004	1.8100e-003	0.0000	5.2000e-004	0.0000	5.2000e-004	1.4000e-004	0.0000	1.4000e-004	0.0000	0.4498	0.4498	1.0000e-005	0.0000	0.4501
Total	**2.8000e-004**	**1.8000e-004**	**1.8100e-003**	**0.0000**	**5.2000e-004**	**0.0000**	**5.2000e-004**	**1.4000e-004**	**0.0000**	**1.4000e-004**	**0.0000**	**0.4498**	**0.4498**	**1.0000e-005**	**0.0000**	**0.4501**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	4.2000e-003	0.0423	0.0444	7.0000e-005		2.3500e-003	2.3500e-003		2.1600e-003	2.1600e-003	0.0000	5.8828	5.8828	1.8600e-003	0.0000	5.9295
Paving	1.1800e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**5.3800e-003**	**0.0423**	**0.0444**	**7.0000e-005**		**2.3500e-003**	**2.3500e-003**		**2.1600e-003**	**2.1600e-003**	**0.0000**	**5.8828**	**5.8828**	**1.8600e-003**	**0.0000**	**5.9295**

3.6 Paving - 2020

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.8000e-004	1.8000e-004	1.8100e-003	0.0000	5.2000e-004	0.0000	5.2000e-004	1.4000e-004	0.0000	1.4000e-004	0.0000	0.4498	0.4498	1.0000e-005	0.0000	0.4501
Total	**2.8000e-004**	**1.8000e-004**	**1.8100e-003**	**0.0000**	**5.2000e-004**	**0.0000**	**5.2000e-004**	**1.4000e-004**	**0.0000**	**1.4000e-004**	**0.0000**	**0.4498**	**0.4498**	**1.0000e-005**	**0.0000**	**0.4501**

3.7 Architectural Coating - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.0571					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.2100e-003	8.4200e-003	9.1600e-003	1.0000e-005		5.5000e-004	5.5000e-004		5.5000e-004	5.5000e-004	0.0000	1.2766	1.2766	1.0000e-004	0.0000	1.2791
Total	**0.0583**	**8.4200e-003**	**9.1600e-003**	**1.0000e-005**		**5.5000e-004**	**5.5000e-004**		**5.5000e-004**	**5.5000e-004**	**0.0000**	**1.2766**	**1.2766**	**1.0000e-004**	**0.0000**	**1.2791**

3.7 Architectural Coating - 2020

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	9.0000e-005	5.0000e-005	5.6000e-004	0.0000	1.6000e-004	0.0000	1.6000e-004	4.0000e-005	0.0000	4.0000e-005	0.0000	0.1384	0.1384	0.0000	0.0000	0.1385
Total	**9.0000e-005**	**5.0000e-005**	**5.6000e-004**	**0.0000**	**1.6000e-004**	**0.0000**	**1.6000e-004**	**4.0000e-005**	**0.0000**	**4.0000e-005**	**0.0000**	**0.1384**	**0.1384**	**0.0000**	**0.0000**	**0.1385**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.0571					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.2100e-003	8.4200e-003	9.1600e-003	1.0000e-005		5.5000e-004	5.5000e-004		5.5000e-004	5.5000e-004	0.0000	1.2766	1.2766	1.0000e-004	0.0000	1.2791
Total	**0.0583**	**8.4200e-003**	**9.1600e-003**	**1.0000e-005**		**5.5000e-004**	**5.5000e-004**		**5.5000e-004**	**5.5000e-004**	**0.0000**	**1.2766**	**1.2766**	**1.0000e-004**	**0.0000**	**1.2791**

3.7 Architectural Coating - 2020

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	9.0000e-005	5.0000e-005	5.6000e-004	0.0000	1.6000e-004	0.0000	1.6000e-004	4.0000e-005	0.0000	4.0000e-005	0.0000	0.1384	0.1384	0.0000	0.0000	0.1385
Total	**9.0000e-005**	**5.0000e-005**	**5.6000e-004**	**0.0000**	**1.6000e-004**	**0.0000**	**1.6000e-004**	**4.0000e-005**	**0.0000**	**4.0000e-005**	**0.0000**	**0.1384**	**0.1384**	**0.0000**	**0.0000**	**0.1385**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	1.7943	20.8776	12.2305	0.0556	2.4641	0.0479	2.5119	0.6643	0.0453	0.7096	0.0000	5,189.438 9	5,189.438 9	0.9784	0.0000	5,213.898 7
Unmitigated	1.7943	20.8776	12.2305	0.0556	2.4641	0.0479	2.5119	0.6643	0.0453	0.7096	0.0000	5,189.438 9	5,189.438 9	0.9784	0.0000	5,213.898 7

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Gasoline/Service Station	3,708.32	3,708.32	3708.32	2,136,617	2,136,617
Fast Food Restaurant w/o Drive Thru	2,792.40	2,714.40	1950.00	4,290,906	4,290,906
Parking Lot	0.00	0.00	0.00		
Total	6,500.72	6,422.72	5,658.32	6,427,522	6,427,522

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Gasoline/Service Station	9.50	7.30	7.30	2.00	79.00	19.00	14	27	59
Fast Food Restaurant w/o Drive	9.50	7.30	7.30	1.50	79.50	19.00	51	37	12
Parking Lot	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Gasoline/Service Station	0.487139	0.031901	0.169199	0.121386	0.017033	0.004732	0.033028	0.124746	0.002366	0.001590	0.005154	0.001097	0.000629
Fast Food Restaurant w/o Drive Thru	0.487139	0.031901	0.169199	0.121386	0.017033	0.004732	0.033028	0.124746	0.002366	0.001590	0.005154	0.001097	0.000629
Parking Lot	0.487139	0.031901	0.169199	0.121386	0.017033	0.004732	0.033028	0.124746	0.002366	0.001590	0.005154	0.001097	0.000629

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	44.9099	44.9099	2.0300e-003	4.2000e-004	45.0859
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	44.9099	44.9099	2.0300e-003	4.2000e-004	45.0859
NaturalGas Mitigated	4.7700e-003	0.0434	0.0365	2.6000e-004		3.3000e-003	3.3000e-003		3.3000e-003	3.3000e-003	0.0000	47.2514	47.2514	9.1000e-004	8.7000e-004	47.5322
NaturalGas Unmitigated	4.7700e-003	0.0434	0.0365	2.6000e-004		3.3000e-003	3.3000e-003		3.3000e-003	3.3000e-003	0.0000	47.2514	47.2514	9.1000e-004	8.7000e-004	47.5322

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Fast Food Restaurant w/o Drive Thru	820638	4.4300e-003	0.0402	0.0338	2.4000e-004		3.0600e-003	3.0600e-003		3.0600e-003	3.0600e-003	0.0000	43.7924	43.7924	8.4000e-004	8.0000e-004	44.0526
Gasoline/Service Station	64819.1	3.5000e-004	3.1800e-003	2.6700e-003	2.0000e-005		2.4000e-004	2.4000e-004		2.4000e-004	2.4000e-004	0.0000	3.4590	3.4590	7.0000e-005	6.0000e-005	3.4796
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**4.7800e-003**	**0.0434**	**0.0365**	**2.6000e-004**		**3.3000e-003**	**3.3000e-003**		**3.3000e-003**	**3.3000e-003**	**0.0000**	**47.2514**	**47.2514**	**9.1000e-004**	**8.6000e-004**	**47.5322**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Fast Food Restaurant w/o Drive Thru	820638	4.4300e-003	0.0402	0.0338	2.4000e-004		3.0600e-003	3.0600e-003		3.0600e-003	3.0600e-003	0.0000	43.7924	43.7924	8.4000e-004	8.0000e-004	44.0526
Gasoline/Service Station	64819.1	3.5000e-004	3.1800e-003	2.6700e-003	2.0000e-005		2.4000e-004	2.4000e-004		2.4000e-004	2.4000e-004	0.0000	3.4590	3.4590	7.0000e-005	6.0000e-005	3.4796
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**4.7800e-003**	**0.0434**	**0.0365**	**2.6000e-004**		**3.3000e-003**	**3.3000e-003**		**3.3000e-003**	**3.3000e-003**	**0.0000**	**47.2514**	**47.2514**	**9.1000e-004**	**8.6000e-004**	**47.5322**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Fast Food Restaurant w/o Drive Thru	112983	32.8681	1.4900e-003	3.1000e-004	32.9968
Gasoline/Service Station	27393.6	7.9691	3.6000e-004	7.0000e-005	8.0003
Parking Lot	14000	4.0728	1.8000e-004	4.0000e-005	4.0887
Total		**44.9099**	**2.0300e-003**	**4.2000e-004**	**45.0859**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Fast Food Restaurant w/o Drive Thru	112983	32.8681	1.4900e-003	3.1000e-004	32.9968
Gasoline/Service Station	27393.6	7.9691	3.6000e-004	7.0000e-005	8.0003
Parking Lot	14000	4.0728	1.8000e-004	4.0000e-005	4.0887
Total		**44.9099**	**2.0300e-003**	**4.2000e-004**	**45.0859**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.0358	1.0000e-005	1.1600e-003	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.2500e-003	2.2500e-003	1.0000e-005	0.0000	2.4000e-003
Unmitigated	0.0358	1.0000e-005	1.1600e-003	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.2500e-003	2.2500e-003	1.0000e-005	0.0000	2.4000e-003

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	5.7100e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0300					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	1.1000e-004	1.0000e-005	1.1600e-003	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.2500e-003	2.2500e-003	1.0000e-005	0.0000	2.4000e-003
Total	**0.0358**	**1.0000e-005**	**1.1600e-003**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**2.2500e-003**	**2.2500e-003**	**1.0000e-005**	**0.0000**	**2.4000e-003**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	5.7100e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0300					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	1.1000e-004	1.0000e-005	1.1600e-003	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.2500e-003	2.2500e-003	1.0000e-005	0.0000	2.4000e-003
Total	**0.0358**	**1.0000e-005**	**1.1600e-003**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**2.2500e-003**	**2.2500e-003**	**1.0000e-005**	**0.0000**	**2.4000e-003**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	3.0509	0.0482	1.1600e-003	4.6018
Unmitigated	3.0509	0.0482	1.1600e-003	4.6018

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Fast Food Restaurant w/o Drive Thru	1.18378 / 0.0755605	2.3159	0.0387	9.3000e-004	3.5593
Gasoline/Service Station	0.292202 / 0.179091	0.7350	9.5500e-003	2.3000e-004	1.0426
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**3.0509**	**0.0482**	**1.1600e-003**	**4.6018**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Fast Food Restaurant w/o Drive Thru	1.18378 / 0.0755605	2.3159	0.0387	9.3000e-004	3.5593
Gasoline/Service Station	0.292202 / 0.179091	0.7350	9.5500e-003	2.3000e-004	1.0426
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**3.0509**	**0.0482**	**1.1600e-003**	**4.6018**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	11.5258	0.6812	0.0000	28.5548
Unmitigated	11.5258	0.6812	0.0000	28.5548

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Fast Food Restaurant w/o Drive Thru	44.92	9.1184	0.5389	0.0000	22.5903
Gasoline/Service Station	11.86	2.4075	0.1423	0.0000	5.9644
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Total		**11.5258**	**0.6812**	**0.0000**	**28.5548**

8.2 Waste by Land Use

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Fast Food Restaurant w/o Drive Thru	44.92	9.1184	0.5389	0.0000	22.5903
Gasoline/Service Station	11.86	2.4075	0.1423	0.0000	5.9644
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Total		**11.5258**	**0.6812**	**0.0000**	**28.5548**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Buford Oil Company Travel Center

Fresno County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Other Non-Asphalt Surfaces	1.57	Acre	1.57	68,389.20	0
Parking Lot	200.00	Space	1.80	80,000.00	0
Parking Lot	6.00	Acre	6.00	261,360.00	0
Fast Food Restaurant with Drive Thru	4.30	1000sqft	0.91	4,300.00	0
Fast Food Restaurant with Drive Thru	3.10	1000sqft	0.63	3,100.00	0
High Turnover (Sit Down Restaurant)	4.60	1000sqft	0.88	4,600.00	0
Hotel	120.00	Room	2.23	40,000.00	0
Automobile Care Center	10.00	1000sqft	0.98	10,000.00	0
Gasoline/Service Station	20.00	Pump	3.00	9,000.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	45
Climate Zone	3			**Operational Year**	2021
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	641.35	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Per project description

Construction Off-road Equipment Mitigation -

Demolition -

Table Name	Column Name	Default Value	New Value
tblLandUse	LandUseSquareFeet	174,240.00	40,000.00
tblLandUse	LandUseSquareFeet	2,823.50	9,000.00
tblLandUse	LotAcreage	0.07	0.63
tblLandUse	LotAcreage	0.10	0.91
tblLandUse	LotAcreage	0.11	0.88
tblLandUse	LotAcreage	4.00	2.23
tblLandUse	LotAcreage	0.23	0.98
tblLandUse	LotAcreage	0.06	3.00

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2019	0.0895	0.9458	0.5600	1.0200e-003	0.1757	0.0454	0.2211	0.0768	0.0420	0.1188	0.0000	91.7147	91.7147	0.0267	0.0000	92.3816
2020	0.4402	4.0437	3.2128	8.4600e-003	0.3523	0.1630	0.5153	0.1034	0.1529	0.2563	0.0000	761.7235	761.7235	0.1210	0.0000	764.7492
2021	0.6870	0.8831	0.8104	2.0600e-003	0.0628	0.0350	0.0978	0.0170	0.0329	0.0499	0.0000	184.7422	184.7422	0.0300	0.0000	185.4928
Maximum	**0.6870**	**4.0437**	**3.2128**	**8.4600e-003**	**0.3523**	**0.1630**	**0.5153**	**0.1034**	**0.1529**	**0.2563**	**0.0000**	**761.7235**	**761.7235**	**0.1210**	**0.0000**	**764.7492**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2019	0.0895	0.9458	0.5600	1.0200e-003	0.0808	0.0454	0.1262	0.0350	0.0420	0.0770	0.0000	91.7146	91.7146	0.0267	0.0000	92.3815
2020	0.4402	4.0437	3.2127	8.4600e-003	0.3023	0.1630	0.4652	0.0855	0.1529	0.2385	0.0000	761.7232	761.7232	0.1210	0.0000	764.7488
2021	0.6870	0.8831	0.8104	2.0600e-003	0.0628	0.0350	0.0978	0.0170	0.0329	0.0499	0.0000	184.7421	184.7421	0.0300	0.0000	185.4926
Maximum	**0.6870**	**4.0437**	**3.2127**	**8.4600e-003**	**0.3023**	**0.1630**	**0.4652**	**0.0855**	**0.1529**	**0.2385**	**0.0000**	**761.7232**	**761.7232**	**0.1210**	**0.0000**	**764.7488**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	24.52	0.00	17.37	30.23	0.00	14.03	0.00	0.00	0.00	0.00	0.00	0.00

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	11-1-2019	1-31-2020	1.5965	1.5965
2	2-1-2020	4-30-2020	1.0556	1.0556
3	5-1-2020	7-31-2020	1.0759	1.0759
4	8-1-2020	10-31-2020	1.0775	1.0775
5	11-1-2020	1-31-2021	1.0466	1.0466
6	2-1-2021	4-30-2021	0.9639	0.9639
7	5-1-2021	7-31-2021	0.2782	0.2782
		Highest	1.5965	1.5965

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.3620	3.0000e-005	3.4100e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	6.6000e-003	6.6000e-003	2.0000e-005	0.0000	7.0400e-003
Energy	0.0212	0.1925	0.1617	1.1600e-003		0.0146	0.0146		0.0146	0.0146	0.0000	486.6239	486.6239	0.0165	6.4300e-003	488.9549
Mobile	2.5208	29.2385	16.6778	0.0748	3.2042	0.0640	3.2682	0.8638	0.0605	0.9244	0.0000	6,986.0394	6,986.0394	1.3879	0.0000	7,020.7377
Waste						0.0000	0.0000		0.0000	0.0000	51.6937	0.0000	51.6937	3.0550	0.0000	128.0689
Water						0.0000	0.0000		0.0000	0.0000	2.5040	13.7583	16.2624	0.2578	6.2000e-003	24.5557
Total	**2.9040**	**29.4310**	**16.8429**	**0.0759**	**3.2042**	**0.0787**	**3.2829**	**0.8638**	**0.0752**	**0.9390**	**54.1977**	**7,486.4282**	**7,540.6259**	**4.7173**	**0.0126**	**7,662.3243**

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.3620	3.0000e-005	3.4100e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	6.6000e-003	6.6000e-003	2.0000e-005	0.0000	7.0400e-003
Energy	0.0212	0.1925	0.1617	1.1600e-003		0.0146	0.0146		0.0146	0.0146	0.0000	486.6239	486.6239	0.0165	6.4300e-003	488.9549
Mobile	2.5208	29.2385	16.6778	0.0748	3.2042	0.0640	3.2682	0.8638	0.0605	0.9244	0.0000	6,986.0394	6,986.0394	1.3879	0.0000	7,020.7377
Waste						0.0000	0.0000		0.0000	0.0000	51.6937	0.0000	51.6937	3.0550	0.0000	128.0689
Water						0.0000	0.0000		0.0000	0.0000	2.5040	13.7583	16.2624	0.2578	6.2000e-003	24.5557
Total	**2.9040**	**29.4310**	**16.8429**	**0.0759**	**3.2042**	**0.0787**	**3.2829**	**0.8638**	**0.0752**	**0.9390**	**54.1977**	**7,486.4282**	**7,540.6259**	**4.7173**	**0.0126**	**7,662.3243**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	11/1/2019	11/28/2019	5	20	
2	Site Preparation	Site Preparation	11/29/2019	12/12/2019	5	10	
3	Grading	Grading	12/13/2019	1/23/2020	5	30	
4	Building Construction	Building Construction	1/24/2020	3/18/2021	5	300	
5	Paving	Paving	3/19/2021	4/15/2021	5	20	
6	Architectural Coating	Architectural Coating	4/16/2021	5/13/2021	5	20	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 75

Acres of Paving: 9.37

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 106,500; Non-Residential Outdoor: 35,500; Striped Parking Area: 24,585 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Excavators	3	8.00	158	0.38
Demolition	Rubber Tired Dozers	2	8.00	247	0.40
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Grading	Excavators	2	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Scrapers	2	8.00	367	0.48
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38
Architectural Coating	Air Compressors	1	6.00	78	0.48

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	6	15.00	0.00	30.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	7	18.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	200.00	79.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	40.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

3.2 Demolition - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					3.2000e-003	0.0000	3.2000e-003	4.8000e-004	0.0000	4.8000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0351	0.3578	0.2206	3.9000e-004		0.0180	0.0180		0.0167	0.0167	0.0000	34.6263	34.6263	9.6300e-003	0.0000	34.8672
Total	**0.0351**	**0.3578**	**0.2206**	**3.9000e-004**	**3.2000e-003**	**0.0180**	**0.0212**	**4.8000e-004**	**0.0167**	**0.0172**	**0.0000**	**34.6263**	**34.6263**	**9.6300e-003**	**0.0000**	**34.8672**

3.2 Demolition - 2019

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.3000e-004	4.5200e-003	6.0000e-004	1.0000e-005	2.6000e-004	2.0000e-005	2.7000e-004	7.0000e-005	2.0000e-005	9.0000e-005	0.0000	1.1559	1.1559	1.0000e-004	0.0000	1.1585
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	7.1000e-004	4.7000e-004	4.6700e-003	1.0000e-005	1.2000e-003	1.0000e-005	1.2100e-003	3.2000e-004	1.0000e-005	3.3000e-004	0.0000	1.0712	1.0712	3.0000e-005	0.0000	1.0720
Total	**8.4000e-004**	**4.9900e-003**	**5.2700e-003**	**2.0000e-005**	**1.4600e-003**	**3.0000e-005**	**1.4800e-003**	**3.9000e-004**	**3.0000e-005**	**4.2000e-004**	**0.0000**	**2.2271**	**2.2271**	**1.3000e-004**	**0.0000**	**2.2305**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					1.4400e-003	0.0000	1.4400e-003	2.2000e-004	0.0000	2.2000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0351	0.3578	0.2206	3.9000e-004		0.0180	0.0180		0.0167	0.0167	0.0000	34.6263	34.6263	9.6300e-003	0.0000	34.8671
Total	**0.0351**	**0.3578**	**0.2206**	**3.9000e-004**	**1.4400e-003**	**0.0180**	**0.0194**	**2.2000e-004**	**0.0167**	**0.0169**	**0.0000**	**34.6263**	**34.6263**	**9.6300e-003**	**0.0000**	**34.8671**

3.2 Demolition - 2019

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.3000e-004	4.5200e-003	6.0000e-004	1.0000e-005	2.6000e-004	2.0000e-005	2.7000e-004	7.0000e-005	2.0000e-005	9.0000e-005	0.0000	1.1559	1.1559	1.0000e-004	0.0000	1.1585
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	7.1000e-004	4.7000e-004	4.6700e-003	1.0000e-005	1.2000e-003	1.0000e-005	1.2100e-003	3.2000e-004	1.0000e-005	3.3000e-004	0.0000	1.0712	1.0712	3.0000e-005	0.0000	1.0720
Total	**8.4000e-004**	**4.9900e-003**	**5.2700e-003**	**2.0000e-005**	**1.4600e-003**	**3.0000e-005**	**1.4800e-003**	**3.9000e-004**	**3.0000e-005**	**4.2000e-004**	**0.0000**	**2.2271**	**2.2271**	**1.3000e-004**	**0.0000**	**2.2305**

3.3 Site Preparation - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0903	0.0000	0.0903	0.0497	0.0000	0.0497	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0217	0.2279	0.1103	1.9000e-004		0.0120	0.0120		0.0110	0.0110	0.0000	17.0843	17.0843	5.4100e-003	0.0000	17.2195
Total	**0.0217**	**0.2279**	**0.1103**	**1.9000e-004**	**0.0903**	**0.0120**	**0.1023**	**0.0497**	**0.0110**	**0.0607**	**0.0000**	**17.0843**	**17.0843**	**5.4100e-003**	**0.0000**	**17.2195**

3.3 Site Preparation - 2019

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.3000e-004	2.8000e-004	2.8000e-003	1.0000e-005	7.2000e-004	0.0000	7.2000e-004	1.9000e-004	0.0000	2.0000e-004	0.0000	0.6427	0.6427	2.0000e-005	0.0000	0.6432
Total	**4.3000e-004**	**2.8000e-004**	**2.8000e-003**	**1.0000e-005**	**7.2000e-004**	**0.0000**	**7.2000e-004**	**1.9000e-004**	**0.0000**	**2.0000e-004**	**0.0000**	**0.6427**	**0.6427**	**2.0000e-005**	**0.0000**	**0.6432**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0407	0.0000	0.0407	0.0223	0.0000	0.0223	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0217	0.2279	0.1103	1.9000e-004		0.0120	0.0120		0.0110	0.0110	0.0000	17.0843	17.0843	5.4100e-003	0.0000	17.2195
Total	**0.0217**	**0.2279**	**0.1103**	**1.9000e-004**	**0.0407**	**0.0120**	**0.0526**	**0.0223**	**0.0110**	**0.0333**	**0.0000**	**17.0843**	**17.0843**	**5.4100e-003**	**0.0000**	**17.2195**

3.3 Site Preparation - 2019

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.3000e-004	2.8000e-004	2.8000e-003	1.0000e-005	7.2000e-004	0.0000	7.2000e-004	1.9000e-004	0.0000	2.0000e-004	0.0000	0.6427	0.6427	2.0000e-005	0.0000	0.6432
Total	**4.3000e-004**	**2.8000e-004**	**2.8000e-003**	**1.0000e-005**	**7.2000e-004**	**0.0000**	**7.2000e-004**	**1.9000e-004**	**0.0000**	**2.0000e-004**	**0.0000**	**0.6427**	**0.6427**	**2.0000e-005**	**0.0000**	**0.6432**

3.4 Grading - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0789	0.0000	0.0789	0.0258	0.0000	0.0258	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0308	0.3544	0.2170	4.0000e-004		0.0155	0.0155		0.0143	0.0143	0.0000	36.2059	36.2059	0.0115	0.0000	36.4922
Total	**0.0308**	**0.3544**	**0.2170**	**4.0000e-004**	**0.0789**	**0.0155**	**0.0944**	**0.0258**	**0.0143**	**0.0401**	**0.0000**	**36.2059**	**36.2059**	**0.0115**	**0.0000**	**36.4922**

3.4 Grading - 2019

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.1000e-004	4.0000e-004	4.0500e-003	1.0000e-005	1.0400e-003	1.0000e-005	1.0500e-003	2.8000e-004	1.0000e-005	2.8000e-004	0.0000	0.9284	0.9284	3.0000e-005	0.0000	0.9291
Total	**6.1000e-004**	**4.0000e-004**	**4.0500e-003**	**1.0000e-005**	**1.0400e-003**	**1.0000e-005**	**1.0500e-003**	**2.8000e-004**	**1.0000e-005**	**2.8000e-004**	**0.0000**	**0.9284**	**0.9284**	**3.0000e-005**	**0.0000**	**0.9291**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0355	0.0000	0.0355	0.0116	0.0000	0.0116	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0308	0.3544	0.2170	4.0000e-004		0.0155	0.0155		0.0143	0.0143	0.0000	36.2058	36.2058	0.0115	0.0000	36.4922
Total	**0.0308**	**0.3544**	**0.2170**	**4.0000e-004**	**0.0355**	**0.0155**	**0.0510**	**0.0116**	**0.0143**	**0.0259**	**0.0000**	**36.2058**	**36.2058**	**0.0115**	**0.0000**	**36.4922**

3.4 Grading - 2019

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.1000e-004	4.0000e-004	4.0500e-003	1.0000e-005	1.0400e-003	1.0000e-005	1.0500e-003	2.8000e-004	1.0000e-005	2.8000e-004	0.0000	0.9284	0.9284	3.0000e-005	0.0000	0.9291
Total	**6.1000e-004**	**4.0000e-004**	**4.0500e-003**	**1.0000e-005**	**1.0400e-003**	**1.0000e-005**	**1.0500e-003**	**2.8000e-004**	**1.0000e-005**	**2.8000e-004**	**0.0000**	**0.9284**	**0.9284**	**3.0000e-005**	**0.0000**	**0.9291**

3.4 Grading - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0910	0.0000	0.0910	0.0324	0.0000	0.0324	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0378	0.4267	0.2717	5.3000e-004		0.0185	0.0185		0.0170	0.0170	0.0000	46.3117	46.3117	0.0150	0.0000	46.6861
Total	**0.0378**	**0.4267**	**0.2717**	**5.3000e-004**	**0.0910**	**0.0185**	**0.1094**	**0.0324**	**0.0170**	**0.0494**	**0.0000**	**46.3117**	**46.3117**	**0.0150**	**0.0000**	**46.6861**

3.4 Grading - 2020

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	7.3000e-004	4.7000e-004	4.7200e-003	1.0000e-005	1.3600e-003	1.0000e-005	1.3700e-003	3.6000e-004	1.0000e-005	3.7000e-004	0.0000	1.1763	1.1763	3.0000e-005	0.0000	1.1771
Total	**7.3000e-004**	**4.7000e-004**	**4.7200e-003**	**1.0000e-005**	**1.3600e-003**	**1.0000e-005**	**1.3700e-003**	**3.6000e-004**	**1.0000e-005**	**3.7000e-004**	**0.0000**	**1.1763**	**1.1763**	**3.0000e-005**	**0.0000**	**1.1771**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0409	0.0000	0.0409	0.0146	0.0000	0.0146	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0378	0.4267	0.2717	5.3000e-004		0.0185	0.0185		0.0170	0.0170	0.0000	46.3116	46.3116	0.0150	0.0000	46.6861
Total	**0.0378**	**0.4267**	**0.2717**	**5.3000e-004**	**0.0409**	**0.0185**	**0.0594**	**0.0146**	**0.0170**	**0.0316**	**0.0000**	**46.3116**	**46.3116**	**0.0150**	**0.0000**	**46.6861**

3.4 Grading - 2020

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	7.3000e-004	4.7000e-004	4.7200e-003	1.0000e-005	1.3600e-003	1.0000e-005	1.3700e-003	3.6000e-004	1.0000e-005	3.7000e-004	0.0000	1.1763	1.1763	3.0000e-005	0.0000	1.1771
Total	**7.3000e-004**	**4.7000e-004**	**4.7200e-003**	**1.0000e-005**	**1.3600e-003**	**1.0000e-005**	**1.3700e-003**	**3.6000e-004**	**1.0000e-005**	**3.7000e-004**	**0.0000**	**1.1763**	**1.1763**	**3.0000e-005**	**0.0000**	**1.1771**

3.5 Building Construction - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.2597	2.3503	2.0639	3.3000e-003		0.1368	0.1368		0.1287	0.1287	0.0000	283.7222	283.7222	0.0692	0.0000	285.4527
Total	**0.2597**	**2.3503**	**2.0639**	**3.3000e-003**		**0.1368**	**0.1368**		**0.1287**	**0.1287**	**0.0000**	**283.7222**	**283.7222**	**0.0692**	**0.0000**	**285.4527**

3.5 Building Construction - 2020

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0362	1.1991	0.1915	2.7500e-003	0.0641	6.3600e-003	0.0705	0.0185	6.0900e-003	0.0246	0.0000	260.9884	260.9884	0.0323	0.0000	261.7948
Worker	0.1058	0.0671	0.6810	1.8800e-003	0.1959	1.2600e-003	0.1971	0.0521	1.1600e-003	0.0532	0.0000	169.5250	169.5250	4.5400e-003	0.0000	169.6385
Total	**0.1419**	**1.2662**	**0.8724**	**4.6300e-003**	**0.2600**	**7.6200e-003**	**0.2676**	**0.0706**	**7.2500e-003**	**0.0778**	**0.0000**	**430.5134**	**430.5134**	**0.0368**	**0.0000**	**431.4334**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.2597	2.3503	2.0639	3.3000e-003		0.1368	0.1368		0.1287	0.1287	0.0000	283.7219	283.7219	0.0692	0.0000	285.4524
Total	**0.2597**	**2.3503**	**2.0639**	**3.3000e-003**		**0.1368**	**0.1368**		**0.1287**	**0.1287**	**0.0000**	**283.7219**	**283.7219**	**0.0692**	**0.0000**	**285.4524**

3.5 Building Construction - 2020

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0362	1.1991	0.1915	2.7500e-003	0.0641	6.3600e-003	0.0705	0.0185	6.0900e-003	0.0246	0.0000	260.9884	260.9884	0.0323	0.0000	261.7948
Worker	0.1058	0.0671	0.6810	1.8800e-003	0.1959	1.2600e-003	0.1971	0.0521	1.1600e-003	0.0532	0.0000	169.5250	169.5250	4.5400e-003	0.0000	169.6385
Total	**0.1419**	**1.2662**	**0.8724**	**4.6300e-003**	**0.2600**	**7.6200e-003**	**0.2676**	**0.0706**	**7.2500e-003**	**0.0778**	**0.0000**	**430.5134**	**430.5134**	**0.0368**	**0.0000**	**431.4334**

3.5 Building Construction - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0523	0.4794	0.4558	7.4000e-004		0.0264	0.0264		0.0248	0.0248	0.0000	63.7003	63.7003	0.0154	0.0000	64.0845
Total	**0.0523**	**0.4794**	**0.4558**	**7.4000e-004**		**0.0264**	**0.0264**		**0.0248**	**0.0248**	**0.0000**	**63.7003**	**63.7003**	**0.0154**	**0.0000**	**64.0845**

3.5 Building Construction - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	6.5600e-003	0.2445	0.0373	6.1000e-004	0.0144	6.6000e-004	0.0151	4.1600e-003	6.3000e-004	4.7900e-003	0.0000	58.0375	58.0375	7.0000e-003	0.0000	58.2126
Worker	0.0219	0.0134	0.1387	4.1000e-004	0.0440	2.7000e-004	0.0442	0.0117	2.5000e-004	0.0119	0.0000	36.7525	36.7525	9.1000e-004	0.0000	36.7752
Total	**0.0285**	**0.2579**	**0.1760**	**1.0200e-003**	**0.0584**	**9.3000e-004**	**0.0593**	**0.0159**	**8.8000e-004**	**0.0167**	**0.0000**	**94.7900**	**94.7900**	**7.9100e-003**	**0.0000**	**94.9878**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0523	0.4794	0.4558	7.4000e-004		0.0264	0.0264		0.0248	0.0248	0.0000	63.7002	63.7002	0.0154	0.0000	64.0844
Total	**0.0523**	**0.4794**	**0.4558**	**7.4000e-004**		**0.0264**	**0.0264**		**0.0248**	**0.0248**	**0.0000**	**63.7002**	**63.7002**	**0.0154**	**0.0000**	**64.0844**

3.5 Building Construction - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	6.5600e-003	0.2445	0.0373	6.1000e-004	0.0144	6.6000e-004	0.0151	4.1600e-003	6.3000e-004	4.7900e-003	0.0000	58.0375	58.0375	7.0000e-003	0.0000	58.2126
Worker	0.0219	0.0134	0.1387	4.1000e-004	0.0440	2.7000e-004	0.0442	0.0117	2.5000e-004	0.0119	0.0000	36.7525	36.7525	9.1000e-004	0.0000	36.7752
Total	**0.0285**	**0.2579**	**0.1760**	**1.0200e-003**	**0.0584**	**9.3000e-004**	**0.0593**	**0.0159**	**8.8000e-004**	**0.0167**	**0.0000**	**94.7900**	**94.7900**	**7.9100e-003**	**0.0000**	**94.9878**

3.6 Paving - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0126	0.1292	0.1465	2.3000e-004		6.7800e-003	6.7800e-003		6.2400e-003	6.2400e-003	0.0000	20.0235	20.0235	6.4800e-003	0.0000	20.1854
Paving	0.0102					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0228**	**0.1292**	**0.1465**	**2.3000e-004**		**6.7800e-003**	**6.7800e-003**		**6.2400e-003**	**6.2400e-003**	**0.0000**	**20.0235**	**20.0235**	**6.4800e-003**	**0.0000**	**20.1854**

3.6 Paving - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.0000e-004	3.7000e-004	3.7800e-003	1.0000e-005	1.2000e-003	1.0000e-005	1.2100e-003	3.2000e-004	1.0000e-005	3.3000e-004	0.0000	1.0023	1.0023	2.0000e-005	0.0000	1.0030
Total	**6.0000e-004**	**3.7000e-004**	**3.7800e-003**	**1.0000e-005**	**1.2000e-003**	**1.0000e-005**	**1.2100e-003**	**3.2000e-004**	**1.0000e-005**	**3.3000e-004**	**0.0000**	**1.0023**	**1.0023**	**2.0000e-005**	**0.0000**	**1.0030**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0126	0.1292	0.1465	2.3000e-004		6.7800e-003	6.7800e-003		6.2400e-003	6.2400e-003	0.0000	20.0235	20.0235	6.4800e-003	0.0000	20.1854
Paving	0.0102					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0228**	**0.1292**	**0.1465**	**2.3000e-004**		**6.7800e-003**	**6.7800e-003**		**6.2400e-003**	**6.2400e-003**	**0.0000**	**20.0235**	**20.0235**	**6.4800e-003**	**0.0000**	**20.1854**

3.6 Paving - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.0000e-004	3.7000e-004	3.7800e-003	1.0000e-005	1.2000e-003	1.0000e-005	1.2100e-003	3.2000e-004	1.0000e-005	3.3000e-004	0.0000	1.0023	1.0023	2.0000e-005	0.0000	1.0030
Total	**6.0000e-004**	**3.7000e-004**	**3.7800e-003**	**1.0000e-005**	**1.2000e-003**	**1.0000e-005**	**1.2100e-003**	**3.2000e-004**	**1.0000e-005**	**3.3000e-004**	**0.0000**	**1.0023**	**1.0023**	**2.0000e-005**	**0.0000**	**1.0030**

3.7 Architectural Coating - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.5791					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.1900e-003	0.0153	0.0182	3.0000e-005		9.4000e-004	9.4000e-004		9.4000e-004	9.4000e-004	0.0000	2.5533	2.5533	1.8000e-004	0.0000	2.5576
Total	**0.5813**	**0.0153**	**0.0182**	**3.0000e-005**		**9.4000e-004**	**9.4000e-004**		**9.4000e-004**	**9.4000e-004**	**0.0000**	**2.5533**	**2.5533**	**1.8000e-004**	**0.0000**	**2.5576**

3.7 Architectural Coating - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.6000e-003	9.7000e-004	0.0101	3.0000e-005	3.2000e-003	2.0000e-005	3.2200e-003	8.5000e-004	2.0000e-005	8.7000e-004	0.0000	2.6729	2.6729	7.0000e-005	0.0000	2.6746
Total	**1.6000e-003**	**9.7000e-004**	**0.0101**	**3.0000e-005**	**3.2000e-003**	**2.0000e-005**	**3.2200e-003**	**8.5000e-004**	**2.0000e-005**	**8.7000e-004**	**0.0000**	**2.6729**	**2.6729**	**7.0000e-005**	**0.0000**	**2.6746**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.5791					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.1900e-003	0.0153	0.0182	3.0000e-005		9.4000e-004	9.4000e-004		9.4000e-004	9.4000e-004	0.0000	2.5533	2.5533	1.8000e-004	0.0000	2.5576
Total	**0.5813**	**0.0153**	**0.0182**	**3.0000e-005**		**9.4000e-004**	**9.4000e-004**		**9.4000e-004**	**9.4000e-004**	**0.0000**	**2.5533**	**2.5533**	**1.8000e-004**	**0.0000**	**2.5576**

3.7 Architectural Coating - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.6000e-003	9.7000e-004	0.0101	3.0000e-005	3.2000e-003	2.0000e-005	3.2200e-003	8.5000e-004	2.0000e-005	8.7000e-004	0.0000	2.6729	2.6729	7.0000e-005	0.0000	2.6746
Total	**1.6000e-003**	**9.7000e-004**	**0.0101**	**3.0000e-005**	**3.2000e-003**	**2.0000e-005**	**3.2200e-003**	**8.5000e-004**	**2.0000e-005**	**8.7000e-004**	**0.0000**	**2.6729**	**2.6729**	**7.0000e-005**	**0.0000**	**2.6746**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	2.5208	29.2385	16.6778	0.0748	3.2042	0.0640	3.2682	0.8638	0.0605	0.9244	0.0000	6,986.0394	6,986.0394	1.3879	0.0000	7,020.7377
Unmitigated	2.5208	29.2385	16.6778	0.0748	3.2042	0.0640	3.2682	0.8638	0.0605	0.9244	0.0000	6,986.0394	6,986.0394	1.3879	0.0000	7,020.7377

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Automobile Care Center	237.20	237.20	118.80	219,446	219,446
Fast Food Restaurant with Drive Thru	2,133.32	3,104.73	2333.70	2,149,616	2,149,616
Fast Food Restaurant with Drive Thru	1,537.97	2,238.29	1682.43	1,549,723	1,549,723
Gasoline/Service Station	3,371.20	3,371.20	3371.20	1,942,379	1,942,379
High Turnover (Sit Down Restaurant)	584.89	728.50	606.46	706,007	706,007
Hotel	980.40	982.80	714.00	1,791,038	1,791,038
Other Non-Asphalt Surfaces	0.00	0.00	0.00		
Parking Lot	0.00	0.00	0.00		
Parking Lot	0.00	0.00	0.00		
Parking Lot	0.00	0.00	0.00		
Parking Lot	0.00	0.00	0.00		
Total	8,844.98	10,662.72	8,826.59	8,358,207	8,358,207

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Automobile Care Center	9.50	7.30	7.30	33.00	48.00	19.00	21	51	28
Fast Food Restaurant with Drive	9.50	7.30	7.30	2.20	78.80	19.00	29	21	50
Fast Food Restaurant with Drive	9.50	7.30	7.30	2.20	78.80	19.00	29	21	50
Gasoline/Service Station	9.50	7.30	7.30	2.00	79.00	19.00	14	27	59
High Turnover (Sit Down	9.50	7.30	7.30	8.50	72.50	19.00	37	20	43
Hotel	9.50	7.30	7.30	19.40	61.60	19.00	58	38	4
Other Non-Asphalt Surfaces	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0
Parking Lot	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0
Parking Lot	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0
Parking Lot	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0
Parking Lot	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Automobile Care Center	0.487139	0.031901	0.169199	0.121386	0.017033	0.004732	0.033028	0.124746	0.002366	0.001590	0.005154	0.001097	0.000629
Fast Food Restaurant with Drive Thru	0.487139	0.031901	0.169199	0.121386	0.017033	0.004732	0.033028	0.124746	0.002366	0.001590	0.005154	0.001097	0.000629
Gasoline/Service Station	0.487139	0.031901	0.169199	0.121386	0.017033	0.004732	0.033028	0.124746	0.002366	0.001590	0.005154	0.001097	0.000629
High Turnover (Sit Down Restaurant)	0.487139	0.031901	0.169199	0.121386	0.017033	0.004732	0.033028	0.124746	0.002366	0.001590	0.005154	0.001097	0.000629
Hotel	0.487139	0.031901	0.169199	0.121386	0.017033	0.004732	0.033028	0.124746	0.002366	0.001590	0.005154	0.001097	0.000629
Other Non-Asphalt Surfaces	0.487139	0.031901	0.169199	0.121386	0.017033	0.004732	0.033028	0.124746	0.002366	0.001590	0.005154	0.001097	0.000629
Parking Lot	0.487139	0.031901	0.169199	0.121386	0.017033	0.004732	0.033028	0.124746	0.002366	0.001590	0.005154	0.001097	0.000629

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	277.0338	277.0338	0.0125	2.5900e-003	278.1193
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	277.0338	277.0338	0.0125	2.5900e-003	278.1193
NaturalGas Mitigated	0.0212	0.1925	0.1617	1.1600e-003		0.0146	0.0146		0.0146	0.0146	0.0000	209.5901	209.5901	4.0200e-003	3.8400e-003	210.8356
NaturalGas Unmitigated	0.0212	0.1925	0.1617	1.1600e-003		0.0146	0.0146		0.0146	0.0146	0.0000	209.5901	209.5901	4.0200e-003	3.8400e-003	210.8356

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Automobile Care Center	208700	1.1300e-003	0.0102	8.5900e-003	6.0000e-005		7.8000e-004	7.8000e-004		7.8000e-004	7.8000e-004	0.0000	11.1370	11.1370	2.1000e-004	2.0000e-004	11.2032
Fast Food Restaurant with Drive Thru	652302	3.5200e-003	0.0320	0.0269	1.9000e-004		2.4300e-003	2.4300e-003		2.4300e-003	2.4300e-003	0.0000	34.8093	34.8093	6.7000e-004	6.4000e-004	35.0162
Fast Food Restaurant with Drive Thru	904806	4.8800e-003	0.0444	0.0373	2.7000e-004		3.3700e-003	3.3700e-003		3.3700e-003	3.3700e-003	0.0000	48.2839	48.2839	9.3000e-004	8.9000e-004	48.5708
Gasoline/Service Station	187830	1.0100e-003	9.2100e-003	7.7300e-003	6.0000e-005		7.0000e-004	7.0000e-004		7.0000e-004	7.0000e-004	0.0000	10.0233	10.0233	1.9000e-004	1.8000e-004	10.0829
High Turnover (Sit Down Restaurant)	967932	5.2200e-003	0.0475	0.0399	2.8000e-004		3.6100e-003	3.6100e-003		3.6100e-003	3.6100e-003	0.0000	51.6525	51.6525	9.9000e-004	9.5000e-004	51.9595
Hotel	1.006e+006	5.4200e-003	0.0493	0.0414	3.0000e-004		3.7500e-003	3.7500e-003		3.7500e-003	3.7500e-003	0.0000	53.6840	53.6840	1.0300e-003	9.8000e-004	54.0030
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0212**	**0.1925**	**0.1617**	**1.1600e-003**		**0.0146**	**0.0146**		**0.0146**	**0.0146**	**0.0000**	**209.5901**	**209.5901**	**4.0200e-003**	**3.8400e-003**	**210.8356**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Automobile Care Center	208700	1.1300e-003	0.0102	8.5900e-003	6.0000e-005		7.8000e-004	7.8000e-004		7.8000e-004	7.8000e-004	0.0000	11.1370	11.1370	2.1000e-004	2.0000e-004	11.2032
Fast Food Restaurant with Drive Thru	904806	4.8800e-003	0.0444	0.0373	2.7000e-004		3.3700e-003	3.3700e-003		3.3700e-003	3.3700e-003	0.0000	48.2839	48.2839	9.3000e-004	8.9000e-004	48.5708
Fast Food Restaurant with Drive Thru	652302	3.5200e-003	0.0320	0.0269	1.9000e-004		2.4300e-003	2.4300e-003		2.4300e-003	2.4300e-003	0.0000	34.8093	34.8093	6.7000e-004	6.4000e-004	35.0162
Gasoline/Service Station	187830	1.0100e-003	9.2100e-003	7.7300e-003	6.0000e-005		7.0000e-004	7.0000e-004		7.0000e-004	7.0000e-004	0.0000	10.0233	10.0233	1.9000e-004	1.8000e-004	10.0829
High Turnover (Sit Down Restaurant)	967932	5.2200e-003	0.0475	0.0399	2.8000e-004		3.6100e-003	3.6100e-003		3.6100e-003	3.6100e-003	0.0000	51.6525	51.6525	9.9000e-004	9.5000e-004	51.9595
Hotel	1.006e+006	5.4200e-003	0.0493	0.0414	3.0000e-004		3.7500e-003	3.7500e-003		3.7500e-003	3.7500e-003	0.0000	53.6840	53.6840	1.0300e-003	9.8000e-004	54.0030
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0212**	**0.1925**	**0.1617**	**1.1600e-003**		**0.0146**	**0.0146**		**0.0146**	**0.0146**	**0.0000**	**209.5901**	**209.5901**	**4.0200e-003**	**3.8400e-003**	**210.8356**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Automobile Care Center	88200	25.6584	1.1600e-003	2.4000e-004	25.7589
Fast Food Restaurant with Drive Thru	124571	36.2391	1.6400e-003	3.4000e-004	36.3811
Fast Food Restaurant with Drive Thru	89807	26.1259	1.1800e-003	2.4000e-004	26.2283
Gasoline/Service Station	79380	23.0926	1.0400e-003	2.2000e-004	23.1830
High Turnover (Sit Down Restaurant)	133262	38.7674	1.7500e-003	3.6000e-004	38.9194
Hotel	317600	92.3935	4.1800e-003	8.6000e-004	92.7555
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Parking Lot	28000	8.1455	3.7000e-004	8.0000e-005	8.1774
Parking Lot	91476	26.6114	1.2000e-003	2.5000e-004	26.7157
Total		**277.0338**	**0.0125**	**2.5900e-003**	**278.1194**

5.3 Energy by Land Use - Electricity

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Automobile Care Center	88200	25.6584	1.1600e-003	2.4000e-004	25.7589
Fast Food Restaurant with Drive Thru	124571	36.2391	1.6400e-003	3.4000e-004	36.3811
Fast Food Restaurant with Drive Thru	89807	26.1259	1.1800e-003	2.4000e-004	26.2283
Gasoline/Service Station	79380	23.0926	1.0400e-003	2.2000e-004	23.1830
High Turnover (Sit Down Restaurant)	133262	38.7674	1.7500e-003	3.6000e-004	38.9194
Hotel	317600	92.3935	4.1800e-003	8.6000e-004	92.7555
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Parking Lot	28000	8.1455	3.7000e-004	8.0000e-005	8.1774
Parking Lot	91476	26.6114	1.2000e-003	2.5000e-004	26.7157
Total		**277.0338**	**0.0125**	**2.5900e-003**	**278.1194**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.3620	3.0000e-005	3.4100e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	6.6000e-003	6.6000e-003	2.0000e-005	0.0000	7.0400e-003
Unmitigated	0.3620	3.0000e-005	3.4100e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	6.6000e-003	6.6000e-003	2.0000e-005	0.0000	7.0400e-003

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0579					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.3038					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	3.2000e-004	3.0000e-005	3.4100e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	6.6000e-003	6.6000e-003	2.0000e-005	0.0000	7.0400e-003
Total	**0.3620**	**3.0000e-005**	**3.4100e-003**	**0.0000**		**1.0000e-005**	**1.0000e-005**		**1.0000e-005**	**1.0000e-005**	**0.0000**	**6.6000e-003**	**6.6000e-003**	**2.0000e-005**	**0.0000**	**7.0400e-003**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0579					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.3038					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	3.2000e-004	3.0000e-005	3.4100e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	6.6000e-003	6.6000e-003	2.0000e-005	0.0000	7.0400e-003
Total	**0.3620**	**3.0000e-005**	**3.4100e-003**	**0.0000**		**1.0000e-005**	**1.0000e-005**		**1.0000e-005**	**1.0000e-005**	**0.0000**	**6.6000e-003**	**6.6000e-003**	**2.0000e-005**	**0.0000**	**7.0400e-003**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	16.2624	0.2578	6.2000e-003	24.5557
Unmitigated	16.2624	0.2578	6.2000e-003	24.5557

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Automobile Care Center	0.940811 / 0.576626	2.3665	0.0308	7.4000e-004	3.3568
Fast Food Restaurant with Drive Thru	2.24615 / 0.143371	4.3943	0.0734	1.7600e-003	6.7535
Gasoline/Service Station	0.265638 / 0.16281	0.6682	8.6800e-003	2.1000e-004	0.9478
High Turnover (Sit Down Restaurant)	1.39626 / 0.0891227	2.7316	0.0456	1.1000e-003	4.1981
Hotel	3.04401 / 0.338224	6.1018	0.0994	2.3900e-003	9.2995
Other Non-Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**16.2624**	**0.2578**	**6.2000e-003**	**24.5557**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Automobile Care Center	0.940811 / 0.576626	2.3665	0.0308	7.4000e-004	3.3568
Fast Food Restaurant with Drive Thru	2.24615 / 0.143371	4.3943	0.0734	1.7600e-003	6.7535
Gasoline/Service Station	0.265638 / 0.16281	0.6682	8.6800e-003	2.1000e-004	0.9478
High Turnover (Sit Down Restaurant)	1.39626 / 0.0891227	2.7316	0.0456	1.1000e-003	4.1981
Hotel	3.04401 / 0.338224	6.1018	0.0994	2.3900e-003	9.2995
Other Non-Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**16.2624**	**0.2578**	**6.2000e-003**	**24.5557**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	51.6937	3.0550	0.0000	128.0689
Unmitigated	51.6937	3.0550	0.0000	128.0689

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Automobile Care Center	38.2	7.7543	0.4583	0.0000	19.2108
Fast Food Restaurant with Drive Thru	85.24	17.3030	1.0226	0.0000	42.8673
Gasoline/Service Station	10.78	2.1882	0.1293	0.0000	5.4213
High Turnover (Sit Down Restaurant)	54.74	11.1117	0.6567	0.0000	27.5288
Hotel	65.7	13.3365	0.7882	0.0000	33.0406
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Total		**51.6937**	**3.0550**	**0.0000**	**128.0689**

8.2 Waste by Land Use

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Automobile Care Center	38.2	7.7543	0.4583	0.0000	19.2108
Fast Food Restaurant with Drive Thru	85.24	17.3030	1.0226	0.0000	42.8673
Gasoline/Service Station	10.78	2.1882	0.1293	0.0000	5.4213
High Turnover (Sit Down Restaurant)	54.74	11.1117	0.6567	0.0000	27.5288
Hotel	65.7	13.3365	0.7882	0.0000	33.0406
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Total		**51.6937**	**3.0550**	**0.0000**	**128.0689**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Appendix D

Biological Resources Evaluation

2018

Buford Travel Center Project
2747 E. Manning Ave.
Fowler, California 93625

Alphabiota Environmental Consulting, LLC
1/12/2018

Buford Oil Travel Center Project

2747 E. Manning, Fowler

Fresno County, California 93625

January 12, 2018

Prepared For:

Technicon Engineering on behalf of

Tom Buford

Buford Oil Company

P.O. Box 104

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List of Abbreviations

AEC	Alphabiota Environmental Consulting, LLC.
CDFW	California Department of Fish and Wildlife
CDNPA	California Desert Native Plants Act
CEQA	California Environmental Quality Act
CESA	California Endangered Species Act
CFR	Code of Federal Regulations
cm	centimeters
CNDDB	California Natural Diversity Database
CNPS	California Native Plant Society
Corps	Unites State Army Corps of Engineers
CRPR	California Rare Plant Ranks
CWA	Clean Water Act
CWHR	California Wildlife Habitat Relationships
Dbh	Diameter at Breast Height
EPA	Environmental Protection Agency
ESA	Endangered Species Act
FE	Federally endangered
FT	Federally threatened
FP	Fully protected
FR	Federal Register
ft.	feet
GIS	Geographic Information System
GPS	Global Positioning System
in	inches
LSA	Lake and Streambed Alteration Agreement
m	meters
MBTA	Migratory Bird Treaty Act
mi	miles
MSL	mean sea level
NMFS	National Marine Fisheries Service NPPA Native Plant Protection Act
NWI	National Wetlands Inventory
NWP	Nationwide Permit OHWM Ordinary High-Water Mark
RWQCB	Regional Water Quality Control Board
SSC	Species of Special Concern
SE	State Endangered
ST	State threatened
SWANCC	Solid Waste Agency of Northern Cook County
TNW	Traditional navigable water
USACE	U.S. Army Corps of Engineers USC U.S. Code
USFWS	U.S. Fish and Wildlife Service
WDR	Waste Discharge Requirements

1. Introduction

Alphabiota Environmental Consulting, LLC (Alphabiota, AEC) was retained by Technicon Engineering Inc. (Technicon) on behalf of Tom Buford of Buford Oil Company (Project Proponent) to provide biological resources services in support of the Buford Oil Travel Center Project (Project). AEC was tasked with providing a site survey and assessment of biological resources that could potentially occur at the project site, based upon desktop analysis and field surveys. AEC assessed biological conditions throughout the project survey area and reviewed relevant technical documents and agency maintained databases on biological resources to characterize the biological resources that could potentially be present or affected by the construction and use of the project. AEC also reviewed relevant federal, state, and county regulations; characterized the existing conditions and habitat with respect to biological resources that may occur within the project development. AEC's study provides observational information related to biological resources that may occur within the project vicinity.

AEC's desktop review and a site habitat survey of the project property site / study area identified no jurisdictional water features or riparian habitat within the project property. No State or Federally listed plant or animal species are documented to occur at the site or within the immediate vicinity. No State or Federally listed plant or animal species were observed at the site during field investigations. CNDDB GIS data identified one documented occurrence of Yellow-billed cuckoo (*Coccyzus americanus*) within 5-miles of the site with an occurrence date of 1898. None of the project land was deemed suitable for any listed special status species that may have the potential to occur in the region.

1.1 Project Description

It is understood by Alphabiota Environmental Consulting, LLC (Alphabiota, AEC) that the proposed project is the redevelopment and expansion of the current truck stop-fuel station and the undeveloped portions of the project property. The Buford Oil Company Travel Center currently consist of a fuel station, truck terminal, convenience store, and a restaurant occupying approximately eight (8) acres of an approximately 18-acre parcel within the Golden State Industrial corridor.

The proposed project would involve the development of additional fueling facilities, traveler amenities, and parking facilities for motorists and commercial truck operators. The site plan includes:

- 8 diesel fueling lanes (includes Diesel, Diesel Exhaust Fluid (DEF) and Bio Diesel).
- 6 gas fueling dispensers
- 107 truck parking spaces
- 367 passenger vehicle parking spaces
- One 100-foot-tall advertising sign (for SR-99)
- One 9,000 square foot building that will include: a driver's lounge, game room, ATM's. Western Union Check Cashing, and Wi-Fi, Restroom facilities, that include showers facilities and laundry, and 2 quick service restaurants
- One 4,397 square foot building that will have a quick service restaurant with drive-through
- One 4,656 square foot building that will have a quick service restaurant with drive-through
- One 5,081 square foot building that will have a 24-hour diner restaurant
- One 33,000 square foot building that will have a three story, 72 room hotel

1.2 Project Location

The property proposed for development contains a single parcel located at a representative address of is 2747 E. Manning Avenue, Fowler California 93625 (APN: 345-180-30).

Figure 1: Approximate Project Boundary of the new Proposed Buford Travel Center

1.3 Site Characterization

The site is comprised of one lot of approximately 18-acres in total (figure 1, Plate 3, 4, 5). There is currently about 8-acres of developed lands utilized as a small travel center with fuel stations, a convenience store, and parking for autos and tractor trailer trucks. The current access is Manning west of Golden State Avenue with a single entrance for ingress and egress at a traffic control light intersection at the southeast corner of the site. The portion of the site that is developed occupies the southern portions of the project property. A single detention basin is located near the southwest property bounds just west of the existing parking lot. The basin is surrounded by dilapidated chain link fence and garbage. The basin's slopes and general integrity appear to be in poor shape. Litter, vehicle fluids, and oil sheened water were observed in the basin at the time of the survey. The northern portions of the site are vacant, fallow land with make-shift dirt roads, and annual weedy species of vegetation dominating most of the undeveloped areas of this site. For the purposes of this report this habitat is classified as ruderal disturbed grassland (this is a derived classification based on the current flora and conditions of the site). Observations of the surface soils indicate the site is disced at least once a year. Rutting and furrows consistent with discing activities were present during the survey. Soils of the site consist of a mix of sands and loams where one or the other is the parent material (Plate 3). The northern portion of the site is developed lands with pavement and buildings covering all the surfaces currently in use for the as built travel center. This area is not considered habitat for the purposes of this report.

2 Regulatory Setting

On-site natural resources or those with a high occurrence probability in the project area may require mitigation for impacts that would, or could, result from project development. Mitigation requirements are based on numerous federal, state, and local laws, regulations, and policies relating to listed and endangered plants and wildlife, migratory and nesting birds, environmental quality, and lake- or streambed alteration. The following discussion reviews these policies and how they pertain to any tasks implemented under the project.

2.1 Federal Regulations

1.1.1 National Environmental Policy Act (NEPA)

The National Environmental Policy Act (NEPA) was signed into law on January 1, 1970. NEPA requires federal agencies to assess the environmental effects of their proposed actions prior to making decisions. The range of actions covered by NEPA is broad and includes:

- making decisions on permit applications,
- adopting federal land management actions, and
- constructing highways and other publicly-owned facilities.

Using the NEPA process, agencies evaluate the environmental and related social and economic effects of their proposed actions. Agencies also provide opportunities for public review and comment on those evaluations.

Title I of NEPA contains a Declaration of National Environmental Policy. This policy requires the federal government to use all practicable means to create and maintain conditions under which man and nature can exist in productive harmony.

Section 102 in Title I of the Act requires federal agencies to incorporate environmental considerations in their planning and decision-making through a systematic interdisciplinary approach. Specifically, all federal agencies are to prepare detailed statements assessing the environmental impact of and alternatives to major federal actions significantly affecting the environment. These statements are commonly referred to as Environmental Impact Statements (EIS) and Environmental Assessments (EA).

Title II of NEPA established the President's Council on Environmental Quality (CEQ) to oversee NEPA implementation. The duties of CEQ include:

- Ensuring that federal agencies meet their obligations under NEPA
- Overseeing federal agency implementation of the environmental impact assessment process
- Issuing regulations and other guidance to federal agencies regarding NEPA compliance.

In 1978, CEQ issued regulations (40 CFR Parts 1500-1508) to implement NEPA. These regulations are binding on all federal agencies. The regulations address the procedural provisions of NEPA and the administration of the NEPA process, including the preparation of environmental impact statements. In addition to the CEQ NEPA regulations, CEQ has issued a variety of guidance documents on the implementation of NEPA.

Many federal agencies have also developed their own NEPA procedures that supplement the CEQ NEPA regulations. These NEPA procedures vary from agency to agency since they are tailored for the specific mission and activities of the agency.

The role of a federal agency in the NEPA process depends on the agency's expertise and relationship to the proposed action. The agency carrying out the federal action is responsible for complying with the requirements of NEPA. In some cases, there may be more than one federal agency involved in the proposed action. In this situation, a lead agency is designated to supervise the preparation of the environmental analysis. Federal agencies, together with state, tribal or local agencies, may act as joint lead agencies.

A federal, state, tribal or local agency having special expertise with respect to an environmental issue or jurisdiction by law may be a cooperating agency. A cooperating agency has the responsibility to:

- assist the lead agency by participating in the NEPA process at the earliest possible time
- participate in the scoping process
- develop information and prepare environmental analysis that the agency has special expertise in
- make staff support available

In addition, a federal agency may refer to CEQ interagency disagreements concerning proposed federal actions that might cause unsatisfactory environmental effects. CEQ's role, when it accepts a referral, is generally to develop findings and recommendations, consistent with the policy goals of Section 101 of NEPA.

The EPA is the responsible regulatory agency for NEPA and is authorized by Congress to write regulations that explain the technical, operational, and legal details necessary to implement the laws related to NEPA. These regulations are mandatory requirements that can apply to individuals, businesses, state or local governments, non-profit institutions, or others (https://www.epa.gov/nepa, 2016).

1.1.2 Federal Endangered Species Act

The U.S. Congress passed the Endangered Species Act (ESA) in 1973 to protect endangered species and species threatened with extinction (federally listed species). The ESA operates in conjunction with the National Environmental Policy Act to help protect the ecosystems upon which endangered and threatened species depend.

Section 9 of the ESA prohibits the "take" of endangered or threatened wildlife species. The legal definition of "take" for the ESA is to "harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct" (16 United States Code [USC] 1532 [19]). Harm is further defined to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing behavioral patterns (50 Code of Federal Regulations [CFR] 17.3). Harassment is defined as actions that create the likelihood of injury to listed species to such an extent as to significantly disrupt normal behavior patterns (50 CFR 17.3). Actions that result in take can result in civil or criminal penalties.

The ESA authorizes the U.S. Fish and Wildlife Service (USFWS) to issue permits under Sections 7 and 10 of that act. Section 7 mandates that all federal agencies consult with the USFWS for terrestrial species and/or National Marine Fisheries Service (NMFS) for marine species to ensure that federal agency actions do not jeopardize the continued existence of a listed species or adversely modify critical habitat for listed species. Any anticipated adverse effects require preparation of a biological assessment to determine potential effects of the project on listed species and critical habitat. If the project adversely affects a listed species or its habitat, the USFWS or NMFS prepares a Biological Opinion (BO). The BO may recommend "reasonable and prudent alternatives" to the project to avoid jeopardizing or adversely modifying habitat including "take" limits.

Sections 7 and 10 of the ESA include provisions to authorize take that is incidental to, but not the purpose of activities that are otherwise lawful. Federal agencies may seek permitting under

Section 7 of the ESA. Under Section 10(a)(1)(B), USFWS may issue permits (incidental take permits) for take of ESA-listed species to non-federal agencies if the take is incidental and does not jeopardize the survival and recovery of the species. To obtain an incidental take permit, an applicant must submit a habitat conservation plan outlining steps to minimize and mitigate permitted take impacts to listed species.

The ESA defines critical habitat as habitat deemed essential to the survival of a federally listed species. The ESA requires the federal government to designate "critical habitat" for any species it lists under the ESA. Under Section 7, all federal agencies must ensure that any actions they authorize, fund, or carry out are not likely to jeopardize the continued existence of a listed species, or destroy or adversely modify its designated critical habitat. These complementary requirements apply only to federal agency actions, and the latter only to specifically designated habitat. A critical habitat designation does not set up a preserve or refuge, and applies only when federal funding, permits, or projects are involved. Critical habitat requirements do not apply to activities on private land that does not involve a federal agency.

1.1.3 Clean Water Act

The federal CWA provides guidance for the restoration and maintenance of the chemical, physical, and biological integrity of the nation's waters.

The USACE and the US Environmental Protection Agency (EPA) regulate discharge of dredged or fill material into traditional navigable waters (TNW) of the United States under Section 404 of the CWA. The general definition of navigable waters of the U.S. includes those waters of the U.S. that are subject to the ebb and flow of the tide shoreward to the mean high-water mark and/or are presently used or have been used in the past, or may be susceptible to use, to transport interstate or foreign commerce. "Discharges of fill material" are defined as the addition of fill material into waters of the U.S., including, but not limited to the following: placement of fill that is necessary for the construction of any structure or impoundment requiring rock, sand, dirt, or other material for its construction; site-development fills for recreational, industrial, commercial, residential, and other uses; causeways or road fills; and fill for intake and outfall pipes and subaqueous utility lines (33 CFR 328.2(f)).

Additionally, Section 401 of the CWA (33 USC 1341) requires any applicant for a federal license or permit to conduct any activity that may result in a discharge of a pollutant into waters of the

U.S. to obtain a certification that the discharge will comply with applicable effluent limitations and water quality standards. Jurisdictional waters of the U.S. include jurisdictional wetlands as well as all other waters of the U.S. such as creeks, ponds, and intermittent drainages. Wetlands are defined as "those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support and under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions" (USACE 1987). The majority of jurisdictional wetlands in the United States meet three wetland assessment criteria: hydrophytic vegetation, hydric soils, and wetland hydrology. Jurisdictional waters of the U.S. can also be defined by exhibiting a defined bed and bank and ordinary high-water mark (OHWM). As discussed in Regulatory Framework, jurisdictional waters of the U.S. are subject to Section 404 of CWA and are regulated by the USACE. Methods for delineating wetlands and non-tidal waters are described below.

- Wetlands are defined as "those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support and under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions" [33 C.F.R.§328.3(b),1991]. Presently, to be a wetland, a site must exhibit three wetland criteria: hydrophytic vegetation, hydric soils, and wetland hydrology existing under the "normal circumstances" for the site.
- The lateral extent of non-tidal waters is determined by delineating the ordinary high-water mark (OHWM) [33 C.F.R. §328.4(c)(1)]. The OHWM is defined by the USACE as "that line on shore established by the fluctuations of water and indicated by physical character of the soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas" [33 C.F.R. §328.3(e)].

The USACE authorizes certain fill activities under the Section 404 Nationwide Permit (NWP) Program. NWPs do not authorize activities that are likely to jeopardize the existence of a threatened or endangered species or that may affect properties listed or eligible for listing in the National Register of Historic Places (56 Federal Register [FR] 59134, November 22, 1991). In addition to conditions outlined under each NWP, project-specific conditions may be required by the USACE as part of the Section 404 permitting process.

Waters of the U.S. do not include prior converted cropland. Notwithstanding the determination of an area's status as prior converted cropland by any other federal agency, for the purposes of the CWA, the final authority regarding CWA jurisdiction remains with the EPA (33 CFR § 328.3 (a)(8) added by 58 FR 45,035, August 25, 1993).

On January 9, 2001, the U.S. Supreme Court issued a decision in Solid Waste Agency of Northern Cook County v. U.S. Army Corps of Engineers, 531 U.S. 159 (2001) (SWANCC) that held that the language of the CWA cannot be interpreted as conferring authority for the federal government to regulate "isolated, intrastate, and non-navigable waters" merely because migratory birds may frequent them. The Court emphasized the states' responsibility for regulating such waters.

In response to the Court's decisions in Rapanos v. United States and Carabell v. United States, the USACE and the EPA issued joint guidance regarding USACE jurisdiction over waters of the U.S. under the CWA in 2008. Updated guidance in light of these cases and SWANCC was issued in 2011. The guidance summarizes the Supreme Court's findings and provides how and when the USACE should apply the "significant nexus" test in its jurisdictional determinations. This test determines whether a waterway is substantially connected to a TNW tributary and thus falls within USACE jurisdiction. The guidance provides the factors and summarizes the significant nexus test as an assessment of "the flow characteristics and functions of the tributary itself and the functions performed by all wetlands adjacent to the tributary to determine if they significantly affect the chemical, physical, and biological integrity of downstream traditional navigable waters." Flow characteristics include the volume, duration, and frequency of the flow. Additionally, ecological factors should be included, such as the shared hydrological and biological characteristics between a tributary and an adjacent wetland.

1.1.4 Migratory Bird Treaty Act

The federal Migratory Bird Treaty Act (MBTA), first enacted in 1918, prohibits any person, unless permitted by regulations, to

> *…pursue, hunt, take, capture, kill, attempt to take, capture or kill, possess, offer for sale, sell, offer to purchase, purchase, deliver for shipment, ship, cause to be shipped, deliver for transportation, transport, cause to be transported, carry, or cause to be carried by any means whatsoever, receive for shipment, transportation or carriage, or export, at any time, or in any manner, any migratory bird, included in the terms of this Convention*

> … for the protection of migratory birds ... or any part, nest, or egg of any such bird. (16 USC 703)

The list of migratory birds includes nearly all bird species native to the United States, and the statute was extended in 1974 to include parts of birds, as well as eggs and nests. The Migratory Bird Treaty Reform Act of 2004 further defined species protected under the act and excluded all non-native species. Thus, it is illegal under MBTA to directly kill, or destroy a nest of, nearly any native bird species, not just endangered species. Activities that result in removal or destruction of an active nest (a nest with eggs or young) would violate the MBTA. Removal of unoccupied nests and bird mortality resulting indirectly from disturbance activities are not considered violations of the MBTA.

1.1.5 Bald and Golden Eagle Protection Act

The Bald and Golden Eagle Protection Act (16 USC 668–668c), enacted in 1940, and amended several times since, prohibits "taking" bald eagles (*Haliaeetus leucocephalus*) and golden eagles (*Aquila chrysaetos*), including their parts, nests, or eggs without a permit issued by the Secretary of the Interior.

The act provides criminal penalties for persons who "take, possess, sell, purchase, barter, offer to sell, purchase or barter, transport, export or import, at any time or any manner, any bald eagle ... [or any golden eagle], alive or dead, or any part, nest, or egg thereof." The act defines "take" as "pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest or disturb."

In 2009, new USFWS rules were implemented requiring all activities that may disturb or incidentally take an eagle or its nest as a result of an otherwise legal activity to obtain permits from the USFWS.

Under USFWS rules (16 U.C.C. § 22.3; 72 Federal Register 31,132, June 5, 2007), "disturb" means "to agitate or bother a bald or golden eagle to a degree that causes, or is likely to cause, based on the best scientific information available, 1) injury to an eagle, 2) a decrease in its productivity, by substantially interfering with normal breeding, feeding, or sheltering behavior, or 3) nest abandonment, by substantially interfering with normal breeding, feeding, or sheltering behavior." In addition to immediate impacts, this definition also covers impacts that result from human-induced alterations initiated around a previously used nest site during a time when eagles are not present, if, upon the eagle's return, such alterations agitate or bother an eagle to a degree that interferes with or interrupts normal breeding, feeding, or sheltering habits, and causes injury, death, or nest abandonment.

1.2 State Regulations

1.2.1 California Endangered Species Act

The California Department of Fish and Wildlife (CDFW) administers the California Endangered Species Act (CESA), which prohibits the "taking" of listed species except as otherwise provided in state law.

Section 86 of Fish and Game Code defines *"take" as "hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill."* Under certain circumstances, the CESA applies these take prohibitions to species petitioned for listing (state candidates). Pursuant to the requirements of the CESA, state lead agencies (as defined under CEQA Public Resources Code Section 21067) are required to consult with the CDFW to ensure that any action or project is not likely to jeopardize the continued existence of any endangered or threatened species or result in destruction or adverse modification of essential habitat. Additionally, the CDFW encourages informal consultation on any proposed project that may impact a candidate species. The CESA requires the CDFW to maintain a list of threatened and endangered species. The CDFW also maintains a list of candidates for listing under the CESA and of species of special concern (or watch list species).

1.2.2 Fully Protected Species

The California Fish and Game Code provides protection from take for a variety of species, referred to as fully protected species. Section 5050 lists protected amphibians and reptiles, and Section 3515 prohibits take of fully protected fish species. Eggs and nests of fully protected birds are under Section 3511. Migratory nongame birds are protected under Section 3800, and mammals are protected under Section 4700. Except for take related to scientific research, all take of fully protected species is prohibited.

1.2.3 Nesting Birds and Raptors

Section 3503 of the Fish and Game Code states that it is unlawful to take, possess, or needlessly destroy the nest or eggs of any bird, except as otherwise provided by this code or any regulation made pursuant thereto. Section 3503.5 provides protection for all birds of prey, including their eggs and nests.

1.2.4 Migratory Bird Protection

Take or possession any migratory non-game bird as designated in the MBTA is prohibited by Section 3513 of the Fish and Game Code.

1.2.5 Native Plant Protection Act

The Native Plant Protection Act (NPPA) of 1977 (Fish and Game Code Section 1900-1913) directed the then-California Department of Fish and Game (now CDFW) to carry out the Legislature's intent to "preserve, protect and enhance rare and endangered plants in this State." The NPPA gave the California Fish and Game Commission the power to designate native plants as "endangered" or "rare" and protected endangered and rare plants from take. The NPPA thus includes measures to preserve, protect, and enhance rare and endangered native plants.

CESA has largely superseded NPPA for all plants designated as endangered by the NPPA. The NPPA nevertheless provides limitations on take of rare and endangered species as follows: "...no person will import into this state, or take, possess, or sell within this State" any rare or endangered native plant, except in compliance with provisions of the CESA. Individual land owners are required to notify the CDFW at least 10 days in advance of changing land uses to allow the CDFW to salvage any rare or endangered native plant material.

1.2.6 Lakes and Streambeds

Sections 1601 through 1616 of the Fish and Game Code prohibit alteration of any lake or streambed under CDFW jurisdiction, including intermittent and seasonal channels and many artificial channels, without execution of a Lake and Streambed Alteration Agreement (LSA) through the CDFW. This applies to any channel modifications that would be required to meet drainage, transportation, or flood control objectives of the project.

The following information is provided by CDFW and contains definitions as they apply to the purposes of this report and are effective as of October 1, 2016. (Note: Authority cited: Sections 713, 1609, and 12029, Fish and Game Code; and Section 21089, Public Resources Code. Reference: Sections 713, 1605, 1609, and 12029, Fish and Game Code; and Sections 4629.6(c) and 21089, Public Resources Code).

"California Department of Fish and Wildlife Lake and Streambed Alterations Agreement"

Definitions

*"**Activity**" means any activity that by itself would be subject to the notification requirement in subdivision (a) of Section 1602 of the Fish and Game Code.*

*"**Agreement**" means a lake or streambed alteration agreement issued by the department.*

*"**Agreement for routine maintenance**" means an agreement that:*

(A) *covers only multiple routine maintenance projects that the entity will complete at different time periods during the term of the agreement; and*

(B) *describes a procedure the entity shall follow to complete any maintenance projects the agreement covers.*

*"**Agreement for timber harvesting**" means an agreement of five years or less that covers one or more projects that are included in a timber harvesting plan approved by the California Department of Forestry and Fire Protection.*

*"**Department**" means the California Department of Fish and Wildlife.*

*"**Extension**" means either a renewal of an agreement executed prior to January 1, 2004, or an extension of an agreement executed on or after January 1, 2004.*

"Major amendment" *means an amendment that would significantly modify the scope or nature of any project covered by the agreement or any measure included in the agreement to protect fish and wildlife resources, or require additional environmental review pursuant to Section 21000 et seq. of the Public Resources Code or Section 15000 et seq., Title 14, California Code of Regulations, as determined by the department.*

*"**Master agreement**" means an agreement with a term of greater than five years that:*

(A) *covers multiple projects that are not exclusively projects to extract gravel, sand, or rock; not exclusively projects that are included in a timber harvesting plan approved by the California Department of Forestry and Fire Protection; or not exclusively* *routinemaintenance projects that the entity will need to complete separately at different time periods during the term of the agreement and for which specific detailed design plans have not been prepared at the time of the original notification; and*

(B) describes a procedure the entity shall follow for construction, maintenance, or other projects the agreement covers.

(C) An example of a project for which the department would issue a master agreement is a large-scale development proposal comprised of multiple projects for which specific, detailed design plans have not been prepared at the time of the original notification. The master agreement will specify a process the department and entity will follow before each project begins and may identify various measures the entity will be required to incorporate as part of each project in order to protect fish and wildlife resources. The process specified in the master agreement may require the entity to notify the department before beginning any project the agreement covers and to submit the applicable fee. After the department receives the notification, it will confirm that the master agreement covers the project and propose measures to protect fish and wildlife resources in addition to any included in the master agreement, if such measures are necessary for the specific project. By contrast, if the large-scale development proposal is comprised of, for example, multiple residences, golf courses, and associated infrastructure projects for which specific, detailed design plans have been prepared by the time the entity notifies the department and the entity is ready to begin those projects, the entity may obtain a standard agreement only.

*"**Master agreement for timber operations**" means an agreement with a term of greater than five years that:*

(A) covers timber operations on timberland that are not exclusively projects to extract gravel, sand, or rock; not exclusively projects that are included in a timber harvesting plan approved by the California Department of Forestry and Fire Protection; or not exclusively routine maintenance projects that the entity will need to complete separately at different time periods during the term of the agreement; and

(B) describes a procedure the entity shall follow for construction, maintenance, or other projects the agreement covers. For the purposes of this definition, "timberland" and "timber operations" have the same meaning as those terms are defined in sections 4526 and 4527 of the Public Resources Code, respectively.

*“**Minor amendment**” means an amendment that would not significantly modify the scope or nature of any project covered by the agreement or any measure included in the*

agreement to protect fish and wildlife resources, as determined by the department, or an amendment to transfer the agreement to another entity by changing the name of the entity to the name of the transferee.

*"**Project**" means either of the following as determined by the department:*

(A) One activity. An example of such a project is one that is limited to the removal of riparian vegetation at one location along the bank of a river, stream, or lake that will substantially change the bank.

(B) Two or more activities that are interrelated and could or will affect similar fish and wildlife resources. An example of such a project is the construction of one bridge across a stream that requires the removal of riparian vegetation, the installation of abutments in or near the stream, and the temporary de-watering of the stream using a diversion structure. Each of those three activities together would constitute one project for the purpose of calculating the fee under this section because they are all related to the single purpose of constructing one bridge at one location. By contrast, the construction of three bridges and two culverts across a stream at five different locations would not constitute one project, but instead would constitute five projects, even if each structure were to provide access to a common development site or were physically connected to each other by a road.

"Project" does not mean project as defined in Section 21065 of the Public Resources Code or Section 15378 of Title 14 of the California Code of Regulations.

*"**Standard agreement**" means any agreement other than an agreement for gravel, rock, or sand extraction, an agreement for timber harvesting, an agreement for routine maintenance, a master agreement, or a master agreement for timber operations.*

1.2.7 California Porter-Cologne Water Quality Act

The Regional Water Quality Control Board (RWQCB) regulates discharge of waste in any region that could affect the Waters of the State under the California Porter-Cologne Water Quality. Under the Porter- Cologne Act, a Report of Waste Discharge must be submitted prior to discharging waste, or proposing to discharge waste, within any region that could affect the quality of the Waters of the State (California Water Code Section 13260). Waste Discharge Requirements (WDRs) or a waiver of WDRs will then be issued by the RWQCB. Waters of the State are defined as any surface water or groundwater, including saline waters that are within the boundaries of the state (California Codes: Public Resource Code Section 71200). This differs from the CWA definition of waters of the U.S. by its inclusion of groundwater and waters outside the ordinary high-water mark in its jurisdiction.

1.3 California Environmental Quality Act

The California Environmental Quality Act (CEQA) was adopted in 1970 and applies to actions directly undertaken, financed or permitted by State or local government lead agencies. CEQA requires that a project's effects on environmental resources be analyzed and assessed using criteria determined by the lead agency. CEQA defines a rare species in a broader sense than the definitions of threatened, endangered, or California species of concern. Under this definition, CDFW can request additional consideration of species not otherwise protected.

1.3.1 CEQA Significance Criteria

Section 15064.7 of the CEQA guidelines encourages local agencies to develop and publish the thresholds that the agency will use in determining the significance of environmental effects caused by projects or actions under its review. Appendix G of the CEQA guidelines provides thresholds to evaluate impacts that would normally be considered significant. Based upon these guidelines, impacts to biological resources would normally be considered significant if the project:

- Has a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the CDFW or USFWS;
- Has a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, and regulations, or by the CDFW or USFWS;
- Has a substantial adverse effect on federally protected wetlands as defined by Section 404 of the CWA (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means;

- Interferes substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impedes the use of native wildlife nursery sites; or
- Conflicts with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance, or conflicts with the provisions of an adopted habitat conservation plan, natural community conservation plan, or other approved local, regional, or state habitat conservation plan.

An evaluation of whether an impact to biological resources would be significant must consider both the resource itself and how that resource fits into a regional or local context. Significant impacts would be those that would diminish, or result in the loss of, an important biological resource, or those that would obviously conflict with local, state, or federal resource conservation plans, goals, or regulations. The evaluation of impacts considers direct impacts, indirect impacts, cumulative impacts, as well as temporary and permanent impacts.

1.4 California Native Plant Society

The California Native Plant Society (CNPS) is a non-profit organization operating within California dedicated to preservation, conservations, and documentation of rare, threatened, endangered, and at-risk plants and habitats of the State of California. As such the contributions of the organization have been a leading source in which CDFW and other regulatory authorities rely and defer to as their principal resource for special status plants and habitats within the State of California. CDFW commonly refers to the listing status of the CNPS as the de-facto identification for ranking at risk plants and therefore, commonly incorporates their listing classification as a standard when assessing impacts to plants of the State.

The CNPS has created a "California Rare Plant Ranking System" (CRPR) to categorize degrees of endangerment and / or concern (California Native Plant Society, 2016). As an additional qualifier to the ranking system a secondary marker extension identified as the "Threat Rank" defined here; "...is an extension added onto the CRPR and designates the level of endangerment by a 1 to 3 ranking, with 1 being the most endangered and 3 being the least endangered (California Native Plant Society, 2016). The "California Rare Plant Ranking System" and "Threat Ranks" are presented below.

California Rare Plant Ranking

- 1A = Plants Presumed Extirpated in California and Either Rare or Extinct Elsewhere
- 1B = Plants Rare, Threatened, or Endangered in California and Elsewhere
- 2A = Plants Presumed Extirpated in California, But More Common Elsewhere
- 2B = Plants Rare, Threatened, or Endangered in California, But More Common Elsewhere
- 3 = Plants About Which More Information is Needed - Review List
- 4 = Plants of Limited Distribution - Watch List

Threat Rank

- .1 = Seriously threatened in California (high degree of threat of becoming extinct within the State)
- .2 = Fairly threatened in California (moderate degree of threat)
- .3 = Not very threatened in California (low degree/immediacy of threats or no current threats known)

2 Methodology

2.1 Desktop Research and Review and Literature Review

Prior to conducting a field survey of the site AEC conducted research and review of desktop and database resources. Information regarding the biological resources in the vicinity of the project study area was obtained by reviewing available data from a number of resources. The data review included a search of existing databases, inventories, lists, and collections that contain information regarding the occurrence of special- status species. Resources used in this review included the following:

- *California Natural Diversity Database (CNDDB) for records of sensitive plants, animals, and vegetation communities.*
- *California Native Plant Society (CNPS) online inventory of rare and endangered plants of California.*
- *Consortium of California Herbaria (available on-line at http://ucjeps.berkeley.edu/consortium/).*
- *USFWS online Critical Habitat Portal.*
- *California Wildlife Habitat Relationships (CWHR) life history and range maps.*
- *Aerial photographs on Google Earth, (Google Earth, Inc 2017).*

- *USFWS National Wetlands Inventory (NWI) database (available online at: http://www.fws.gov/wetlands).*
- *Natural Resources Conservation Services: Web Soil Survey page (NRCS, 2017)*
- *The Corps of Engineers Wetlands Delineation Manual (USACE 1987);*
- *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (Version 2.0) (USACE 2008);*
- *A Field Guide to the Identification of the Ordinary High-Water Mark (OHWM) in the Arid West Region of the Western United States (Lichvar and McColley 2008);*
- *Hydric Soils List of California, 2017 (Natural Resources Conservation Service 2017*

The California Natural Diversity Database (CNDDB) GIS (geographic information system) data sets were utilized on Environmental Systems Research Institute(Esri) mapping platform (licensed professional subscription) to identify documented natural resources within the immediate vicinity and within and up to a five-mile radius of the site. These natural resources may consist of flora, fauna, water features, habitats, soils and or any type of special status natural resource that has been documented by the CNDDB or other agencies or organization that collect and provide scientific data for review and use through GIS.

2.1.1 Definition of Sensitive Biological Resources

For the purposes of this study, sensitive plants and animals were defined to include species, subspecies, varieties, and populations recognized by CDFW or USFWS, and which have been classified into one or more of the following categories:

- Species, subspecies, and populations listed or proposed for listing as threatened or endangered pursuant to the federal Endangered Species Act (ESA), and species that are candidates for such listing.
- Species and subspecies listed or proposed for listing by the State of California as threatened or endangered pursuant to the California Endangered Species Act (CESA).
- Plants included in the California Vascular Plants, Bryophytes, and Lichens List.
- Plants assigned California Rare Plant Ranks (CRPR) by the California Native Plant Society (CNPS).
- Animals listed as species of special concern, fully protected, or watchlist on the California Special Animals List, and for invertebrates, all species on the California Special Animals List regardless of the reason for inclusion.
- Plants and animals identified by CDFW and/or USFWS in letters, emails, or in-person communications regarding the project.

In addition, natural communities recognized by CDFW as being of special concern were considered sensitive, along with riparian habitats and water bodies under the jurisdiction of CDFW, USACE, and/or RWQCB.

Throughout this document, species, subspecies, varieties, and populations are broadly referred to as "species," a term which is used here to encompass whichever pertinent taxonomic level is recognized by the state and federal authorities with jurisdiction over plants and animals.

The information obtained from the literature and database searches were reviewed to identify a list of sensitive biological resources with the potential to occur at the project property.

2.2 On-Site Survey Methodology

The on-site field survey was conducted by AEC senior biologists / botanist Mr. Yancey Bissonnette on the day of December 18, 2017. The survey of the site was conducted by walking meandering pedestrian transects throughout the entire site area. The site was visually observed with the naked eye and with the use of binoculars when needed. Mr. Bissonnette was able to observe most of the site ground surface and vegetation at the time of the survey. Areas not surveyed included the developed portions of the site with pavement and structures utilized by the current travel center. Weather conditions at the time of arrival were recorded with a Kestrel 2000 weather meter.

3 Results – Evaluation / Assessment

3.1 Research and Literature

Review of GIS CNDDB map data indicate that no special status plant or animal species or critical habitat have been documented to occur at the site (Plate 4). No wetlands or wetland features, currently or historically, were documented to occur within the site. CNDDB GIS data identified one documented occurrence of Yellow-billed cuckoo (*Coccyzus americanus*) within 5-miles of the site with an occurrence date of 1898. The following is a simple list of the special status endangered or threatened species identified within 5-miles of the project vicinity.

Species	Federal Listing	State Listing
Yellow-billed Cuckoo	Threatened	Endangered

3.2 Field Survey

On December 18, 2017 Mr. Bissonnette conducted an on-site field survey of all accessible areas of the project. The weather conditions recorded at the beginning of the survey recorded a starting survey temperature of 65.0° Fahrenheit (°F). The observed % cloud cover was estimated at 0% - 1% with mostly clear blue-sky visibility. Visible clouds were identified as high cirrus wisps. Wind was identified as a 1(light air) on the Beaufort scale (National Oceanic and Atmospheric Administration, 2016) (slight breeze).

The Beaufort Wind Scale was developed by Sir Francis Beaufort of England in 1805, and is a system that contains 12 classes of wind. Only classes 0 through 5 are described here given that most biological surveys should not be conducted during the wind speeds experienced for lasses 6 through 12.

0 - Calm Winds (0 to <1mph): Smoke rises vertically
1 - Light Air (1 to 3 mph): Smoke drifts with air
2 - Light Breeze (4 to 7 mph): Weather vanes become active
3 - Gentle Breeze (8 to 12 mph): Leaves and small twigs move
4 - Moderate Breeze (13 to 18 mph): Small branches sway
5 - Fresh Breeze (19 to 24 mph): Small trees sway - Waves break

The site is comprised of one lot that is partially developed in its southern portions. Access is via the ingress from Manning Avenue or from Valley Road west of Golden State Blvd. The site is unfenced and easily accessed from either vantage. The undeveloped landform is a visually flat open, vacant, and fallow lot consisting of annual grasses, forbs, and four trees. Two remnant Chinaberry trees (*Melia azedarach*) occupy this area and appeared to be stressed to the point of barely appearing alive. Two very old Olive trees, also barely alive, occupied an area near the south-eastern bounds of the undeveloped open space. The open space vegetation consisted of weedy species of grasses and forbs. Naturalized non-native grasses of Bromes (*Bromus diandrus and Bromus madritensis ssp. rubens*), and Wild Oats (*Avena sp.*) appear to have been the dominant grasses, while Mustard (*Hirschfeldia incana*), Tumbleweed / Russian Thistle (*Salsola tragus*), and Yarrow (*Achillea millefolium*) were also plentifully extant. At the time of the survey most annual plants had already fulfilled their lifecycle and were well past fruiting. No Federal, State or CNPS listed species of plants (identified for the project in the database review) were observed during the survey. No Federal or State special status species were observed during the survey. Burrows and sign of commonly occurring fossorial mammals were observed at the site and were abundant.

FIGURE 2 ; VIEW LOOKING NORTH NEAR THE WEST BOUNDS OF THE PROJECT PROPERTY.

FIGURE 3 : VIEW LOOKING NORTHEAST OF THE PROPOSED PROJECT DEVELOPMENT AREA.

FIGURE 4 : VIEW LOOKING SOUTHWEST OF THE CURRENT DETENTION BASIN.

FIGURE 5 : VIEW LOOKING SOUTH WITHIN THE DETENTION BASIN.

FIGURE 6 : VIEW LOOKING SOUTHWEST FROM NORTHEAST CORNER OF THE PROPERTY.

FIGURE 7 : VIEW LOOKING WEST ATOP THE FILL SLOPE NEAR THE OLIVE TREES ALONG THE EAST BOUNDS OF THE PROJECT PROPERTY.

3.2.1 Wildlife

The following species of wildlife were observed at the site during the survey: House Finches (*Haemorhous mexicanus*), and Mourning Doves (*Zenaida macroura*).

Cottontail rabbit (*Sylvilagus audubonii*) scat was observed throughout the site. Ground Squirrel (*Spermophilus beecheyi*) burrows and Pocket gopher (*Thomomys bottae*) burrows were extremely dominant and were observed in most locations throughout the site. Mice burrows were observed but little evidence was available to indicate the genus or species occurring at the site.

Other species utilizing the site and identified by the presence of scat, tracks, burrow, or other indications include pocket gophers, domestic cats (*Felis catus*) and domestic dogs (*Canis lupus familiaris*). No other macro wildlife was observed during the survey. Burrow mounds of a small species of ant were observed periodically throughout the site. No other significant invertebrates were noted or observed at the time.

3.2.2 Habitat

For this report, habitat is defined by the physical area characterized by an assemblage of botanical species, substrate features, or aquatic environment. Habitat types comprised of botanical assemblages illustrate a community typically associated or classified by the dominant vegetation type present in the locale where the survey is being conducted. Habitat may be utilized by organisms that may occupy the area and may provide some subset of essential or preferred ecological and biological needs for those species that may be found in a described habitat. Habitat types are utilized to classify elements of nature associated with the physical, biological, and ecological conditions in an area. These habitat characteristics may be utilized as indicators of the potential for special-status species and or plant communities to occur, to be associated with, or may be affected by a project. The following paragraph(s) describe the major vegetation alliances identified for this project. Habitats were identified and characterized based on current excepted habitat descriptions. Habitat descriptions follow and or integrate types that have been described by Holland (Holland R. F., 1986), Sawyer Keeler-Wolfe (Keeler-Wolfe & Sawyer, 2007, 2008), Holland (Holland & Keil, 1989), the CDFW maintained publication of "A Guide to Wildlife Habitats of California" (CWHR), and or by derived descriptions that best characterize the general habitat as it was observed during the survey.

The habitat identified for this site is best described as ruderal or disturbed annual grassland habitat characterized by routine maintenance and fallow landscape use. The developed lands of the travel center are not considered for this report and have no other designation than commercially developed property. The following table is a list of the botanical species readily identifiable and observed at the time of the survey. Note that the survey did not include a floristic survey and the timing of the survey was not conducive for identifying all potential occurring species of plants that could be present at the site.

TABLE 1 : OBSERVED BOTANICAL SPECIES

FAMILY	SCIENTIFIC NAME	COMMON NAME	HABITAT TYPE	HABIT OR LIFE CYCLE	NATIVE OR NON-NATIVE
Oleaceae	*Olea europaea*	olive	disturbed habitat	tree	non-native
Amaranthaceae	*Amaranthus sp.**	pigweed	disturbed habitat	annual-perennial	native/non-native
Asteraceae	*Achillea millefolium*	common yarrow	many habitats	perennial	native
Asteraceae	*Centaurea sp.*		disturbed areas	annual	non-native
Asteraceae	*Erigeron canadensis*	Horse Weed	disturbed places	annual	native
Asteraceae	*Heterotheca grandiflora*	telegraph weed	disturbed grassland	perennial	native
Brassicaceae	*Hirschfeldia incana*	Hoary Mustard	cultavated/disturbed places	perennial	non-native
Chenopodiaceae	*Chenopodium album*	Pigweed, Lambs Quarter's	disturbed places, fields, roadsides	annual	non-native
Chenopodiaceae	*Salsola tragus*	Russian thistle	disturbed grassland	perennial	non-native
Euphorbiaceae	*Croton setigerus*	Turkey Mullein; Dove Weed	many habitats	annual	native
Meliaceae	*Melia azedarach*	Chinaberry tree	Washes, riparian areas, coastal scrub, or persisting near old habitations	tree	naturalized
Poaceae	*Avena sp.*	oat grass	annual grasslands	annual	non-native
Poaceae	*Bromus diandrus*	Rip-gut Brome	disturbed areas	annual-perennial	non-native
Poaceae	*Bromus madritensis* ssp. *rubens*	Red Brome	disturbed areas	annual	non-native

3.2.3 Site Soils and Topography

Site topography consist of flat, zero to low gradient lands. The topography is mostly flat with a fill pad near the middle west portion of the site that is elevated approximately two feet above the surrounding grade elevations. The site occurs within the middle boundaries of the Great Central Valley of California. Typically, the land form in these areas consist of low gradient flat lands within the valley to rolling hills rising into the mountains of the Sierra Nevada range. The site is surrounded by lands consisting of commercial and industrial properties and or commercial agriculture where most of the natural habitat has been degraded for anthropogenic uses and infrastructure.

Soil structure at the site consist of three NRCS soil types identified as DhA-Delhi loamy sand, Dm-Dello loamy sand, and HsR-Hesperia fine sandy loam (Plate 3, Appendix3). As there are no documented wetlands, or botanical species of concern for the project area, specifics of the soils will not be discussed in detail for this report as they have no relevance to the presence or absence of listed species potentially occurring within the site. Appendix 3 provides some additional general information regarding the identified soil structures of site.

3.2.4 Wetlands and Regulated Waters

No Jurisdictionally regulated USACE and or CDFW waters were observed at the site. The site survey and database review confirm that no wetlands and or habitat associated with wetlands exist within the property bounds of the site (Plate 5).

4 Conclusions

The site as it was observed during the survey consists of an old travel center and undeveloped vacant lot land. The vacant lands consist of annual weedy species of grasses and forbs with little value as viable habitat for most special status species occurring within the Central Valley. The City of Fowler has designated zoning of the project parcel as C-3 general commercial development. Based on the observations of the survey and findings of the database review, it is the opinion of AEC that the project is unlikely to affect any special status species, or regulated waters of the U.S. or State.

5 Recommendations

The following are actions that could be utilized to help further reduce the risk of "take" with regards to due diligence and general compliance during permit development and regulatory review or during ground disturbance activities and development:

1. If construction activities are scheduled to occur during the breeding or nesting season for MBTA birds than a preconstruction survey for nesting birds should be implemented. If surveys identify nesting birds, then the appropriate agency should be notified, and temporary buffers implemented.
2. Conduct a general preconstruction survey prior to any ground disturbing activities for general wildlife and botanical species of concern.
3. Additional nesting surveys should be conducted if there are delays in work greater than a week during the nesting season. (For example; if work were to occur for a period of five days and then there is a delay of a week or greater before crew's schedule to come back to the site, then additional pre-construction nesting surveys

are recommended to determine if any birds are still nesting or if any birds have begun new nesting clutches).

4. Monitoring could be utilized if special status species or nests of MBTA protected species are found during any surveys and or during the nesting season if needed to help reduce the risk of take.
5. Best Management Practices (BMP's) to protect against attracting wildlife during construction activities should be implemented.

6 Limitations

The site survey is conducted with consideration for current existing environmental laws, regulations, and policies for the time that the survey was conducted. The results provided represent observations of the site at a particular point in time. The habitat(s), topography, resources, and conditions on-site can exhibit seasonal and permanent changes after the survey has been completed. Therefore, the survey report can only represent the site as it was observed during the survey period. No warranty is expressed or implied.

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8 Appendices

1. **Plates**
    1. **Site Regional Map**
    2. **Site Vicinity Map**
    3. **Site Soils Map (NRCS)**
    4. **Site Natural Resources Map (CNDDB)**
    5. **Site NWI Wetlands Map**
2. **Tables**
    1. **Observed Botanical Species**
3. **NRCS General Soils Information of the Site**

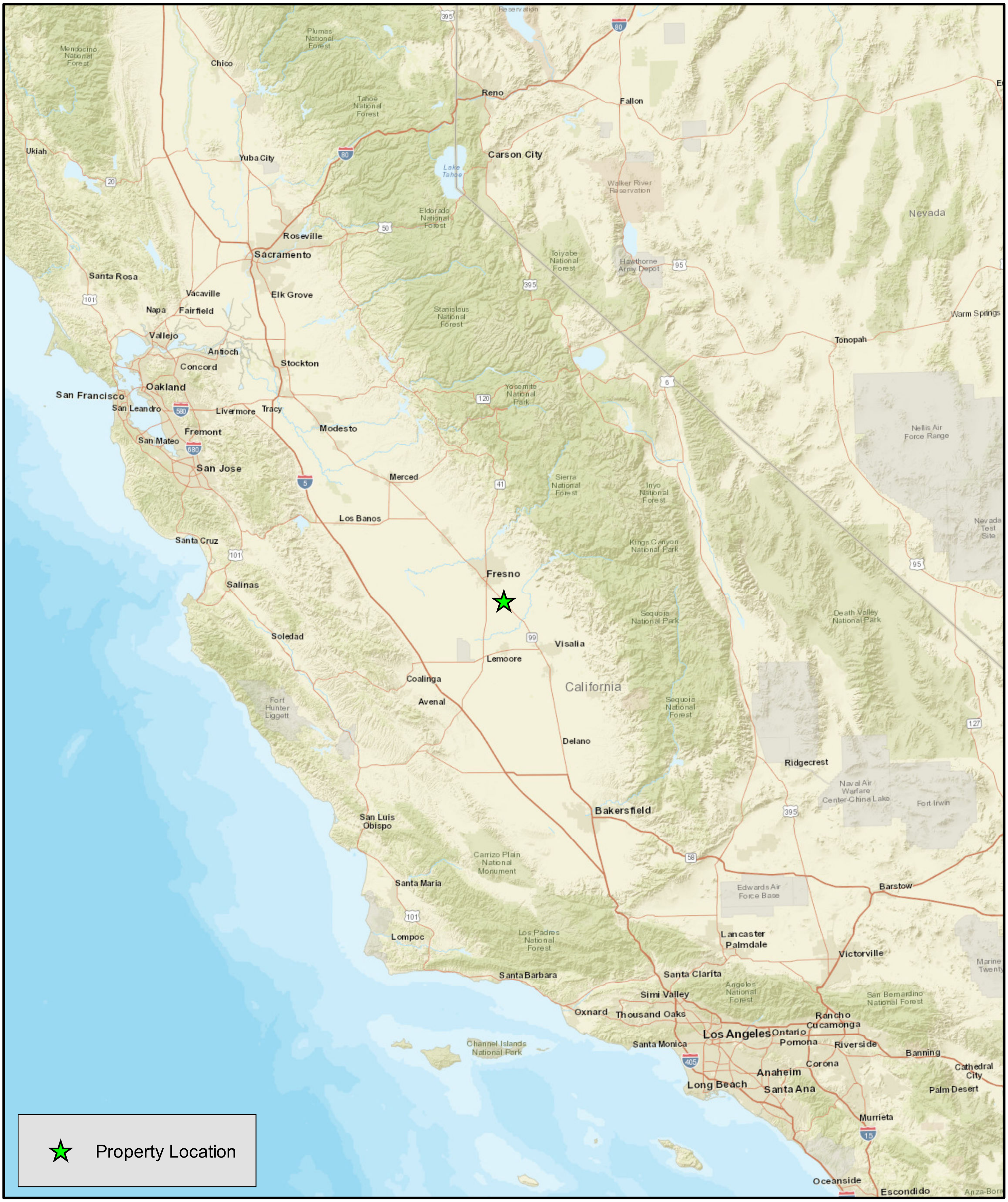


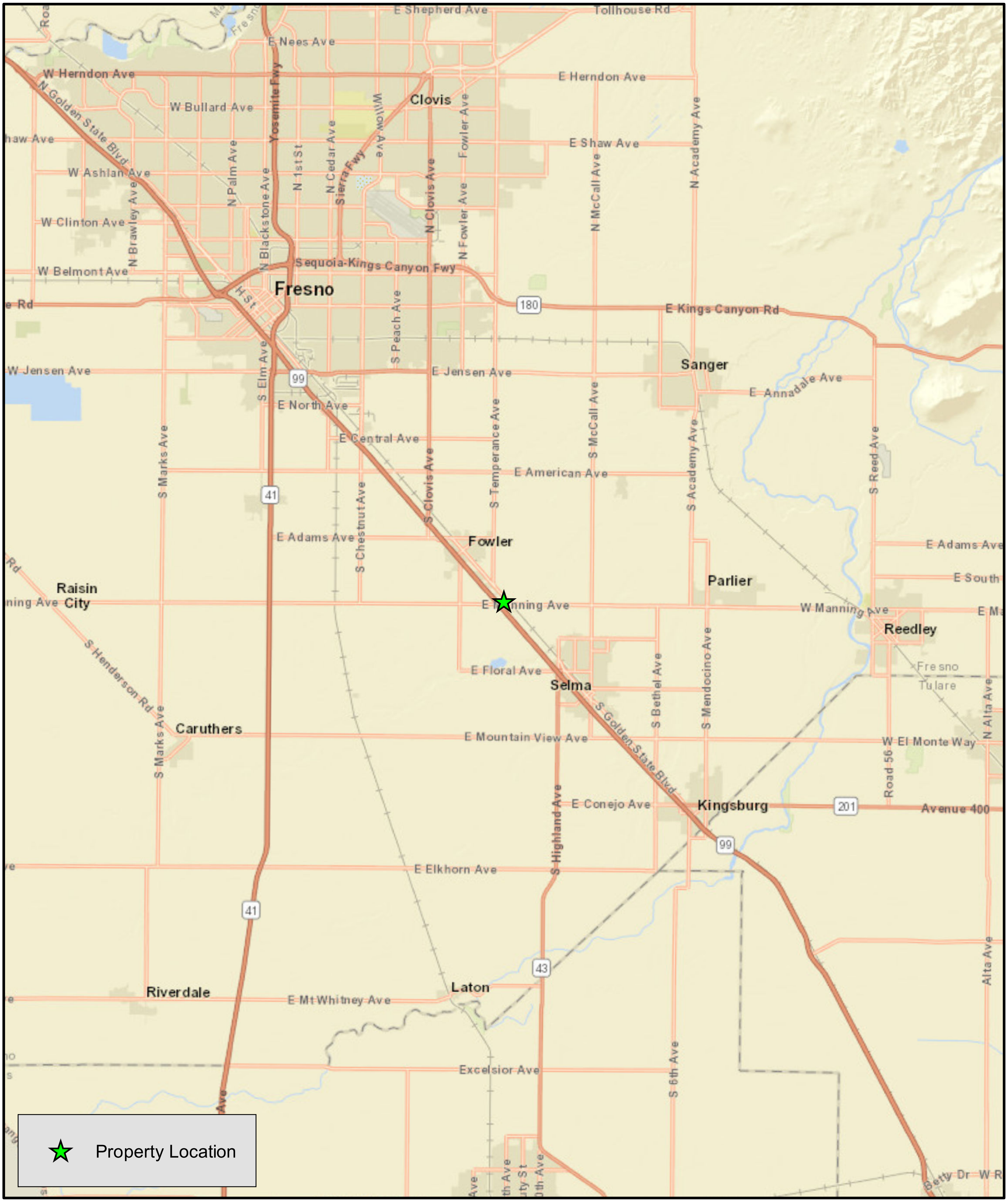
PLATE 1
Regional Map

0 35 70 140 Miles
1:3,300,000

AlphabiotA
BIOLOGICAL CONSULTING

DATE: January 9, 2018
COORDINATE SYSTEM: NAD 1983 California Teale Albers
SOURCE: ESRI World Street Map

Buford Oil Co. - Buford Truck Stop



N
W
E
S

0 2.5 5 10 Miles

1:250,000

AlphabiotA
BIOLOGICAL CONSULTING

PLATE 2
Vicinity Map

DATE: January 9, 2018
COORDINATE SYSTEM: NAD 1983 State Plane Zone IV (feet)
SOURCE: ESRI World Street Map

Buford Oil Co. - Buford Truck Stop

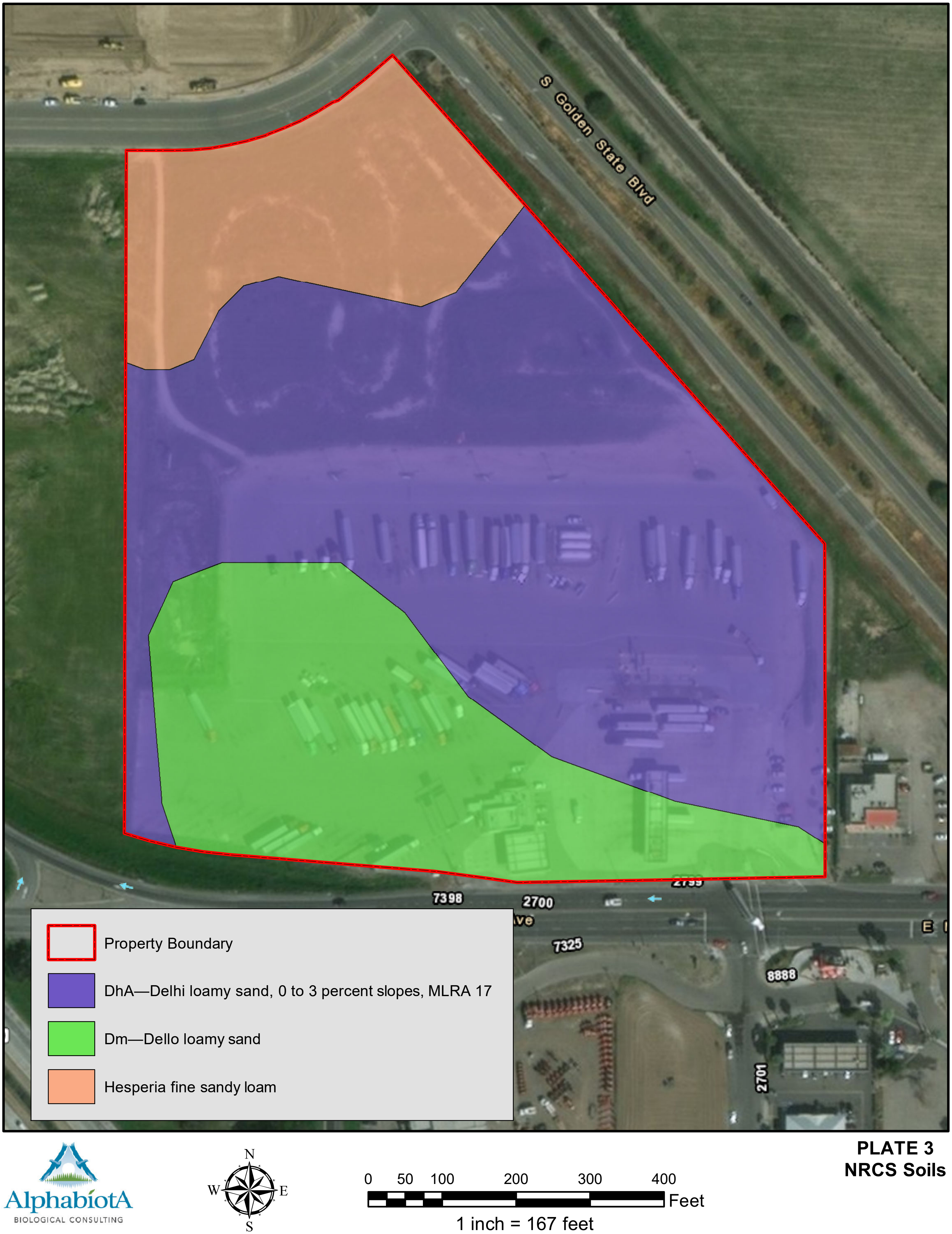
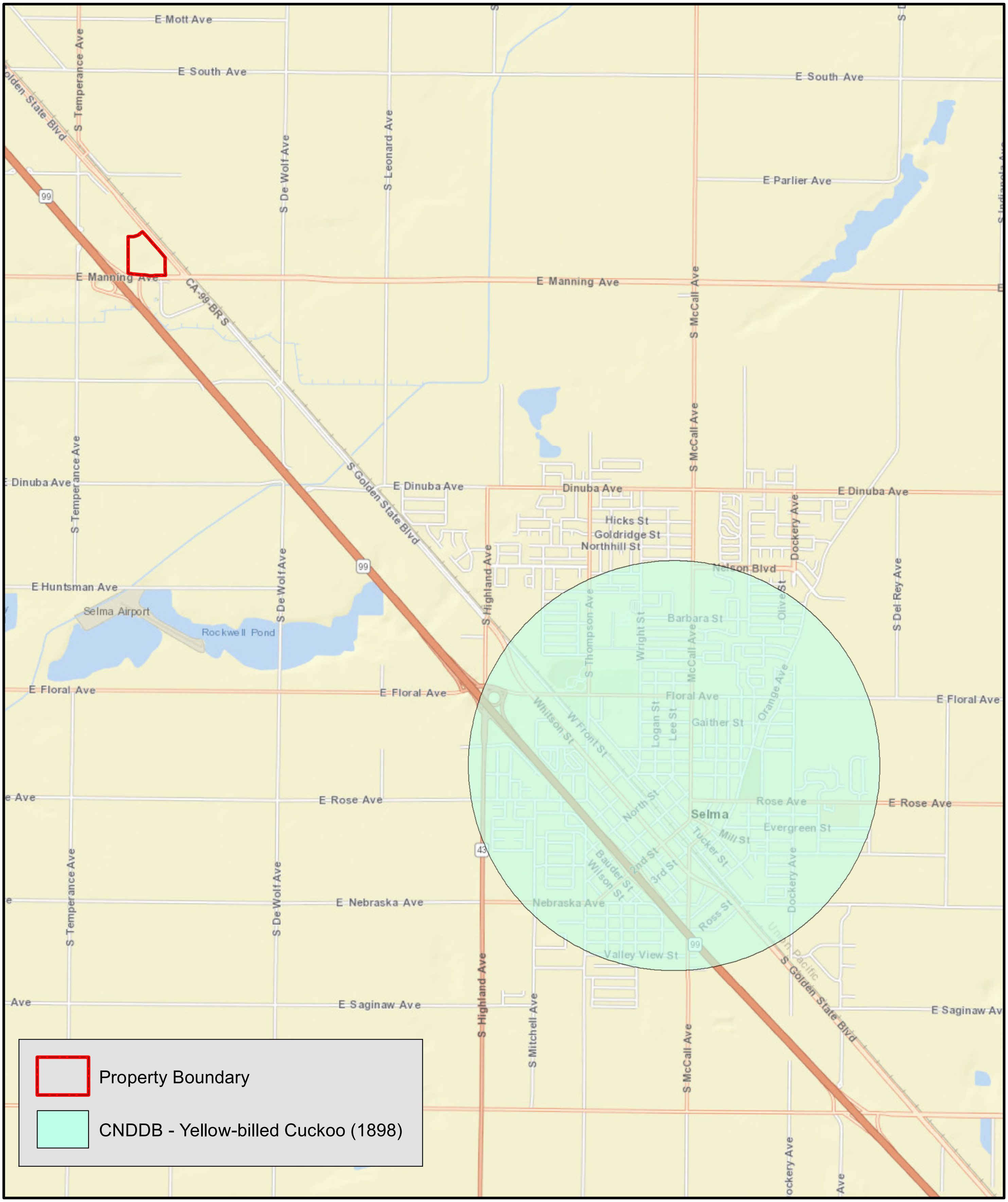


PLATE 3
NRCS Soils

DATE: January 9, 2018
COORDINATE SYSTEM: NAD 1983 State Plane Zone IV (feet)
SOURCE: ESRI Imagery and Transportation Basemaps,
NRCS Web Soil Survey Eastern Fresno Area, California

Buford Oil Co. - Buford Truck Stop



N
W E
S

0 0.5 1 2 Miles

1:40,000

PLATE 4
CNDDB 5 Mile Query

AlphabiotA
BIOLOGICAL CONSULTING

DATE: January 9, 2018
COORDINATE SYSTEM: NAD 1983 State Plane Zone IV (feet)
SOURCE: ESRI World Street Map, CNDDB (Jan. 2018 Data)

Buford Oil Co. - Buford Truck Stop

N
W E
S

0 150 300 600 900 1,200
Feet
1 inch = 500 feet

PLATE 5
USFWS National Wetlands Inventory

AlphabiotA
BIOLOGICAL CONSULTING

DATE: January 10, 2018
COORDINATE SYSTEM: NAD 1983 State Plane Zone IV (feet)
SOURCE: ESRI Imagery Basemap, USFWS NWI

Buford Oil Co. - Buford Truck Stop

The following data is provided via the NRCS Websoil Survey website and can be found at this link:

https://casoilresource.lawr.ucdavis.edu/soil_web/ssurgo.php?action=list_mapunits&areasymbol=ca654

The information below is for reference purposes and is only intended for that purpose.

Component Name	Geomorphic Position	Area Fraction	Component Type	Horizon Data
Soil Type 1 ***Delhi***	*valleys / Toeslope dunes*	*85%*	*Major Soil Type*	*YES*

Map Unit Data *What is a Map Unit?*

Cartographic information about this map unit.

Map Unit Name:	*Delhi sand, 0 to 3 percent slopes, MLRA 17*
Map Unit Type:	*Consociation*
Map Unit Symbol:	*DhA*

Map Unit Aggregated Data

Generalized soils information within this map unit.

Farmland Class:	*Farmland of statewide importance*
Available Water Storage (0-100cm):	*7 cm*
Max Flood Freq:	*None*
Drainage Class (Dominant Condition):	*Somewhat excessively drained*
Drainage Class (Wettest Component):	*Somewhat excessively drained*
Hydric Conditions:	*3*
[Annual] Min. Water Table Depth:	*n/a*
[April-June] Min. Water Table Depth:	*n/a*
Min Bedrock Depth:	*n/a*
Raw Aggregated Map Unit Data	

Associated Point Data

Links to any NSSL point data within this map unit.

Map Unit Composition

Map units consist of 1 or more soil types, commonly referred to as "components".

Component Name	Geomorphic Position	Area Fraction	Component Type	Horizon Data
Soil Type 1 ***Delhi***	*dunes / Toeslope fan remnants / Shoulder*	*85%*	*Major Soil Type*	*YES*
Soil Type 2 ***Hanford***	*depressions fan remnants*	*6%*	*Inclusion*	*Similar Data [12] **
Soil Type 3 ***Dello***	*depressions fan remnants*	*6%*	*Inclusion*	*Similar Data [1] **
Soil Type 4 ***Grangeville***		*1%*	*Inclusion*	*Similar Data [7] **
Soil Type 5 ***Hilmar***		*1%*	*Inclusion*	*Similar Data [6] **
Soil Type 6 ***Dinuba***		*1%*	*Inclusion*	*Similar Data [12] **

Map Unit Data *What is a Map Unit?*

Cartographic information about this map unit.

Map Unit Name:	*Delhi loamy sand, 0 to 3 percent slopes, MLRA 17*
Map Unit Type:	*Consociation*
Map Unit Symbol:	*DeA*
Map Unit Area:	*4847 acres total in survey area*
Raw Map Unit Data	
Raw Component Data (All Components)	

Map Unit Aggregated Data

Generalized soils information within this map unit.

Farmland Class:	*Prime farmland if irrigated*
Available Water Storage (0-100cm):	*7 cm*
Max Flood Freq:	*None*
Drainage Class (Dominant Condition):	*Somewhat excessively drained*
Drainage Class (Wettest Component):	*Somewhat excessively drained*
Hydric Conditions:	*6*
[Annual] Min. Water Table Depth:	*n/a*
[April-June] Min. Water Table Depth:	*n/a*
Min Bedrock Depth:	*n/a*
Raw Aggregated Map Unit Data	

Map Unit Composition

Map units consist of 1 or more soil types, commonly referred to as "components".

Component Name	Geomorphic Position	Area Fraction	Component Type	Horizon Data
Soil Type 1 ***Dello***	*alluvial fans / Footslope* *depressions / Toeslope* *depressions / Toeslope* *flood plains / Toeslope*	*85%*	*Major Soil Type*	*YES*
Soil Type 2 ***Unnamed***	*depressions* *flood plains*	*13%*	*Inclusion*	*None*
Soil Type 3 ***Unnamed***	*alluvial fans* *flood plains* *hummocks* *levees*	*2%*	*Inclusion*	*None*

Note: links to horizon data marked with an ***** *are approximate.*

Map Unit Data *What is a Map Unit?*

Cartographic information about this map unit.

Map Unit Name:	*Dello loamy sand*
Map Unit Type:	*Consociation*
Map Unit Symbol:	*Dm*
Map Unit Area:	*4001 acres total in survey area*
Raw Map Unit Data	
Raw Component Data (All Components)	

Map Unit Aggregated Data

Generalized soils information within this map unit.

Farmland Class:	*Farmland of statewide importance*
Available Water Storage (0-100cm):	*7.93 cm*
Max Flood Freq:	*Rare*
Drainage Class (Dominant Condition):	*Somewhat poorly drained*
Drainage Class (Wettest Component):	*Somewhat poorly drained*
Hydric Conditions:	*98*
[Annual] Min. Water Table Depth:	*122 cm*
[April-June] Min. Water Table Depth:	*122 cm*
Min Bedrock Depth:	*n/a*
Raw Aggregated Map Unit Data	

Map Unit Composition

Map units consist of 1 or more soil types, commonly referred to as "components".

Component Name	Geomorphic Position	Area Fraction	Component Type	Horizon Data
Soil Type 1 ***Hesperia***	*alluvial fans / Footslope*	*85%*	*Major Soil Type*	*YES*
Soil Type 2 ***Unnamed***	*alluvial fans*	*10%*	*Inclusion*	*None*
Soil Type 3 ***Unnamed***	*alluvial fans*	*5%*	*Inclusion*	*None*

Note: links to horizon data marked with an * *are approximate.*

Map Unit Data *What is a Map Unit?*

Cartographic information about this map unit.

Map Unit Name:	*Hesperia fine sandy loam*
Map Unit Type:	*Consociation*
Map Unit Symbol:	*Hsr*
Map Unit Area:	*20380 acres total in survey area*
Raw Map Unit Data	
Raw Component Data (All Components)	

Map Unit Aggregated Data

Generalized soils information within this map unit.

Farmland Class:	*Prime farmland if irrigated*
Available Water Storage (0-100cm):	*13 cm*
Max Flood Freq:	*Rare*
Drainage Class (Dominant Condition):	*Well drained*
Drainage Class (Wettest Component):	*Well drained*
Hydric Conditions:	*0*
[Annual] Min. Water Table Depth:	*n/a*
[April-June] Min. Water Table Depth:	*n/a*
Min Bedrock Depth:	*n/a*
Raw Aggregated Map Unit Data	

2018

Buford Travel Center Project
Addendum Report
2747 E. Manning Ave.
Fowler, California 93625

Alphabiota Environmental Consulting, LLC

10/30/2018

Buford Oil Travel Center Project

Addendum Report

2747 E. Manning, Fowler

Fresno County, California 93625

October 30, 2018

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List of Abbreviations

AEC	Alphabiota Environmental Consulting, LLC.
CDFW	California Department of Fish and Wildlife
CDNPA	California Desert Native Plants Act
CEQA	California Environmental Quality Act
CESA	California Endangered Species Act
cm	centimeters
CNDDB	California Natural Diversity Database
CNPS	California Native Plant Society
Corps	Unites State Army Corps of Engineers
CRPR	California Rare Plant Ranks
CWHR	California Wildlife Habitat Relationships
Dbh	Diameter at Breast Height
EPA	Environmental Protection Agency
ESA	Endangered Species Act
FE	Federally endangered
FT	Federally threatened
FP	Fully protected
ft.	feet
GIS	Geographic Information System
GPS	Global Positioning System
in	inches
m	meters
MBTA	Migratory Bird Treaty Act
mi	miles
NWI	National Wetlands Inventory
NRCS	Natural Resources Conservation Service
RWQCB	Regional Water Quality Control Board
SSC	Species of Special Concern
SE	State Endangered
ST	State threatened
USACE	U.S. Army Corps of Engineers USC U.S. Code
USFWS	U.S. Fish and Wildlife Service

1. Executive Summary

It is our understanding that the Buford Travel Center development (Project) is drafting an Environmental Impact Report (EIR) as required for Project development. Alphabiota Environmental Consulting, LLC (AEC) was tasked with providing updated survey and reporting information to help support the EIR. On October 16, 2018 a senior biologist for AEC revisited the site to conduct a secondary biological survey and assess habitat for special status flora and fauna.

Based on the survey conducted on December 18, 2017 and the survey conducted on October 16, 2018 habitat for special status species (species of special concern, threatened, and endangered) exist at the site. Special status species that could potentially occur are discussed in the body of this report in section 3.2 and within Table 2. It is our opinion while habitat features exist at the site for the special status species identified for this project, we believe that the potential for these species to occur at the site is low. However, consultation with the United States Fish and Wildlife Service (USFWS) and the California Department of Fish and Wildlife should be implemented to determine if additional information or surveys regarding these species may be required. AEC can facilitate consultation services with the agencies under a separate contract if needed. Consultation with the agencies should help to assess the potential level of impacts for the EIR. Preconstruction surveys and monitoring are also recommended as mitigation strategies for project development and are discussed further in section six at the end of the report.

Jurisdictional water features were not observed or documented to occur at or within the immediate vicinity of the Project site. No further consultation or permitting should be required regarding these resources.

2. Introduction

AEC was initially retained by Technicon Engineering Inc. (Technicon) on behalf of the Project Proponent to provide a biological reconnaissance survey and report for the Buford Oil Travel Center Project (Project). The reconnaissance survey and reporting are provided as observational information to the project proponent which may satisfy some permit and or regulatory requirements, if needed, but is generally intended to offer strategic planning information regarding natural resources of a site.

The following list describes AEC's typical tiered set of surveys and reports which range from basic site reconnaissance to extensive habitat assessment and special status species assessment.

- **Reconnaissance Survey:** a simple survey where a cursory investigation of a site provides identification of a site's general conditions, habitat, observations of species and or plants present during a survey, potential wetland or water features that may be regulated, and a cursory desktop survey of documented special status species and wetlands within proximity of the site.
  - Does not include an in depth analysis of habitat and or the potential for special status species to occur at the site or to be impacted by the project.
  - Can generally be used to satisfy minor permit conditions and or identify resources present at the site.
- **Habitat Assessment:** Provides a thorough investigation of a site and identifies readily observable plants, animals, wetlands / water features, and habitat for special status species that potentially could occur or do occur at the site. Desktop databases are explored extensively, and reporting identifies previously documented potential special status species and or habitat that occur within a radius of five miles of the site.
  - Reporting can be used to satisfy most CEQA, NEPA, and or Wetland permitting conditions.
- **Constraints Analysis (EIR, EIS):** Provides the same level of survey and reporting as a "Habitat Assessment" but is sometimes more thorough in analyzing special status species and or habitat and is generally tailored to providing specific information and or recommendations or mitigation for an "Environmental Impact Report" (EIS: State document) or "Environmental Impact Statement" (EIS: Federal document).
  - Also provides mitigation strategies as needed to offset impacts to special status habitat or species identified during the survey or desktop analysis.

In September, 2018 Tom Buford's (Project Proponent, Buford Oil Company, BOC) planning consultant Provost & Pritchard Inc., requested additional natural and biological resource's information in support of an Environmental Impact Report being prepared for the project. AEC is providing the requested information as an addendum report to the original "reconnaissance" survey report prepared by AEC and dated January 12, 2018. This addendum report may discuss habitat at the site, identify special status species documented within a 5-mile radius of the site as identified in GIS CNDDB data (CDFW database), federally accessed United States Fish and Wildlife (USFWS) databases, and or California Native Plant Society (CNPS) databases identifying special status species for the project vicinity. AEC will either identity or discuss the potential for these species to occur at the site and potential impacts to special status species and or their habitat with recommendations for mitigation that could be utilized in the EIR to assess risk and offset impacts during project development.

The initial survey and report did not identify wetlands and or water features regulated by the State or Federal regulators that would be impacted by the project. Therefore, no further discussion or assessment will be provided regarding these types of resources in this addendum report.

AEC's desktop review and site surveys (initial survey occurred on December 18, 2017, second survey occurred on October 16, 2018) of the project property site did not observe jurisdictional water features or riparian habitat within the project property. Database review did not identify State or Federally listed plant, or animal species documented to occur at the site or within the immediate vicinity. Field surveys of the site did not detect State or Federally listed special status flora or fauna during either field investigation. CNDDB GIS data identified one documented occurrence of Yellow-billed cuckoo (*Coccyzus americanus*) within a 5-miles radius of the site with an occurrence date of 1898. CNDDB data accessed with updated GIS information from CDFW dated October 2018 did not render any new CNDDB occurrences in addition to the original GIS review (Plate 4).

Ten animal species and seven plant species were identified in database reviews with potential to occur within the immediate vicinity of the site and or within the specific quadrangle (Conejo, quad code = 3611956, CNPS code 357c) of the project site (Table 2). Habitat suitability of the project land was deemed marginally suitable for four of the animal special status species (Vernal Pool Fairy Shrimp, Blunt-nosed Leopard lizard, Burrowing Owl, and Fresno Kangaroo rat) and one of the plant special status species (California Jewel flower). Habitat for the other special status species listed in Table 2 was deemed to be absent from and adjacent to the site and therefore these species are expected to have little to no capacity to occur at the site. No critical habitat for special status species occurs at the site and none was identified in the database review.

1.1 Project Description

It is understood by AEC that the proposed project is the redevelopment and expansion of the current truck stop-fuel station and the undeveloped portions of the project property. The Buford Oil Company Travel Center currently consist of a fuel station, truck terminal, convenience store, and a restaurant occupying approximately eight (8) acres of an approximately 18-acre parcel within the Golden State Industrial corridor.

The proposed project would involve the development of additional fueling facilities, traveler amenities, and parking facilities for motorists and commercial truck operators. The site plan, as provided to AEC, includes:

- 8 diesel fueling lanes (includes Diesel, Diesel Exhaust Fluid (DEF) and Bio Diesel).
- 6 gas fueling dispensers
- 107 truck parking spaces
- 367 passenger vehicle parking spaces
- One 100-foot-tall advertising sign (for SR-99)
- One 9,000 square foot building that will include: a driver's lounge, game room, ATM's. Western Union Check Cashing, and Wi-Fi, Restroom facilities, that include showers facilities and laundry, and 2 quick service restaurants
- One 4,397 square foot building that will have a quick service restaurant with drive-through
- One 4,656 square foot building that will have a quick service restaurant with drive-through
- One 5,081 square foot building that will have a 24-hour diner restaurant
- One 33,000 square foot building that will have a three story, 72 room hotel

1.2 Project Location

The property proposed for development contains a single parcel located at 2747 E. Manning Avenue, Fowler California 93625 (APN: 345-180-30).

FIGURE 1: APPROXIMATE PROJECT BOUNDARY OF THE NEW PROPOSED BUFORD TRAVEL CENTER

1.3 Site Characterization

The site is comprised of one lot of approximately 18-acres in total (figure 1, Plate 3, 4, 5). No changes were observed, noted, or conveyed to AEC indicating a change in site acreage or use for the second survey. There is currently about 8-acres of developed lands utilized as a small travel center with fuel stations, a convenience store, and parking for autos and tractor trailer trucks. The current access is Manning west of Golden State Avenue with a single entrance for ingress and egress at a traffic control light intersection at the southeast corner of the site. The portion of the site that is developed occupies the southern portions of the project property. A single detention basin is located near the southwest property bounds just west of the existing parking lot. The basin is surrounded by dilapidated chain link fence and garbage. During the second site visit a significant amount of the garbage had been removed from around and within the basin. Dozer tracks had been observed within the basin and throughout the site. It appeared that the site surface vegetation and soils were cleared as a result of routine maintenance procedures. The basin's slopes and general integrity appear to be in poor shape. The northern portions of the site were still vacant, fallow land and had also been cleared of vegetation and most garbage. Spoils piles were present and appeared to be awaiting removal.

The only portion of the site that was vacant that had not been cleared was the upper elevated pad area in the middle north east portion of the site. This area still had annual desiccate vegetation present. Observed flora observed during the second survey consisted of the same annual weedy species of vegetation observed in the initial survey. For the purposes of this report this habitat is classified as ruderal disturbed grassland (this is a derived classification based on the current flora and conditions of the site). Observations of the surface soils indicate the site is disced *and or scraped clear* at least once a year. Soils of the site consist of a mix of sands and loams where one or the other is the parent material (Plate 3). The southern portion of the site is developed lands with pavement and buildings covering all the surfaces currently in use for the as built travel center. This area is not considered habitat for the purposes of this report.

2 Methodology

2.1 Desktop Research and Review and Literature Review

Prior to conducting *the second* field survey of the site AEC conducted *a follow up* review of the desktop and database resources *previously accessed* regarding the biological resources in the vicinity of the project study area. The data review included a search of existing databases, inventories, lists, and collections that contain information regarding the occurrence of special-status species. Resources used in this review included the following:

- *California Natural Diversity Database (CNDDB, August 6, 2018 version of the BIOS) for records of sensitive plants, animals, and vegetation communities.*
- *California Native Plant Society (CNPS, October 2018) online inventory of rare and endangered plants of California.*
- *Consortium of California Herbaria (available on-line at http://ucjeps.berkeley.edu/consortium/).*
- *USFWS online Information for Planning and Consultation portal (IPaC).*
- *California Wildlife Habitat Relationships (CWHR) life history and range maps.*
- *Aerial photographs on Google Earth, (Google Earth, Inc 2018).*

The California Natural Diversity Database (CNDDB) GIS (geographic information system) data sets were utilized on Environmental Systems Research Institute (Esri) mapping platform (licensed professional subscription) to identify documented natural resources within the immediate vicinity and within and up to a five-mile radius of the site. These natural resources may consist of flora, fauna, water features, habitats, soils and or any type of special status natural resource that has been documented by the CNDDB or other agencies or organization that collect and provide scientific data for review and use through GIS.

2.1.1 Definition of Sensitive Biological Resources

For the purposes of this report, sensitive plants and animals were defined to include species, subspecies, varieties, and populations recognized by CDFW or USFWS, and which have been classified into one or more of the following categories:

- Species, subspecies, and populations listed or proposed for listing as threatened or endangered pursuant to the federal Endangered Species Act (ESA), and species that are candidates for such listing.
- Species and subspecies listed or proposed for listing by the State of California as threatened or endangered pursuant to the California Endangered Species Act (CESA).
- Plants included in the California Vascular Plants, Bryophytes, and Lichens List.
- Plants assigned California Rare Plant Ranks (CRPR) by the California Native Plant Society (CNPS).
- Animals listed as species of special concern, fully protected, or watchlist on the California Special Animals List, and for invertebrates, all species on the California Special Animals List regardless of the reason for inclusion.
- Plants and animals identified by CDFW and / or USFWS in letters, emails, or in-person communications regarding the project.

In addition, natural communities recognized by CDFW as being of special concern were considered sensitive, along with riparian habitats, and water bodies under the jurisdiction of CDFW, USACE, and / or RWQCB.

Throughout this document, species, subspecies, varieties, and populations are broadly referred to as "species," a term which is used here to encompass whichever pertinent taxonomic level is recognized by the state and federal authorities with jurisdiction over plants and animals.

The information obtained from the literature and database searches were reviewed to identify a list of sensitive biological resources with the potential to occur at the project property.

2.2 On-Site Survey Methodology

The *second* on-site field survey was conducted by AEC senior biologists / botanist Mr. Yancey Bissonnette on the day of October 16, 2018. The survey of the site was conducted by walking meandering pedestrian transects throughout the entire site area. The site was visually observed with the naked eye and with the use of binoculars when needed. Mr. Bissonnette was able to observe most of the site ground surface and vegetation at the time of the survey. Areas not surveyed included the developed portions of the site with pavement and structures utilized by the current travel center. Weather conditions at the time of arrival were recorded with a Kestrel 2000 weather meter. *Note: Methodology of the second survey was consistent with the methods employed during the initial survey.*

3 Results – Evaluation / Assessment

3.1 Research and Literature

A secondary review of GIS CNDDB map data indicates that no additional special status plant or animal species or critical habitat *have been recently added or* documented to occur at the site (Plate 4) since the initial survey and reporting review. This secondary review also confirmed that no wetlands or wetland features, currently or historically, have been recently recorded and or documented to occur within or directly adjacent to the site. CNDDB GIS data identified one documented occurrence of Yellow-billed cuckoo (*Coccyzus americanus*) within a 5-mile radius of the site with an occurrence date of 1898 (Plate 4). The siting occurrence was approximately 4.5 miles south of the site and presumably within a riverine habitat system that is no longer a part of the landscape of the region.

3.2 Special Status Wildlife and Botanical Species

Only special status wildlife and or their habitat with potential to occur at the site or within the 5-mile radius of the site will be discussed in this section of the report. Species "not expected" to occur at the site but that have been identified in the database review will be addressed within Table 2.

3.2.1 Yellow-billed Cuckoo

Yellow-billed Cuckoos are federally threatened and state endangered birds of relatively large and long stature. The bill is almost as long as the head, predominately yellow, thick and slightly downcurved. They have a flat head, thin body, and very long tail. Wings appear pointed and swept back in flight. Yellow-billed Cuckoos are warm brown above and clean whitish below.

Their blackish face mask is accompanied by a yellow eye-ring. In flight, the outer part of the wings flash rufous. From below, the tail has wide white bands and narrower black ones (ECOS-USFWS, 2018).

Yellow-billed Cuckoos use wooded habitat with dense cover and water nearby, including woodlands with low, scrubby, vegetation, overgrown orchards, abandoned farmland, and dense thickets along streams and marshes. In the West, nests are often placed in willows along streams and rivers, with nearby cottonwoods serving as foraging sites (ECOS-USFWS, 2018).

Caterpillars top the list of Yellow-Billed Cuckoo prey: individual cuckoos eat thousands of caterpillars per season. On the East coast, periodic outbreaks of tent caterpillars draw cuckoos to eat as many as 100 caterpillars in one sitting. Fall webworms and the larvae of gypsy, brown-tailed, and white-marked tussock moths are also part of the cuckoo's lepidopteran diet, often supplemented with beetles, ants, and spiders. They take advantage of the annual outbreaks of cicadas, katydids and crickets, and will hop to the ground to chase frogs and lizards. In summer and fall, cuckoos forage on small wild fruits, including elderberries, blackberries and wild grapes. In winter, fruit and seeds become a larger part of their diet (ECOS-USFWS, 2018).

Yellow-billed Cuckoos breed throughout much of the eastern and central U.S., winter almost entirely in South America east of the Andes and migrate through Central America. The western subspecies (C.a. occidentalis) has disappeared over much of the western U.S. and now occurs as a rare breeder in California, Arizona, New Mexico, and west Texas. In the West, much of the Yellow-Billed Cuckoos riparian habitat has been converted to farmland and housing, leading to population declines and the possible extirpation of cuckoos from British Columbia, Washington, Oregon, and Nevada. Once common in the California Central Valley, coastal valleys, and riparian habitats east of the Sierra Nevada, habitat loss now constrains the California breeding population to small numbers of birds. As long-distance, nocturnal migrants, Yellow-Billed Cuckoos are also vulnerable to collisions with tall buildings, cell towers, radio antennas, wind turbines, and other structures (ECOS-USFWS, 2018).

Project Assessment: Yellow-billed Cuckoo was the only species documented within a 5-mile radius of the project site. This occurrence data was dated 1898. The habitat of this location occurrence has since been altered and is currently developed agriculture, urban and suburban interfaces within the valley. The original water course that the species was likely observed is no longer in existence and appears to be an irrigation canal that has little to no natural course or resources intact. It is the opinion of AEC that it is unlikely for this species to occur at the site as there is no habitat or conditions which would support this species. No nesting, breeding, or transient foraging habitat exists at the site at this time. No significant impacts are anticipated to occur for this species.

3.2.2 Vernal Pool Fairy Shrimp

The vernal pool fairy shrimp (*Branchinecta lynchi*) is a federally threatened species of invertebrate that ranges in size from 10.9 to 25.0 mm (Eng et al. 1990). Vernal pool fairy shrimp are almost translucent but can be whitish or have some orange body parts. Fairy shrimp have delicate elongate bodies, large stalked compound eyes, no carapace, and 11 pairs of swimming legs. They swim upside down by means of complex beating movements of the legs that pass in a wave-like anterior to posterior direction. Nearly all fairy shrimp feed on algae, bacteria, protozoa, rotifers, and bits of detritus (Pennak 1989) (Veranal Pool Fairy Shrimp (Branchinect lynchi), 2018).

A key adaptation of the fairy shrimp is the production of drought-resistant eggs. Eggs or cysts are released when pools are inundated then settle to the bottoms of the pools or habitat. When the vernal pools dry, the eggs remain on the surface of the pool or embedded within the top few centimeters of soil. There they survive the hot, dry summers and cold, wet winters that follow until the vernal pools and swales fill with rainwater and conditions are right for hatching (Geer and Foulk 1999/2000). When the pools refill in the same or subsequent seasons some, but not all, of the eggs may hatch. The egg bank in the soil may be comprised of the eggs from several years of breeding (Donald 1983). Although the animal can mature quickly, allowing populations to persist in short-lived shallow pools, it also persists later into the spring where pools are longer lasting (Simovich et al. 1992) (Veranal Pool Fairy Shrimp (Branchinect lynchi), 2018).

Vernal pool fairy shrimp populations live in ephemeral freshwater habitats, such as vernal pools swales, depressions, anthropogenic and sometimes inadvertent water features where water quality and persistence are suitable for growth and reproduction. None are known to occur in running or marine waters or other permanent bodies of water. The distribution of vernal pools or habitat suitable for vernal pool fairy shrimp is highly discontinuous and some of the aquatic invertebrates that are found in this habitat occur only in specific geographic areas due to local topography and geology.

Although the vernal pool fairy shrimp has a relatively wide range, the majority of known populations inhabit pools with clear to tea-colored water, most commonly in grass or mud bottomed swales, or basalt flow depression pools in unplowed grasslands, but may occur in sandstone rock outcrops and or alkaline vernal pools. They are ecologically dependent on seasonal fluctuations in their habitat, such as absence or presence of water during specific times of the year, duration of inundation, and other environmental factors that include specific salinity, conductivity, dissolved solids, and pH levels. Water chemistry is one of the most important factors in determining the distribution of fairy shrimp (Belk 1977; Jamie King, University of California, in litt., 1992; Marie Simovich, University of San Diego, in litt., 1992) (Veranal Pool Fairy Shrimp (Branchinect lynchi), 2018). The water in pools inhabited by this species has low total dissolved solids (TDS), conductivity, alkalinity, and chloride (Collie and Lathrop 1976). The vernal pools the animal inhabits vary in size from over 10 ha to only 20 square meters. The vernal pool fairy shrimp occurs at temperatures between 6-20 degrees C in soft and poorly buffered waters (Eng. et al. 1990) (Veranal Pool Fairy Shrimp (Branchinect lynchi), 2018).

Contamination of vernal pools from adjacent areas may injure or kill vernal pool crustaceans. Toxic chemicals, such as petroleum products, pesticides, herbicides, fertilizers and soap, may wash into vernal pools during development of adjacent areas. Contamination also may result from increased discharge of contaminants such as fertilizers and pesticides into surface waters from golf courses, irrigated agricultural lands, or landscaped residential areas (Petrovich 1990). Fertilizer contamination can lead to the eutrophication of vernal pools, which can kill vernal pool crustaceans by reducing the concentration of dissolved oxygen (Rogers 1998) (Veranal Pool Fairy Shrimp (Branchinect lynchi), 2018).

Project Assessment: The vegetation structure of the site is a mix of ruderal, non-native and native annual species that typically do not support the predicted vegetative habitat generally expected for this species. However, the sites topography and soil structure does provide potential for shallow low gradient areas or depressions that could potentially support some "fairy shrimp" species. AEC has observed that some species of fairy shrimp have occurred and occupied ruts, depressions, and "mud puddles" of sites that have persistent inundation and water quality (chemistry and temperature, and DTS) to support some populations and species of fairy shrimp. The project site has some of these features, but as stated in the published literature, contamination variables like those found at the site are likely to deter the ability of this species to occur at the site. However, biological organisms can be adaptable and have been known to persist in conditions that are not expected to support them. With that being said it is the opinion of AEC that the site has a low potential for this species to occur at the site due to the marginal habitat in the form of topographic features. To offset potential impacts to the species with regards to the EIR AEC recommends that the site be monitored for inundation and water quality with regards to the needs of the vernal pool fairy shrimp of any topographic feature that could potentially support the species prior to construction if the construction is scheduled to occur during expected inundation periods of the wet season for the species. If areas of the site are deemed to be inundated for periods long enough to support the species, then the USFWS should be consulted to determine if wet and or dry season surveys and or preconstruction surveys may need to be reduce the risk of impacts to the species to a less than significant level.

3.2.3 Burrowing Owl

The Burrowing Owl is small ground-dwelling diurnal owl with several distinctive features. They have bright yellow eyes, long legs and range in length from 19-25 cm and have brown and buffy-white spotted feathers with a buffy-white eyebrow. Males are slightly larger than females. Juveniles are distinguishable from adults by their solid buff colored breast and wings (Poulin et al. 2011) (ECOS-Western Burrowing Owl (Athene cunicularia ssp. hypugaea), 2018). They are a state listed species of special concern and therefore need to be addressed in environmental review documentation and reporting when potential habitat is identified for a project.

Burrowing Owls typically prefer habitats within deserts, grasslands, and shrub-steppe, and utilize well-drained, level to gently sloping areas characterized by sparse vegetation and bare ground such as moderately or heavily grazed pasture. They prefer short grass for nesting but will forage over areas of tall vegetation (Dechant et al. 1999, revised 2002, p. 3). However, there is evidence that vegetation over 3.3 ft may be too tall for Burrowing Owls to locate prey. Types of foraging areas include cropland, pasture, prairie dog colonies, fallow fields, and sparsely vegetated areas (Dechant et al. 1999, revised 2002, p. 7). Burrowing Owls also regularly utilize developed areas such as agricultural fields, golf courses, cemeteries, road allowances, airports, vacant urban lots, and fairgrounds (Poulin et al. 2011) (ECOS-Western Burrowing Owl (Athene cunicularia ssp. hypugaea), 2018).

Burrowing Owls forage prey includes arthropods and small mammals. They typically forage just after sunset and just before sunrise. Burrowing Owls may perch or fly low along the ground to spot prey and have been known to hover between 33-98 ft off the ground as a foraging tactic.

Egg laying for Burrowing Owls begins may begin in late-April and extend through early to mid-May. Burrowing Owls nest underground and commonly use ground squirrel, rabbit, and or other suitably available burrows for their nesting sites. However, they have been known to utilize anthropogenic sources of material such as abandoned pipes, cavities in soil berms or spoils piles. They can be opportunistic in choosing nesting locations in urban or vacant lands. Burrows are often selected in areas where there are a high density of burrows and are often surrounded by bare ground or very low and sparse vegetation. Nests usually contain one clutch per nest, but the female may re-nest if the first clutch is destroyed early in the breeding season. Young are born altricial but can walk to occupy nearby burrows by two weeks of age. In non-migratory populations, nests are utilized and maintained throughout the year. It has been observed that many migratory Burrowing Owls return to the same burrows in subsequent years (Poulin et al. 2011) (ECOS-Western Burrowing Owl (Athene cunicularia ssp. hypugaea), 2018).

Project Assessment: The site contains numerous burrows of ground squirrels and rabbits that could potentially support nesting and refugia for this species. The open vacant lands on, adjacent, and within the vicinity of the project site provide observed habitat that supports multiple small fossorial mammals that could be utilized as prey for burrowing owls and in some locations at or near the site is clearly abundant. AEC has conducted many surveys (80+) and habitat assessments for this species and have found the species to occur in habitat and conditions similar to that of the project. It is our opinion that the species has the potential to occur at the site. Therefore, to offset potential impacts to the species to less than significant, the following conditions should be implemented. Consultation with CDFW to determine if protocol level surveys need to be conducted for the site prior to construction. If it is determined that formal protocol surveys for the species is not needed, then a general preconstruction survey for nesting birds prior to construction activities should be implemented.

3.2.4 Fresno Kangaroo Rat

The Fresno kangaroo rat (*Dipodomys nitratoides exilis*) is one of three subspecies of San Joaquin kangaroo rats, distinguished by being smaller than the Tipton (*Dipodomys nitratoides nitratoides*) and the short-nosed kangaroo rat (*Dipodomys nitratoides brevinasus*), a species of concern. The Fresno kangaroo rat is federally, and state listed as endangered. The Fresno subspecies averages around nine inches in length. The Fresno kangaroo rat is similar in general appearance to the other 20 species of kangaroo rats, but is smaller, and differs substantially from all other species in several ways. Like all kangaroo rats, the Fresno kangaroo rat is adapted for survival in an arid environment. Adaptations for bipedal locomotion include elongated hind limbs, a long, tufted tail for balance, a shortened neck, and, compared to typical rodents, a large head. The skull is flattened from top to bottom, with enlarged auditory bullae (bony capsules containing the middle and inner ears). Other characteristics include large eyes placed near the top of the head and small, rounded ears. Forelimbs are comparatively short with stout claws that facilitate digging burrows (CSUS, Endangered Species Recovery Program : Recovery Plan for Upland Specis of the San Joaquin Valley, California, 2018). Its total length averages about 231 millimeters (9.09 inches) for males and 225 millimeters (8.86 inches) for females (Hoffmann 1975). The hind foot usually is less than 36 millimeters (1.42 inches) in length. The fur is dark yellowish-buff dorsally and white ventrally (Knapp 1975). A white stripe extends across the hips, continuing for the length of the prominently tufted tail. The base of the tail is circumscribed by white. Dorsal and ventral sides of the tail are blackish. Dark whisker patches on each side of the nose are connected by a black band of fur (Grinnell 1922, Culbertson 1934, Williams 1985) (CSUS, Endangered Species Recovery Program : Recovery Plan for Upland Specis of the San Joaquin Valley, California, 2018). The Fresno kangaroo rat can be distinguished from other kangaroo rats within its geographic range by the presence of four toes on the hind foot; the other species found in the same area have five toes. The Fresno kangaroo rat is the smallest of the three subspecies of D. nitratoides. Individuals of the three subspecies of D. nitratoides cannot be reliably distinguished without dissection unless the geographic origin of the individual is known. The Fresno kangaroo rat is distinguished from the other subspecies of the San Joaquin kangaroo rat by its smaller average measurements (CSUS, Endangered Species Recovery Program : Recovery Plan for Upland Specis of the San Joaquin Valley, California, 2018).

Little specific life history and ecology information for Fresno kangaroo rat was available at the time of this report review. Published information generally references conditions of the parent species of *Dipodomys nitratoides* to supplement information about the Fresno kangaroo rat's life history, and foraging habits. The following information represents the general accepted behavior of most San Joaquin kangaroo rats in that they collect and store food via pocket pouches in the cheeks and later store the collected seeds / food in caches for later consumption. Caches generally occur in the surface soils of the home locale of the species but may include interior caches within the wall of burrows and dens. Seeds are a staple in their diet, but they also eat some forms of green, herbaceous vegetation, and a small percentage of insects. Known foods include seeds of annual and perennial grasses, particularly wild oats, brome grasses (Rip-gut brome (*Bromus diandrus*), Red brome (Bromus madritensis subsp. Rubens), Soft-chess brome (*Bromus hordeaceus*), wild barley (*Hordeum sp.),* Rattail / Sixweeks grass (Festuca myuros), Alkali sacaton (*Sporobolus airoides*), and Salt-grass (*Distichilis spicata*) ; and seeds of annual forbs such as filaree (*Erodium sp.*), Peppergrass (*Lepidium sp.*), common Spikeweed (*Centromadia pungens*), and Shepherds purse (*Capsella bursa-pastoris*) (CSUS, Endangered Species Recovery Program : Recovery Plan for Upland Specis of the San Joaquin Valley, California, 2018). Forage may also include seeds of the woody and semi-woody shrubs such as Iodine bush (*Allenrolfea occidentalis*) and Seepweed (*Sueda moquinii*). Seeds of woody shrubs, especially saltbushes (*Atriplex sp*.) are diligently sought out by Tipton and short-nosed kangaroo rats, and also probably are important for Fresno kangaroo rats (D.F. Williams unpublished observation). Insects make up a small part of the diet, varying from about 2 to 10 percent frequency in fecal samples (CSUS, Endangered Species Recovery Program : Recovery Plan for Upland Specis of the San Joaquin Valley, California, 2018).

Fresno kangaroo rats use nearly level terrain with sandy loam soils for excavation of burrows. Herbaceous vegetation with scattered shrubs is common above-ground cover. Culbertson (1946) described burrow systems as covering a surface area from about 2.1 x 2.1 m (7 x 7 ft) to 3.7 x 3.7 m (12 x 12 ft). Some burrow systems included short dead-end tunnels, apparently used to escape predators. (G. Ahlborn, 1999).

Project Assessment: The observed and identified vegetative structure and soil structure of the site are compatible analogs for this species. Observations during both surveys indicated that the site is abundant with fossorial mammal burrows. The previous survey identified some of the species generally associated with the burrows observed but not all species potentially present at the site could be verified or identified with the methods employed during the survey. The CNDDB GIS data did not indicate any know documented occurrences of the species within a 5-mile radius of the site. GIS data indicated the nearest documented occurrence is approximately 19.5 miles west of the site within near S. Henderson Road north of Manning Road near Raisin City and dated 1974. As little data exists for this species current range and occupation it is the opinion of AEC that there is a low potential for the species to occur at the site based on the habitat type. Consultation with USFWS and CDFW is recommended to determine if protocol surveys are warranted for this site. Consultation should help determine the significance level for impacts to the species. If the agencies determine that surveys are unwarranted then it is recommended that a general preconstruction survey be conducted prior to any ground disturbance activities to search for any sign or indications of kangaroo rats utilizing the site. In addition to precon surveys it is recommended that monitoring during any ground breaking or disturbance be conducted to ensure that no potential occurring kangaroo rats are harmed and that habitat loss does not occur if the species is found to be present at the site during construction activities.

3.2.5 San Joaquin Kit Fox

The San Joaquin kit fox (*Vulpes macrotis mutica*) is listed as an endangered species by the U.S. Fish and Wildlife Services (U.S. Fish and Wildlife Service, 1967 Federal Register 32), and is listed as threatened by the state of California, (Endangered Species Protection Program 2010). The San Joaquin kit fox is believed or known to inhabit the following California counties: Alameda, Calaveras, Contra Costa, Fresno, Kern, Kings, Los Angeles, Madera, Mariposa, Merced, Monterey, Sacramento, San Benito, San Joaquin, San Luis Obispo, Santa Barbara, Santa Clara, Santa Cruz, Solano, Stanislaus, Tulare, Tuolumne, and Ventura, (U.S. Fish and Wildlife Service, 2017).

The average kit fox is approximately 32 in. in total length (nose to tail), 12 in. tall, 5lbs., and has a recognizable foot pad the size of 1.2 in. x 1 in., (Endangered Species Protection Program 2010). The kit fox's habitat consists of dens in open shrubby areas with loose textured soils, but it will use other resources such as old artifacts or different soils to build if needed, (U.S. Fish and Wildlife Service, 2017). Kit foxes are primarily carnivorous preferably feeding on rodents and birds, but will also feed on insects, reptiles, vegetation, or trash if necessary; (Ahlborn, 2000). Recent studies by Brian Cypher et. el. have determined that populations of SJKF occurring within the bounds and near bounds of Bakersfield have developed into "urbanized" populations tolerant and adapted to the municipal environment. As such these populations tend to exhibit greater tolerances for humans and activities associated with city life. They have been found to be opportunistic in their feeding habits and have been documented eating food not typically associated with Kit fox. They have also adapted to a variety of denning locations within the urban environment suggesting that they do not immigrate to the urban interface strictly to forage but to occupy and live.

Project Assessment: The site habitat and structure is conducive to supporting SJKF based off the recent studies of urbanized populations. As stated before observations of the site indicate that numerous fossorial mammal species occupy the site and could potentially provide a suitable prey source for an urbanized kit fox population, albeit a small population. However, there were no indications of the presence of SJKF observed during either survey. No sign of kit fox such as scat, burrow entrances, tracks or other indications that they were occupying or utilizing the site or surrounding properties. It is the opinion of AEC that there is only a low potential for the species to occur at the site. To reduce the risk of take of the species and to reduce the impacts to the species to less than significant AEC suggests that a preconstruction survey for SJKF occur prior to any ground disturbance activities during construction. Periodic monitoring should be implemented during construction to ensure no foxes have been attracted to the site during project development activities. Worker education should be implemented to inform construction crews of how to recognize the animals and what not to do to attract them to the site during construction and how to protect machinery and materials from being utilized as refuge or denning sources for the fox.

3.2.6 Special Status Botanical Species

Database research from USFWS did not indicate any listed plant species that would be of concern within the official species list letter generated for the project. However, a CNPS search of the quadrangle for the project (USGS quadrangle = Conejo, 3611956; CNPS code = 357c) did identify seven special status species of plants with potential to be present within the vicinity and or with historical occurrence within the region of the project. Table 2 identifies the species listed for the project and their status designation.

Project Assessment: It is the opinion of AEC that none of the listed species for this project are expected to occur at the site. The soil and or habitat needed for these particular special status species have generally been extirpated from most of their historical range and locales due to agriculture and modern development. Most of these species currently are restricted to areas of the state with intact or protected natural or restored habitat and are rarely discovered to occur outside of these know locales. CNDDB data and CNPS research did not indicated that any historical occurrence of these species every occurred within the project site or immediate vicinity. Maintenance activity and soil contamination likely would inhibit these species of occurring at the project site. California Jewel flower (*Caulanthus californicus*) is the only species of the seven that may have had any historical or current ability to occur within the site's vicinity based on the soil type and variable habitat the species can occur. AEC believes it is unlikely that this or any of the seven special status species are likely to occur at the site. However, USFWS and CDFW should be consulted to determine if a floristic survey and or focused special status survey should be conducted for these species. The timing of each of the surveys of the site occurred outside the blooming period for most of these species and these survey's timing may not satisfy conditions for determining significance levels for impacts to the species and or habitat.

3.3 Field Survey

On October 16, 2018 Mr. Bissonnette conducted a secondary on-site field survey of the accessible areas of the project. The weather conditions recorded at the beginning of the survey recorded a starting survey temperature of 65.0° Fahrenheit (°F). The observed % cloud cover was estimated at 0% - 1% with mostly clear blue-skies and unobstructed visibility. Wind was identified as a 2 to 3 (range of 5 mph to 8 mph) on the Beaufort scale (National Oceanic and Atmospheric Administration, 2016) (slight breeze).

The Beaufort Wind Scale was developed by Sir Francis Beaufort of England in 1805 and is a system that contains 12 classes of wind. Only classes 0 through 5 are described here given that most biological surveys should not be conducted during the wind speeds experienced for lasses 6 through 12.

0 - Calm Winds (0 to <1mph): Smoke rises vertically
1 - Light Air (1 to 3 mph): Smoke drifts with air
2 - Light Breeze (4 to 7 mph): Weather vanes become active

3 - Gentle Breeze (8 to 12 mph): Leaves and small twigs move
4 - Moderate Breeze (13 to 18 mph): Small branches sway
5 - Fresh Breeze (19 to 24 mph): Small trees sway - Waves break

The site is comprised of one lot that is partially developed in its southern portions. Access is via the ingress from Manning Avenue or from Valley Road west of Golden State Blvd. The site is unfenced and easily accessed from either vantage. The undeveloped landform is a visually flat open, vacant, and fallow lot consisting of annual grasses, forbs, and four trees. Two remnant Chinaberry trees (*Melia azedarach*) occupy this area and appeared to be stressed to the point of barely appearing alive. Two very old Olive trees, also barely alive, occupied an area near the south-eastern bounds of the undeveloped open space. The open space vegetation consisted of weedy species of grasses and forbs. Naturalized non-native grasses of Bromes (*Bromus diandrus and Bromus madritensis ssp. rubens*), and Wild Oats (*Avena sp*.) appear to have been the dominant grasses, while Mustard (*Hirschfeldia incana*), Tumbleweed / Russian Thistle (*Salsola tragus*), and Yarrow (*Achillea millefolium*) *were all present during the second survey*. At the time of the *second* survey annual plants were *desiccate and well past fruiting*. No Federal, State, or CNPS listed species of plants (identified for the project in the database review) were observed during the survey. No Federal or State special status animal species were observed during the survey.

Burrows and sign of commonly occurring fossorial mammals were observed at the site and were abundant. Ground squirrel (Spermophilus beecheyi) burrows were easily identified and could potentially provide suitable burrow habitat for Burrowing Owls (Athene cunicularia). Other burrows previously identified in the first survey were less identifiable during the second survey due to the recent scraping of the site. However, while the burrows were less identifiable to specific species the burrow size, orientations, and aspect were visible and consistent with previously recognized species of the first survey. The site is abundant with multiple types of burrows and sizes therefore to accurately identify which species are utilizing the site trapping surveys would need to be implemented to determine specific species occupying the site.

The following photos represent the site during the second survey (October 16, 2018) and are similar in aspect and location to the original photos presented in the "reconnaissance report of January 12, 2018".

FIGURE 2 ; VIEW LOOKING NORTH NEAR THE WEST BOUNDS OF THE PROJECT PROPERTY.

FIGURE 3 : VIEW LOOKING NORTHEAST OF THE PROPOSED PROJECT DEVELOPMENT AREA.

FIGURE 4 : VIEW LOOKING SOUTHWEST OF THE CURRENT DETENTION BASIN.

FIGURE 5 : VIEW LOOKING SOUTH WITHIN THE DETENTION BASIN.

FIGURE 6 : VIEW LOOKING SOUTHWEST FROM NORTHEAST CORNER OF THE PROPERTY.

FIGURE 7 : VIEW LOOKING WEST ATOP THE FILL SLOPE NEAR THE OLIVE TREES ALONG THE EAST BOUNDS OF THE PROJECT PROPERTY.

3.3.1 Wildlife

The following species of wildlife were observed at the site during the *second* survey: House Finches (*Haemorhous mexicanus*), Mourning Doves (*Zenaida macroura*), and Kestrel (*Falco* *sparverius*). Mice burrows were observed but little evidence was available to indicate the genus or species occurring at the site. Species previously identified at the site by the presence of scat, tracks, burrow, or other indications include pocket gophers (*Thomomys bottae*), Cottontail rabbit (*Sylvilagus audubonii*), Ground squirrels (observed), and Mice and are assumed to still be present based on the observed burrow types and their density at the site. Ants of undetermined species and their excavation mounds were also still present at the site despite the maintenance activities involving the scraping of the surface vegetation and soils. No other significant wildlife was noted or observed during the second survey.

3.3.2 Habitat

For this report, habitat is defined by the physical area characterized by an assemblage of botanical species, substrate features, or aquatic environment. Habitat types comprised of botanical assemblages illustrate a community typically associated or classified by the dominant vegetation type present in the locale where the survey is being conducted. Habitat may be utilized by organisms that may occupy the area and may provide some subset of essential or preferred ecological and biological needs for those species that may be found in a described habitat. Habitat types are utilized to classify elements of nature associated with the physical, biological, and ecological conditions in an area. These habitat characteristics may be utilized as indicators of the potential for special-status species and or plant communities to occur, to be associated with, or may be affected by a project. The following paragraph(s) describe the major vegetation alliances identified for this project. Habitats were identified and characterized based on current excepted habitat descriptions. Habitat descriptions follow and or integrate types that have been described by Holland (Holland R. F., 1986), Sawyer Keeler-Wolfe (Keeler-Wolfe & Sawyer, 2007, 2008), Holland (Holland & Keil, 1989), the CDFW maintained publication of "A Guide to Wildlife Habitats of California" (CWHR), and or by derived descriptions that best characterize the general habitat as it was observed during the survey.

The habitat identified for this site is best described as ruderal or disturbed annual grassland habitat characterized by routine maintenance and fallow landscape use. (*A ruderal species is a plant species that is first to colonize disturbed lands. The disturbance may be natural – for example, wildfires or avalanches – or a consequence of human activity, such as construction (of roads, of buildings, mining, etc.) or agriculture (abandoned fields, irrigation, etc.). The word ruderal comes from the Latin rudus = rubble. Ruderal species typically dominate the disturbed area for a few years, gradually losing* *the competition to other native species. However, in extreme disturbance circumstances, such as when the natural topsoil is covered with a foreign substance, a single-species ruderal community may become permanently established. In addition, some ruderal invasive species may have such a competitive advantage over the native species that they, too, may permanently prevent a disturbed area from returning to its original state despite natural topsoil* (Wikipedia , 2018).

The developed lands of the travel center are not considered for this report and have no other designation than commercially developed property. The following table is a list of the botanical species readily identifiable and observed at the time of the survey. Note that the survey did not include a floristic survey and the timing of the survey was not conducive for identifying all potential occurring species of plants that could be present at the site. *The second survey botanical observations were consistent with the previous survey. The only exception to this is that a reduction in the density of the vegetation was observed and occurred as a result of the maintenance activity. However, the botanical remnants observable at the time were consistent with the following list from the original survey where no additional species were observed at the time of the second survey.*

TABLE 1 : OBSERVED BOTANICAL SPECIES

FAMILY	SCIENTIFIC NAME	COMMON NAME	HABITAT TYPE	HABIT OR LIFE CYCLE	NATIVE OR NON-NATIVE
Oleaceae	*Olea europaea*	olive	disturbed habitat	tree	non-native
Amaranthaceae	*Amaranthus sp.**	pigweed	disturbed habitat	annual-perennial	native/non-native
Asteraceae	*Achillea millefolium*	common yarrow	many habitats	perennial	native
Asteraceae	*Centaurea sp.*		disturbed areas	annual	non-native
Asteraceae	*Erigeron canadensis*	Horse Weed	disturbed places	annual	native
Asteraceae	*Heterotheca grandiflora*	telegraph weed	disturbed grassland	perennial	native
Brassicaceae	*Hirschfeldia incana*	Hoary Mustard	cultavated/disturbed places	perennial	non-native
Chenopodiaceae	*Chenopodium album*	Pigweed, Lambs Quarter's	disturbed places, fields, roadsides	annual	non-native
Chenopodiaceae	*Salsola tragus*	Russian thistle	disturbed grassland	perennial	non-native
Euphorbiaceae	*Croton setigerus*	Turkey Mullein; Dove Weed	many habitats	annual	native
Meliaceae	*Melia azedarach*	Chinaberry tree	Washes, riparian areas, coastal scrub, or persisting near old habitations	tree	naturalized
Poaceae	*Avena sp.*	oat grass	annual grasslands	annual	non-native
Poaceae	*Bromus diandrus*	Rip-gut Brome	disturbed areas	annual-perennial	non-native
Poaceae	*Bromus madritensis* ssp. *rubens*	Red Brome	disturbed areas	annual	non-native

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3.3.3 Site Soils and Topography

Site topography consist of flat, zero to low gradient lands. The topography is mostly flat with a fill pad near the middle west portion of the site that is elevated approximately two feet above the surrounding grade elevations. The site occurs within the middle boundaries of the Great Central Valley of California. Typically, the land form in these areas consist of low gradient flat lands within the valley to rolling hills rising into the mountains of the Sierra Nevada range. The site is surrounded by lands consisting of commercial and industrial properties and or commercial agriculture where most of the natural habitat has been degraded for anthropogenic uses and infrastructure.

Soil structure at the site consist of three NRCS soil types identified as DhA-Delhi loamy sand, Dm-Dello loamy sand, and HsR-Hesperia fine sandy loam (Plate 3, Appendix3). As there are no documented wetlands, or botanical species of concern for the project area, specifics of the soils will not be discussed in detail for this report as they have no relevance to the presence or absence of listed species potentially occurring within the site. Appendix 3 provides some additional general information regarding the identified soil structures of site.

3.3.4 Wetlands and Regulated Waters

No Jurisdictionally regulated USACE and or CDFW waters were observed at the site. The site survey and database review confirm that no wetlands and or habitat associated with wetlands exist within the property bounds of the site (Plate 5).

4 Conclusions

The site as it was observed during each survey consists of an old travel center and undeveloped vacant lot land. The vacant lands consist of annual weedy species of grasses and forbs that are routinely maintained by the property owner. The City of Fowler has designated zoning of the project parcel as C-3 general commercial development. Based on the observations of the survey and findings of the database review, it is the opinion of AEC that the project is unlikely to adversely affect special status species, or regulated waters of the U.S. or State, identified within this report as long as the recommended surveys, best management practices, and or due diligence protections of the natural resource is observed.

As for species not listed as special status such as birds and insects or other animals commonly found throughout the region or state and as yet may not have official protection, we propose that the following recommendations be implemented to ensure compliance with CEQA, NEPA, and or other regulatory requirements and for the general protection of natural resources.

5 Recommendations

The following are actions that should be utilized to help further reduce the risk of "take" during construction or ground disturbance activities and development:

1. If construction activities are scheduled to occur during the breeding or nesting season for Migratory Bird and Treaty Act (MBTA) listed birds a preconstruction survey for nesting birds should be implemented. (breeding season = begins February 1 of each calendar year and continues through until August 31 of each calendar year; nesting season begins March 1 of each calendar year and extends through August 31 of each calendar year)
    a. If surveys identify nesting birds, then the appropriate agency should be notified, and temporary noise and physical buffers implemented.
        i. Monitoring during the time when and if nesting birds are detected should be carried out by a qualified biologist to ensure protection of the birds, their young, and to prevent "take" of the animals.
        ii. Buffers should remain intact until any nesting birds have fledged their young and are no longer at risk of take from construction activities.
    b. If no nesting birds are detected during preconstruction surveys and construction activities proceed and nesting birds are found after the preconstruction survey, then a qualified biologist will be employed to determine the species, type, and nesting behavior of the birds and set any appropriate buffers until such time the appropriate agency can be contacted.
2. Additional nesting surveys should be conducted if there are delays in work greater than a week during the nesting season. (For example; if work were to occur for a period of five days and then there is a delay of a week or greater before crew's schedule to come back to the site, then additional pre-construction nesting surveys

are recommended to determine if any birds are still nesting or if any birds have begun new nesting clutches).

3. Conduct a general preconstruction survey prior to any ground disturbing activities for general wildlife and botanical species of concern.
4. Monitoring (by a qualified biologist) should be implemented during construction activities if special status species, or nests of MBTA protected bird species are found during any survey and or during the nesting season and or at any time during project development / construction for the duration of the construction of the project.
5. Best Management Practices (BMP's) to protect against attracting wildlife during construction activities should be implemented.
    a. Worker Education Planning and Training for each person working at or entering the site.
    b. Clean work site practices.
        i. Trash protected in appropriate containers.
        ii. Materials and equipment stored and covered as needed to prevent from attracting wildlife and nesting birds.
    c. Morning clearance surveys to determine if wildlife has entered the site and or equipment.
    d. Escape routes for wildlife when trenches or holes are left over night.
        i. Covering and securing open trenches for overnight, weekend, or during non-construction work hours.

6 Limitations

The site survey is conducted with consideration for current existing environmental laws, regulations, and policies for the time that the survey was conducted. The results provided represent observations of the site at a particular point in time. The habitat(s), topography, resources, and conditions on-site can exhibit seasonal and permanent changes after the survey has been completed. Therefore, the survey report can only represent the site as it was observed during the survey period. No warranty is expressed or implied.

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8 Appendices

1. **Plates**
   1. **Site Regional Map**
   2. **Site Vicinity Map**
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   4. **Site Natural Resources Map (CNDDB)**
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   2. **Special Status Species**
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5. **USFWS Official Species List – Sacramento Fish and Wildlife Office**

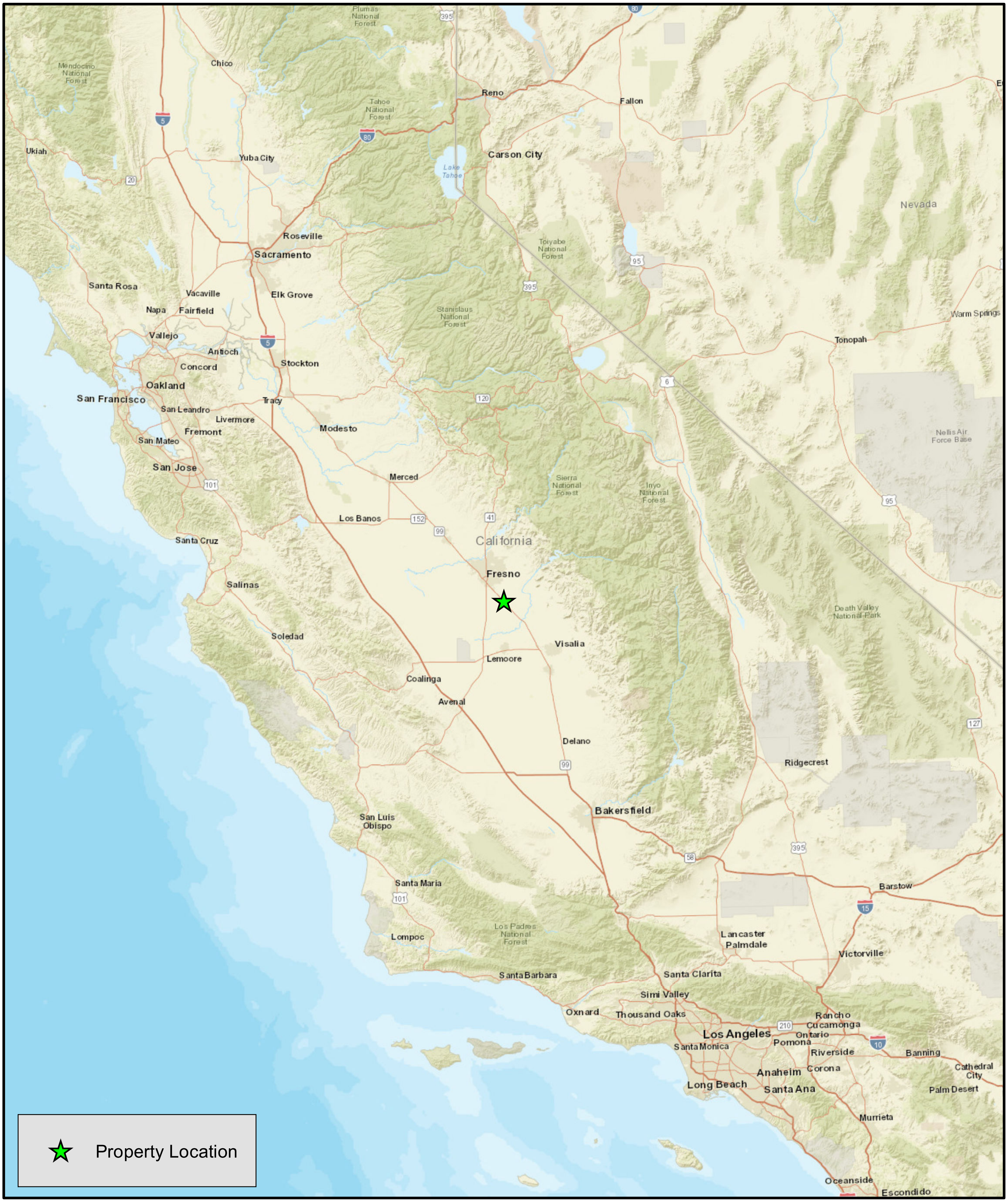
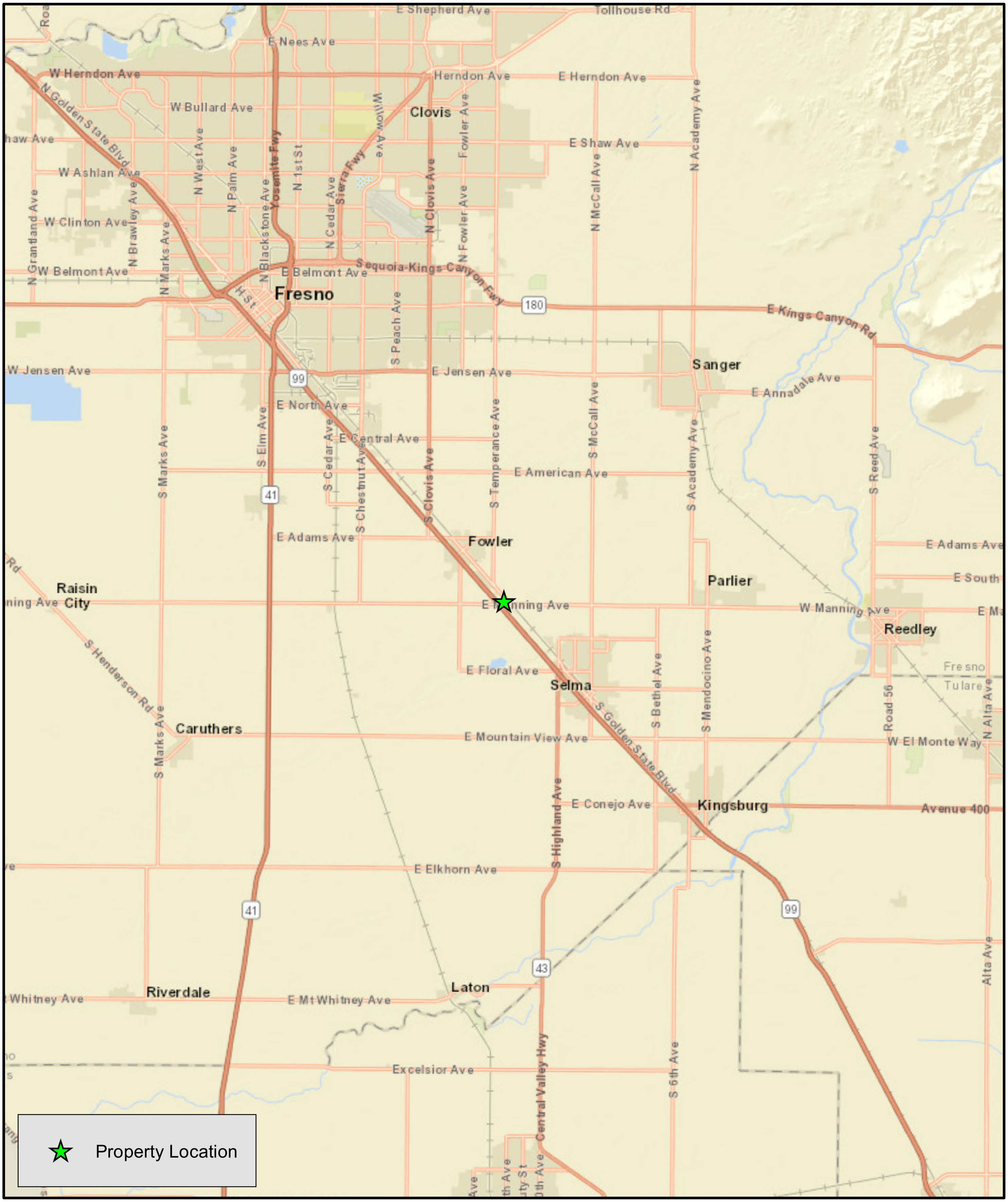


PLATE 1
Regional Map

0 35 70 140 Miles
1:3,300,000

DATE: November 7, 2018
COORDINATE SYSTEM: NAD 1983 California Teale Albers
SOURCE: ESRI World Street Map

Buford Oil Co. - Buford Truck Stop



N
W E
S

0 2.5 5 10 Miles

1:250,000

PLATE 2
Vicinity Map

AlphabiotA
BIOLOGICAL CONSULTING

DATE: November 7, 2018
COORDINATE SYSTEM: NAD 1983 State Plane Zone IV (feet)
SOURCE: ESRI World Street Map

Buford Oil Co. - Buford Truck Stop

AlphabiotA
BIOLOGICAL CONSULTING

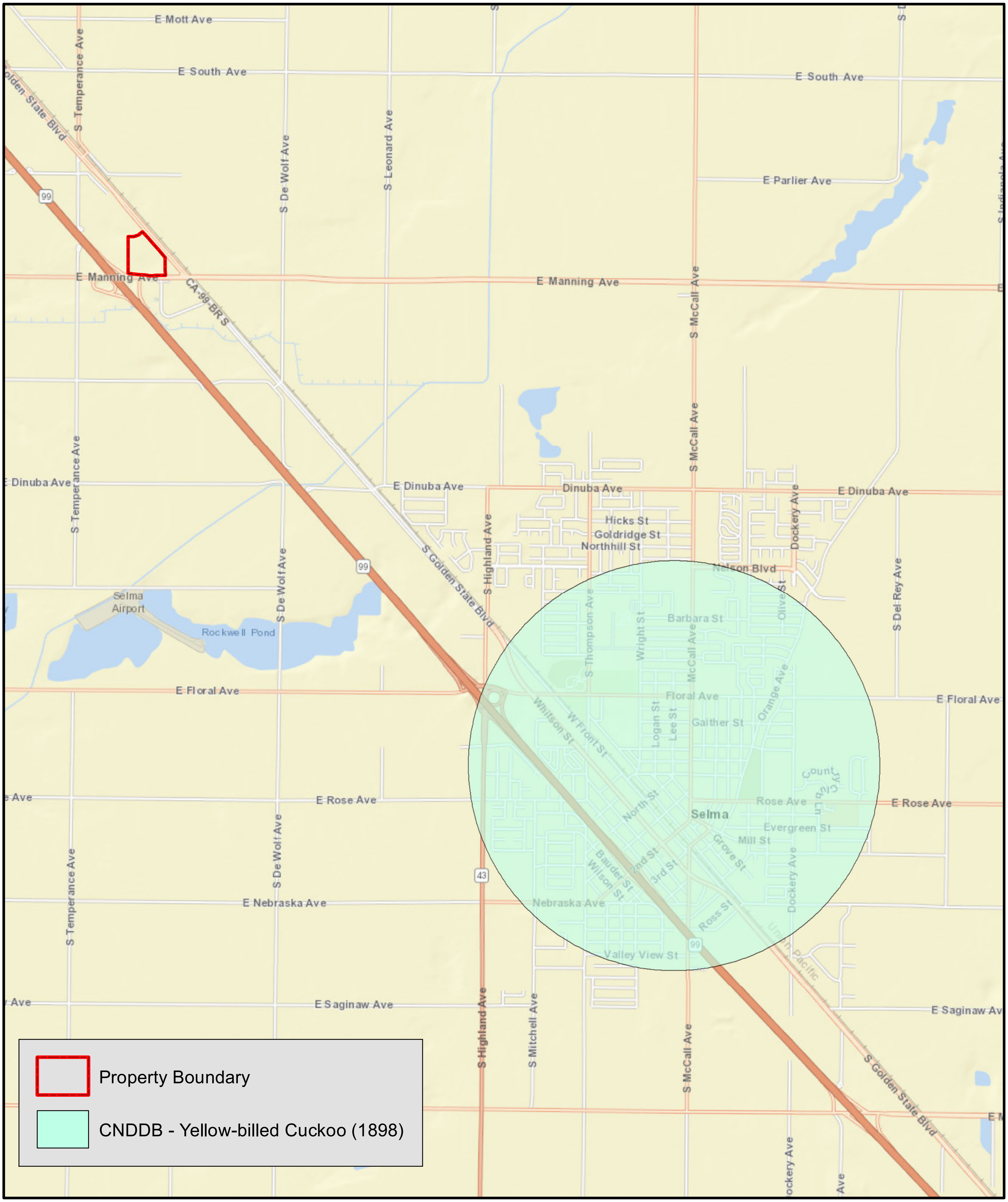
N
W E
S

0 50 100 200 300 400
Feet
1 inch = 167 feet

PLATE 3
NRCS Soils

DATE: November 7, 2018
COORDINATE SYSTEM: NAD 1983 State Plane Zone IV (feet)
SOURCE: ESRI Imagery and Transportation Basemaps,
NRCS Web Soil Survey Eastern Fresno Area, California

Buford Oil Co. - Buford Truck Stop



AlphabiotA
BIOLOGICAL CONSULTING

N W E S

0 0.5 1 2 Miles

1:40,000

PLATE 4
CNDDB 5 Mile Query

DATE: November 7, 2018
COORDINATE SYSTEM: NAD 1983 State Plane Zone IV (feet)
SOURCE: ESRI World Street Map, CNDDB (Jan. 2018 Data)

Buford Oil Co. - Buford Truck Stop

AlphabiotA
BIOLOGICAL CONSULTING

N
W E
S

0 150 300 600 900 1,200
Feet
1 inch = 500 feet

PLATE 5
USFWS National Wetlands Inventory

DATE: November 7, 2018
COORDINATE SYSTEM: NAD 1983 State Plane Zone IV (feet)
SOURCE: ESRI Imagery Basemap, USFWS NWI

Buford Oil Co. - Buford Truck Stop

Table 2
Special Status Species

Scientific Name	Common Name	Status: Federal	Status: State	Status: Other	General Habitat Association and Distribution Notes	Not Expected	Low	Likely	Observed	Potential for Species to Occur in Project Area
INVERTEBRATES										
Branchinecta lynchi	Vernal pool fairy shrimp	T			Endemic to the grasslands of the central valley, central coast mountins, and south coast mountins, in astatic rain-filled pools.		x			Marginal habitat present. Some low gradient depressions and or the retention basin could potentially secure water levels that may support some species of fairy shrimp. However, site conditions iindicate water quality and inundation duration are likely not supportive of this species.
FISH										
Hypomesus transpacificus	Delta Smelt	T	E		Seldom found at salinities > 10 ppt. Most often at salinities < 2ppt. Sacramento-san joaquin delta. Seasonally in Suisun Bay, Carquinez Strait & San Pablo Bay.	x				Habitat absent on / or adjacent to the site. No water features are connected or associated with the site that would indirectly mpact upstream or downstream conditions for this species.
BIRDS										
Athene cunicularia	Western Burrowing Owl		SC		Subterranean nester, dependent upon burrowing mammals, open, dry annual or perennial grasslands, deserts & scrublands characterized by low-growing vegetation.		x			Marginal habitat present. Burrows and open foraging areas nearby could potentially support the species. However, activity of the site and surrounding lands would likely discourage most birds from occupying the area.
Coccyzus americanus occidentalis	Western yellow-billed cuckoo	T	E		Nests in riparian jungles of willow, often mixed with cottonwoods, w/ lower story of blackberry, nettles, or wild grape.	x				Habitat absent on / or adjacent to the site.

Table 2
Special Status Species

Scientific Name	Common Name	Status			General Habitat Association and Distribution Notes	Potential for Species to Occur in Project Area				
		Federal	State	Other		Not Expected	Low	Likely	Observed	
AMPHIBIANS										
Ambystoma californiense	California tiger salamander	T		CDFW: SC	Needs underground refuges, especially ground squirrel burrows & vernal pools or other seasonal water sources for breeding. Federal listing refers to populations in Santa Barbara County only.	x				Partial upland habitat present at the site. No breeding pools observed on / or adjacent to the site.
Rana aurora draytonii	California red-legged frog	T			Requires 11-20 weeks of permanent water for larval development. Must have access to estivation habitat. Lowlands & foothills in or near permanent sources of deep water with dense, shrubby or emergent riparian vegetation.	x				Habitat absent on / or adjacent to the site.
REPTILES										
Gambelia sila	Blunt-nosed leopard lizard	E	E	CDFW: Fully Protected	Seeks cover in mammal burrows, under shrubs or structures such as fence posts; they do not excavate their own burrows. Resident of sparsely vegetated alkali and desert scrub habitats, in areas of low topographic relief.	x				Marginal habitat present. Burrow refugia abundant, but typical vegetation structure is ephemeral and inconsistent with typical BNLL habitat due to maintenance activites. Also, habitat is isolated and fragmented due to roads and infrastructure surrounding the site. Regional development has likely extirpated the species from this general region.
Thamnophis gigas	Giant garter snake	T	T		This is the most aquatic of the garter snakes in California. Prefers freshwater marsh and low gradient streams. Has adapted to drainage canals & irrigation ditches.	x				Habitat absent on / or adjacent to the site.
Mammals										
Dipodomys nitratoides exilis	Fresno kangaroo rat	E	E		Bare alkaline clay-based soils subject to seasonal inundation, with more friable soil mounds around shrubs & grasses. Alkali sink-open grassland habitats in western Fresno County.		x			Marginal habitat and soil structure present. Fragmented and isolated site conditions expected to inhibit residency of the species at the site. Maintenance and transient impacts also likely to contribute to inhibiting the species within the site and surrounding areas.
Vulpes macrotis mutica	San Joaquin kit fox	E	T		Needs loose-textured sandy soils for burrowing and suitable prey base. Annual grasslands or grassy open stages with scattered shrubby vegetation. Some populations have adapted to disturbed habitats and human activities.		x			Fragmented and isolated habitat that is unlikely to support resident individuals. Could potentially support transient "urban tolerant" individuals.

Table 2
Special Status Species

Scientific Name	Common Name	Status: Federal	Status: State	Status: Other	General Habitat Association and Distribution Notes	Not Expected	Low	Likely	Observed	Potential for Species to Occur in Project Area
PLANTS										
Castilleja campestris ssp. succulenta	Succulent Owl's Clover	T	E	CNPS:1B	Vernal pools, valley and foothill grassland. Moist places, often in acidic soils. 25-750m.	x				Marginal habitat type present. Soil structure at the site unlikely to support the species.
Caulanthus californicus	California Jewel-flower	E	E	CNPS:1B.1	Historical from various valley habitats in both central valley and Carrizo plain. 65-900m. Chenopod scrub, valley and foothill grassland, pinyon juniper woodland.	x				Marginal habitat types and soils present. Maintenance and transient impacts likely to inhibit species within the site and surrounding areas.
Chloropyron palmatum *(Cordylanthus palmatus)*	Palmate-bracted Birds Beak	E	E	CNPS:1B.1	Chenopod Scrub, Valley and Foothill Grasslands. Usually on Pescadaro silty clay, which is alkaline, with Distichlis, Frankenia, etc. 0-155 m.	x				Marginal habitat type present. Soil structure at the site unlikely to support the species.
Orcuttia inaequalis	San Joaquin Valley Orcutt grass	T	E	CNPS:1B	Vernal pools. 30-755m.	x				Habitat absent on / or adjacent to the site.
Pseudobahia bahiifolia	Hartweg's Golden Sunburst	E	E	CNPS: 1B.1	Valley and foothill grassland, cismontane woodland. Clay soils, predominantly on the northern slopes of knolls, but also along shady creeks or near vernal pools. 15-150m.	x				Marginal habitat type present. Soil structure at the site unlikely to support the species.
Pseudobahia peirsonii	San Joaquin Adobe Sunburst	T	E	CNPS: 1B.1	Valley and foothill grassland, cismontane woodland. Grassy valley floors and rolling foothills in heavy clay soil. 85-800m.	x				Marginal habitat type present. Soil structure at the site unlikely to support the species.
Tuctoria greenei	Greene's tuctoria	E	R	CNPS:1B	Vernal pools, valley and foothill grassland. Dry bottoms of vernal pools in open grasslands. 30-1065m.	x				Habitat absent on / or adjacent to the site.
CRITICAL HABITAT										
None documented within a 5-mile radius of the site as referenced by GIS and USFWS and CNDDB data.										

Appendix 3 :
General Soils Information of the Site

The following data is provided via the NRCS Websoil Survey website and can be found at this link:

https://casoilresource.lawr.ucdavis.edu/soil_web/ssurgo.php?action=list_mapunits&areasymbol=ca654

The information below is for reference purposes and is only intended for that purpose.

Component Name	Geomorphic Position	Area Fraction	Component Type	Horizon Data
Soil Type 1 ***Delhi***	*valleys / Toeslope dunes*	*85%*	*Major Soil Type*	*YES*

Map Unit Data *What is a Map Unit?*

Cartographic information about this map unit.

Map Unit Name:	*Delhi sand, 0 to 3 percent slopes, MLRA 17*
Map Unit Type:	*Consociation*
Map Unit Symbol:	*DhA*

Map Unit Aggregated Data

Generalized soils information within this map unit.

Farmland Class:	*Farmland of statewide importance*
Available Water Storage (0-100cm):	*7 cm*
Max Flood Freq:	*None*
Drainage Class (Dominant Condition):	*Somewhat excessively drained*
Drainage Class (Wettest Component):	*Somewhat excessively drained*
Hydric Conditions:	*3*
[Annual] Min. Water Table Depth:	*n/a*
[April-June] Min. Water Table Depth:	*n/a*
Min Bedrock Depth:	*n/a*
Raw Aggregated Map Unit Data	

Associated Point Data

Links to any NSSL point data within this map unit.

Map Unit Composition

Map units consist of 1 or more soil types, commonly referred to as "components".

Component Name	Geomorphic Position	Area Fraction	Component Type	Horizon Data
Soil Type 1 ***Delhi***	*dunes / Toeslope fan remnants / Shoulder*	*85%*	*Major Soil Type*	*YES*
Soil Type 2 ***Hanford***	*depressions fan remnants*	*6%*	*Inclusion*	*Similar Data [12] **
Soil Type 3 ***Dello***	*depressions fan remnants*	*6%*	*Inclusion*	*Similar Data [1] **
Soil Type 4 ***Grangeville***		*1%*	*Inclusion*	*Similar Data [7] **
Soil Type 5 ***Hilmar***		*1%*	*Inclusion*	*Similar Data [6] **
Soil Type 6 ***Dinuba***		*1%*	*Inclusion*	*Similar Data [12] **

Map Unit Data *What is a Map Unit?*

Cartographic information about this map unit.

Map Unit Name:	*Delhi loamy sand, 0 to 3 percent slopes, MLRA 17*
Map Unit Type:	*Consociation*
Map Unit Symbol:	*DeA*
Map Unit Area:	*4847 acres total in survey area*
Raw Map Unit Data	
Raw Component Data (All Components)	

Map Unit Aggregated Data

Generalized soils information within this map unit.

Farmland Class:	*Prime farmland if irrigated*
Available Water Storage (0-100cm):	*7 cm*
Max Flood Freq:	*None*
Drainage Class (Dominant Condition):	*Somewhat excessively drained*
Drainage Class (Wettest Component):	*Somewhat excessively drained*
Hydric Conditions:	*6*
[Annual] Min. Water Table Depth:	*n/a*
[April-June] Min. Water Table Depth:	*n/a*
Min Bedrock Depth:	*n/a*
Raw Aggregated Map Unit Data	

Map Unit Composition

Map units consist of 1 or more soil types, commonly referred to as "components".

Component Name	Geomorphic Position	Area Fraction	Component Type	Horizon Data
Soil Type 1 ***Dello***	*alluvial fans / Footslope* *depressions / Toeslope* *depressions / Toeslope* *flood plains / Toeslope*	*85%*	*Major Soil Type*	*YES*
Soil Type 2 ***Unnamed***	*depressions* *flood plains*	*13%*	*Inclusion*	*None*
Soil Type 3 ***Unnamed***	*alluvial fans* *flood plains* *hummocks* *levees*	*2%*	*Inclusion*	*None*

Note: links to horizon data marked with an ***** *are approximate.*

Map Unit Data *What is a Map Unit?*

Cartographic information about this map unit.

Map Unit Name:	*Dello loamy sand*
Map Unit Type:	*Consociation*
Map Unit Symbol:	*Dm*
Map Unit Area:	*4001 acres total in survey area*
Raw Map Unit Data	
Raw Component Data (All Components)	

Map Unit Aggregated Data

Generalized soils information within this map unit.

Farmland Class:	*Farmland of statewide importance*
Available Water Storage (0-100cm):	*7.93 cm*
Max Flood Freq:	*Rare*
Drainage Class (Dominant Condition):	*Somewhat poorly drained*
Drainage Class (Wettest Component):	*Somewhat poorly drained*
Hydric Conditions:	*98*
[Annual] Min. Water Table Depth:	*122 cm*
[April-June] Min. Water Table Depth:	*122 cm*
Min Bedrock Depth:	*n/a*
Raw Aggregated Map Unit Data	

Map Unit Composition

Map units consist of 1 or more soil types, commonly referred to as "components".

Component Name	Geomorphic Position	Area Fraction	Component Type	Horizon Data
Soil Type 1 ***Hesperia***	*alluvial fans / Footslope*	*85%*	*Major Soil Type*	*YES*
Soil Type 2 ***Unnamed***	*alluvial fans*	*10%*	*Inclusion*	*None*
Soil Type 3 ***Unnamed***	*alluvial fans*	*5%*	*Inclusion*	*None*

Note: links to horizon data marked with an ***** *are approximate.*

Map Unit Data ***What is a Map Unit?***

Cartographic information about this map unit.

Map Unit Name:	*Hesperia fine sandy loam*
Map Unit Type:	*Consociation*
Map Unit Symbol:	*Hsr*
Map Unit Area:	*20380 acres total in survey area*
Raw Map Unit Data	
Raw Component Data (All Components)	

Map Unit Aggregated Data

Generalized soils information within this map unit.

Farmland Class:	*Prime farmland if irrigated*
Available Water Storage (0-100cm):	*13 cm*
Max Flood Freq:	*Rare*
Drainage Class (Dominant Condition):	*Well drained*
Drainage Class (Wettest Component):	*Well drained*
Hydric Conditions:	*0*
[Annual] Min. Water Table Depth:	*n/a*
[April-June] Min. Water Table Depth:	*n/a*
Min Bedrock Depth:	*n/a*
Raw Aggregated Map Unit Data	

1A: Plants presumed extirpated in California and either rare or extinct elsewhere

Plants with a California Rare Plant Rank of 1A are presumed extirpated or extinct because they have not been seen or collected in the wild in California for many years. A plant is extinct if it no longer occurs anywhere. A plant that is extirpated from California has been eliminated from California but may still occur elsewhere in its range.

> All of the plants constituting California Rare Plant Rank 1A meet the definitions of the California Endangered Species Act of the California Fish and Game Code and are eligible for state listing. Should these taxa be rediscovered, and impacts proposed to individuals or their habitat, they must be analyzed during preparation of environmental documents relating to the California Environmental Quality Act (CEQA), or those considered to be functionally equivalent to CEQA, as they meet the definition of Rare or Endangered under CEQA Guidelines §15125 (c) and/or §15380.

1B: Plants rare, threatened, or endangered in California and elsewhere

Plants with a California Rare Plant Rank of 1B are rare throughout their range with the majority of them endemic to California. Most of the plants that are ranked 1B have declined significantly over the last century. California Rare Plant Rank 1B plants constitute the majority of taxa in the CNPS Inventory, with more than 1,000 plants assigned to this category of rarity.

> All of the plants constituting California Rare Plant Rank 1B meet the definitions of the California Endangered Species Act of the California Fish and Game Code and are eligible for state listing. Impacts to these species or their habitat must be analyzed during preparation of environmental documents relating to CEQA, or those considered to be functionally equivalent to CEQA, as they meet the definition of Rare or Endangered under CEQA Guidelines §15125; (c) and/or §15380.

2A: Plants presumed extirpated in California but common elsewhere

Plants with a California Rare Plant Rank of 2A are presumed extirpated because they have not been observed or documented in California for many years. This list only includes plants that are presumed extirpated in California, but more common elsewhere in their range.

> All of the plants constituting California Rare Plant Rank 2A meet the definitions of the California Endangered Species Act of the California Fish and Game Code and are eligible for state listing. Should these species be rediscovered, any impacts proposed to individuals or their habitat must be analyzed during preparation of environmental documents relating to CEQA, or those considered to be functionally equivalent to CEQA, as they meet the definition of Rare or Endangered under CEQA Guidelines §15125 (c) and/or §15380.

2B: Plants rare, threatened, or endangered in California but more common elsewhere

Except for being common beyond the boundaries of California, plants with a California Rare Plant Rank of 2B would have been ranked 1B. From the federal perspective, plants common in other states or countries are not eligible for consideration under the provisions of the Federal Endangered Species Act. With California Rare Plant Rank 2B, we recognize the importance of protecting the geographic range of widespread species. In this way we protect the diversity of our own state’s flora and help maintain evolutionary processes and genetic diversity within species.

> All of the plants constituting California Rare Plant Rank 2B meet the definitions of the California Endangered Species Act of the California Fish and Game Code and are eligible for state listing. Impacts to these species or their habitat must be analyzed during preparation of environmental documents relating to CEQA, or those considered to be functionally equivalent to CEQA, as they meet the definition of Rare or Endangered under CEQA Guidelines §15125 (c) and/or §15380.

3 Review List: Plants about which more information is needed

Plants with a California Rare Plant Rank of 3 are united by one common theme – we lack the necessary information to assign them to one of the other ranks or to reject them. Nearly all of the plants constituting California Rare Plant Rank 3 are taxonomically problematic. For each California Rare Plant Rank 3 plant we have provided the known information and indicated in the "Notes" section of the CNPS *Inventory* record where assistance is needed. Data regarding distribution, endangerment, ecology, and taxonomic validity are welcomed and can be submitted by emailing the Rare Plant Program at rareplants@cnps.org.

> Many of the plants constituting California Rare Plant Rank 3 meet the definitions of the California Endangered Species Act of the California Fish and Game Code and are eligible for state listing. Impacts to these species or their habitat should be analyzed during preparation of environmental documents relating to CEQA, or those considered to be functionally equivalent to CEQA, as they may meet the definition of Rare or Endangered under CEQA Guidelines §15125 (c) and/or §15380.

4 Watch List: Plants of limited distribution

Plants with a California Rare Plant Rank of 4 are of limited distribution or infrequent throughout a broader area in California, and their status should be monitored regularly. Should the degree of endangerment or rarity of a California Rare Plant Rank 4 plant change, we will transfer it to a more appropriate rank.

> Some of the plants constituting California Rare Plant Rank 4 meet the definitions of the California Endangered Species Act of the California Fish and Game Code, and few, if any, are eligible for state listing. Nevertheless, many of them are significant locally, and we strongly recommend that California Rare Plant Rank 4 plants be evaluated for impact significance during preparation of environmental documents relating to CEQA, or those considered to be functionally equivalent to CEQA, based on CEQA Guidelines §15125 (c) and/or §15380. This may be particularly appropriate for:

- The type locality of a California Rare Plant Rank 4 plant,
- Populations at the periphery of a species' range,
- Areas where the taxon is especially uncommon,
- Areas where the taxon has sustained heavy losses, or
- Populations exhibiting unusual morphology or occurring on unusual substrates.

Threat Ranks

Ranks at each level also include a threat rank (e.g., ,CRPB 4.3) and are determined as follows:

- 0.1-Seriously threatened in California (over 80% of occurrences threatened / high degree and immediacy of threat)
- 0.2-Moderately threatened in California (20-80% occurrences threatened / moderate degree and immediacy of threat)
- 0.3-Not very threatened in California (less than 20% of occurrences threatened / low degree and immediacy of threat or no current threats known)

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Sacramento Fish And Wildlife Office
Federal Building
2800 Cottage Way, Room W-2605
Sacramento, CA 95825-1846
Phone: (916) 414-6600 Fax: (916) 414-6713

In Reply Refer To:
Consultation Code: 08ESMF00-2019-SLI-0240
Event Code: 08ESMF00-2019-E-00696
Project Name: Buford Travel Center

November 01, 2018

Subject: List of threatened and endangered species that may occur in your proposed project location, and/or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, under the jurisdiction of the U.S. Fish and Wildlife Service (Service) that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the Service under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*).

Please follow the link below to see if your proposed project has the potential to affect other species or their habitats under the jurisdiction of the National Marine Fisheries Service:

http://www.nwr.noaa.gov/protected_species/species_list/species_lists.html

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 *et seq.*), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)(c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF

Please be aware that bald and golden eagles are protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668 *et seq.*), and projects affecting these species may require development of an eagle conservation plan (http://www.fws.gov/windenergy/eagle_guidance.html). Additionally, wind energy projects should follow the wind energy guidelines (http://www.fws.gov/windenergy/) for minimizing impacts to migratory birds and bats.

Guidance for minimizing impacts to migratory birds for projects including communications towers (e.g., cellular, digital television, radio, and emergency broadcast) can be found at: http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/towers.htm; http://www.towerkill.com; and http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/comtow.html.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Tracking Number in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List

Official Species List

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

Sacramento Fish And Wildlife Office
Federal Building
2800 Cottage Way, Room W-2605
Sacramento, CA 95825-1846
(916) 414-6600

Project Summary

Consultation Code: 08ESMF00-2019-SLI-0240

Event Code: 08ESMF00-2019-E-00696

Project Name: Buford Travel Center

Project Type: ** OTHER **

Project Description: 2747 E. Manning Avenue, Fowler CA 93625. Approximately 18-acre redevelopment and expansion of a Travel Center.

Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/place/36.60706629014076N119.65846814036209W

Counties: Fresno, CA

Endangered Species Act Species

There is a total of 8 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

---

1. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

Mammals

NAME	STATUS
Fresno Kangaroo Rat *Dipodomys nitratoides exilis* There is **final** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/5150 Species survey guidelines: https://ecos.fws.gov/ipac/guideline/survey/population/37/office/11420.pdf	Endangered
San Joaquin Kit Fox *Vulpes macrotis mutica* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/2873	Endangered

Reptiles

NAME	STATUS
Blunt-nosed Leopard Lizard *Gambelia silus* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/625	Endangered
Giant Garter Snake *Thamnophis gigas* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/4482	Threatened

Amphibians

NAME STATUS

California Red-legged Frog *Rana draytonii* Threatened

There is **final** critical habitat for this species. Your location is outside the critical habitat.

Species profile: https://ecos.fws.gov/ecp/species/2891

California Tiger Salamander *Ambystoma californiense* Threatened

Population: U.S.A. (Central CA DPS)

There is **final** critical habitat for this species. Your location is outside the critical habitat.

Species profile: https://ecos.fws.gov/ecp/species/2076

Fishes

NAME STATUS

Delta Smelt *Hypomesus transpacificus* Threatened

There is **final** critical habitat for this species. Your location is outside the critical habitat.

Species profile: https://ecos.fws.gov/ecp/species/321

Crustaceans

NAME STATUS

Vernal Pool Fairy Shrimp *Branchinecta lynchi* Threatened

There is **final** critical habitat for this species. Your location is outside the critical habitat.

Species profile: https://ecos.fws.gov/ecp/species/498

Critical habitats

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

Appendix E

Cultural Resources Evaluation

Cultural Resource Inventory and Evaluation for the Buford Oil Travel Center Project in Fowler, Fresno County, California

Ward Stanley and Jessica Jones

Prepared By

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Prepared For
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December 2018

USGS Conejo, CA, 7.5′ quadrangle; T7S, R21E, Sec. 23
18-acre Project area; 8 acres surveyed
Keywords: P-10-007090 (CA-FRE-3854H)

MANAGEMENT SUMMARY

The Buford Oil Company plans to expand an existing fuel station at the northeast intersection of Highway 99 and Manning Avenue within the City of Fowler in Fresno County, California. The proposed expansion includes additional fueling facilities, traveler amenities, and parking stalls for motorist and commercial truck operators. The proposed Buford Oil Travel Center Project (Project) requires a Conditional Use Permit from the City of Fowler, thus it is subject to the regulations of the California Environmental Quality Act (CEQA), which requires that government agencies consider the impacts of their actions on the cultural environment. Applied EarthWorks, Inc. (Æ) conducted a cultural resource inventory to identify cultural resources present within the 18-acre Project area. Æ's inventory included background research, a records search at the Southern San Joaquin Valley Information Center (SSJVIC) of the California Historical Resources Information System, a search of the Native American Heritage Commission's Sacred Lands File and outreach with local Native American tribal representatives, a pedestrian survey of all open ground within the Project area, and preparation of this technical report.

The results of the Sacred Lands File search and SSJVIC records search did not reveal any known cultural resources or sacred sites within the Project area. Æ's pedestrian survey resulted in the identification of abandoned irrigation equipment, ornamental trees, and a slightly raised mound marking the location of a previous homestead. Review of aerial photographs, historical maps, and Google Earth imagery depict that a house surrounded by trees was standing in the same location as the observed debris between 1937 and 2006. No other archaeological sites, isolated artifacts, or features were identified during the pedestrian survey.

Because the Project will not avoid the remains of the previous homestead, Æ evaluated the site (CA-FRE-3854H) for historical significance and eligibility for listing in the California Register of Historical Resources. Æ found little historical information about the previous owners, and the remaining debris lacks data potentials. Thus, Æ evaluated the site as not eligible for the California Register of Historical Resources.

Æ advises that if cultural remains are encountered at any time during ground-disturbing activities within any portion of the work area, all work in the vicinity of the find should be halted until a qualified archaeologist can assess the discovery. Finally, if human remains are uncovered during construction, the Fresno County Coroner is to be notified to arrange their proper treatment and disposition. If the remains are determined to be Native American, California Health and Safety Code 7050.5 and Public Resource Code 5097.98 require that the coroner notify the Native American Heritage Commission within 24 hours of discovery.

Field notes and photographs for this project are on file at Æ's office in Fresno, California. A copy of this report will be transmitted to the SSJVIC at California State University, Bakersfield, for inclusion in the California Historical Resources Information System.

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1
INTRODUCTION

The Buford Oil Company plans to expand an existing fuel station at the northeast corner of the intersection of Highway 99 and Manning Avenue within the City of Fowler in Fresno County, California (Figures 1-1 and 1-2). The proposed expansion includes additional fueling facilities, traveler amenities, and parking stalls for motorist and commercial truck operators. The Buford Oil Travel Center Project (Project) area is in Section 23 of Township 7 South, Range 21 East, as depicted on the U.S. Geological Survey (USGS) Conejo, CA, 7.5-minute topographic quadrangle within Assessor's Parcel No. (APN) 345-180-30 (Figure 1-3).

The proposed Project requires a Conditional Use Permit from the City of Fowler, thus it is subject to the California Environmental Quality Act (CEQA) statute (California Public Resources Code [PRC] 21000–21189) and guidelines (Title 14, California Code of Regulations [CCR], Sections 15000–15387), which mandate that government bodies consider the impacts of discretionary projects on the environment. If a project has the potential to cause substantial adverse change in the characteristics of an important cultural resource or "historical resource"—either through demolition, destruction, relocation, alteration, or other means—then the project is judged to have a significant effect on the environment (CEQA Guidelines Section 15064.5[b]). Section 15064.5(a) of the CEQA Guidelines defines a historical resource as one that: (1) is listed or determined eligible for listing in the California Register of Historical Resources (PRC 5024.1; 14 CCR 4852); (2) is included in a local register of historical resources (pursuant to PRC 5020.1[k]), or identified as significant in a historical resource survey per the California Register eligibility criteria (PRC 5024.1[c]); or (3) is considered eligible by a lead agency under PRC Section 5020.1(j) or 5024.1. The definition subsumes a variety of resources, including prehistoric and historical archaeological sites, structures, buildings, and objects (CEQA Guidelines Section 15064.5[a][3] and 15064.5[c]).

Cultural resources include prehistoric or historical archaeological sites, isolated artifacts, or features as well as built-environment resources (i.e., a historical building, structure, or object). The term "historical" applies to archaeological artifacts and features as well as standing buildings, structures, or objects that are 50 years of age or older. The importance or significance of a cultural resource depends on whether it qualifies for inclusion in the California Register of Historical Resources (CRHR). Cultural resources determined eligible for the CRHR are called "historical resources" (CEQA Guidelines Section 15064.5). In order to be considered a historical resource, a cultural resource must possess both historical significance and integrity according to the criteria defined in the implementing regulations of the CEQA (CEQA Guidelines Section 15064.5[a][3]).

To meet the requirements under CEQA, Applied EarthWorks, Inc. (Æ) conducted a cultural resource inventory of the proposed Project area. Æ's inventory included a records search at the regional information center of the California Historical Resources Information System (CHRIS) at California State University, Bakersfield, to identify previously recorded cultural resources in and around the proposed development; a Sacred Lands File search and outreach with local tribes

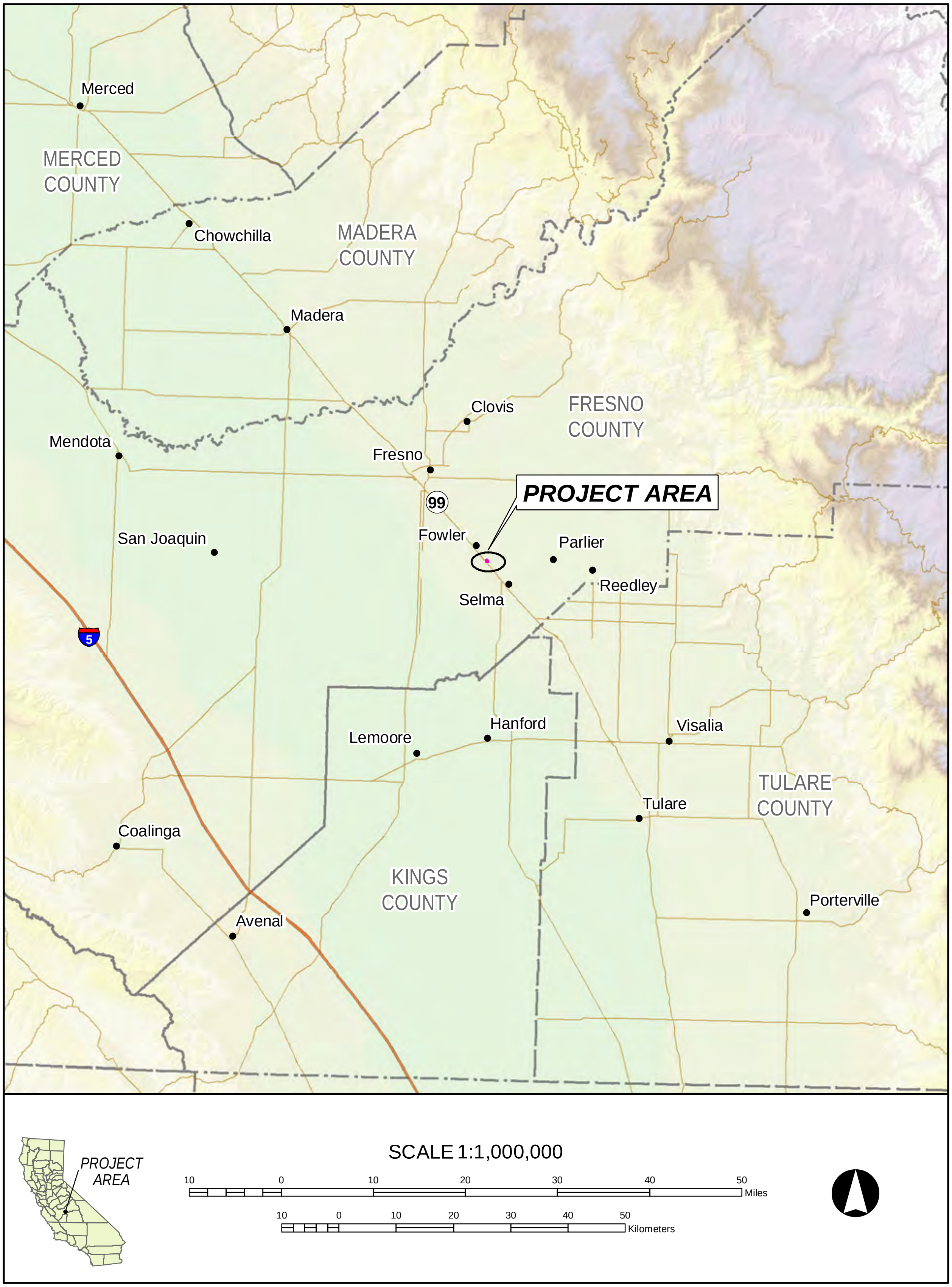

Figure 1-1 Project vicinity in Fresno County, California.

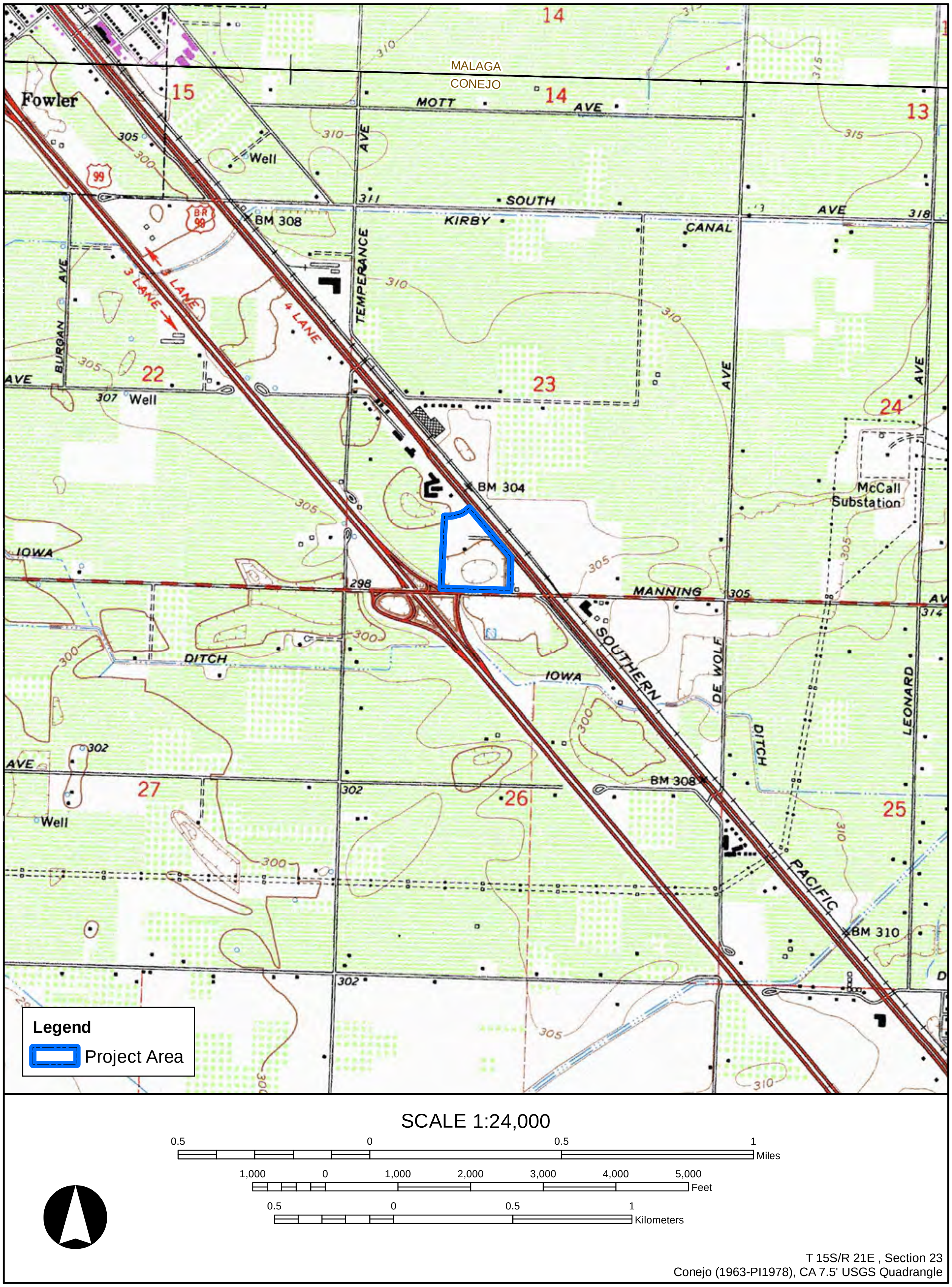

Figure 1-2 Project location on the USGS Conejo, CA 7.5-minute quadrangle.

Figure 1-3 Aerial view of the Project area.

and individuals; historical research to better understand the history of land use in the Project area and assess the likelihood for significant buried cultural deposits; and a pedestrian survey of the 18-acre Project area. Additionally, Æ evaluated the eligibility of one historic-era archaeological site (CA-FRE-3854H) discovered in the Project area for inclusion in the California Register of Historical Resources.

Æ Senior Archaeologist Mary Baloian (Ph.D.), a Registered Professional Archaeologist (RPA 15189), served as project manager for this investigation, providing quality oversight and technical guidance. Æ Staff Archaeologist Ward Stanley (B.A.) led the pedestrian survey, reviewed the records search results, conducted the Native American outreach, and co-authored the technical report. Æ Staff Archaeologist/Geographic Information Systems (GIS) Technician Jessica Jones conducted the historical research and site evaluation, managed the GIS data, prepared all maps and graphics, and served as second author on this report. Personnel qualifications are provided in Appendix A.

2
SETTING

2.1 ENVIRONMENT

The Project area is near the eastern periphery of the San Joaquin Valley near the base of the Sierra Nevada foothills, approximately 12 miles west of the Kings River. The San Joaquin Valley is the southern half of an elongated trough called the Great Valley, a 50-mile-wide lowland that extends approximately 500 miles south from the Cascade Range to the Tehachapi Mountains (Norris and Webb 1990:412). The San Joaquin Valley parallels the 400-mile stretch of the Sierra Nevada geomorphic province, which encompasses a 40- to 100-mile-wide area ranging in elevation from 400 feet above mean sea level (amsl) along the western boundary to more than 14,000 feet amsl in the east (Norris and Webb 1990:63).

Between the Mesozoic and Cenozoic eras, the Great Valley served as a shallow marine embayment containing numerous lakes, primarily within the San Joaquin Valley (Norris and Webb 1990:412). As a result, the upper levels of the Great Valley floor are composed of alluvium and flood materials. Below these strata are layers of marine and nonmarine rocks, including claystone, sandstone, shale, basalt, andesite, and serpentine. Waters began to diminish about 10 million years ago, eventually dwindling to the drainages, tributaries, and small lakes that exist today (Hill 1984:28). Playas, remnants of the extinct lakes, are currently used for agricultural activities in the valley (Norris and Webb 1990:431).

The San Joaquin River is the prominent hydrologic feature that drains the southern half of the Great Valley into San Francisco Bay. The tall steep peaks of the Sierra Nevada effectively block moisture moving eastward from the coast, resulting in a higher level of precipitation on the western slopes. Smaller east-west–trending rivers, like the Kings River just west of the Project area, drain the Sierra Nevada range before converging on the San Joaquin River. The Kings River and its smaller tributaries would have provided habitat for an abundance of food resources such as aquatic plants, fish, beaver, and other animals hunted prehistorically and historically. The annual rainfall for this area averages about 6–14 inches. Winters are cool and wet with average low temperatures between 40° and 50°F; snow is uncommon (Hill 1984:29). Summers are generally hot and dry, with temperatures often exceeding 100°F.

The development of agriculture within the Great Valley has resulted in the replacement of native plants and animals with domesticated species. Common native plants would have included white, blue, and live oak as well as walnut, cottonwood, salix, and tule, many of which still occur along the Kings River drainage east of the Project. The Project area specifically occupies the Lower Sonoran life zone, marked by prairie grassland communities that cover the plains and low rolling hillocks that border the Sierra Nevada. These grasslands are interspersed with narrow bands of riparian woodland that follow the valley stream corridors. The land in and around the Project area has been intensively farmed for many years. No areas of original grassland remain within the Project area.

The previously swampy valley floor provided a lush habitat for a variety of animals. Large herds of mule deer, tule elk, and pronghorn once roamed the valley. Historical accounts indicate that, due to their vast numbers, the tule elk and pronghorn were a major food source for the Yokuts Indians, explorers, trappers, and others (Clough and Secrest 1984:27–28; Wallace 1978a:449). Grizzly and black bears, wolves, and mountain lions also were once prominent valley species (Preston 1981:245–247). Other mammals noted are the valley coyote, bobcat, gray and kit foxes, and rabbits. The valley's large variety of birds consists of the American osprey, redwing blackbird, marsh hawk, willow and Nuttall's woodpeckers, western meadowlark, and quail. Water sources such as the Kings River supported anadromous and freshwater fish species that include salmon, golden trout, river lamprey eel, and white sturgeon.

2.2 ETHNOGRAPHY

The study area lies within the Wechikit and Wimilichi tribelet areas; they are two of the many autonomous tribes that made up the Northern Valley Yokuts who inhabited the marshy regions of the upper half of the San Joaquin Valley (Wallace 1978b). The Yokuts language belongs to the broader Penutian family, which includes a relatively diverse group of languages including Miwok, Costanoan, Maiduan, and Wintuan (Silverstein 1978). Their linguistically related brethren, the Southern Valley Yokuts, lived to the south, and the Miwok occupied areas to the north and east.

The Wechikit occupied lands along the Kings River near Sanger (Kroeber 1976:483, Plate 47; Latta 1999:171; Wallace 1978a: 448) (both Wallace and Kroeber uses the alternate names Wechihit/Wechahit and Wetehit). Latta notes that there is some doubt as to whether the Wechikit were a group distinct from surrounding Yokuts tribelets, but both Kroeber and Wallace identify them as an independent and distinct group. The primary settlements attributed to the Wechikit were *Musanau*, between the channels of the Kings River near Sanger, and *Wewio*, on Wahtoke Creek (Latta 1999:171). Little is known regarding these villages, and Kroeber (1976:483) claims that the Wechikit population had died off before he performed his fieldwork in the early twentieth century. The Wimilchi, a neighboring tribe also resided along the lower Kings River. One of their known villages, *Ugona, ?uko na(?)* ("drinking place") lies about 7 miles south of Laton (Latta 1977:163).

The Kings River and its tributaries provided food (fish and waterfowl), riparian plants for building and basket making (Figure 2-1), and avenues of travel for small watercraft. Not surprisingly, Yokuts villages were situated near major waterways and built on low mounds to prevent spring flooding. Ethnographic evidence indicates that these villages were occupied for the majority of the year and abandoned for short periods as the residents left to engage in seasonal resource gathering (McCarthy 1995). The Northern Valley Yokuts were defined by individual autonomous villages (Latta 1949:3) composed of single-family structures (Moratto 1988:174; Wallace 1978b:451). The structures were small and usually built from woven tule mats. Other structures included sweathouses and ceremonial chambers. Most stone artifacts were fashioned from cherts, although obsidian was imported from other locations (Wallace 1978a:465). Mortars and pestles were the dominant ground stone tools; bone was used to manufacture awls for making coiled baskets. The Northern Valley Yokuts did not manufacture ceramic items, although given the presence of ceramics in the nearby hills and reportedly at some San Joaquin Valley sites, it is likely that ceramics were brought to the region via trade.

Figure 2-1 Lucy Charlie gathering and processing plant materials near Sanger in 1946 (photo courtesy of Lorrie Planas Beck).

The material culture of the Wechikit was largely consistent with that of the Yokuts in general, although McCarthy (1995) has pointed out that the tendency to treat all Northern Valley Yokuts people as a whole in the ethnographic literature may mask regional variations. For this reason, the notes of Oscar Noren are of great value in describing the local archaeological and ethnographic record.

Noren (1988) found a variety of artifacts at several sites along the Kings River, including stone gaming balls, beads, and pendants along with such functional items as net weights, arrow shaft straighteners, milling stones, handstones, mortars, and pestles. The presence of *Olivella*, clam shell, and abalone shell from the coast as well as obsidian and steatite from the Sierra Nevada indicate that the Wechikit were part of the regional trade network. Among the 20 habitation sites that Noren identified were *Wewayo*, located 5 miles northeast of Reedley, *Mosahau*, which translates to “sweathouse place,” and a site named “Noren-76” located northwest of the Project area (Noren 1988).

As with other Indian groups in California, the lifeway of the Northern Valley Yokuts was dramatically altered as a result of contact with Spanish explorers and missionaries, miners, ranchers, and other European immigrants who entered the San Joaquin Valley after 1700. The introduction of European culture and new diseases proved devastating to the native population. Traditional lifestyles were diminished, and numerous people died from disease (Moratto 1988:174).

2.3 PREHISTORY

Archaeological studies in the San Joaquin Valley began in the early 1900s with a series of investigations primarily in the Stockton and Kern County areas (Gifford and Schenck 1926; Schenck and Dawson 1929). By the late 1930s, efforts were made to link the more well-known southern and northern valley areas through an exploration of the central San Joaquin Valley. University of California Berkeley's Gordon Hewes surveyed the Central Valley region and discovered 107 sites, most near streams and marshes on the east side of the valley (Moratto 1984:186).

Archaeological investigations in the San Joaquin Valley intensified during the 1960s with the advent of cultural resources management work (Olsen and Payen 1968, 1969; Riddell and Olsen 1969; Treganza 1960). Based on these and other archaeological investigations conducted throughout the valley (Latta 1977; McCarthy 1995; McGuire 1995; Moratto 1988; Price 1992; Roper 2005), it is apparent that the Yokuts occupied most of the San Joaquin Valley over a period extending as long as 2,000 years (Spier 1978; Wallace 1978a, 1978b).

Prehistoric sequences developed from these excavations provide a fairly clear understanding of culture change during the last 2,000–3,000 years; however, archaeological investigations in the Tulare Lake and Buena Vista Lake localities south of the project vicinity suggest that people occupied the San Joaquin Valley as early as 11,000–12,000 years ago (Fredrickson and Grossman 1977; Riddell and Olson 1969).

Archaeological evidence suggests that the valley's initial occupants settled in lakeshore and streamside environments, visiting the foothills periodically to harvest seasonally available resources. These early Paleoindian sites are typified by fluted points, stemmed dart points, scrapers, and crescents. As compared with their predecessors, the Archaic groups in the middle and late Holocene utilized a broader resource base, supplementing their subsistence with small game and hard seeds. Handstones, milling slabs, mortars, and pestles are common in Archaic assemblages, as are atlatl dart points. Favorable climatic conditions between 3,000 and 3,500 years ago instigated widespread settlement along the western Sierran slopes. The late Holocene witnessed various technological and social changes, including the adoption of the bow and arrow, expansion of trade, increasing use of acorns, and improved food storage techniques. As populations grew, social relations became more complex. Violence among many Sierran and foothill groups was common as economic stress and social instability became more pronounced during a period of xeric climates between circa A.D. 450 and 1250. Thereafter, new levels of population growth were achieved, resulting in part from movement of new Sierran groups. By circa A.D. 1600–1700, most groups claimed the territories that would identify them ethnographically.

2.4 HISTORY

2.4.1 Early Exploration

The first Europeans known to have entered the San Joaquin Valley were Spanish soldiers led by Pedro Fages, who came to the valley through Tejon Pass in 1772 (Wallace 1978a:459). Other Europeans followed in 1806 when Lieutenant Gabriel Moraga led a group of Spanish explorers into the San Joaquin Valley to locate new lands for missions (Clough and Secrest 1984:25–27).

The expansion of missions in California ceased by the early 1820s as a result of Mexico's independence from Spain (Clough and Secrest 1984:26). Fur trappers discovered the California interior soon after and began their forays into the San Joaquin Valley. Jedediah S. Smith may have been the first to enter the area during a fur trapping expedition in 1827. Smith's adventures included friendly encounters with the Yokuts while trapping and camping along the San Joaquin River (Clough and Secrest 1984:27). After Smith's visit, other trappers followed until about 1837 when fur-bearing animals were nearly gone from the valley. These trappers included Kit Carson, Peter Skene Ogden of the Hudson's Bay Company, and Joseph Reddeford Walker.

Compared to the California coastal regions, Euro-Americans settled in the Central Valley relatively late. The Mexican government issued land grants in the Fresno County area on three occasions in the 1840s (Clough and Secrest 1984:32–36). In order to satisfy the conditions of the contract and receive full ownership of the property, the grantee had to fulfill certain residency and improvement requirements; however, this was easier said than done. Early Euro-American efforts to settle the Central Valley often met with resistance from the indigenous tribes, who were probably aware of the harsh treatment given to the coastal tribes by Spanish missionaries. In addition, most regions of the valley were not well suited either for agriculture or cattle ranching and required a certain level of development (e.g., transportation routes, irrigation) before their potential could be realized. As part of the terms of the Treaty of Guadalupe Hidalgo, which formally concluded the Mexican-American War and ceded California to the United States, the claims on grants would be respected by the federal government provided that they complied with Mexican colonization laws. After the war, a series of legal disputes ensued that extended into the 1860s. Testimonies from these cases demonstrated that in only very few instances did the grantee actually reside on the land long enough to satisfy his contractual obligations (Clough and Secrest 1984:32–39). Aside from a small Hispanic presence, located primarily in the western part of the Fresno County area (Clough and Secrest 1984:39–43), it was not until after 1849 and the early stages of the gold rush that Euro-Americans seriously considered establishing permanent residency in the valley.

The gold rush, which is perhaps best known as a northern California phenomenon, extended to the state's central highlands. Prospectors first established camps at Coarse Gold (presently the town of Coarsegold) and Fine Gold (Clough and Secrest 1984:46). For the speculators that came to the Sierra Nevada and its foothills from the west coast, the Central Valley probably represented little more than a dry stretch of land to be traversed before reaching the gold fields to the east. The first settlements in the valley emerged along the valley's major waterways—the Chowchilla, Fresno, San Joaquin, and Kings rivers—largely to meet the transportation and material needs of the miners. These were untamed and temperamental rivers that were prone to unexpected flooding, not the dry lifeless channels that mark the valley's present-day landscape. These waterways could be crossed only via ferry. Outposts such as Fort Miller, Fort Bishop, and Campbells Ferry offered river crossing points, supplies, lodging, and, in the case of the first two, fortification from Indian attacks. It is perhaps telling that the history of the area focuses not on the miners who arrived during the gold rush but rather the entrepreneurs who profited from them.

The momentum of the gold rush could not be sustained, and by the early 1850s most of the miners and the merchants who relied on their patronage began to look to other pursuits. William Mayfield and his family arrived in the valley in 1850 to find their fortune in the deposits of the San Joaquin River. After floods wiped out his gold mining operation, he settled near the future site of Centerville to raise horses and cattle (Clough and Secrest 1984:47–48). Similarly, William Campbell, co-founder of Campbell's Ferry, eventually left the ferry business to become a rancher (Clough and Secrest 1984:53).

2.4.2 Central Valley Agriculture to 1920

The Central Valley has long been synonymous with agriculture, but the early settlers in the 1850s could not have imagined the extent and diversity of crops presently covering the valley floor. With the gold rush in decline, most miners descended from the foothills to pursue other professions. The town of Centerville—located along the Kings River in a relatively lush portion of the valley—became an early agricultural and cattle center in the 1850s and 1860s. During this time, farms were generally located near a perennial water source. This constraint on early agriculture kept the valley's two major industries—farming and ranching—in balance. Competition for real estate was minimized since agricultural interests had little reason to expand into pasturelands that were unsuitable for farming. The successful development of irrigation systems led to the agricultural boom as more tracts of land became suitable for crops. The increase in agricultural products also spurred the development of related industries, including nurseries and farm implement manufacturing. The immigration of a large number of farmers also promoted expansion of commercial ventures that offered food, clothing, and other staples.

Although a variety of crops were grown on the small farms, the majority of the valley was covered in wheat fields in the 1870s. When several small grape growers began turning huge profits on raisin production in the 1880s, however, the dominance of wheat fields was quickly challenged by vineyards. This trend gained steam when a nationwide glut in the grain market and attendant drop in the price of wheat caused valley farmers to shift their attention to newer crops. Although many fields were covered with vineyards, citrus, apricot, peach, and fig orchards became more common in Fresno County.

The Reclamation Act of 1902 facilitated the further proliferation of smaller farms. This law granted subsidized irrigation water to farmers, provided that the agricultural lands did not exceed 160 acres and that the recipient of the water resided on the property. The bill was intended to assist small farmers while at the same time establishing a legal structure to restrain the accumulation of agricultural lands by wealthy property owners. However, difficulties in enforcing the act, loopholes inherent within the statute, and changes to the law over the years have allowed individual farmers to receive cheap irrigation water well beyond the 160-acre limitation. Much of the San Joaquin Valley has been converted into arable land under the provisions of the 1902 Reclamation Act.

With farms and irrigation firmly established, agricultural production in the county boomed, although market forces would drive farmers to continue to alter and diversify their crops. In the early 1900s, a glut in the grape and raisin market—one of several that would occur in the century—caused many farmers to turn to peaches and other tree fruit (Hall 1986:170). During this same time, cotton served as a rotation crop for dairy farmers or an alternative row crop when prices for food commodities were low (Hall 1986:182). Such decisions, however, are not always driven exclusively by supply and demand. In the 1910s, many grape and raisin growers switched from the muscat variety to Thompson seedless, presently the most popular table grape in the nation. Compared to the muscat, the Thompson grape was less sticky and, more importantly, seedless—two factors which facilitated the packaging and marketing of the product (Hall 1986:169).

2.4.3 Agricultural Evolution (1920–1950)

Market demands continued to dictate the types of crops grown in the valley. Wheat was revived to meet the demands of World War I, and production continued until the 1921 depression. The war also spurred the cotton industry. The burgeoning olive industry was stifled for more than a decade when an outbreak of botulism was traced to California olives, resulting in a significant decrease in demand. Grape producers were flush as a result of a booming war economy and the successful Thompson seedless grape. However, market saturation and the onset of Prohibition produced such widespread bankruptcies and foreclosures that the grape and raisin industry did not fully recover until World War II.

The ever-increasing expanses of agricultural fields required vast quantities of water for irrigation. By 1920, the rate of water being pumped from the aquifer was greater than the recharge rate. During the 1920s, a state water plan that called for the construction of dams, canals, and other water facilities was drafted. Because of this plan, the San Joaquin Valley received assistance through the Central Valley Project (CVP) Act of 1933. The CVP was a massive water conveyance system constructed to alleviate local shortages and balance water supply throughout much of the state (JRP Historical Consulting Services and California Department of Transportation 2000). Construction of the CVP was delayed by World War II, but by the early 1950s the project, which includes the Delta-Mendota Canal, the Madera Canal, the Friant-Kern Canal, and Friant Dam, was functioning as an integrated system.

2.4.4 Modern Agriculture (1950–Present)

Even with federal subsidies, farming was a risky and expensive venture. In the 1950s, mechanization and scientific advances contributed to the consolidation of farmland and allowed farmers to easily expand the number of acres in production. Hundreds if not thousands of acres, which previously required numerous workers to sow and harvest, could now be cultivated and managed with only a fraction of the labor. On the west side of Fresno County, farms averaged more than 2,000 acres. However, because of the 1902 Reclamation Act, getting water for these large farms became a hotbed issue and a political focus until the 1980s. Much of this land was irrigated by water derived from federal projects such as the San Luis Dam, Pine Flat Dam, or Friant Dam, and, therefore, in theory was subject to the Reclamation Act. Although most farms were technically too large to qualify for federally subsidized water, various political machinations have allowed corporate farms to thrive. In 1982, Congress was finally persuaded to update the Reclamation Act to reflect more modern times. The Reclamation Reform Act, which raised the limitation for federally subsidized water to 960 acres and eliminated the residency restriction, allowed small farmers to increase production. However, farming still remains a speculative venture that is vulnerable to violent market fluctuations. Active interest by the federal government in the form of subsidies, infrastructural projects, and extensive federally funded scientific research has increased stability, allowing smaller farms to maintain a competitive edge (Clough 1986). In 2000, the average farm comprised 374 acres, with families or individuals, not corporations, driving production (Pollock 2000).

2.4.5 Transportation in the Central Valley

2.4.5.1 Southern Pacific Railroad

The arrival of the railroad at the lonely Fresno depot in April 1872 was truly a watershed moment in county history. At the time, the line was known as the San Joaquin Division of the Central Pacific Railroad (Clough and Secrest 1984:end sheets). The Central Pacific Railroad was established in 1862 in large part through government loans and land grants with the primary objective to build the western leg of the first transcontinental railroad in the United States. In 1885, the Southern Pacific Transportation Company leased the Central Pacific Railroad's lines, which have since been commonly known as the Southern Pacific Railroad.

Following the completion of the transcontinental railroad in 1869, the Central Pacific Railroad set out to build a line through the sparsely populated Central Valley, connecting the Bay Area with Southern California. The tracks reached what would become the town of Fresno in April 1872; the segment adjacent to the Project area would have thus been laid shortly afterward (Clough and Secrest 1984:121). The railroad arrived in Bakersfield 2 years later and in Los Angeles in 1876.

The effect of the railroad was all-encompassing for the region in general. Although agriculture existed in the valley long before the railroad, it emerged as the region's dominant industry because of the Southern Pacific. Certainly, the railroad was the necessary ingredient for commercial agriculture, considering that farmers would have no other feasible way to transport their products to the markets of the Bay Area.

The Southern Pacific Railroad enjoyed a monopoly in the Central Valley until 1896 when the competing San Francisco & San Joaquin Valley Railroad (later acquired by Atchison, Topeka and Santa Fe Railway) reached Fresno County (Clough and Secrest 1984:333). The valley branch of the historical Southern Pacific Railroad is presently owned and operated by the Union Pacific Railroad.

2.4.5.2 Golden State Highway

Adjacent to the Project area, Golden State Boulevard, also known as "Old Highway 99," was once the Central Valley's first highway, parts of which were eventually incorporated into U.S. Highway 99 (US 99). The roadway was laid over centuries of previously traveled corridors, blazed initially by a series of millennia-old Native American trails. These old pathways would lead the way for horse travel, stagecoach, and finally the railroad during the early pioneer years. In 1909 the California State Legislature passed the first $18 million State Highway Bond Act, in response to the introduction of the Model T. The plan was to increase travel to other cities by automobile, which at the time was only possible by rail (Provost 2017:4–5).

The Golden State Highway, initially named State Route 4, connected a 359-mile stretch between Sacramento and Los Angeles. Groundbreaking began in 1912, with the first sections of the highway (the Ridge Route) opening in the mountains above Los Angeles 2 years later (Livingston 2010:15; Windmiller 2011). The highway began as a two-lane dirt road needing constant repairs and maintenance (Warwick 2014:7). Building methods were very crude. Mule teams pulled Fresno Scrapers to create the grade, and men moved soil with wheelbarrows. The first road was a 15-foot-wide concrete slab that was later widened to 20 feet and covered with a 2-inch-thick layer of asphalt (Livingston 2010:20). From the very beginning, landscaping was a feature of the highway. Livingston (2010:58) notes that as its first civic project in 1916, the Fresno Rotary Club planted olive trees along the section of the highway between Fresno and Herndon. An even more familiar sight along the Golden State Highway (now Golden State Boulevard) was the hearty and ubiquitous oleander bushes, which actually serve as light, sound, and (to some extent) vehicle barriers (Livingston 2010:66).

In 1927, State Route 4 was renamed the Golden State Highway by James S. Anderson of Fresno, California, who won a naming contest for the highway (Provost 2017:4–6). At this time Ford replaced the Model T with the Model A, which had a top speed of 65 miles per hour. Not only were vehicle speeds increasing, but the number of vehicles on the road were too, and between 1920 and 1925 traffic counts tripled (Provost 2017:21). More businesses appeared along the roadside, fueled by travelers who ventured across the state. Folks whose cars broke down or those who simply needed dinner and a place to sleep found comfort in the full-service gas stations, restaurants, and motels just off the highway. Some individuals who owned land along the corridor sold or gave it to the state and profited later by running gas stations or rest stops (Provost 2017:12).

Soon the growth of cities from Redding to Los Angeles demanded a need for more efficient travel, resulting in multiple lane segments, bypasses, overpasses, and freeways that allowed uninterrupted travel through urbanized areas (Provost 2017:19). By 1965, the Golden State Highway, renamed US 99, would be further enlarged and shifted from its original alignment to its current route. Today, roads following the route of Old Highway 99 still retain the “Golden State” designation, now followed by “Boulevard” or “Avenue.” The existing Buford Oil Company gas station lies on the north side of Manning Avenue between Old Highway 99 (Golden State Boulevard) and the current US 99. The land was acquired by Buford in 1963, and the gas station was developed shortly thereafter.

3
METHODS

3.1 RECORDS SEARCH AND BACKGROUND RESEARCH

On December 27, 2017, Æ requested a records search from the Southern San Joaquin Valley Information Center (SSJVIC) of the CHRIS at California State University, Bakersfield. The records search encompassed the 18-acre Project area plus all land within a 0.5 mile radius of the Project area. SSJVIC staff consulted cultural resource location and survey base maps, reports of previous investigations, cultural resource records, the listings of the Office of Historic Preservation Historic Properties Directory, Archaeological Determinations of Eligibility, and the California Inventory of Historic Resources (Appendix B).

In addition to the SSJVIC records search, Æ consulted General Land Office land patent records and survey plats available online and reviewed a series of historical atlases dating between 1891 and 1935 as well as aerial photographs of the Project area dating between 1937 and 1999 from the online collection maintained by the Henry Madden Library at California State University, Fresno. Æ also reviewed online historical USGS topographic maps and accessed recent aerials (dating from 1998 to the present) on Google Earth. County histories, city directories, genealogybank.com and Ancestry.com provided biographical and demographic information about the owners of the Project parcel and neighboring properties. Æ also visited the Fresno County Recorders/Assessors records for property information. These sources provided a better understanding of the history of land use in the Project area. References for historical USGS topographic maps and aerial photographs consulted are provided in Appendix B.

3.2 NATIVE AMERICAN OUTREACH

On December 27, 2017, Æ contacted the Native American Heritage Commission (NAHC) requesting a search of its Sacred Lands File and the contact information for local Native American representatives who may have information about the Project area. The NAHC responded on January 12, 2018, with its findings and attached a list of 12 Native American tribes and individuals culturally affiliated with the Project area. Æ prepared and sent a letter to each of the contacts identified by the NAHC and kept a log of all responses. This record of correspondence is included in Appendix C.

3.3 PEDESTRIAN SURVEY

Æ's pedestrian survey entailed walking systematic transects spaced at 15–20 meter intervals over accessible areas of the 18-acre Project area. Æ photographed the survey area using a digital camera to document the environmental setting and ground visibility at the time of survey. Upon discovery of cultural material, Æ closely inspected the ground and surrounding area to identify the nature and extent of the site. Æ recorded information about the site on California Department of Parks and Recreation (DPR) Primary and Archaeological Site Record forms and used a Trimble Global Positioning System (GPS) unit to collect spatial information. Photographs and field notes are on file at Æ's office in Fresno, California. DPR forms prepared for this inventory are provided in Appendix D.

3.4 SITE EVALUATION AND ASSESSMENT OF IMPACTS

The purpose of evaluating the eligibility of an identified cultural resource for inclusion in the California Register of Historical Resources (CRHR) is to determine if the resource meets the criteria of a significant historical resource and, if so, to assess whether the Project will cause a significant impact to the resource.

In this regard, the National Park Service (NPS) has established a process for identifying, evaluating, and assessing impacts to cultural resources. Practically speaking, determinations made within a federal regulatory context are almost universally accepted for purposes of identifying, evaluating, and assessing impacts under CEQA.

The first threshold in this process is to ascertain whether an archaeological site or built environment resource is old enough to be considered a cultural resource and, accordingly, eligible for the state register. To be eligible for the CRHR, an archaeological or built environment resource must be 50 years old or older. Except under exceptional circumstances (National Park Service [NPS] 2002:25–43), sites and properties less than 50 years old are dismissed from further consideration. If a cultural resource is found to meet this age criterion, the following sequential steps apply:

- Classifying the resource as a district, archaeological site, building, structure, or object;
- Determining the theme, context, and relevant thematic period of significance with which the resource is associated;
- Determining whether the resource is historically important under a set of significance criteria; and
- If significant, determining whether the resource retains integrity.

In California, cultural resources are usually classified according to *Instructions for Recording Historical Resources*, published by the California Office of Historic Preservation in 1995. This handbook contains listings of resource categories for historical and prehistoric sites as well as standing structures.

For historic-era resources, a historic context establishes the framework within which decisions about significance are based (NPS 2002:9). The evaluation process essentially weighs the relative importance of events, people, and places against the larger backdrop of history. Within this process, the context provides the comparative standards and/or examples as well as the theme(s) necessary for this assessment. According to the NPS (2002:9), a theme is a pattern or trend that has influenced the history of an area for a certain period. A theme is typically couched in geographic (i.e., local, state, or national) and temporal terms to focus and facilitate the evaluation process.

Significance is based on how well a subject resource represents one or more themes through its associations with important events or people and/or through its inherent qualities. A resource must demonstrate more than just association with a theme; it must be a good representative of the theme, capable of illustrating the various thematic elements of a particular time and place in history. According to the CEQA Guidelines, in order for a resource to be eligible for the CRHR, it must meet at least one of the criteria defined in California PRC 5024.1:

(1) Is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage.

(2) Is associated with the lives of persons important in our past.

(3) Embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values.

(4) Has yielded, or may be likely to yield, information important in history or prehistory.

To be included in the CRHR, a resource must not only possess historical significance but also the physical means to convey such significance—that is, it must possess integrity. Integrity refers to the degree to which a resource retains its original character. To facilitate this assessment, the NPS provides the following definition of the seven aspects of integrity.

> Location is the place where the historic property was constructed or the place where the historic event occurred. . . .
>
> Design is the combination of elements that create the form, plan, space, structure, and style of a property. . . .
>
> Setting is the physical environment of a historic property. . . .
>
> Materials are the physical elements that were combined or deposited during a particular period of time and in a particular pattern or configuration to form a historic property. . . .
>
> Workmanship is the physical evidence of the crafts of a particular culture or people during any given period in history or prehistory. . . .
>
> Feeling is a property's expression of the aesthetic or historic sense of a particular period of time. . . .
>
> Association is the direct link between an important historic event or person and a historic property. . . [NPS 2002:44–45].

4
FINDINGS

4.1 RECORDS SEARCH AND BACKGROUND RESEARCH

The SSJVIC provided the results of the records search in a letter dated January 16, 2018 (Appendix B). The records search revealed that no cultural resource studies have occurred within the Project area and there are no previously recorded sites in the Project area. One historic-era resource, the Southern Pacific Railroad Goshen Division Segment (P-10-003930), has been documented within 0.5 mile of the Project area. Four prior cultural resource investigations have been conducted within 0.5 mile of the Project area for road and highway expansion projects (Appendix B).

Review of historical topographic maps shows that in 1924 a structure existed within the Project area. A 1937 aerial photograph of the area (Figure 4-1) depicts what appears to be a residence surrounded by mature trees and agricultural fields adjacent to the "Old" Highway 99 corridor. This building is still visible in a 1992 aerial photograph as well as on 2006 Google Earth imagery; the building is no longer present on 2009 Google Earth imagery, suggesting it was removed between 2006 and 2009.

Figure 4-1 1937 aerial photograph of Project area depicting homestead (Agricultural Adjustment Administration 1937).

4.2 NATIVE AMERICAN OUTREACH

In its January 12, 2018, response to Æ's request, the NAHC stated that the search of the Sacred Lands File did not indicate the presence of resources within the Project area (see Appendix C). However, the NAHC cautioned that the absence of specific site information in its file does not indicate the absence of cultural resources in the area. The NAHC supplied a list of parties to be contacted for information regarding locations of sacred or special sites of cultural and spiritual significance in the study locale:

- Elizabeth D. Kipp, Chairperson, Big Sandy Rancheria of Western Mono Indians;
- Carol Bill, Chairperson, Cold Springs Rancheria;
- Robert Ledger Sr., Tribal Chairperson, Dumna Wo-Wah Tribal Government;
- Stan Alec, Kings River Choinumni Farm Tribe;
- Ron Goode, Chairperson, North Fork Mono Tribe;
- Claudia Gonzalez, Chairperson, Picayune Rancheria of Chukchansi Indians;
- Rueben Barrios Sr., Chairperson, Santa Rosa Indian Community of the Santa Rosa Rancheria;
- Leanne Walker-Grant, Chairperson, Table Mountain Rancheria of California;
- Bob Pennell, Cultural Resources Director, Table Mountain Rancheria of California;
- David Alvarez, Chairperson, Traditional Choinumni Tribe; and
- Kenneth Woodrow, Chairperson, Wuksache Indian Tribe/Eshom Valley Band

On January 17, 2018, Æ sent a letter describing the Project to each of the individuals and groups identified in the NAHC response, except the Dunlap Band of Mono Indians. In late 2017, Tribal Secretary Dirk Charley of the Dunlap Band of Mono Indians informed Æ that the tribe did not want to be contacted unless the project falls within their traditional territory in the foothills of eastern Fresno County. Because the Project lies outside of the band's traditional territory, Æ did not reach out to the tribe. An example of Æ's contact letter is provided in Appendix C. Æ placed follow-up telephone calls or sent an email on February 5, 2018.

Table Mountain Cultural Resources Director Bob Pennell, responding on behalf of Chairperson Walker-Grant, stated in a letter dated February 8, 2018 that the tribe declined to participate. Stan Alec of the Kings River Choinumni Farm Tribe responded that he had no specific concerns but wanted to be informed if any discoveries were made during construction. Similarly, Chairperson David Alvaraz of the Kings River Choinumni Farm Tribe stated that he has no concerns. No other responses have been received to date. A contact log and Native American outreach correspondence are included in Appendix C.

4.3 PEDESTRIAN SURVEY

On January 4, 2018, Æ archaeologist Ward Stanley conducted an intensive pedestrian survey of the Project area, which consists of the existing fuel station and commercial truck rest area as well as a vacant field (Figures 4-2 and 4-3). A water basin along the western boundary of the Project area was fenced off and inaccessible during the January survey (Figure 4-4). Additionally, the ground surface within the paved area of the operating fuel station was completely obscured and could not be examined (Figure 4-5). On October 11, 2018, Æ archaeologist Randy Ottenhoff returned to the Project area to survey the fence-enclosed water basin. Thus, excluding the paved areas, Æ surveyed approximately 8 acres of the 18-acre Project area.

Much of the vacant field was covered in tall grasses and weeds, offering less than 10 percent ground visibility. In the northeast corner of the fallow field, ground visibility was 100 percent as the result of a recent brush fire (Figure 4-6). To take advantage of increased surface visibility, survey transect spacing was narrowed to 5-meter intervals. The fence-enclosed water basin was dry at the time of survey and covered with short grasses; visibility was good (approximately 80 percent). North of the paved area, Æ observed a large flat-topped earthen mound, an assortment of concrete irrigation pipes, and a water pump amidst unidentified ornamental trees and two olive trees (Figures 4-7 and 4-8). Scattered atop and adjacent to the mound is a moderate amount of modern trash; however, no historic-era artifacts were noted. The mound matches the location of the residence and mature trees depicted on the aerial photographs from 1937 to 2006 (see Figure 4-1). Æ recorded the site on the appropriate DPR record forms. Æ did not observe any prehistoric or Native American artifacts, features, or deposits within the Project area.

Figure 4-2 Unpaved portion of Project area; view to the northeast.

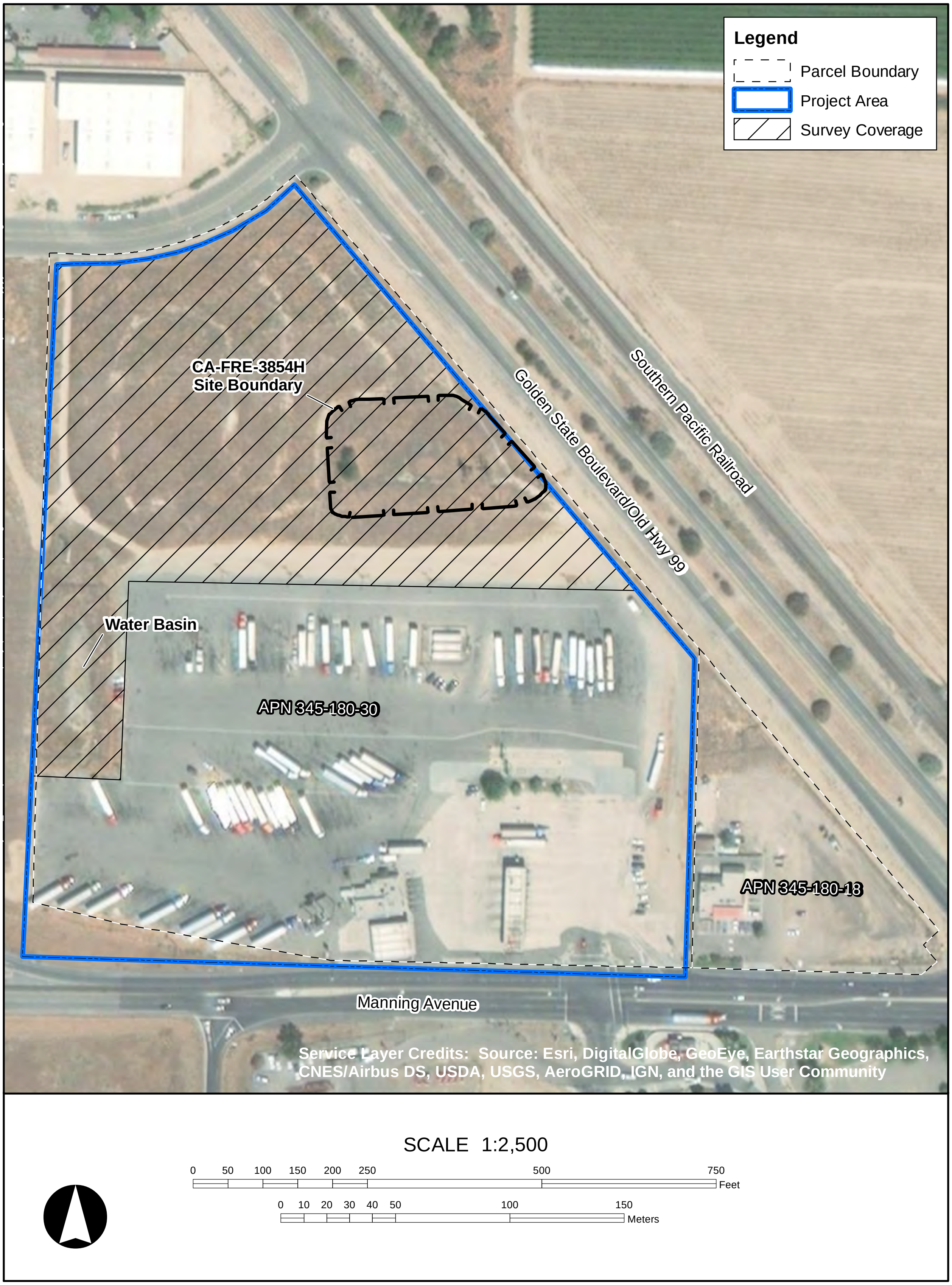

Figure 4-3 Aerial view of the Project area showing survey coverage and CA-FRE-3854H.

Figure 4-4 Water basin enclosed by a fence west of the parking lot; view to the southwest.

Figure 4-5 Commercial truck rest area; view to the northeast.

Figure 4-6 Ground exposed by recent fire in the northeast corner of the Project area; view to the north.

Figure 4-7 Overview of CA-FRE-3854H; view to the north.

Figure 4-8 Remnant irrigation and pump equipment; view to the west.

5
CRHR ELIGIBILITY EVALUATION OF CA-FRE-3854H

5.1 SITE DESCRIPTION

As discussed in Section 4.3, CA-FRE-3854H is a historic-era archaeological site that covers approximately 1 acre in the southeast corner of APN 345-180-30 (see Figure 4-3). The site includes a flat-topped earthen mound with several ornamental trees and the remains of a water-pumping system. The water pump and concrete and metal piping do not bear any temporally diagnostic characteristics and are not visible on modern or historical aerial photographs or maps. Historical aerial photographs indicate the presence of a building at the site; however, no artifacts or building remains were observed.

5.2 INTERPRETATION

CA-FRE-3854H occurs on APN 345-180-30, which encompasses 18 acres of land between State Route 99 and Golden State Boulevard (Golden State Highway/Old Highway 99). In 1877, the General Land Office (GLO) granted the land patent for all of Section 23 to the Southern Pacific Railroad Company (GLO 1877). Sometime between 1877 and 1891, land ownership within Section 23 passed from the Southern Pacific Railroad Company to private citizens, who subdivided the land (Thompson 1891). Few details are available regarding ownership of the land within APN 345-180-30 prior to 1911. The 1891 and 1907 Fresno County atlases provide landowner names; however, archival research yielded no further information about these individuals' relationship to the property (Guard 1907; Thompson 1891).

Between 1907 and 1911, Charles L. Berkland assumed ownership of APN 345-180-30 and an adjoining 2-acre parcel (APN 345-180-18) on the corner of Manning Avenue and Golden State Highway (Guard 1907, 1911). He retained it until about 1929, when he granted it to his daughter Madonna (Donna) L. Pope and her husband Virgil Pope (Progressive Map Service 1930). Archival research on Charles L. Berkland and Donna Pope revealed that the family at one time may have resided on or immediately adjacent to CA-FRE-3854H. In 1937, Berkland submitted advertisements for purebred Pointer dogs to the *Fresno Bee* and listed "99 Highway and Manning Ave." as the location of sale (*Fresno Bee* 1937). Additionally, Berkland's obituary states that, prior to his death, he resided with his daughter Donna on her property south of Fowler and adjacent to the Golden State Highway (*Fresno Bee* 1938).

While records indicate Berkland and Pope resided in general proximity to CA-FRE-3854H, property and census records do not identify the parcel on which their residence was located. As buildings were present on both parcels owned by Berkland and Pope, it is difficult to determine if the building that existed at site CA-FRE-3854H served as a residence for either of these individuals, or if they resided at the corner of Manning and Golden State on adjoining APN 345-180-18.

Historical and modern aerial photographs indicate the presence of a residence at CA-FRE-3854H from 1937 to 2006 and regular-to-periodic cultivation of the land surrounding the site from 1937 to 2009. Historical aerial photos and land-use patterns in rural Fresno County in the early to mid twentieth century suggest that CA-FRE-3854H was likely the site of a farmhouse whose occupants cultivated the surrounding property. Several joint tenancy land agreements were recorded in the mid twentieth century; however, investigations into the tenants did not reveal any information useful for determining association between CA-FRE-3854H and specific individuals.

A 1929 deed of trust for the two parcels discussed above names J. A. Kieffer and Katie Stiears as trustees of the property, with Donna Pope and her husband Virgil listed as trustors (Fresno County 1929). The terms of the deed demanded that the trustors install an electric water pump system on the property and maintain it for the life of the trust.

A joint-tenancy land deed between the Popes and F. Buford was signed in 1963 (Fresno County 1963). Descendants of F. Buford currently own APN 345-180-30, which suggests that complete ownership of the parcel passed to the Buford family sometime after 1963.

5.3 APPLICATION OF SIGNIFICANCE CRITERIA

5.3.1 Criteria 1 and 2

The primary obstacle in assessing the significance of CA-FRE-3854H under CRHR Criteria 1 and 2 is confidently determining its association, which provides the basis for the evaluation. The cultural constituents of the site in themselves do not provided details that could be used to determine their source. Assessor’s records and newspapers from the early to mid twentieth century indicate that the Berkland and Pope families occupied the land; however, historical aerial photographs and maps depict other structures in proximity to CA-FRE-3854H (Figure 4-1). The 1929 deed of trust between the Popes and J. A. Kieffer and Katie Stiears indicates that an electrical water pump system was to be installed on the property; however, the record does not indicate a date or location of installation. Without a concrete timeline of occupancy and installation of the water pump system, a confident determination of association between these families and the constituents of CA-FRE-3854H cannot be made. Archival records do not suggest that the site is associated with any events (Criterion 1) or individuals (Criterion 2) important to the broad patterns of California history or cultural heritage. Because the site cannot be associated with a specific theme related to a significant event or individual, CA-FRE-3854H is not considered significant under Criterion 1 or 2.

5.3.2 Criterion 3

Criterion 3 is usually applied to standing buildings or other structures with architectural qualities. The water pump system observed at CA-FRE-3854H could be considered an engineered structure; however, it lacks context and association and does not embody the distinctive characteristics of a type, period, region, or method of construction. Consequently, CA-FRE-3854H is not considered significant under Criterion 3.

5.3.3 Criterion 4

The significance of CA-FRE-3854H under Criterion 4 is measured by the availability, or potential availability, of specific data classes necessary to address relevant research domains. Æ did not observe any temporally diagnostic artifacts or feature characteristics from which inferences about land-use and ownership could be derived. Archival research confirmed that the site had been the location of a homestead in the early twentieth century and revealed that an electric water pump system was proposed to be installed on the property around 1929 (*Fresno Bee* 1938; Fresno County 1929). However, the age of the water pump features observed at CA-FRE-3854H cannot be accurately determined, and the system cannot be directly associated with any one individual or period of significance. The lack of clear temporal association limits the site's ability to provide important information relating to agricultural development in the San Joaquin Valley in the early to mid twentieth century. Therefore, CA-FRE-3854H is not considered significant under Criterion 4.

5.4 ELIGIBILITY

Because the site does not lend any information, evidence, or context to further understanding of important themes in history, it is not significant under any of the four CRHR criteria, thus it is not considered eligible for the CRHR. An assessment of exclusionary characteristics and the site's integrity is not necessary.

6
CONCLUSION

The Buford Oil Company plans to expand an existing fuel station at the northeast intersection of Highway 99 and Manning Avenue in Fowler within Fresno County, California. Æ's inventory, consisting of a records search, Native American outreach, historical research, and a pedestrian survey, revealed that one cultural resource—the remains of a historic-era homestead CA-FRE-3854H)–occurs in the Project area. Æ did not observe any other prehistoric archaeological sites, artifacts, features, or historical built environment cultural resources within the Project area.

Æ recorded archaeological site CA-FRE-3854H and evaluated its eligibility for listing in the CRHR. Although archival research confirmed that the site had been the location of a homestead in the early twentieth century and revealed that an electric water pump system was proposed to be installed on the property around 1929 (*Fresno Bee* 1938; Fresno County 1929), Æ could not determine the age of the existing water pump features observed at the site or directly associate the remains of the homestead with a specific prior owner of the property. Because Æ did not observe any temporally diagnostic artifacts or feature characteristics, the site is not considered significant under any of the four CRHR evaluation criteria.

However, given the possibility of encountering archaeological materials during construction, Æ offers the following general recommendations:

- In the event that archaeological remains are encountered at any time during development or ground-moving activities within the Buford Oil Travel Center Project area, all work in the vicinity of the find should be halted until a qualified archaeologist can assess the discovery.

- If human remains are uncovered, or in any other case when human remains are discovered during construction, the Fresno County Coroner is to be notified to arrange their proper treatment and disposition. If the remains are identified—on the basis of archaeological context, age, cultural associations, or biological traits—as those of a Native American, California Health and Safety Code 7050.5 and Public Resource Code 5097.98 require that the coroner notify the NAHC within 24 hours of discovery. The NAHC will then identify the Most Likely Descendant who will be afforded the opportunity to make recommendations about the manner in which the remains are treated.

7
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JRP Historical Consulting and California Department of Transportation (JRP and Caltrans)
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1976 *Handbook of the Indians of California.* Reprinted. Dover, New York. Originally published 1925, Bureau of American Ethnology Bulletin 78, Smithsonian Institution, Washington, D.C.

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McCarthy, Helen
1995 Choinimne Ethnography and Ethnohistory. In *Test Excavations at CA-FRE-61, Fresno County, California*, by Kelly R. McGuire, pp. 5–22. Occasional Papers in Anthropology 5. Museum of Anthropology, California State University, Bakersfield.

McGuire, Kelly R.
1995 Test Excavations at CA-FRE-61, Fresno County, California. *Occasional Papers in Anthropology* 5. Museum of Anthropology, California State University, Bakersfield.

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1990 *Geology of California*. 2nd ed. John Wiley and Sons, New York.

Olsen, William H., and Louis A. Payen
1968 *Archaeology of the Little Panoche Reservoir, Fresno County, California*. Archaeological Report 11. Submitted to the California Department of Parks and Recreation, Sacramento.

1969 *Archeology of the Grayson Site [CA-MER-S94], Merced County, California.* Coyote Press, Salinas, California.

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Provost, Stephen H.
2017 *Highway 99: The History of California's Main Street.* Craven Street Books, Fresno, California.

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1969 An Early Man Site in the San Joaquin Valley. *American Antiquity* 34:121–130.

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Schenck, W. E., and E. J. Dawson
1929 Archaeology of the Northern San Joaquin Valley. *University of California Publications in American Archaeology and Ethnology* 25(4):289–413.

Silverstein, Michael
1978 Yokuts: Introduction. In *California*, edited by Robert F. Heizer, pp. 446–447. Handbook of North American Indians, Vol. 8, William C. Sturtevant, general editor. Smithsonian Institution, Washington, D.C.

Spier, Robert F. G.
1978 Monache. In *California*, edited by Robert F. Heizer, pp. 426–436. Handbook of North American Indians, Vol. 8, William C. Sturtevant, general editor. Smithsonian Institution, Washington, D.C.

Thompson, Thomas H.
1891 *Atlas of Fresno County*, *California.* Thos. H. Thompson, Tulare, California.

Treganza, Adan E.
1960 *Archaeological Investigations in the San Luis Reservoir Area, Merced County, California.* Submitted to the California Department of Parks and Recreation, Sacramento.

Wallace, William J.
1978a Southern Valley Yokuts. In *California*, edited by Robert F. Heizer, pp. 448–461. Handbook of North American Indians, Vol. 8, William C. Sturtevant, general editor. Smithsonian Institution, Washington, D.C.

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Warwick, Keith
2014 *California's Highway 99: Modesto to Bakersfield.* Acadia Publishing, Charleston, South Carolina.

Windmiller, Ric
2011 Golden State Boulevard/US 99—American Avenue to Mission Street. Department of Parks and Recreation forms. On file, California Historical Resources Information System, Southern San Joaquin Valley Information Center, California State University, Bakersfield.

APPENDIX A

Personnel Qualifications

MARY CLARK BALOIAN

President/Principal Archaeologist

Areas of Expertise

- Cultural resource management
- Prehistoric archaeology
- Project management

Years of Experience

- 28

Education

Ph.D., Anthropology, Southern Methodist University, 2003

M.A., Anthropology, Southern Methodist University, 1995

B.A., Anthropology, University of California, Davis, 1989

Registrations/Certifications

- Register of Professional Archaeologist No. 15189

Permits/Licensure

- Principal Investigator, California BLM Statewide Cultural Resources Use Permit CA-15-29
- Crew Chief, Nevada BLM Statewide Cultural Resources Use Permit N-85878

Professional Affiliations

- Society for American Archaeology
- Society for California Archaeology

Professional Experience

2000–	President (2015–), Regional Manager (2012–2014), Assistant Division Manager (2010–2011), Senior Archaeologist (2000–), Applied EarthWorks, Inc., Fresno, California
1998–2001	Adjunct Faculty Member, Fresno City College, Fresno, California
1995–1996	Staff Archaeologist, Applied EarthWorks, Inc., Fresno, California
1994–1995	Staff Archaeologist, INFOTEC Research, Inc., Fresno, California
1992–1994	Teaching Assistant, Southern Methodist University, Dallas, Texas
1989–1991	Archaeological Project Leader, California Department of Transportation, Sacramento

Technical Qualifications

Dr. Clark Baloian has been involved in archaeology in California and the western United States since 1987. Her areas of expertise include the prehistory of the San Joaquin Valley, Sierra Nevada, Great Basin, central California coast, and the Iron Age of West Africa. Dr. Baloian has served as Project Manager, Field Supervisor, Crew Chief, or Field Technician for projects throughout California, Oregon, Nevada, New Mexico, Texas, Hawaii, and West Africa. Her experience in cultural resources management includes research design, data acquisition, laboratory analysis, and preparation of technical reports and compliance documents; she also has completed the Advisory Council on Historic Preservation course in National Historic Preservation Act Section 106 compliance policies and procedures. Her analytic skills include lithic and ceramic analyses as well as settlement pattern studies and spatial analysis, which were the foci of her doctoral research. As a Senior Archaeologist for Applied EarthWorks, Dr. Baloian directs professional staff and subcontractors and provides quality assurance for all project work. She has directed numerous surveys, testing and data recovery excavations as well as prepared dozens of technical reports and compliance documents. She administers both large, complex, multiyear, multiphase projects as well as smaller.

Jessica Jones

GIS Technician/Staff Archaeologist

Areas of Expertise

- Geographic Information Systems (GIS) in archaeology
- Computer-generated maps and graphics
- Archaeological survey and excavation

Years of Experience

- 5

Education

B.A., Anthropology, California State University, Sacramento, 2013

Archaeological Technician Certificate, Anthropology Department, Fresno City College, Fresno, California, 2011

Professional Experience

2015–	Geographic Information Systems (GIS) Technician/Staff Archaeologist, Applied EarthWorks, Inc., Fresno, California
2012–2013	Laboratory Technician (volunteer), Archaeological Research Center, California State University, Sacramento
2009–2010	Laboratory Technician (volunteer), Fresno City College, Fresno, California

Technical Qualifications

As a staff archaeologist, Ms. Jones performs archival research, pedestrian archaeological and built environment survey, site recordation, and excavation on projects throughout the Central Valley and Sierra Nevada foothills. She also is a primary author or contributor for cultural resource inventory reports and is familiar with the preparation of California Department of Parks and Recreation cultural resource record forms (DPR 523 series) and California Department of Transportation documents. In her role as a GIS technician, Ms. Jones serves as cartographer and has participated in large and small projects involving both prehistoric and historic-era cultural resources. Using ESRI ArcGIS software, she has prepared maps and illustrations for documentation and technical reports encompassing archaeological and built environment resources for a variety of projects in California and Oregon. Additionally, she assists in the management and maintenance of the company's GPS data/units and cultural resources database system. She has extensive experience volunteering in archaeological repositories and is well versed in laboratory methodology related to the processing, cataloging, and management of archaeological collections.

Applied EARTHWORKS Inc.

WARD STANLEY

Staff Archaeologist

Areas of Expertise

- California archaeology—Sierra Nevada
- Survey, excavation, and Geographic Information System applications
- Project administration support

Years of Experience

- 8

Education

B.A., Kansas State University, 2008

Registrations/Certifications

Wildland Firefighter Qualified (Arduous)

Professional Experience

2015–	Staff Archaeologist, Applied EarthWorks, Inc., Fresno, California
2011–2017	Archaeological Field Technician/Crew Supervisor, Sierra National Forest and Lassen National Forest
2009–2011	Archaeological Field Technician/Crew Supervisor, Malheur National Forest
2008–	Archaeological Field Technician, Plumas National Forest

Technical Qualifications

Mr. Stanley's archaeological experience includes survey, archaeological testing, data recovery excavation, and documentation of both prehistoric and historical resources in the Central Valley and Sierra National Forest in California. He has supervised field crews for several large-scale projects for the Sierra, Lassen, and Malheur National Forests. This work included prefield research, pedestrian survey, site recording, and report preparation. Mr. Stanley is knowledgeable about Section 106 of the National Historic Preservation Act and associated regulations and processes, and working with local Native American tribes. He is well versed in the use of Geographic Information System (GIS) applications, including those for data gathering and modeling, and has prepared maps using ESRI ArcGIS software for use in technical reports and in the field. In addition to working for the Sierra National Forest, he has served as lead archaeological resource advisor on three separate wildland fires and was responsible for coordinating protection of archaeological resources from suppression efforts. Additionally, he produced assessment damage reports for all fires. For Applied EarthWorks, Mr. Stanley has served as field supervisor for implementation of the Crane Valley Hydroelectric Power Project Historic Properties Management Plan, which includes monitoring of impacts to resources and implementing management measures to avoid or minimize adverse effects to historic properties within the Crane Valley Archaeological District.

APPENDIX B

Records Search Results

California
Historical
Resources
Information
System

Fresno
Kern
Kings
Madera
Tulare

Southern San Joaquin Valley Information Center
California State University, Bakersfield
Mail Stop: 72 DOB
9001 Stockdale Highway
Bakersfield, California 93311-1022
(661) 654-2289
E-mail: ssjvic@csub.edu
Website: www.csub.edu/ssjvic

1/16/2018

Mary Baloian
Applied EarthWorks, Inc.
1391 W. Shaw Ave., Suite C
Fresno, CA 93711

Re: Buford Oil Compant Travel Center
Records Search File No.: 18-008

The Southern San Joaquin Valley Information Center received your record search request for the project area referenced above, located on the Conejo USGS 7.5's quad. The following reflects the results of the records search for the project area and the 0.5 mile radius:

As indicated on the data request form, the locations of resources and reports are provided in the following format: ☐ custom GIS maps ☒ shapefiles ☐ hand-drawn maps

Resources within project area:	None
Resources within 0.5 mile radius:	P-10-003930
Reports within project area:	None
Reports within 0.5 mile radius:	FR-00135, 00338, 00778, 02287, 02452

Resource Database Printout (list):	☒ enclosed	☐ not requested	☐ nothing listed
Resource Database Printout (details):	☒ enclosed	☐ not requested	☐ nothing listed
Resource Digital Database Records:	☒ enclosed	☐ not requested	☐ nothing listed
Report Database Printout (list):	☒ enclosed	☐ not requested	☐ nothing listed
Report Database Printout (details):	☒ enclosed	☐ not requested	☐ nothing listed
Report Digital Database Records:	☒ enclosed	☐ not requested	☐ nothing listed
Resource Record Copies:	☒ enclosed	☐ not requested	☐ nothing listed
Report Copies:	☐ enclosed	☒ not requested	☐ nothing listed
OHP Historic Properties Directory:	☐ enclosed	☐ not requested	☒ nothing listed
Archaeological Determinations of Eligibility:	☐ enclosed	☐ not requested	☒ nothing listed
CA Inventory of Historic Resources (1976):	☐ enclosed	☐ not requested	☒ nothing listed

Caltrans Bridge Survey: Not available at SSJVIC; please see
http://www.dot.ca.gov/hq/structur/strmaint/historic.htm

Ethnographic Information: Not available at SSJVIC

Historical Literature: Not available at SSJVIC

Historical Maps: Not available at SSJVIC; please see
http://historicalmaps.arcgis.com/usgs/

Local Inventories: Not available at SSJVIC

GLO and/or Rancho Plat Maps: Not available at SSJVIC; please see
http://www.glorecords.blm.gov/search/default.aspx#searchTabIndex=0&searchByTypeIndex=1 and/or
http://www.oac.cdlib.org/view?docId=hb8489p15p;developer=local;style=oac4;doc.view=items

Shipwreck Inventory: Not available at SSJVIC; please see
http://www.slc.ca.gov/Info/Shipwrecks.html

Soil Survey Maps: Not available at SSJVIC; please see
http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx

Please forward a copy of any resulting reports from this project to the office as soon as possible. Due to the sensitive nature of archaeological site location data, we ask that you do not include resource location maps and resource location descriptions in your report if the report is for public distribution. If you have any questions regarding the results presented herein, please contact the office at the phone number listed above.

The provision of CHRIS Data via this records search response does not in any way constitute public disclosure of records otherwise exempt from disclosure under the California Public Records Act or any other law, including, but not limited to, records related to archeological site information maintained by or on behalf of, or in the possession of, the State of California, Department of Parks and Recreation, State Historic Preservation Officer, Office of Historic Preservation, or the State Historical Resources Commission.

Due to processing delays and other factors, not all of the historical resource reports and resource records that have been submitted to the Office of Historic Preservation are available via this records search. Additional information may be available through the federal, state, and local agencies that produced or paid for historical resource management work in the search area. Additionally, Native American tribes have historical resource information not in the CHRIS Inventory, and you should contact the California Native American Heritage Commission for information on local/regional tribal contacts.

Should you require any additional information for the above referenced project, reference the record search number listed above when making inquiries. Invoices for Information Center services will be sent under separate cover from the California State University, Bakersfield Accounting Office.

Thank you for using the California Historical Resources Information System (CHRIS).

Sincerely,

Celeste M. Thomson
Coordinator

Resource List

SSJVIC Record Search 18-008

Primary No.	Trinomial	Other IDs	Type	Age	Attribute codes	Recorded by	Reports
P-10-003930	CA-FRE-003109H	Resource Name - Southern Pacific Railroad	Structure	Historic	AH07 (Roads/trails/railroad grades)	1998 (W.L. Norton, Jones & Stokes); 1999 (S. Hooper, S. Flint, Applied EarthWorks, Inc.); 2002 (Peggy B. Murphy, Three Girls and a Shovel); 2004 (Bryan Larson, Cindy Toffelmier, JRP Historical Consulting); 2009 (Joseph Freeman, Rebecca Flores, JRP Historical Consulting); 2009 (Joseph Freeman, Rebecca Flores, JRP Historical Consulting); 2009 (Joseph Freeman, Rebecca Flores, JRP Historical Consulting); 2010 (Michael Hibma, LSA Associates); 2013 (Randy Baloian, Applied Earthworks, Inc.); 2015 (Randy Baloian, Applied Earthworks, Inc.); 2016 (J. Tibbet, Applied EarthWorins, Inc.)	FR-00238, FR-01770, FR-01771, FR-01772, FR-02642, FR-02726, FR-02769, FR-02847

Report List

SSJVIC Record Search 18-008

Report No.	Other IDs	Year	Author(s)	Title	Affiliation	Resources
FR-00135	NADB-R - 1140863	1995	Hatoff, Brian, Voss, Barb, Waechter, Sharon, Benté, Vance, and Wee, Stephen	Cultural Resources Inventory Report for the Proposed Mojave Northward Expansion Project.	Woodward-Clyde Consultants	
FR-00338		1979	Cursi, Kathleen L.	Archaeological Reconnaissance for Manning Avenue Between HWY 99 and McCall Avenue, Fresno County, California (near Sanger/Selma)	California State University, Fresno	
FR-00778	NADB-R - 1140711	1994	Varner, Dudley M.	An Archaeological Study of a Property On State Highway 99 At Manning Avenue In Fresno County, California	Varner Associates	
FR-02287	Submitter - SWCA Cultural Resources Report Database No. 06-507; Submitter - SWCA Project No. 10715-180	2006	Arrington, Cindy, Bass, Bryon, Brown, Joan, Corey, Chris, and Hunt, Kevin	Cultural Resources Final Report of Monitoring and Findings for the Qwest Network Construction Project, State of California	SWCA Environmental Consultants	
FR-02452		2011	Windmiller, Ric	Golden State Corridor Project Cultural Resources Assessment Fresno County, California	Individual Consultant	

Historical Topographic Maps and Aerial Images Consulted

Date	Name	Author	Hyperlink
1937	Fresno County Aerial Survey 13-ABI 67-53	Agricultural Adjustment Administration	http://cdmweb.lib.csufresno.edu/cdm/ref/collection/aerial/id/911
1942	Fresno County Aerial Survey ABI-8B-177	Agricultural Adjustment Administration	http://cdmweb.lib.csufresno.edu/cdm/singleitem/collection/aerial/id/23010
1950	Fresno County Aerial Survey ABI-4G-106	United States Department of Agriculture	http://cdmweb.lib.csufresno.edu/cdm/singleitem/collection/aerial/id/1861
1957	Fresno County Aerial Survey ABI-53T-34	United States Commodity Stabilization Service	http://cdmweb.lib.csufresno.edu/cdm/ref/collection/aerial/id/3192
1961	Fresno County Aerial Survey ABI-3BB-270	United States Commodity Stabilization Service	http://cdmweb.lib.csufresno.edu/cdm/ref/collection/aerial/id/4782
1965	Fresno County Aerial Survey FRE-1-158	United States Soil Conservation Service	http://cdmweb.lib.csufresno.edu/cdm/ref/collection/aerial/id/5635
1973	Fresno County Aerial Survey 06019 173-11 L	United States Agricultural Stabilization and Conservation Service	http://cdmweb.lib.csufresno.edu/cdm/ref/collection/aerial/id/7667
1987	Fresno County Aerial Survey NAPP 463-34	Agricultural Adjustment Administration	http://cdmweb.lib.csufresno.edu/cdm/ref/collection/aerial/id/7702
1992	Fresno County Aerial Survey BR-CVHAB 10-201	Agricultural Adjustment Administration	http://cdmweb.lib.csufresno.edu/cdm/ref/collection/aerial/id/11591
1999	Fresno County Highways Aerial Survey NAPP 10566-30	Agricultural Adjustment Administration	http://cdmweb.lib.csufresno.edu/cdm/ref/collection/aerial/id/19186
1924	Conejo, CA	USGS	https://ngmdb.usgs.gov/topoview/
1947	Conejo, CA	USGS	https://ngmdb.usgs.gov/topoview/
1964	Conejo, CA	USGS	https://ngmdb.usgs.gov/topoview/
1985	Conejo, CA	USGS	https://ngmdb.usgs.gov/topoview/

APPENDIX C

Native American Outreach

Applied EARTHWORKS Inc.

Native American Outreach Log

Buford Oil Travel Center

Organization	Name	Position	Letter	E-mail	Phone	Summary of Contact
Native American Heritage Commission				12/27/17		AE Requested search on 12/27/2017. Received an email dated 1/12/2018 that stated a serach of the sacred lands file failed to indicate any resources. The NACHC included a list of 12 tirbes and individuals to contact.
Big Sandy Rancheria	Elizabeth D. Kipp	Chairperson	01/17/18			Outreach letter sent 1/17/18; AE sent a follow up email on 2/5/18; No reply received to date.
Cold Springs Rancheria of Mono Indians	Carol Bill	Chairperson	01/17/18		02/05/18	Outreach letter sent 1/17/18; AE left a follow up voicemail 2/5/18; No response received to date.
Dumna Wo-Wah Tribal Government	Robert Ledger Sr.	Tribal Chairperson	01/17/18	02/05/18		Outreach letter sent 1/17/18; AE left a follow up voicemail 2/5/18; No response received to date.
Dunlap Band of Mono Indiatns		Chairperson	01/17/18			Per Dunlap Mono Indians Dirk Charley's request, AE did not send an outreach letter because the project lies outside the tribe's traditional area.
Kings River Choinumni Farm Tribe	Stan Alec		01/17/18		02/05/18	Outreach letter sent1/17/18; AE spoke with Stan Alec via telephone on 2/5/18 and he stated there are no concerns.
North Fork Mono Tribe	Ron Goode	Chairperson	01/17/18	02/05/18		Outreach letter sent 1/17/18; AE sent follow up email on 2/5/18; No reply received to date.
Santa Rosa Rancheria Tachi Yokut Tribe	Rueben Barrios Sr.	Chairperson	01/17/18	02/05/18		Outreach letter sent 1/17/18; AE sent a follow up email to baria@tachi-yokut-nsn.gov as requested by receptionist on 2/5/18. No response received to date.
Table Mountain Rancheria	Bob Pennell	Cultural Resources Director	01/17/18	02/05/18		Outreach letter sent 1/17/18; AE sent follow up email on 2/5/18; No reply received to date.
Traditional Choinumni Tribe	David Alvarez	Chairperson	01/17/18		2/5/18; 2/6/18	Outreach letter sent 1/17/2018; AE left a voice mail on cell phone 2/5/2018; Dave Alvarez Returned call on 2/6/2018 and stated that the Tribe has no concerns. He also provided a correction to his email address.
Wuksache Indian Tribe/Eshom Valley Band	Kenneth Woodrow	Chairperson	01/17/18	02/05/18		Outreach letter sent 1/17/18; AE sent a follow up email on 2/5/18; No reply received to date.
Picayune Rancheria of Chukchansi	Jennifer Ruiz	Chairperson	01/17/18	02/05/18		Outreach letter sent 1/17/18; AE sent a follow up email on 2/5/18; No reply received to date.

NATIVE AMERICAN HERITAGE COMMISSION
Environmental and Cultural Department
1550 Harbor Blvd., Suite 100
West Sacramento, CA 95691
(916) 373-3710

January 12, 2018

Mary Baloian
Applied Earth Works

Sent by Email: mbaloian@appliedearthworks.com
Number of Pages: 2

RE: Buford Oil Company Travel Center, Conejo, Fresno County

Dear Ms. Boloian:

A record search of the Native American Heritage Commission (NAHC) *Sacred Lands File* was completed for the area of potential project effect (APE) referenced above with negative results. **Please note that the absence of specific site information in the *Sacred Lands File* does not indicate the absence of Native American cultural resources in any APE.**

I suggest you contact all of those listed, if they cannot supply information, they might recommend others with specific knowledge. The list should provide a starting place to locate areas of potential adverse impact within the APE. **By contacting all those on the list, your organization will be better able to respond to claims of failure to consult**. If a response has not been received within two weeks of notification, the NAHC requests that you follow-up with a telephone call to ensure that the project information has been received.

If you receive notification of change of addresses and phone numbers from any of these individuals or groups, please notify me. With your assistance we are able to assure that our lists contain current information. If you have any questions or need additional information, please contact via email: Sharaya.souza@nahc.ca.gov or (916) 573-0168.

Sincerely,

Sharaya Souza
Staff Services Analyst
(916) 573-0168

Native American Heritage Commission
Native American Contacts
1/12/2018

Big Sandy Rancheria of Western Mono Indians
Elizabeth D. Kipp, Chairperson
PO. Box 337 37387 Auberry Mission Rd.
Auberry , CA 93602
lkipp@bsrnation.com
(559) 374-0066
(559) 374-0055
Western Mono

Cold Springs Rancheria
Carol Bill, Chairperson
P.O. Box 209
Tollhouse , CA 93667
(559) 855-5043
(559) 855-4445 Fax
Mono

Dumna Wo-Wah Tribal Goverment
Robert Ledger SR., Chairperson
2216 East Hammond Street
Fresno , CA 93703
ledgerrobert@ymail.com
(559) 519-1742 Office
Dumna/Foothill Yoku
Mono

Dunlap Band of Mono Indians
Chairperson
Box 44
Dunlap , CA 93621
(559) 338-2545
Mono

Kings River Choinumni Farm Tribe
Stan Alec
3515 East Fedora Avenue
Fresno , CA 93726
(559) 647-3227 Cell
Foothill Yokuts
Choinumni

North Fork Mono Tribe
Ron Goode, Chairperson
13396 Tollhouse Road
Clovis , CA 93619
rwgoode911@hotmail.com
(559) 299-3729 Home
(559) 355-1774 - cell
Mono

Picayune Rancheria of Chukchansi Indians
Jennifer Ruiz, Chairperson
P.O. Box 2226
Oakhurst , CA 93644
jruiz@chukchansitribe.net
(559) 412-5590
Chukchansi / Yokut

Santa Rosa Indian Community of the Santa Rosa Rancheria
Rueben Barrios Sr., Chairperson
P.O. Box 8
Lemoore , CA 93245
(559) 924-1278
(559) 924-3583 Fax
Tache
Tachi
Yokut

Table Mountain Rancheria of California
Leanne Walker-Grant, Chairperson
P.O. Box 410
Friant , CA 93626
(559) 822-2587
(559) 822-2693 Fax
Yokuts

Table Mountain Rancheria of California
Bob Pennell, Cultural Resources Director
P.O. Box 410
Friant , CA 93626
rpennell@tmr.org
(559) 325-0351
(559) 217-9718 - cell
(559) 325-0394 Fax
Yokuts

This list is current only as of the date of this document and is based on the information available to the Commission on the date it was produc ed.

Distribution of this list does not relieve any person of statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resource Section 5097.98 of the Public Resources Code.

This list is only applicable for contacting local Native American Tribes with regard to cultural resources assessments for the proposed: Buford Oil Company Travel Center, Conejo, Fresno County.

Native American Heritage Commission
Native American Contacts
1/12/2018

Traditional Choinumni Tribe
David Alvarez, Chairperson
2415 E. Houston Avenue
Fresno , CA 93720
davealvarez@sbcglobal.net
(559) 323-6231
(559) 217-0396 Cell
(559) 292-5057 Fax

Choinumni

Wuksache Indian Tribe/Eshom Valley Band
Kenneth Woodrow, Chairperson
1179 Rock Haven Ct.
Salinas , CA 93906
kwood8934@aol.com
(831) 443-9702

Foothill Yokuts
Mono
Wuksache

This list is current only as of the date of this document and is based on the information available to the Commission on the date it was produc ed.

Distribution of this list does not relieve any person of statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resource Section 5097.98 of the Public Resources Code.

This list is only applicable for contacting local Native American Tribes with regard to cultural resources assessments for the proposed: Buford Oil Company Travel Center, Conejo, Fresno County.

EXAMPLE

Applied EARTHWORKS Inc.

1391 W. Shaw Ave., Suite C
Fresno, CA 93711-3600
O: (559) 229-1856 | F: (559) 229-2019

January 16, 2018

RE: Buford Oil Travel Center Project, City of Fowler, Fresno County, California.

Dear Sir or Madam,

Applied EarthWorks, Inc. (Æ) is providing cultural resources services for the Buford Oil Travel Center Project, City of Fowler, Fresno County, California. The project is at the intersection of Highway 99 and Manning Avenue and consists of expanding the existing gas station to include additional fueling facilities, traveler amenities, and parking stalls for motorist and commercial truck operators. The City of Fowler is held accountable by the California Environmental Quality Act (CEQA), which mandates that government entities consider the impacts of the discretionary action on the cultural environment. Under the conditions of approval for the Buford Oil Travel Center Project, the City requires multiple tasks corresponding to the identification of cultural resources. These include a records search, pedestrian survey, search of the Native American Heritage Commission's (NAHC) *Sacred Lands File*, and outreach with local Native American tribes and individuals.

The project is in Section 23 in Township 7 South, Range 21 East, as depicted on the Conejo, California, 7.5 minute topographic quadrangle (see attached map). A search of the NAHC Sacred Lands File did not identify any Native American traditional cultural places in the vicinity of the project area. Æ requested a records search from the Southern San Joaquin Information Center of the California Historical Resources Information System. The record search is still pending. An intensive pedestrian survey of the project area was conducted on January 4, 2018 by staff Archeologist Ward Stanley. One historic-era cultural resource was discovered and recorded on Department of Parks and Recreation Site Record Forms. The site consists of a large flattened mound with associated historic debris. Aerial photographs from 1937 through 1999 depict a homestead with mature trees in the same location as the resource. No prehistoric or Native American resources were discovered during the pedestrian survey

The NAHC provided your name and address as someone who might have information regarding any sacred or special sites in the project area unknown to the NAHC. If you have any information on the location and character of any Native American cultural resources in the area, please phone (559) 229-1856, email (mbaloian@appliedearthworks.com), or send a letter to my attention. I would appreciate any information you might provide. Be assured that any locations of archaeological sites, cemeteries, or sacred places will be treated confidentially, as required both by law and Æ's professional standards. Æ will not disclose this information in any document available to the general public.

Sincerely,

Mary Baloian

Mary Baloian, Ph.D., RPA
Principal Archaeologist

encl.: Project Map

Appendix F

Geo-Technical Evaluation

TECHNICON
ENGINEERING SERVICES, INC.

GEOTECHNICAL INVESTIGATION REPORT
PROPOSED OIL AND TRAVEL CENTER
2747 E. MANNING AVENUE
FOWLER, CALIFORNIA

Prepared For:

Buford Oil Co.
P.O. Box 104
Hanford, California 93232

February 12, 2018
Revised: October 15, 2018

TES No. 170748.001

GEOTECHNICAL & ENVIRONMENTAL ENGINEERING • CONSTRUCTION TESTING & INSPECTION

TECHNICON
ENGINEERING SERVICES, INC.

GEOTECHNICAL & ENVIRONMENTAL ENGINEERING ▬ CONSTRUCTION TESTING & INSPECTION

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PROPOSED OIL AND TRAVEL CENTER
2747 E. MANNING AVENUE
FOWLER, CALIFORNIA

TECHNICON PROJECT
TES No. 170748.001

Prepared by:

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Geotechnical Engineering Manager

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February 12, 2018
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GEOTECHNICAL INVESTIGATION REPORT
PROPOSED OIL AND TRAVEL CENTER
2747 E. MANNING AVENUE
FOWLER, CALIFORNIA

1 INTRODUCTION

1.1 GENERAL

This report presents the results of a geotechnical investigation for the proposed Oil and Travel Center to be located at 2747 E. Manning Avenue in Fowler, California. The purpose of the investigation was to explore and evaluate the subsurface conditions at the site and develop geotechnical engineering recommendations to aid in project design and construction.

The Vicinity Map, presented on Figure 1, shows the location of the project and the Site Map, presented on Figure 2, shows the proposed improvements and the approximate locations of the borings and R-values performed for this study.

1.2 PROPOSED CONSTRUCTION

The project involves the design and construction of an oil and travel center to be located at 2747 E. Manning Avenue in Fowler, California. The oil and travel center is anticipated to consist of six (6) structures including a travel center, tire and lube shop, a 4-story motel, and three buildings yet to be determined encompassing 9,000; 7,500; 30,000; 4,397; 4,656; and 5,080 square feet, respectively. All the buildings, other than the motel, are anticipated to be single-story and all buildings are anticipated to consist of wood/steel-framed structures utilizing conventional spread footings and concrete-slab-on-grade floors. The hotel's maximum wall and column loads are anticipated to be less than 7 kips/ft and 75 kips, respectively and all other buildings maximum wall and column loads are anticipated to be less than 3 kips/ft and 30 kips, respectively. Cuts and fills are anticipated to be less than 1 to 2 feet in order to achieve a level building pad and positive site drainage. Appurtenant improvements are anticipated to include fueling canopies, a truck scale, above grade tanks, asphalt and Portland cement concrete pavements, underground utilities, hardscape, and landscaping.

1.3 PURPOSE AND SCOPE OF SERVICES

The purpose of this investigation was to explore the site subsurface conditions to allow for development of recommendations and opinions regarding site development. The report includes the following:

- A description of the proposed project including a Vicinity Map showing the location of the site and a Site Map showing the locations of the exploration points for this study.
- A description of the site surface and subsurface conditions encountered during the field investigation, including boring log.
- A summary of the field exploration and laboratory testing program.
- Discussion of regional and local geology including faults, seismicity, and liquefaction potential and associated effects.
- Recommended seismic design criteria.
- Recommendations for site preparation and earthwork, including the use of on-site soils for engineered fill and recommended import fill criteria.
- Recommended E'_n for trench wall soil and E'_b and density of backfill for use in initial pipe deformation analysis.
- Recommendations for spread foundation design including bearing capacity of foundation soil for sustained loading, total combined loading, and anticipated settlement.
- Recommendations for resistance of lateral loads, including passive pressure and coefficient of friction.
- Recommendations to aid in design of the concrete slabs-on-grade for building areas, including a modulus of subgrade reaction.
- Recommendations to aid in design of pier foundations.
- Comments on the corrosion potential of on-site soils to buried metal and concrete.
- Recommendations for asphalt concrete pavements and Portland cement concrete pavements for a range of traffic indexes.
- Comments on general site drainage.

The scope of services consisted of a field exploration program, laboratory testing, design analysis, preparation of this written report as outlined in **TECHNICON's** proposal dated October 17, 2017 (TES No. GP17-272).

2 FIELD EXPLORATION AND LABORATORY TESTING

2.1 FIELD EXPLORATION

The field exploration, conducted on November 15 and 16, 2017 consisted of drilling twelve (12) exploratory test borings and a site reconnaissance by a staff engineer. The test borings were drilled with a CME 55 truck-mounted drill rig using hollow stem augers. The borings extended to depths of 16.5, 21.5 and 36.5 feet below the existing ground surface (bgs). The location of the proposed improvements and the approximate locations of the test borings and R-values are indicated on the Site Map, Figure 2.

The soils encountered in the borings were visually classified in the field and a continuous log was recorded. Relatively undisturbed samples were collected from the test borings at selected depths by driving a 2.5-inch I.D. split barrel sampler containing brass liners into the undisturbed soil with a 140-pound automatic hammer free falling a distance of 30 inches. In addition, samples of the subsurface material were obtained using a 1.4-inch I.D. standard penetrometer, driven 18 inches in accordance with ASTM D1586 test procedures. The sampler was used without liners. Resistance to sampler penetration was noted as the number of blows per foot over the last 12 inches of sampler penetration on the boring logs. The blow counts listed in the boring logs have not been corrected for the effects of overburden pressure, boring diameter, rod length, sampler size, or hammer efficiency. Bulk samples were also retained from auger cuttings of the near surface soils.

2.2 FIELD AND LABORATORY TESTING

Penetration rates, determined in general accordance with ASTM D1586, were used to aid in evaluating the consistency, compression, and strength characteristics of the foundation soils.

Laboratory tests were performed on selected near surface samples to evaluate their physical characteristics. The following laboratory tests were used to develop the design geotechnical parameters:

- Unit weight (ASTM D2937)
- Moisture Content (ASTM D2216)
- Sieve Analysis (ASTM C136)

- Direct Shear (ASTM D3080)
- Soluble Sulfate and Soluble Chloride Contents (California Test Method No's 417 & 422)
- pH and Minimum Resistivity (California Test Method No. 643)
- Resistance Value (California Test Method No. 301)

The dry density and moisture content test results are shown on the boring logs in Appendix A. The soluble sulfate, soluble chloride, pH, and minimum resistivity are discussed in the "Corrosion Potential" Section (Section 6.6). The remaining test results are provided in Appendix B.

3 SITE CONDITIONS

3.1 SURFACE CONDITIONS

The project site consists of approximately 20 acres of partially developed land. The northern half of the project site is currently vacant and the southern half of the project site is currently occupied by an existing truck stop/fueling station. The project site is generally bounded by S. Temperance Avenue to the north, S. Golden State Boulevard to the east, N. Manning Avenue to the south, and vacant land to the west. The overall site topography was observed to be relatively flat and at a relative elevation approximately 1-foot above the adjacent street grades. Although the site elevation varies, on average elevation of the site is approximately 305 feet above mean sea level according to Google Earth. At the time of the investigation, the vacant northern half of the lot supported a moderate growth of annual weeds and grasses and the southern half of the lot was paved with asphalt and Portland cement concrete.

3.2 FLOOD INSURANCE RATE MAP

According to the Federal Emergency Management Agency (FEMA), the project site lies within a Zone X flood designation (Map Number 06019C2650H, dated February 18, 2009), indicating areas determined to be outside the 0.2 percent annual chance (500-year) floodplain.

3.3 EARTH MATERIALS

The natural site soil consists of Holocene age Great Valley fan deposits. The general earth material profile depicted by the subsurface exploration generally consisted of silty sand extending to a depth of approximately 8 to 11 feet bgs. Two borings, B-1 and B-2 consisted of silty clay and poorly graded sand extending to a depth of 11 feet. All borings were underlain by sandy clay, clayey sand, sandy silt, and poorly graded sand soils to the depth of exploration 36.5 feet bgs. The granular soils generally had a relative consistency of medium dense to very dense and the fine grained soils generally had a relative consistency of stiff to hard.

The above is a general description of the earth material profile. A more detailed representation of the stratigraphy at the specific exploration locations is provided on the boring logs in Appendix A.

3.4 GROUNDWATER CONDITIONS

Groundwater was not encountered within the depth of exploration, 36.5 feet below existing ground surface. The California Department of Water Resources "Lines of Equal Elevation in Water Wells," Spring 2011, indicates the depth to groundwater exceeds 50 feet below grade. It is possible that groundwater conditions at the site could change at some time in the future due to variations in the rainfall, groundwater withdrawal, construction activities, or other factors not apparent at the time our field reconnaissance. Based on the boring data collected for this study, groundwater is not anticipated to impact design or construction.

4 GEOLOGIC CONDITIONS

4.1 FAULTS LOCAL TO THE PROPOSED SITE

The project site and its vicinity are located in an area traditionally characterized by relatively low to moderate seismic activity. The site is not located in an Alquist-Priolo Earthquake Fault Zone as established by the Alquist-Priolo Fault Zoning Act (Section 2622 of Chapter 7.5, Division 2 of the California Public Resources Code).

Based on review of published data and current understanding of the geologic framework and tectonic setting of the proposed improvements, the primary sources of seismic shaking at this site are anticipated to be the Coast Ranges Sierran Block (M_w6.5), the Foothills Fault System (M_w6.5), the San Andreas (M_w8.0), and the Independence (M_w7.1) faults, which are located approximately 67, 82, 111, and 122 kilometers, respectively, from the site. The San Andreas Fault located west of the site, is considered the governing fault.

4.2 SEISMIC DESIGN CRITERIA

There are no geotechnical factors at this site that are unique and would necessitate special seismic consideration for design of the improvements. Use of 2016 CBC and ASCE 7-10 design criteria would be appropriate, unless the designer deems more specific data (e.g. elastic response spectra or characteristic site period) necessary. Table 4.2-1 provides the recommended design parameters.

TABLE 4.2-1
2016 CBC and ASCE 7-10 SEISMIC DESIGN PARAMETERS

Seismic Item	Design Value	Seismic Item	Design Value
Site Class	D	S_{MS}	0.822
S_S	0.638	S_{M1}	0.486
S_1	0.258	S_{DS}	0.548
Site Coefficient, F_a	1.290	S_{D1}	0.324
Site Coefficient, F_v	1.884		

4.3 LIQUEFACTION POTENTIAL AND SEISMIC SETTLEMENT

In order for liquefaction, and possible associated effects, of soils due to ground shaking to occur, it is generally accepted that four conditions will exist:

- The subsurface soils are in a relatively loose state,
- The soils are saturated,
- The soils are fine, granular, and uniform,
- Ground shaking of sufficient intensity should occur to act as a triggering mechanism.

Saturated granular sediments can experience liquefaction if subject to seismically induced ground motion of sufficient intensity and duration. The absence of groundwater would preclude the occurrence of liquefaction. Based on the ground shaking which may be expected at this site, the relative density and geologic age of the sediments, analysis utilizing Youd (2001) indicates liquefaction, seismically induced settlement, or bearing loss is considered unlikely, even if there should be a substantial increase in groundwater levels.

5 EARTHWORK

5.1 GENERAL

Based on the laboratory data, field exploration, and geotechnical analyses conducted for this study, it is geotechnically feasible to construct the proposed Oil and Travel Center as currently envisioned. Provided that the recommendations presented in this report are incorporated into the project design and construction, use of shallow spread and continuous reinforced concrete footings bearing on undisturbed native soil or approved engineered fill are considered appropriate for structure support.

Recommendations regarding site grading are presented in subsequent sections of this report. All reference to relative compaction, maximum density, and optimum moisture is based on ASTM Test Method D1557. Earthwork should extend a minimum of 5 feet beyond the perimeter of the buildings and 3 feet beyond the perimeter of site hardscape and pavements.

5.2 SITE PREPARATION

5.2.1 Demolition of Existing Structures

Existing structures, foundation systems (i.e. concrete slabs/footings), associated underground utilities, and other unsuitable structures that will not remain, should be entirely removed during the site preparation.

Following removal of underground utilities, and structure demolition, disturbed soils should be mitigated as described in Section 5.2.3.

5.2.2 Stripping

All surface vegetation and any miscellaneous surface obstructions should be removed from the project area prior to any site grading. It is anticipated stripping of vegetation may involve the upper 1 to 3 inches. Surface strippings should not be incorporated into structural fill unless they can be sufficiently blended to result in an organic content of less than 3 percent by weight (ASTM D 2974). Stripped topsoil, with an organic content between 3 and 12 percent by weight, may be stockpiled and used as non-structural fill (i.e. landscaped areas). If placed in landscape areas, strippings and organic rich soil should be placed within 2 feet of finished grade and at least 5 feet outside of building and pavement areas. Soils with an organic content greater than 12 percent should be excluded from all fill.

5.2.3 Disturbed Soil, Undocumented Fill and Subsurface Obstructions

Initial site grading should include a reasonable search to locate soil disturbed by previous activity, tree removals, any undocumented fill soils, abandoned underground structures, or existing utilities that may exist within the area of construction. All subsurface obstructions (e.g. buried structures, utilities, etc.) should be removed from the project area. Any areas or pockets of soft or loose soils, void spaces made by burrowing animals, undocumented fill, or other disturbed soil that are encountered, should be excavated to expose firm native material approved by a representative of the Geotechnical Engineer.

Borings B-1 and B-2 were observed to have surface soils differing from the remainder of the project site. Boring B-1 consisted of silty clay in the upper 5 feet or until firmed conditions are exposed, and Boring B-2 consisted of poorly graded sand in the upper 10 feet. These soils are anticipated to consist of undocumented fill and should be excavated if encountered within areas of proposed structures or pavements. The removal of the undocumented fill should extend to a depth of approximately 5 feet and extend a minimum of 5 feet beyond the perimeter of the proposed improvements.

Excavations for removal of any unsuitable conditions should be dish-shaped and backfilled with engineered fill (see Section 5.3).

5.2.4 Over-excavation

Demolition of the existing structures will likely disturb the near surface soils. As such, after performing the removals described in Sections 5.2.1 through 5.2.3, the footing lines and pad areas of the existing structures, should be over-excavated to a depth of 18 inches. The over-excavation is recommended to remove the majority of the loose/disturbed soils and any remaining loose soils may be excavated or recompacted in place if less than 6 inches thick. The final depth of over-excavation to mitigate loose soil conditions should be determined at the time of grading.

The undisturbed foundations soils are capable of supporting the proposed improvements, therefore, foundations that extend below the recompaction depth discussed in Sections 5.2.4 and 5.2.5 may bear on firm, undisturbed soils approved by the geotechnical engineer without further over-excavation

5.2.5 Scarification and Compaction

After performing any necessary stripping over-excavation and removals, all areas to receive fill or to support improvements should be scarified at least 8 inches below exposed subgrade elevation. The subgrade soil should be uniformly moisture conditioned to at, or above optimum moisture, proof rolled to detect soft or pliant areas, and compacted to the requirements of section 5.3.2. Soft or pliant areas should be mitigated in accordance with Section 5.2.3.

5.2.6 Construction Considerations

Should site grading be performed during or subsequent to wet weather, near-surface site soils may be significantly above optimum moisture content. These conditions could hamper equipment maneuverability and efforts to compact site soils to the recommended compaction criteria. Disking to aerate, chemical treatment, replacement with drier material, stabilization with a geotextile fabric or grid, or other methods may be required to mitigate the effects of excessive soil moisture and facilitate earthwork operations. Any consideration of chemical treatment (e.g. lime) to facilitate construction would require additional soil chemistry evaluation and could affect landscape areas and some construction materials (e.g. aluminum).

5.3 ENGINEERED FILL

5.3.1 Materials

All engineered fill soils should be nearly free of organic or other deleterious debris and less than 3 inches in maximum dimension. The on-site soil exclusive of debris may be used as engineered fill, provided it contains less than 3 percent organics by weight (ASTM D2974).

Should any imported material be used for engineered fill, it should be sampled and tested by a representative of the project Geotechnical Engineer prior to being transported to the site. Table 5.3-1 provides general criteria for imported soil.

TABLE 5.3-1
IMPORT FILL CRITERIA

<table>
<tr><th colspan="4"><u>Gradation</u>
<u>(ASTM C136)</u></th></tr>
<tr><th colspan="2"><u>Sieve Size</u></th><th colspan="2"><u>Percent Passing</u></th></tr>
<tr><td colspan="2">76 mm (3-inch)</td><td colspan="2">100</td></tr>
<tr><td colspan="2">19 mm (¾-inch)</td><td colspan="2">80 – 100</td></tr>
<tr><td colspan="2">No. 4</td><td colspan="2">60 – 100</td></tr>
<tr><td colspan="2">No. 200</td><td colspan="2">20 – 50</td></tr>
<tr><th colspan="2" rowspan="2"><u>Expansion Index</u>
<u>(ASTM D4829)</u></th><th colspan="2"><u>Plasticity</u>
<u>(ASTM D4318)</u></th></tr>
<tr><th>Liquid Limit</th><th>Plasticity Index</th></tr>
<tr><td colspan="2">< 20</td><td>< 25</td><td>< 9</td></tr>
<tr><th colspan="4"><u>Organic Content</u>
<u>(ASTM D 2974)</u></th></tr>
<tr><td colspan="4">< 3% by dry weight</td></tr>
<tr><th colspan="4"><u>Corrosivity</u></th></tr>
<tr><th>pH</th><th>Minimum Resistivity (ohm-cm)</th><th>Soluble Sulfate (ppm)</th><th>Soluble Chloride (ppm)</th></tr>
<tr><td>6 to 8</td><td>> 2,000</td><td>< 2,000</td><td>< 500</td></tr>
<tr><th colspan="4"><u>Resistance Value</u>
<u>California Test Method No. 301</u></th></tr>
<tr><td colspan="4">Minimum R-value = 50</td></tr>
</table>

The import criteria for corrosion are typical threshold limits for non-corrosive soil. Should corrosion concentrations of import soils fall outside of the threshold limits indicated above, revised protection measures will be necessary.

5.3.2 Compaction Criteria

Soils used as engineered fill should be uniformly moisture-conditioned at, or above optimum moisture, placed in horizontal lifts less than 8 inches in loose thickness, and compacted to at least 90 percent relative compaction. Disking and/or blending may be required to uniformly moisture-condition soils used for engineered fill.

5.4 TEMPORARY EXCAVATIONS

5.4.1 General

All excavations must comply with applicable local, State, and Federal safety regulations including the current OSHA Excavation and Trench Safety Standards. Construction site safety generally is the responsibility of the Contractor, who shall also be solely responsible for the means, methods, and sequencing of construction operations. The information provided is a service to the client. Under no circumstances should the information provided be interpreted to mean that **TECHNICON**'s assuming responsibility for construction site safety or the Contractor's activities; such responsibility is not being implied and should not be inferred.

5.4.2 Excavations and Slopes

The Contractor should be aware that slope height, slope inclination, or excavation depths (including utility trench excavations) should in no case exceed those specified in local, State, and/or Federal safety regulations (e.g., OSHA Health and Safety Standards for Excavations, 29 CFR Part 1926, or successor regulations). Such regulations are strictly enforced and, if they are not followed, the Owner, Contractor, and/or earthwork and utility subcontractors could be liable for substantial penalties.

All excavations should be constructed and maintained in conformance with current OSHA requirements (29 CFR Part 1926) for a Type C soil (Silty Sand).

5.4.3 Construction Considerations

Heavy construction equipment, building materials, excavated soil, and vehicular traffic should be kept sufficiently away from the top of any excavation to prevent any unanticipated surcharging. If it is necessary to encroach upon the top of an excavation, **TECHNICON** can provide comments on slope gradients or loads on shoring to address surcharging, if provided with the geometry. Shoring, bracing, or underpinning required for the project (if any), should be designed by a professional engineer registered in the State of California.

During wet weather, earthen berms or other methods should be used to prevent run-off water from entering all excavations. All run-offs should be collected and disposed of outside the construction limits.

5.5 TRENCH BACKFILL

5.5.1 Materials

Pipe zone backfill (i.e., material beneath and in the immediate vicinity of the pipe) should consist of soil compatible with design requirements for the specific types of pipes. It is recommended the project designer or pipe supplier develops the material specifications based on planned pipe types, bedding conditions, and other factors beyond the scope of this study. Randomly excavated on-site soil will likely be Class III material per ASTM D2321.

Trench zone backfill (i.e., material placed between the pipe zone backfill and finished subgrade) may consist of native soil which meets the requirements for engineered fill.

5.5.2 Compaction Criteria

All trench backfill should be placed and compacted in accordance with recommendations provided for engineered fill. Reduced compaction (85 percent minimum) could be specified for trench zone backfill in non-structural areas located a distance equal to twice the depth of the trench from any structures and appurtenant improvements. Mechanical compaction is recommended; ponding or jetting should not be used. Table 5.5-1 provides estimated geotechnical parameters for designers to consider in evaluating pipe zone backfill criteria that is compatible with pipe types and deformation tolerances.

TABLE 5.5-1
PIPE ZONE BACKFILL PARAMETERS

Soil Stiffness Modulus (psi)			Backfill Density (pcf)	
E'_n (Trench Sidewall)	E'_b (Backfill) 85% Compaction	E'_b (Backfill) 90% Compaction	85% Compaction	90% Compaction
3,000	900	1,350	115	121

E'_n represents the modulus for the undisturbed natural soil and is based on relative density, and data by Howard (1996). E'_b is the modulus for backfill derived from random excavation of on-site soil and is based on data by Hartley and Duncan (1982) and Watkins and Anderson (2000). The design E' will be dependent upon the pipe diameter and trench width, which dictates the relative influence of E'_n and E'_b. Methods by Howard (1996) are suggested for evaluating the design E'. **TECHNICON** can furnish a recommended design E', if provided with pipe diameter and specifications for trench construction.

6 DESIGN RECOMMENDATIONS

6.1 GENERAL

The proposed structures may be supported by shallow spread or continuous reinforced concrete footings bearing on undisturbed native soil or approved engineered fill. The following recommendations are based on the assumption that the recommendations in Section 5, “Earthwork,” have been implemented. Recommendations regarding the geotechnical aspects of design are presented in subsequent sections.

6.2 SPREAD FOUNDATIONS

6.2.1 Allowable Vertical Bearing Pressures and Settlements

Generally two geotechnical issues determine the design bearing pressure for conventional spread footing foundations; (1) strength of the foundation soil and (2) tolerable settlement. For lightly loaded structures, design bearing may be dictated by code-required minimum footing geometry or constructability considerations.

The available bearing capacity, based only on the shear strength of the soil, will be dependent upon the footing geometry. Presented in Table 6.2-1 are the expressions for the allowable available bearing capacity (shear strength considerations only) for static loading (D.L. + L.L.), total combined loading (D.L. + L.L. + transient loading, such as wind or seismic), and unfactored ultimate bearing.

TABLE 6.2-1
AVAILABLE ALLOWABLE BEARING

	Available Allowable Bearing (psf)
Static Loading	730 B + 1,400 D
Total Combined Loading	1,095 B + 2,100 D
Unfactored Ultimate Bearing	2,185 B + 4,200 D

Note: B is footing width in feet and D is footing embedment depth in feet.

The above expressions are appropriated for design using the Basic and Alternate Load Combinations in Section 1605.3 of the 2016 CBC. Analysis, based on methods by Schmertmann, determined the following estimated static settlement based on a range of assumed design bearing and estimated structural loads. Settlement is expected to occur rapidly with load application. The estimated settlements presented in Table 6.2-2 are based on the assumption that the earthwork recommendations provided in Section 5 have been performed, and the sustained load of footings is equal to 80 percent of the total load.

TABLE 6.2-2
ESTIMATED SETTLEMENT

Footing Configuration	Loading (DL +LL)	Design Bearing (psf)	Estimated Settlement (inch)
Strip	To 7 kips/ft	To 3,070	0.26
Square	To 75 kips	To 4,400	0.50

To simplify design, an allowable bearing pressure of 2,000 psf (static loading, D.L. + L.L.) could be considered. The bearing pressure could be increased 50 percent for evaluating transient loads, such as, wind or seismic. The differential settlement between similarly loaded footings is anticipated to be less than 50 percent of the total settlement. **TECHNICON** can provide the estimated settlement for other loading conditions.

The foundation soil is anticipated to have a low expansive potential. Therefore, foundation embedment should be consistent with structural or architectural considerations and the 2016 CBC. A modulus of subgrade reaction, K_p (B_p = 1 foot), of 375 pci can be used for undisturbed on-site and engineered fill soils. The subgrade modulus is most appropriately applicable to consideration of static loads with deformations within an elastic range.

6.2.2 Lateral Resistance

Lateral loads applied to foundations can be resisted by a combination of passive lateral bearing and base friction. The allowable and ultimate passive pressures and frictional coefficients for the footings are presented in Table 6.2-3.

TABLE 6.2-3
PASSIVE PRESSURES AND FRICTIONAL COEFFICIENTS

	Allowable		Ultimate
	Static	Total Combined	
Frictional Coefficient	0.45	0.54	0.67
Passive Pressure (psf/ft of depth)	350	465	700
Lateral Translation Needed to Develop Passive Pressure	0.004 D	0.011 D	0.023 D

Note: D is the footing depth

If the deflection resulting from the strain necessary to develop the passive pressure is beyond structural tolerance, additional passive pressure values could be provided based on tolerable deflection. The passive pressure and frictional resistance can be used in combination. The allowable values already incorporate a factor of safety and, as such, would be compared directly to the driving loads.

6.3 RETAINING STRUCTURES

The lateral earth pressure against retaining structures will be dependent upon the ability of the wall to deflect. Presented in Table 6.3-1 are the active, at-rest and braced lateral earth pressures. The active pressure is applicable to walls able to translate 0.0005 radians at the top or bottom. The at-rest soil pressure is applicable to retaining structures that are fully fixed against both rotation and translation.

TABLE 6.3-1
LATERAL EARTH PRESSURES

Loading Condition	Earth Pressure
Active Pressure (psf/ft of depth)	36
Braced Pressure (psf)	23 H
At-Rest Pressure (psf/ft of depth)	57

H in the expression represents the retained height in feet (measured from finished grade to bottom of footing). The above recommended values consider saturated soil conditions, however, they do not include the lateral pressures due to hydrostatic forces. Therefore, wall backfill should be adequately drained.

Retaining wall foundation design can utilize the passive pressures and sliding resistance given in Table 6.2-3 and the bearing capacities given in Table 6.2-1. When utilizing the available allowable bearing capacities of Table 6.2-1, the value for static loading would represent the average bearing for the footing and the value for total combined loading would represent the allowable maximum toe pressure.

6.4 CONCRETE SLABS-ON-GRADE

6.4.1 Subgrade Preparation

The slabs-on-grade should be supported on engineered fill placed as described in Section 5 of this report. The slab subgrade, to a depth of 12 inches, should have a moisture content within 2 percent of optimum immediately prior to pouring the slab.

6.4.2 Capillary and Moisture/Vapor Break

Considering the soil type and regional groundwater depth, a capillary break (i.e. clean sand or gravel layer) is not considered necessary.

In areas to receive moisture-sensitive floor coverings, it is recommended that the subgrade be covered by a vapor retarding membrane meeting the specifications of ASTM E1745, (Class C with minimum puncture resistance of 475 grams) such as, Fortifiber Building Systems Group 10 Mil, “Moistop Ultra®”, Stego Industries 10 mil “Stego Wrap™”, W.R. Meadows Sealtight 10 mil “Perminator®”, or approved equivalent. The subgrade surface should be smooth and care should be exercised to avoid tearing, ripping, or otherwise puncturing the vapor retarding membrane. If the vapor retarding membrane becomes torn or disturbed, it should be removed and replaced or properly patched.

The vapor retarding membrane could be covered with approximately 1 to 2 inches of saturated surface dry (SSD) sand to protect it during construction. Concrete should not be placed if sand overlying the vapor barrier has been allowed to attain a moisture content greater than about 5 percent (due to precipitation or excessive moistening). In addition, penetrations through the concrete slab shall be sealed or protected to prevent inadvertently introducing excess water into the sand cushion layer due to curing water, wash-off water, rainfall, etc. Excessive water beneath interior floor slabs could result in future significant vapor transmission through the slab, adversely affecting moisture-sensitive floor coverings and could inhibit proper concrete curing.

According to American Concrete Institute ACI 302.2R-06, concrete could be placed directly on the vapor retarding membrane to minimize the potential for developing a reservoir of moisture in the sand layer, which could lead to future moisture entrapment and potential moisture and flooring problems. If concrete is placed directly on the membrane, care shall be taken to not damage the membrane and special concrete curing methods implemented to minimize potential slab curing problems. If the protective sand layer is not used, the building designer should be in agreement. Many slab designers feel the sand cushion is important to proper concrete curing as well as minimizing slab curling issues.

It should be noted that, although the slab support discussed above is currently the industry standard, this system might not be completely effective in preventing floor slab moisture vapor transmission problems. This system will not necessarily assure that floor slab moisture transmission rates will meet floor-covering manufacturer standards and that indoor humidity levels will not inhibit mold growth. A qualified specialist(s) with knowledge of slab moisture protection systems, flooring design and other potential components that may be influenced by moisture, should address these post-construction conditions separately. The purpose of a geotechnical study is to address subgrade conditions only, and consequently, it does not evaluate future potential conditions.

6.4.3 Conventional Slab Design

There are no geotechnical considerations (e.g. expansive soil), which would require special design of slabs. Therefore, the thickness and reinforcement of slabs-on-grade should be determined by structural considerations and should be designed by the project structural engineer or building designer. A modulus of subgrade reaction, K_p (B_p = 1 foot), of 400 pci may be used for elastic analysis of slabs on properly compacted subgrade.

Slab concrete should have good density, a low water/cement ratio, and proper curing. A water/cement ratio of 0.45 to 0.5 is recommended to minimize vapor transfer.

6.5 PIER FOUNDATIONS

6.5.1 Allowable Vertical Axial Capacity and Settlements

Structures such as light poles, signs, canopies, etc., can be supported by pier foundations. Should design incorporate the use of pier foundations, Table 6.5-1 provides expressions for the allowable and ultimate axial capacity using friction to resist axial loads. If the design of the pier foundations includes end bearing to resist axial loads, the design may utilize the bearing capacity expressions given in Table 6.2-1, up to an allowable bearing capacity of 2,000 psf for static loading (D.L. + long term L.L.). The end bearing capacity may be increased 50 percent for total combined loading (D.L. + L.L. + transient loading, such as wind or seismic).

TABLE 6.5-1
ALLOWABLE AXIAL CAPACITY

	Frictional Resistance for Vertical Loads in Compression (lbs)
Static Loading	60 DL^2
Total Combined Loading	80 DL^2
Unfactored Ultimate Capacity	120 DL^2

Note: 1) D is pier diameter in feet and L is embedment length in feet.
2) The allowable uplift resistance would be 70 percent of the compressional resistance.

The total settlement of friction piers designed in accordance with the above recommendations should be less than 0.002 times the pier diameter in inches. If design incorporates end bearing to resist axial loading, the estimated settlement would increase to approximately 0.018 times the pier diameter in inches. The concrete mix and reinforcement for drilled pier/caisson foundations should be designed by the project structural engineer.

6.5.2 Lateral Resistance

Methods by AASHTO and Caltrans can be used to evaluate the lateral capacity of pier footings. The allowable passive pressure to resist lateral loads on isolated piers for use in these methods may be taken as 610 psf/ ft of embedment. The passive pressure may be increased by one-third for the total combined loads, including wind and seismic. The passive pressure values already consider arching and, as such, should not be increased further.

The allowable passive pressure provided above would not be appropriate for use in place of the values given in Table No. 1806.2 of the 2016 California Building Code (CBC) if pier foundation design utilizes the pole formulas in the CBC. If design uses the pole formulas in the CBC, the appropriate class of material in Table 1806.2 would be No. 4 (Silty Sand). Based on the strength of the on-site soils, a lateral bearing pressure of 200 psf/ft of embedment below the site grade may be used in place of the value given in Table 1806.2.

The passive pressure only considers soil strength. Tolerable pier deflection may govern the design lateral resistance. If provided with pier geometry, lateral load, and loading eccentricity, **TECHNICON** can provide the estimated pier head deflection.

6.5.3 Design and Construction Considerations

Prior to placing steel or concrete, footing excavations should be cleaned of all debris, loose or soft soil, and water. All footing excavations should be observed by the project Geotechnical Engineer just prior to placing steel or concrete. The purpose of these observations is to check that the bearing soils actually encountered in the foundation excavations are similar to those assumed in analysis and to verify the recommendations contained herein are implemented during construction.

6.6 CORROSION POTENTIAL

Two (2) soil samples obtained from the upper 3 feet of soil was tested to evaluate pH, minimum electrical resistivity, and soluble sulfate and soluble chloride content.

The pH of the soil tested was 6.82 and 7.34 and the minimum electrical resistivity was 1,012 and 4,899 ohm-cm, respectively. These values are generally representative of an environment that is slightly to moderately corrosive to buried unprotected metals. Utilizing methods provided in Caltrans California Test 643, “Method for Estimating the Service Life of Steel Culverts”, an 18-gauge steel zinc-coated culvert is estimated to have a maintenance-free service life (years to perforation) of 14 and 47 years. Therefore, if project improvements will involve metal that comes into contact with the on-site soil, the design should consider the potential soil corrosiveness described.

Test results suggest that a low level of soluble sulfates (16 and 8 ppm) and soluble chlorides (31 and 6 ppm) are present in on-site soils. Normal cement (Type II) and reinforcement cover should be adequate in foundation concrete that comes in contact with the foundation soils. Reinforcement cover need not be increased for concrete that comes in contact with the on-site soil.

Corrosion is dependent upon a complex variety of conditions, which are beyond the geotechnical practice. Consequently, a qualified corrosion engineer should be consulted if the owner desires more specific recommendations.

6.7 PAVEMENTS

6.7.1 Design R-value and Traffic Assumptions

The subgrade R-value for the on-site soil was evaluated in the laboratory on bulk samples of subgrade soil taken at six (6) locations within the proposed pavement areas of the site. The laboratory tests were performed in conformance to Caltrans Test Method 301. The soils tested had measured R-values of 61, 67, 68, 69, 70, and 71. An R-value of 50 is recommended for design of on-site pavements.

Detailed vehicular load and frequency information is not available for the on-site pavements. Traffic on the site is anticipated to consist of parking and drives for automobiles large commercial diesel trucks, and regular delivery truck traffic and trash collection. Consequently, a range of pavement sections have been provided for the on-site based on Traffic Indexes (T.I.'s) of 4.5, 5.0, 5.5, 6.0, 6.5, 7.0, 7.5, 8.0, 8.5, and 9.0. These traffic design assumptions should be reviewed for compatibility with the actual development, and revised pavement sections developed, as necessary.

6.7.2 Asphalt Concrete Pavement Design

The flexible pavement design recommendations presented are based upon the California Department of Transportation (Caltrans) design procedures and design R-value of 50. The flexible, asphalt concrete pavement sections associated with the given T.I.’s are summarized in Table 6.7-1.

TABLE 6.7-1
RECOMMENDED MINIMUM PAVEMENT SECTIONS

Traffic Index	Asphalt Concrete (inches)	Aggregate Base – Class 2 (inches)
Up to 5.0	2.5	4.0
5.5	3.0	4.0
6.0	3.0	4.5
6.5	3.5	4.0
7.0	4.0	4.5
7.5	4.0	6.0
8.0	4.5	6.0
8.5	5.0	6.0
9.0	5.5	6.5

The design criteria assumes a 20-year design period and that normal maintenance (crack sealing, etc.) is performed. The traffic index is a measure of the volume of truck traffic that will be applied to a pavement section in the design life. The allowable average daily truck traffic (ADTT) for the assumed traffic indexes is presented in Table 6.7-2.

TABLE 6.7-2
AVERAGE DAILY TRUCK TRAFFIC

Traffic Index	2-Axle Vehicle	Or	3-Axle Vehicle	Or	5-Axle Vehicle
4.5	2.2		0.8		0.2
5.0	5.2		2.0		0.5
5.5	11.6		4.4		1.2
6.0	24.1		9.0		2.4
6.5	47.3		17.7		4.7
7.0	88.1		33.0		8.8
7.5	157.3		59.0		15.8
8.0	270.6		101.5		27.1
8.5	450.4		168.9		45.1
9.0	728.0		273.0		72.9

The flexible pavement should conform to, and be placed in accordance with the Caltrans Standard Specifications, 2015. The aggregate base (Class 2) should comply with the specifications in Sections 26. The aggregate base and upper 12 inches of subgrade should be compacted to a minimum of 95 percent relative compaction as determined by Caltrans No 216 (dry weight determination) or ASTM D 1557 test procedures.

6.7.3 Portland Cement Concrete Pavement Recommendations

Portland cement concrete pavement (PCCP) may be desirable at entry points, delivery areas, trash collection areas, car wash drive thru, and other locations where tight-turning heavy vehicles may be maneuvering. Design recommendations for PCCP are based on standards developed by the Portland Cement Association. Considering areas subject to truck traffic, Table 6.7-3 provides Portland cement concrete pavement sections for light to moderate usage. If desired, a design analysis could be performed based on actual estimated vehicle volumes and axle loading.

TABLE 6.7-3
RECOMMENDED MINIMUM PAVEMENT SECTIONS

Truck Usage	Average Daily Truck Traffic (ADTT)	Portland Cement Concrete (inches)	Aggregate Base – Class 2 (inches)
Auto Parking Only		4.0	4.0
Light Duty	1	4.5	6.0
Medium Duty	10	5.0	6.0
Heavy Duty	100	6.0	6.0

The aggregate base and upper 12 inches of subgrade should be compacted to 95 percent relative compaction as determined by Caltrans Test Method No 216 (dry weight determination) or ASTM D1557 test procedures. If desired, a design analysis could be performed based on actual estimated vehicle volumes and axle loading.

The concrete mix design should provide a 28-day compressive strength of at least 4,000 pounds per square inch. The concrete mix should also be designed for a slump not exceeding 4 inches. Thickened edges should be used along outside edges of concrete pavements. Edge thickness should be at least 2 inches greater than the concrete pavement thickness and taper to the actual concrete pavement thickness 36 inches inward from the edge. Integral curbs may be used in lieu of thickened edges.

There are no geotechnical considerations (e.g. expansive soil), which would require special reinforcement of pavement. Therefore, the reinforcement of concrete pavement should be determined by structural, curing (i.e. thermal), etc. considerations and should be designed by the project civil designer.

Continuous sections of concrete pavement should have construction or control joints in an approximately 12-foot square grid system or less. If a square system is impractical, rectangular panels having a maximum dimension of 12 feet can be used. Construction or control joints should be located at each grid line location, a maximum of 12 feet apart. All longitudinal or transverse control joint should be constructed by saw-cutting, hand forming (e.g. deep grooving) or placing pre-molded fillers, such as zip strips. Longitudinal or transverse construction joints should be keyed or doweled to mitigate against differential movement. Expansion joints should be used to isolate fixed objects abutting or within the pavement area. The expansion joints should extend the full depth of the pavement. Joints should run continuously and extend through integral curbs and thickened edges. It is recommended that joint layout be adjusted to coincide with the corner of objects and structures.

6.7.4 Moisture Considerations

The pavement design should consider both the vehicular loading, as well as the environmental factors. The vehicular loading will depend on the amount and type of traffic anticipated for the pavement design life. Environmental factors include the potential for moisture variations beneath the pavement structural section. It is recommended that all pavement areas conform to the following criteria:

- ❑ All trench backfill, including utility and sprinkler lines, should be properly placed and adequately compacted to provide a stable subgrade.
- ❑ Adequate drainage should be provided to prevent ponding of surface water which could lead to saturation of the subgrade soil.
- ❑ A periodic maintenance program should be incorporated.

- ❑ All concrete curbs separating pavement and landscaped areas should extend to the subgrade.

6.7.5 Construction Considerations

In the event unstable (pumping) subgrades are encountered within planned pavement areas, it is recommended a heavy, rubber-tired vehicle (typically a loaded water truck) be used to test the load/deflection characteristics of the finished subgrade materials. It is recommended this vehicle have a minimum rear axle load (at the time of testing) of 16,000 pounds with tires inflated to at least 65 psi pressure. If the tested surface shows a visible deflection extending more than 6 inches from the wheel track at the time of loading, or a visible crack remains after loading, corrective measures should be implemented. Such measures could include disking to aerate, chemical treatment, replacement with drier material, or other methods. It is recommended **TECHNICON** be retained to assist in developing which method (or methods) would be applicable for this project.

6.8 SITE DRAINAGE

Providing and maintaining adequate site drainage to prevent entrapment and ponding of surface water and excessive moisture migration into subgrade soil is very important. Poor perimeter or surface drainage could cause reduced subgrade support. The improvements should incorporate the basis for good drainage. This includes:

- ❑ Sufficient pad height to allow for proper drainage.
- ❑ Defined drainage gradients away from the structure to points of conveyance, such as drainage swales and/or area drains and discharge pipe.
- ❑ Proper discharge of roof drainage.

The maintenance personnel must maintain the established drainage by not blocking or obstructing gradients away from structures without providing some alternative drainage means (e.g. area drains and subsurface pipes). If planter areas are established near the structure, it is important to prevent surface run-off from entering the planter and care must be taken not to over irrigate and to maintain a leak-free sprinkler piping system. Consideration should be given to use of low volume emitter irrigation systems for planters. Well-maintained low-volume emitter irrigation (drip system) is best suited for planters adjacent to structures. Watering practices must strive to use only sufficient water to sustain and promote plant growth.

7 ADDITIONAL SERVICES

7.1 DESIGN REVIEW AND CONSULTATION

It is recommended that **TECHNICON** be retained to review those portions of the contract drawings and specifications that pertain to earthwork, foundations, and pavements prior to finalization to determine whether they are consistent with our recommendations.

7.2 CONSTRUCTION OBSERVATION AND TESTING

It is recommended that a representative of **TECHNICON** observe the excavation, earthwork, foundation, and pavement phases of work to determine that the subsurface conditions are compatible with those used in the analysis and design. **TECHNICON** can conduct the necessary field testing and provide results on a timely basis so that action necessary to remedy indicated deficiencies can be taken in accordance with the plans and specifications. Upon completion of the work, a written summary of observations, field testing, and conclusions regarding the conformance of the completed work to the intent of the plans and specifications will be provided. This additional service is not part of this current contractual agreement. **TECHNICON** will not be responsible for establishing or confirming building or foundations depths or locations unless retained to do so.

8 LIMITATIONS

The conclusions and recommendations presented in this report are based on the information provided regarding the proposed construction, and the results of our field and laboratory investigation, combined with interpolation of the subsurface conditions between boring locations. The nature and extent of the variations between borings may not become evident until construction. If variations or undesirable conditions are encountered during construction, our firm should be notified promptly so that these conditions can be reviewed and our recommendations reconsidered where necessary. The unexpected conditions frequently require additional expenditures for proper construction of the project. **TECHNICON Engineering Services, Inc.** will not assume any responsibility for errors or omissions if the final extent and depth of earthwork is not determined by our firm at the time of construction due to said variations or undesirable conditions encountered.

If the proposed construction is relocated or redesigned, or if there is a substantial lapse of time between the submission of our report and the start of work at the site, or if conditions have changed due to natural causes, or construction operations at or adjacent to the site, the conclusions and recommendations contained in this report should be considered invalid unless the changes are reviewed and our conclusions and recommendations modified or approved in writing. Such conditions may require additional field and laboratory investigations to determine if our conclusions and recommendations are applicable considering the changed conditions or time lapse.

It is the responsibility of the contractor to provide safe working conditions with respect to excavation slope stability. This report does not relieve the contractors of responsibility for temporary excavation construction, bracing and shoring in accordance with CAL OSHA requirements.

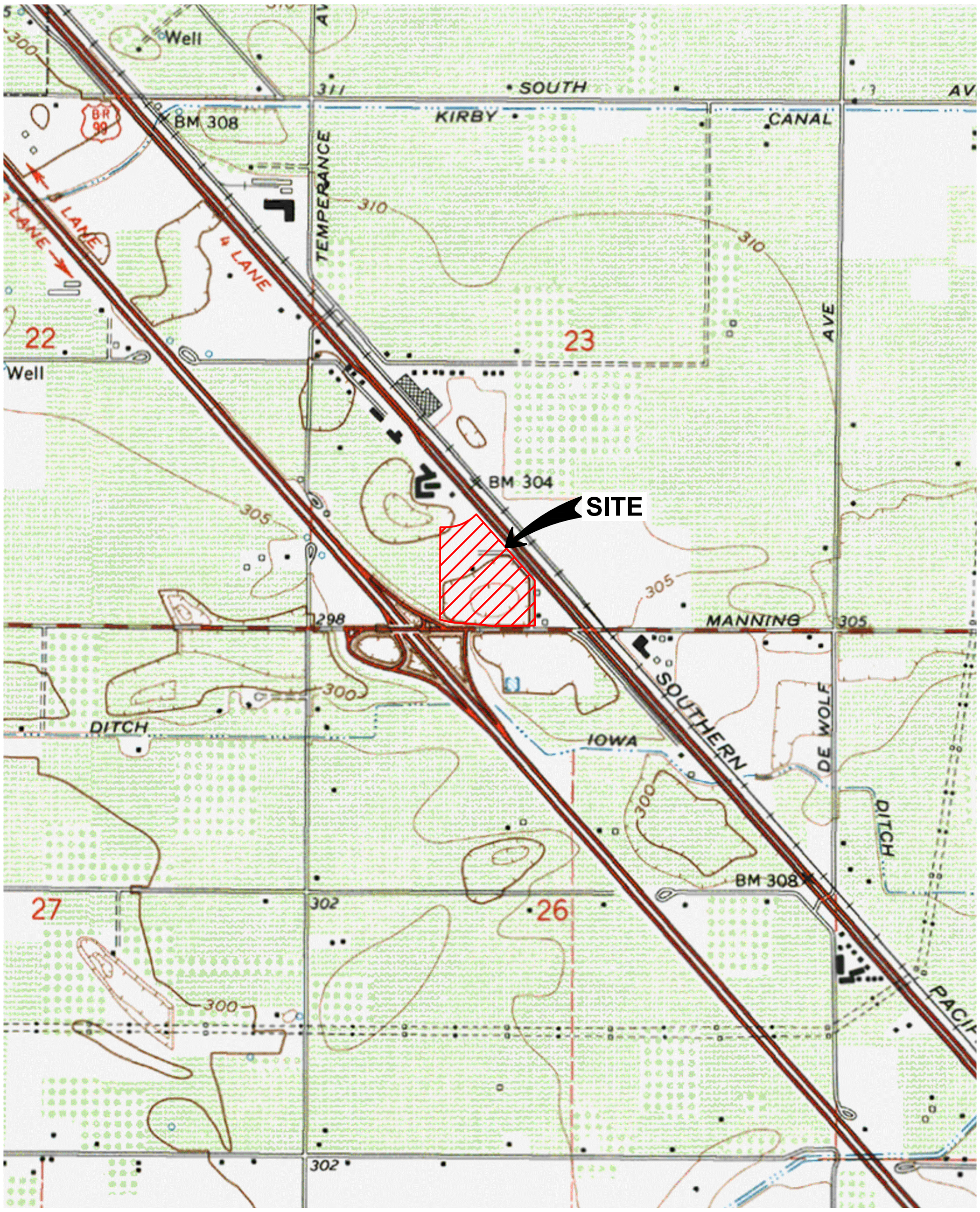
Our professional services were performed, our findings obtained, and our recommendations prepared in accordance with generally accepted engineering principles and practices. This warranty is in lieu of all other warranties either expressed or implied. This report should not be construed as an environmental audit or study.

This report has been prepared for the sole use by Buford Oil Co. and any designated consultants for the proposed Oil and Travel Center to be located at 2747 E. Manning Avenue in Fowler, California. Recommendations presented in this report should not be extrapolated to other areas or used for other projects without prior review. This report has been prepared with the intent that the firm of **TECHNICON** will be performing the construction testing and observation for the complete project. If, however, another firm or individual(s) should be retained or employed to use this geotechnical investigation report for the purpose of construction testing and observation, notice is hereby given that **TECHNICON** will not assume any responsibility for errors or omissions, if any, which may occur and which could have been avoided, corrected, or mitigated if **TECHNICON**, had performed the work. This notice also applies to the misuse or misinterpretation of the conclusions and recommendations outlined in this report. Furthermore, the other firm or individual(s) performing construction testing and observation should accept transfer of responsibility of the work, as required by the California Building Code, in writing to the project owner and **TECHNICON**. The firm accepting transfer of responsibility should perform additional investigation(s) as may be necessary to develop their own conclusions, evaluations, and recommendations for design and construction.

FIGURE 1

&

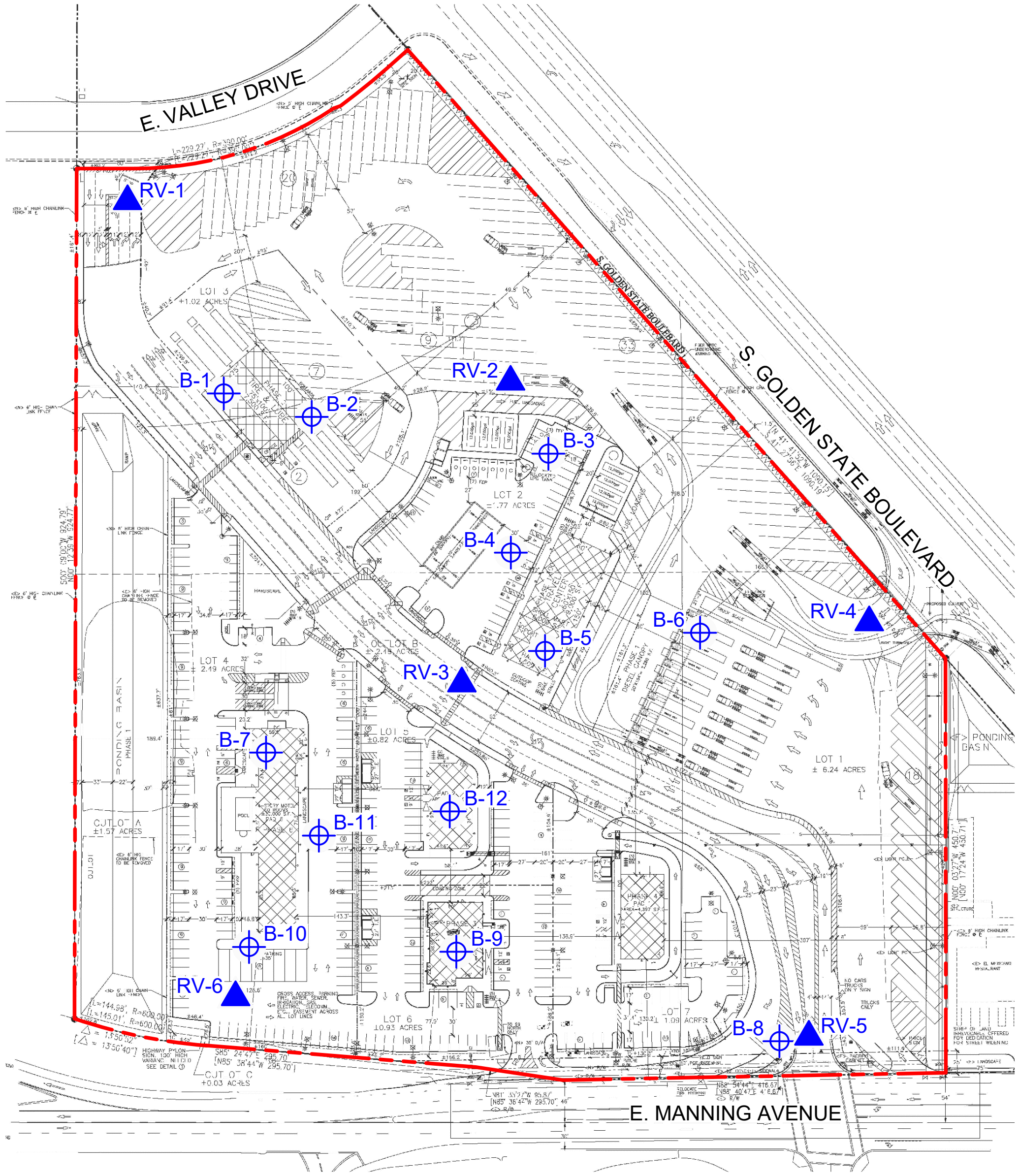
FIGURE 2



LAT.: 36.6069°N, LONG.: 119.6584°W, 23-T15S-R21E, MDB&M,
USGS MAP: CONEJO, DATE: 1963, PHOTO REV.: 1978

NORTH

TECHNICON ENGINEERING SERVICES, INC.	PROJECT: 170748	VICINITY MAP PROPOSED OIL AND TRAVEL CENTER 2747 E. MANNING AVENUE FOWLER, CALIFORNIA	FIGURE 1 NTS
	SOURCE: USGS TOPOGRAPHIC MAPS		



TECHNICON ENGINEERING SERVICES, INC.

PROJECT: 170748

SOURCE: AESTHETICS DESIGNS

SITE MAP
PROPOSED OIL AND TRAVEL CENTER
2747 E. MANNING AVENUE
FOWLER, CALIFORNIA

FIGURE 2

BORING LOGS AND LOG KEY

APPENDIX A

Technicon Engineering Services, Inc.
4539 N. Brawley Avenue #108
Fresno, CA 93722
Telephone: 559-276-9311

KEY TO SYMBOLS

PROJECT NAME Proposed Oil and Travel Center
DATE OF EXPLORATION 11/15/2017
PROJECT LOCATION Fowler, California
PROJECT NUMBER 170748

LITHOLOGIC SYMBOLS (Unified Soil Classification System)

		FILL
	SW	WELL GRADED SAND
	SP	POORLY GRADED SAND
	SM	SILTY SAND
	SC	CLAYEY SAND
	PT	PEAT
	OL	LOW PLASTICITY ORGANIC SILT
	OH	HIGH PLASTICITY ORGANIC SILT
	ML	LOW PLASTICITY SILT
	MH	HIGH PLASTICITY SILT
	GW	WELL GRADED GRAVEL
	GP	POORLY GRADED GRAVEL
	GM	SILTY GRAVEL
	GC	CLAYEY GRAVEL
	CL	LOW PLASTICITY CLAY
	CH	HIGH PLASTICITY CLAY

SAMPLER SYMBOLS

- STANDARD PENETRATION TEST
- CALIFORNIA SAMPLER
- MODIFIED CALIFORNIA SAMPLER
- SHELBY TUBE SAMPLER
- ROCK CORE BARREL
- BULK SAMPLE

- Water Level at Time of Drilling
- Water Level at End of Drilling
- Water Level After 24 Hours
- Assumed stratum line
- Observed stratum line

Note 1: The degree of saturation shown on the boring logs is based on an assumed specific gravity of 2.65. The actual degree of saturation may vary.

Note 2: The stratum lines shown on the logs represent the approximate boundary between soil types; the actual in-situ transition may be gradual.

ABBREVIATIONS

LL - LIQUID LIMIT (%)
PI - PLASTIC INDEX (%)
W - MOISTURE CONTENT (%)
DD - DRY DENSITY (PCF)
S - DEGREE OF SATURATION (%)
NP - NON PLASTIC
-200 PERCENT PASSING NO. 200 SIEVE
PP - POCKET PENETROMETER (TSF)

TV - TORVANE
PID - PHOTOIONIZATION DETECTOR
UC - UNCONFINED COMPRESSION
ppm - PARTS PER MILLION

KEY TO SYMBOLS 2 - TECHNICON.GDT - 2/5/18 15:25 - \\TECH2\USERSHARES\TESDATA\USERS\ADAM A\FOWLER\170748 - OIL AND TRAVEL CENTER\CALCS\170748 - GINT.GPJ

Technicon Engineering Services, Inc.
4539 N. Brawley Avenue #108
Fresno, CA 93722
Telephone: 559-276-9311

BORING B- 1

PROJECT NAME Proposed Oil and Travel Center
PROJECT NUMBER 170748
PROJECT LOCATION Fowler, California
SURFACE DESCRIPTION Flat Soil Surface
DATE STARTED 11/15/17 **COMPLETED** 11/15/17
GROUND ELEVATION
DRILLING CONTRACTOR TECHNICON Engineering Services
GROUND WATER LEVEL No groundwater encountered.
DRILL RIG TYPE CME 55
BORING DEPTH 16.5 ft
DRILLING METHOD 7.5-inch Hollow Stem Auger
LOGGED BY Y.Mendoza **CHECKED BY** S. Alvarez

DEPTH (ft)	SAMPLE TYPE	BLOWS/ft	GRAPHIC LOG	MATERIAL DESCRIPTION	DRY DENSITY (pcf)	MOISTURE (%)	OTHER TESTS	REMARKS
0	CAL	6-15-16 (31)		**Clayey SILT (CL-ML)** - very stiff, light brown to yellowish brown, moist, trace fine sand, iron oxide staining	93.3	5.7	S = 20 %	
5	SPT	2-3-2 (5)		**Poorly Graded SAND (SP)** - loose, light brown, moist, fine to medium grained, iron oxide staining				
	CAL	3-5-6 (11)		Medium dense				
10	SPT	7-28-38 (66)		**Clayey SAND (SC)** - very dense, brown, moist, fine to medium grained				
				Sandy SILT (ML) - very stiff, brown brown, moist, no clay				
15	CAL	5-12-17 (29)						

NOTES:
1. Bottom of boring at 16.5 feet.
2. No groundwater encountered.
3. Boring backfilled with soil cuttings 11/15/17.

Technicon Engineering Services, Inc.
4539 N. Brawley Avenue #108
Fresno, CA 93722
Telephone: 559-276-9311

BORING B- 2

PROJECT NAME Proposed Oil and Travel Center
PROJECT NUMBER 170748
PROJECT LOCATION Fowler, California
SURFACE DESCRIPTION Flat Soil Surface
DATE STARTED 11/15/17 **COMPLETED** 11/15/17
GROUND ELEVATION
DRILLING CONTRACTOR TECHNICON Engineering Services
GROUND WATER LEVEL No groundwater encountered.
DRILL RIG TYPE CME 55
BORING DEPTH 21.5 ft
DRILLING METHOD 7.5-inch Hollow Stem Auger
LOGGED BY Y.Mendoza **CHECKED BY** S. Alvarez

DEPTH (ft)	SAMPLE TYPE	BLOWS/ft	GRAPHIC LOG	MATERIAL DESCRIPTION	DRY DENSITY (pcf)	MOISTURE (%)	OTHER TESTS	REMARKS
0				**Poorly Graded SAND (SP)** - medium dense, brown, moist, fine to medium grained, trace silt, trace clay				
	GB							
	CAL	5-9-10 (19)			101.8	1.5	S = 6 %	
5	CAL	3-4-5 (9)		Fine to coarse grained, increased moisture	91.4	2.4	S = 8 %	
10	SPT	14-38-50/4"		**Clayey SAND (SC)** - very dense, brown, moist, fine to medium grained, with silt, trace mica, moderate cementation				
				Sandy SILT (ML) - stiff, light brown, moist, fine sand, trace mica, iron oxide staining				
15	CAL	10-8-9 (17)						
20	SPT	6-9-11 (20)		Very stiff, grayish brown to light brown				

NOTES:
1. Bottom of boring at 21.5 feet.
2. No groundwater encountered.
3. Boring backfilled with soil cuttings 11/15/17.

Technicon Engineering Services, Inc.
4539 N. Brawley Avenue #108
Fresno, CA 93722
Telephone: 559-276-9311

BORING B- 3

PROJECT NAME Proposed Oil and Travel Center
PROJECT NUMBER 170748
PROJECT LOCATION Fowler, California
SURFACE DESCRIPTION Flat Soil Surface
DATE STARTED 11/15/17 **COMPLETED** 11/15/17
GROUND ELEVATION
DRILLING CONTRACTOR TECHNICON Engineering Services, Inc.
GROUND WATER LEVEL No groundwater encountered.
DRILL RIG TYPE CME 55
BORING DEPTH 16.5 ft
DRILLING METHOD 7.5-inch Hollow Stem Auger
LOGGED BY Yvan Mendoza **CHECKED BY** S. Alvarez

DEPTH (ft)	SAMPLE TYPE	BLOWS/ft	GRAPHIC LOG	MATERIAL DESCRIPTION	DRY DENSITY (pcf)	MOISTURE (%)	OTHER TESTS	REMARKS
0	CAL	3-5-6 (11)		**Silty SAND (SM)** - medium dense, brown, moist, fine to medium grained, trace clay	110.8	2.3	S = 12 %	
				Sandy SILT (ML) - very stiff, light brown, moist, with fine sand				
5	CAL	10-13-13 (26)		**Silty SAND (SM)** - medium dense, brown to light brown, moist, fine to medium grained	103.5	6.2	S = 28 %	
10	SPT	1-2-2 (4)		**Poorly Graded SAND (SP)** - loose, brown, moist, fine to medium grained, some mica				
	CAL	2-4-5 (9)						
15	CAL	14-46-50/3"		**Clayey SAND (SC)** - very dense, dark brown, moist, fine grained, some silt, iron oxide staining				

NOTES:
1. Bottom of boring at 16.5 feet.
2. No groundwater encountered.
3. Boring backfilled with soil cuttings 11/15/17.

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BORING B- 4

PROJECT NAME Proposed Oil and Travel Center
PROJECT NUMBER 170748
PROJECT LOCATION Fowler, California
SURFACE DESCRIPTION Flat Soil Surface
DATE STARTED 11/15/17 **COMPLETED** 11/15/17
GROUND ELEVATION
DRILLING CONTRACTOR TECHNICON Engineering Services, Inc.
GROUND WATER LEVEL No groundwater encountered.
DRILL RIG TYPE CME 55
BORING DEPTH 16.5 ft
DRILLING METHOD 7.5-inch Hollow Stem Auger
LOGGED BY Yvan Mendoza **CHECKED BY** S. Alvarez

DEPTH (ft)	SAMPLE TYPE	BLOWS/ft	GRAPHIC LOG	MATERIAL DESCRIPTION	DRY DENSITY (pcf)	MOISTURE (%)	OTHER TESTS	REMARKS
0	CAL	9-8-12 (20)		**Silty SAND (SM)** - medium dense, brown, moist, fine to medium grained, trace clay	111.0	3.2	S = 17 %	
	GB							
				Poorly Graded SAND (SP) - medium dense, light brown, moist, fine to coarse grained				
5	SPT	3-4-5 (9)						
10	CAL	4-12-22 (34)		**Clayey SAND (SC)** - medium dense, brown to dark brown, moist, fine to medium grained, some silt, iron oxide staining				
				Poorly Graded SAND (SP) - medium dense, brown, moist, fine to coarse grained				
15	SPT	9-13-15 (28)		**Clayey SAND (SC)** - medium dense, reddish brown, moist, fine to medium grained				
				Sandy SILT (ML) - very stiff, light brown, moist, with fine sand, white staining				

NOTES:
1. Bottom of boring at 16.5 feet.
2. No groundwater encountered.
3. Boring backfilled with soil cuttings 11/15/17.

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BORING B- 5

PROJECT NAME Proposed Oil and Travel Center
PROJECT NUMBER 170748
PROJECT LOCATION Fowler, California
SURFACE DESCRIPTION Asphalt Pavement
DATE STARTED 11/15/17 **COMPLETED** 11/15/17
GROUND ELEVATION
DRILLING CONTRACTOR TECHNICON Engineering Services, Inc.
GROUND WATER LEVEL No groundwater encountered.
DRILL RIG TYPE CME 55
BORING DEPTH 16 ft
DRILLING METHOD 7.5-inch Hollow Stem Auger
LOGGED BY Yvan Mendoza **CHECKED BY** S. Alvarez

DEPTH (ft)	SAMPLE TYPE	BLOWS/ft	GRAPHIC LOG	MATERIAL DESCRIPTION	DRY DENSITY (pcf)	MOISTURE (%)	OTHER TESTS	REMARKS
0				**ASPHALT**				
	CAL	22-23-19 (42)		**Silty SAND (SM)** - dense, brown, moist, fine to medium grained, trace mica, trace clay	120.0	5.0	S = 35 %	
5	CAL	4-6-7 (13)		Medium to coarse grained, increased moisture, no clay, iron oxide staining	102.8	3.7	S = 16 %	
				Poorly Graded SAND (SP) - medium dense, brown, moist, some mica				
10	SPT	3-4-6 (10)						
				Sandy SILT (ML) - stiff, brown, moist, some clay, iron oxide staining				
				Clayey SAND (SC) - very dense, dark brown, moist, some silt, moderate cementation				
15	CAL	30-50/1"						
	SPT	50						

NOTES:
1. Bottom of boring at 16.0 feet.
2. No groundwater encountered.
3. Boring backfilled with soil cuttings 11/15/17.

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BORING B- 6

PROJECT NAME Proposed Oil and Travel Center
PROJECT NUMBER 170748
PROJECT LOCATION Fowler, California
SURFACE DESCRIPTION Asphalt Pavement
DATE STARTED 11/15/17 **COMPLETED** 11/15/17
GROUND ELEVATION
DRILLING CONTRACTOR TECHNICON Engineering Services, Inc.
GROUND WATER LEVEL No groundwater encountered.
DRILL RIG TYPE CME 55
BORING DEPTH 21.5 ft
DRILLING METHOD 7.5-inch Hollow Stem Auger
LOGGED BY Yvan Mendoza **CHECKED BY** S. Alvarez

DEPTH (ft)	SAMPLE TYPE	BLOWS/ft	GRAPHIC LOG	MATERIAL DESCRIPTION	DRY DENSITY (pcf)	MOISTURE (%)	OTHER TESTS	REMARKS
0				**ASPHALT**				
				AGGREGATE BASE				
	GB CAL	14-15-12 (27)		**Silty SAND (SM)** - medium dense, dark brown, moist, trace clay	106.8	3.4	S = 17 %	
5	SPT	3-4-4 (8)		**Poorly Graded SAND (SP)** - medium dense, brown, moist, fine to medium grained, trace silt				
10	CAL	4-7-8 (15)		Trace clay, increased moisture				
15	SPT	9-24-32 (56)		**Clayey SAND (SC)** - very dense, dark brown, moist, fine to medium grained				
				Clayey SILT (ML) - very stiff, brown to grayish brown, moist, iron oxide staining				
20	CAL	10-13-15 (28)		Very stiff				
				Poorly Graded SAND (SP) - medium dense, brown, moist, fine to coarse grained				

NOTES:
1. Bottom of boring at 21.5 feet.
2. No groundwater encountered.
3. Boring backfilled with soil cuttings 11/15/17.

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BORING B- 7

PROJECT NAME Proposed Oil and Travel Center
PROJECT NUMBER 170748
PROJECT LOCATION Fowler, California
SURFACE DESCRIPTION Asphalt Pavement
DATE STARTED 11/15/17 **COMPLETED** 11/15/17
GROUND ELEVATION
DRILLING CONTRACTOR TECHNICON Engineering Services, Inc.
GROUND WATER LEVEL No groundwater encountered.
DRILL RIG TYPE CME 55
BORING DEPTH 16 ft
DRILLING METHOD 7.5-inch Hollow Stem Auger
LOGGED BY Yvan Mendoza **CHECKED BY** S. Alvarez

DEPTH (ft)	SAMPLE TYPE	BLOWS/ft	GRAPHIC LOG	MATERIAL DESCRIPTION	DRY DENSITY (pcf)	MOISTURE (%)	OTHER TESTS	REMARKS
0				**ASPHALT**				
				AGGREGATE BASE				
	CAL	14-21-22 (43)		**Silty SAND (SM)** - dense, brown, moist, fine to medium grained, some clay	118.8	5.9	S = 40 %	
				Poorly Graded SAND (SP) - medium dense, brown, moist, trace silt, trace clay, iron oxide staining				
5	CAL	14-7-7 (14)			109.2	3.8	S = 20 %	
10	SPT	4-5-6 (11)		**Clayey SAND (SC)** - medium dense, reddish brown, moist, fine to medium grained, some silt				
				Very dense, moderate cementation				
15	CAL	22-50/3"						

NOTES:
1. Bottom of boring at 16.0 feet.
2. No groundwater encountered.
3. Boring backfilled with soil cuttings 11/15/17.

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BORING B- 8

PAGE 1 OF 1

PROJECT NAME Proposed Oil and Travel Center
PROJECT NUMBER 170748
PROJECT LOCATION Fowler, California
SURFACE DESCRIPTION Asphalt Pavement
DATE STARTED 11/16/17 **COMPLETED** 11/16/17
GROUND ELEVATION
DRILLING CONTRACTOR TECHNICON Engineering Services, Inc.
GROUND WATER LEVEL No groundwater encountered.
DRILL RIG TYPE CME 55
BORING DEPTH 21.5 ft
DRILLING METHOD 7.5-inch Hollow Stem Auger
LOGGED BY Y.Mendoza **CHECKED BY** S. Alvarez

DEPTH (ft)	SAMPLE TYPE	BLOWS/ft	GRAPHIC LOG	MATERIAL DESCRIPTION	DRY DENSITY (pcf)	MOISTURE (%)	OTHER TESTS	REMARKS
0				**ASPHALT**				
				AGGREGATE BASE				
	CAL	9-14-18 (32)		**Silty SAND (SM)** - medium dense, brown, moist, fine to medium grained, trace clay	118.0	6.2	S = 41 %	
5	CAL	4-6-7 (13)		Increased moisture, decreased silt, decreased clay, iron oxide staining	99.3	3.3	S = 13 %	
10	SPT	8-9-12 (21)		Increased silt, increased clay				
				Clayey SAND (SC) - medium dense, brown to reddish brown, moist, some silt, iron oxide staining				
15	CAL	5-26-25 (51)		Dense, trace gravel, moderate cementation				
20	SPT	6-10-12 (22)		Medium dense, fine to coarse grained, with silt, some clay, trace fine gravel				

NOTES:
1. Bottom of boring at 21.5 feet.
2. No groundwater encountered.
3. Boring backfilled with soil cuttings 11/16/17.

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BORING B- 9

PROJECT NAME Proposed Oil and Travel Center
PROJECT NUMBER 170748
PROJECT LOCATION Fowler, California
SURFACE DESCRIPTION Asphalt Pavement
DATE STARTED 11/16/17 **COMPLETED** 11/16/17
GROUND ELEVATION
DRILLING CONTRACTOR TECHNICON Engineering Services, Inc.
GROUND WATER LEVEL No groundwater encountered.
DRILL RIG TYPE CME 55
BORING DEPTH 16.5 ft
DRILLING METHOD 7.5-inch Hollow Stem Auger
LOGGED BY Yvan Mendoza **CHECKED BY** S. Alvarez

DEPTH (ft)	SAMPLE TYPE	BLOWS/ft	GRAPHIC LOG	MATERIAL DESCRIPTION	DRY DENSITY (pcf)	MOISTURE (%)	OTHER TESTS	REMARKS
0				**ASPHALT**				
				AGGREGATE BASE				
	GB CAL	18-21-20 (41)		**Silty SAND (SM)** - dense, brown, moist, fine to medium grained, trace clay	117.0	4.5	S = 29 %	
5	SPT	3-5-4 (9)		Medium dense, dark brown, increased moisture				
				Clayey SAND (SC) - dense, brown to reddish brown, moist, fine to medium grained, some silt, iron oxide staining				
10	CAL	11-25-21 (46)						
15	SPT	11-8-9 (17)		**Silty SAND (SM)** - medium dense, brown to reddish brown, moist, fine to medium grained, trace clay				

NOTES:
1. Bottom of boring at 16.5 feet.
2. No groundwater encountered.
3. Boring backfilled with soil cuttings 11/16/17.

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BORING B-10

PROJECT NAME Proposed Oil and Travel Center
PROJECT NUMBER 170748
PROJECT LOCATION Fowler, California
SURFACE DESCRIPTION Asphalt Pavement
DATE STARTED 11/16/17 **COMPLETED** 11/16/17
GROUND ELEVATION
DRILLING CONTRACTOR TECHNICON Engineering Services, Inc.
GROUND WATER LEVEL No groundwater encountered.
DRILL RIG TYPE CME 55
BORING DEPTH 21.25 ft
DRILLING METHOD 7.5-inch Hollow Stem Auger
LOGGED BY Y.Mendoza **CHECKED BY** S. Alvarez

DEPTH (ft)	SAMPLE TYPE	BLOWS/ft	GRAPHIC LOG	MATERIAL DESCRIPTION	DRY DENSITY (pcf)	MOISTURE (%)	OTHER TESTS	REMARKS
0				**ASPHALT**				
				AGGREGATE BASE				
				Silty SAND (SM) - medium dense, brown, moist, fine to medium grained, trace clay				
	CAL	9-11-12 (23)			113.8	5.3	S = 31 %	
5	CAL	5-8-8 (16)		Iron oxide staining	112.8	5.0	S = 28 %	
				Reddish brown, trace fine gravel				
10	SPT	5-4-3 (7)						
				Poorly Graded SAND (SP) - medium dense, light brown, moist, fine to coarse grained				
15	CAL	7-11-11 (22)						
20	SPT	30-46-50/3"		**Sandy SILT (ML)** - hard, light brown to brown, moist, trace clay, with fine sand, trace mica, iron oxide staining				

NOTES:
1. Bottom of boring at 21.3 feet.
2. No groundwater encountered.
3. Boring backfilled with soil cuttings 11/16/17.

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BORING B-11

PROJECT NAME Proposed Oil and Travel Center
PROJECT NUMBER 170748
PROJECT LOCATION Fowler, California
SURFACE DESCRIPTION Asphalt Pavement
DATE STARTED 11/16/17 **COMPLETED** 11/16/17
GROUND ELEVATION
DRILLING CONTRACTOR TECHNICON Engineering Services, Inc.
GROUND WATER LEVEL No groundwater encountered.
DRILL RIG TYPE CME 55
BORING DEPTH 36.5 ft
DRILLING METHOD 7.5-inch Hollow Stem Auger
LOGGED BY Yvan Mendoza **CHECKED BY** S. Alvarez

DEPTH (ft)	SAMPLE TYPE	BLOWS/ft	GRAPHIC LOG	MATERIAL DESCRIPTION	DRY DENSITY (pcf)	MOISTURE (%)	OTHER TESTS	REMARKS
0				**ASPHALT**				
				AGGREGATE BASE				
	CAL	5-10-15 (25)		**Silty SAND (SM)** - medium dense, dark brown, moist, fine grained, trace clay, fine sand	114.6	7.8	S = 47 %	
5	SPT	6-4-4 (8)		Reddish brown, fine to medium grained, iron oxide staining				
10	CAL	11-11-14 (25)		Increased clay				
				Sandy CLAY (CL) - hard, light brown, moist, with silt, iron oxide staining				
15	SPT	50						
				Poorly Graded SAND (SP) - medium dense, light brown to tan, moist				
20	CAL	7-10-12 (22)						
	CAL	8-15-24 (39)						
				Sandy SILT (ML) - very stiff, brown to reddish brown, moist, medium plasticity, trace fine sand, with clay, iron oxide staining				
25	SPT	5-8-11 (19)						
				Poorly Graded SAND (SP) - dense, light brown to tan, moist, trace silt, iron oxide staining				
30	CAL	10-22-30 (52)						
35								

(Continued Next Page)

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BORING B-11

PROJECT NAME Proposed Oil and Travel Center
PROJECT NUMBER 170748
PROJECT LOCATION Fowler, California
SURFACE DESCRIPTION Asphalt Pavement
DATE STARTED 11/16/17 **COMPLETED** 11/16/17
GROUND ELEVATION
DRILLING CONTRACTOR TECHNICON Engineering Services, Inc.
GROUND WATER LEVEL No groundwater encountered.
DRILL RIG TYPE CME 55
BORING DEPTH 36.5 ft
DRILLING METHOD 7.5-inch Hollow Stem Auger
LOGGED BY Yvan Mendoza **CHECKED BY** S. Alvarez

DEPTH (ft)	SAMPLE TYPE	BLOWS/ft	GRAPHIC LOG	MATERIAL DESCRIPTION	DRY DENSITY (pcf)	MOISTURE (%)	OTHER TESTS	REMARKS
35	SPT	3-4-6 (10)		**Poorly Graded SAND (SP)** - dense, light brown to tan, moist, trace silt, iron oxide staining *(continued)* Medium dense				

NOTES:
1. Bottom of boring at 36.5 feet.
2. No groundwater encountered.
3. Boring backfilled with soil cuttings 11/16/17.

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BORING B-12

PROJECT NAME Proposed Oil and Travel Center
PROJECT NUMBER 170748
PROJECT LOCATION Fowler, California
SURFACE DESCRIPTION Asphalt Pavement
DATE STARTED 11/16/17 **COMPLETED** 11/16/17
GROUND ELEVATION
DRILLING CONTRACTOR TECHNICON Engineering Services, Inc.
GROUND WATER LEVEL No groundwater encountered.
DRILL RIG TYPE CME 55
BORING DEPTH 16.5 ft
DRILLING METHOD 7.5-inch Hollow Stem Auger
LOGGED BY Yvan Mendoza **CHECKED BY** S. Alvarez

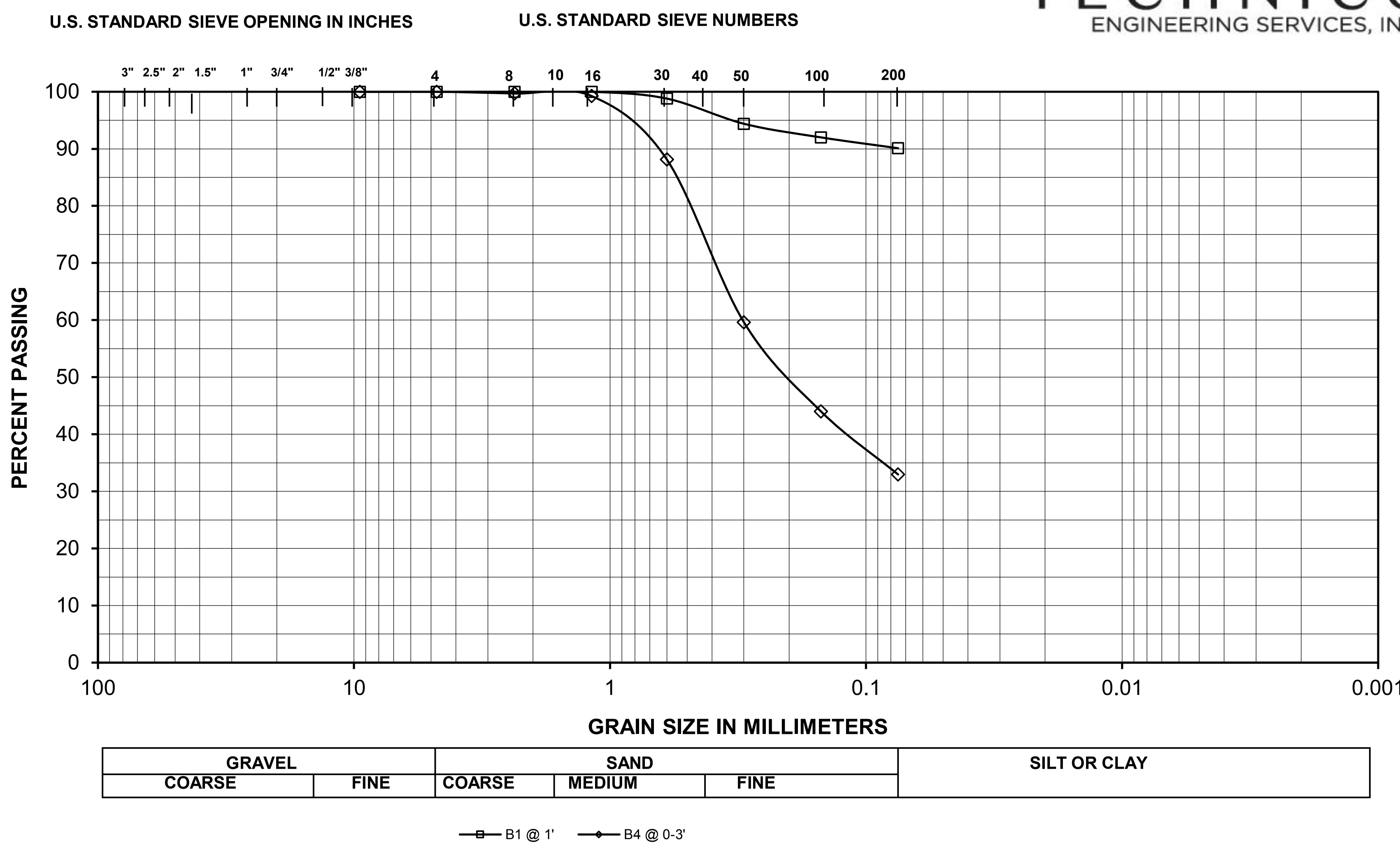
DEPTH (ft)	SAMPLE TYPE	BLOWS/ft	GRAPHIC LOG	MATERIAL DESCRIPTION	DRY DENSITY (pcf)	MOISTURE (%)	OTHER TESTS	REMARKS
0				**ASPHALT**				
				AGGREGATE BASE				
	CAL	9-15-21 (36)		**Silty SAND (SM)** - dense, brown to dark brown, moist, fine to medium grained, trace clay	116.6	7.8	S = 49 %	
5	CAL	6-10-7 (17)		Medium dense, dark brown, increased moisture, some clay, iron oxide staining	108.8	4.6	S = 24 %	
10	SPT	8-7-5 (12)		**Clayey SAND (SC)** - medium dense, reddish brown, moist, fine to medium grained, trace fine gravel, some silt				
15	CAL	14-18-26 (44)		**Sandy SILT (ML)** - hard, light brown, moist, some fine sand, iron oxide staining				

NOTES:
1. Bottom of boring at 16.5 feet.
2. No groundwater encountered.
3. Boring backfilled with soil cuttings 11/16/17.

LABORATORY TESTS

APPENDIX B

TECHNICON ENGINEERING SERVICES, INC.



Sample No.	Classification	% Gravel	% Sand	% Fines	% Moist.	LL	PL	PI	Project	Oil and Travel Center
B1 @ 1'	Silty CLAY (CL-ML)	0	9.9	90.1	5.7					Fowler, CA
B4 @ 0-3'	Silty SAND (SM)	0	67.0	33.0	0.6				TES No.	170748
									Date	12/6/2017

TECHNICON
ENGINEERING SERVICES, INC.

Sieve Analysis for Coarse and Fine Aggregate
ASTM C 136

Project	Oil and Travel Center	Technician	K.W.
	Fowler, CA	Date	12/6/2017
TES No.	170748	Sample No.	B1 @ 1'
Lab No.		Remarks	Silty CLAY (CL-ML)

	Weight (lbs. or grams)	Maximum Sieve Size	Minimum Weight of Test Specimen, lbs. (kg)
Total Dry Sample + Tare Wt.		Sand	1.0 (0.5)
Tare Weight		3/8"	2.0 (1.0)
Total Dry Sample Wt.	189.2	1/2"	4.0 (2.0)
Initial Weight Fine Aggregate Before Wash		3/4"	11.0 (5.0)
		1"	22.0 (10.0)
Final Weight Fine Aggregate After Wash	19.72	1 1/2"	33.0 (15.0)
		2"	44.0 (20.0)

Sieve Size	Cumulative Weight Retained	Individual % Retained	Cumulative % Retained	Cumulative % Passing	Specs.
3 in.		0.0	0.0	100.0	
2 1/2 in.		0.0	0.0	100.0	
2 in.		0.0	0.0	100.0	
1 1/2 in.		0.0	0.0	100.0	
1 in.		0.0	0.0	100.0	
3/4 in.		0.0	0.0	100.0	
1/2 in.		0.0	0.0	100.0	
3/8 in.		0.0	0.0	100.0	
#4	0.0	0.0	0.0	100.0	
#8	0.0	0.0	0.0	100.0	
#16	0.0	0.0	0.0	100.0	
#30	2.3	1.2	1.2	98.8	
#50	10.6	4.4	5.6	94.4	
#100	15.1	2.4	8.0	92.0	
#200	18.7	1.9	9.9	90.1	
Pan	19.72				

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TECHNICON
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Sieve Analysis for Coarse and Fine Aggregate
ASTM C 136

Project	Oil and Travel Center	Technician	K.W.
	Fowler, CA	Date	12/6/2017
TES No.	170748	Sample No.	B4 @ 0-3'
Lab No.		Remarks	Silty SAND (SM)

	Weight (lbs. or grams)	Maximum Sieve Size	Minimum Weight of Test Specimen, lbs. (kg)
Total Dry Sample + Tare Wt.		Sand	1.0 (0.5)
Tare Weight		3/8"	2.0 (1.0)
Total Dry Sample Wt.	198.8	1/2"	4.0 (2.0)
Initial Weight Fine Aggregate Before Wash		3/4"	11.0 (5.0)
		1"	22.0 (10.0)
Final Weight Fine Aggregate After Wash	135.29	1 1/2"	33.0 (15.0)
		2"	44.0 (20.0)

Sieve Size	Cumulative Weight Retained	Individual % Retained	Cumulative % Retained	Cumulative % Passing	Specs.
3 in.		0.0	0.0	100.0	
2 1/2 in.		0.0	0.0	100.0	
2 in.		0.0	0.0	100.0	
1 1/2 in.		0.0	0.0	100.0	
1 in.		0.0	0.0	100.0	
3/4 in.		0.0	0.0	100.0	
1/2 in.		0.0	0.0	100.0	
3/8 in.		0.0	0.0	100.0	
#4	0.0	0.0	0.0	100.0	
#8	0.6	0.3	0.3	99.7	
#16	1.5	0.4	0.8	99.2	
#30	23.6	11.1	11.9	88.1	
#50	80.3	28.5	40.4	59.6	
#100	111.3	15.6	56.0	44.0	
#200	133.3	11.0	67.0	33.0	
Pan	135.29				

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TECHNICON
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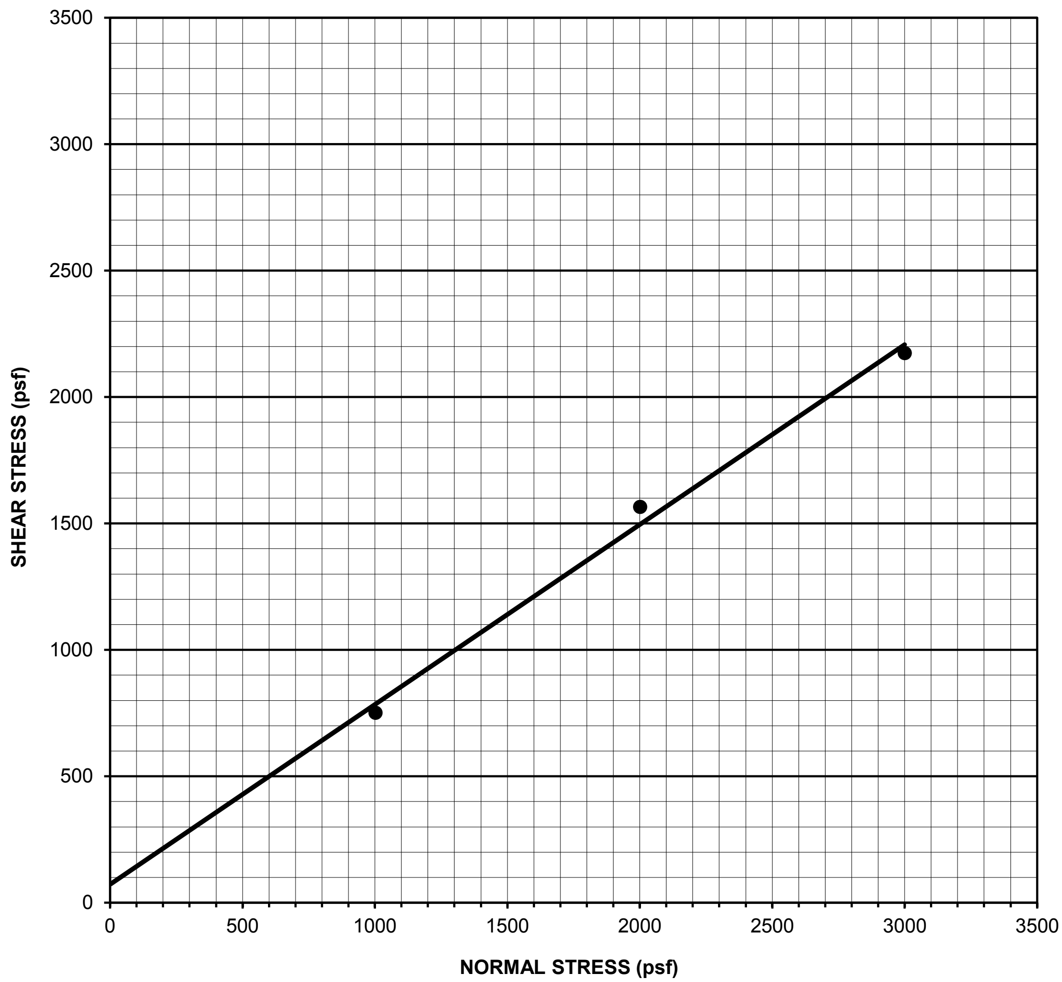
Direct Shear Test
ASTM D3080



Project	Oil and Travel Center
TES No.	170748
Sample Date	11/15/2017
Sample No.	B-1 @ 1'
Description	Silty CLAY (CL-ML)

Cohesion (psf)	**70**
Internal Friction Angle (ϕ)	**35**

Specimen	A	B	C	D	E
Dry Density (pcf)	121.6	121.6	121.6	---	---
Initial Water Content (%)	6.5	6.5	6.5	---	---
Final Water Content (%)	12.3	11.7	11.6	---	---
Normal Stress (pcf)	1002	2001	3000	---	---
Maximum Shear (pcf)	751	1565	2173	---	---

Engineering Materials Laboratory
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TECHNICON
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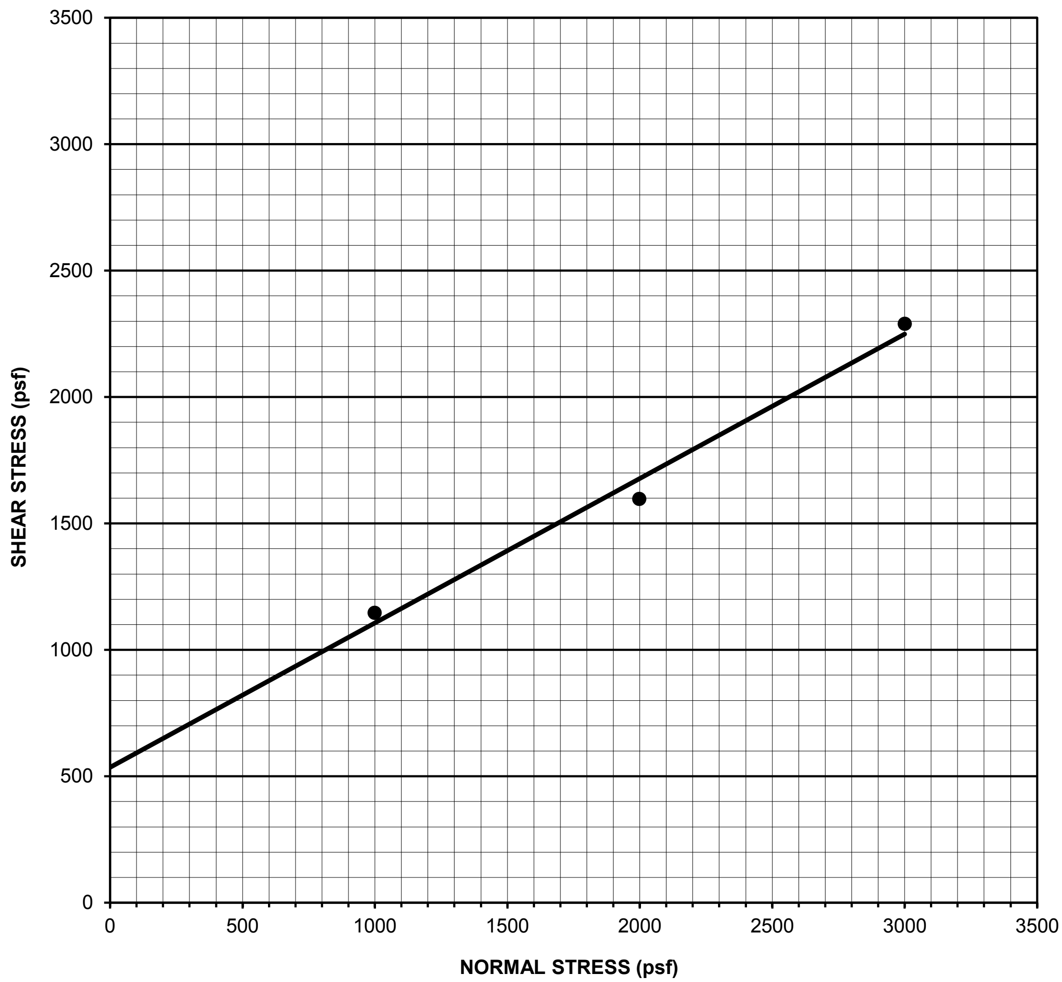
Direct Shear Test
ASTM D3080



Project	Oil and Travel Center
TES No.	170748
Sample Date	11/15/2017
Sample No.	B-5 @ 2'
Description	Silty SAND (SM)

Cohesion (psf)	**540**
Internal Friction Angle (ϕ)	**30**

Specimen	A	B	C	D	E
Dry Density (pcf)	121.6	121.6	121.6	---	---
Initial Water Content (%)	6.5	6.5	6.5	---	---
Final Water Content (%)	12.3	11.7	11.6	---	---
Normal Stress (pcf)	999	1998	3000	---	---
Maximum Shear (pcf)	1146	1597	2289	---	---

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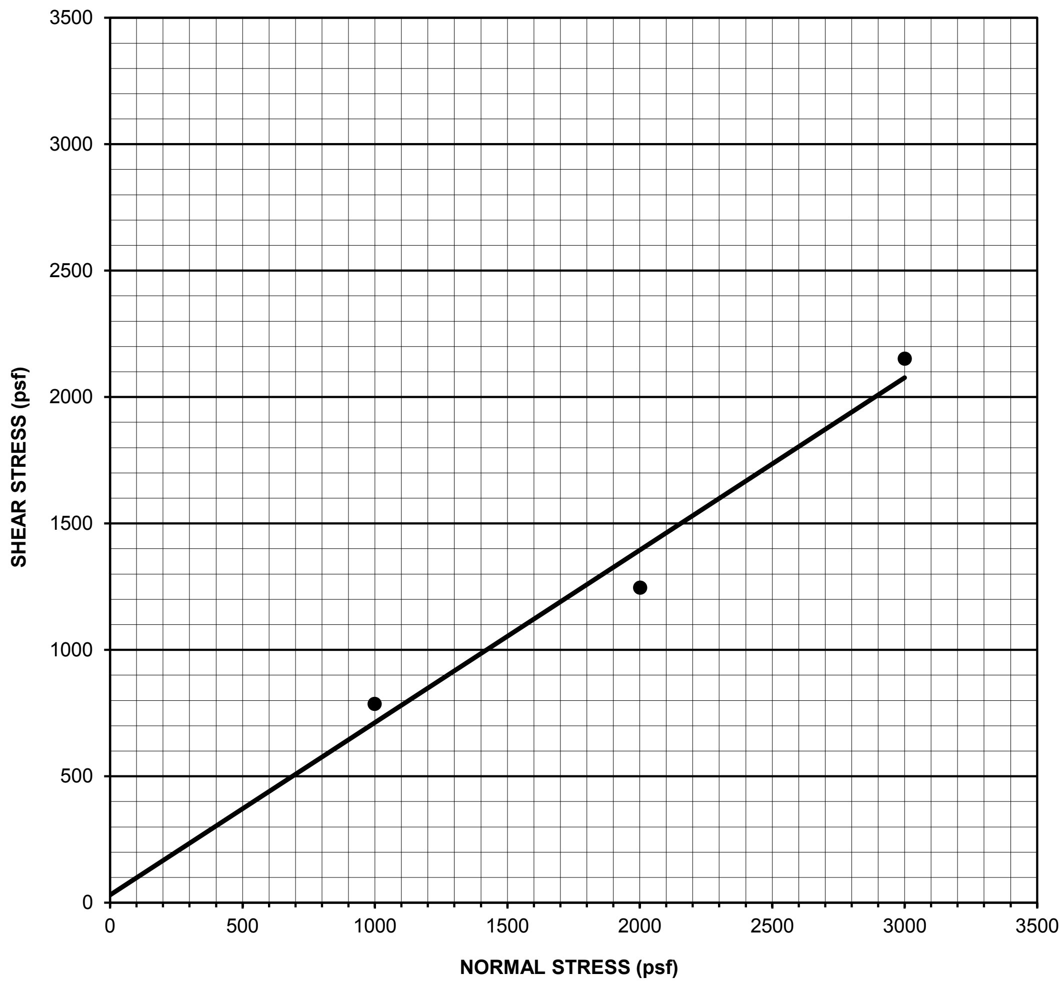
TECHNICON
ENGINEERING SERVICES, INC.

Direct Shear Test

ASTM D3080



Project	Oil and Travel Center
TES No.	170748
Sample Date	3/1/2016
Sample No.	B-1 @ 1'
Description	Silty SAND (SM)

Cohesion (psf)	**30**
Internal Friction Angle (ϕ)	**34**

Specimen	A	B	C	D	E
Dry Density (pcf)	121.6	121.6	121.6	---	---
Initial Water Content (%)	6.5	6.5	6.5	---	---
Final Water Content (%)	12.3	11.7	11.6	---	---
Normal Stress (pcf)	999	2001	3000	---	---
Maximum Shear (pcf)	786	1246	2151	---	---

Engineering Materials Laboratory
4539 N. Brawley #108, Fresno, CA 93722
559-276-9311

Method for Estimating the Service Life of Steel Culverts
Caltrans California Test 643

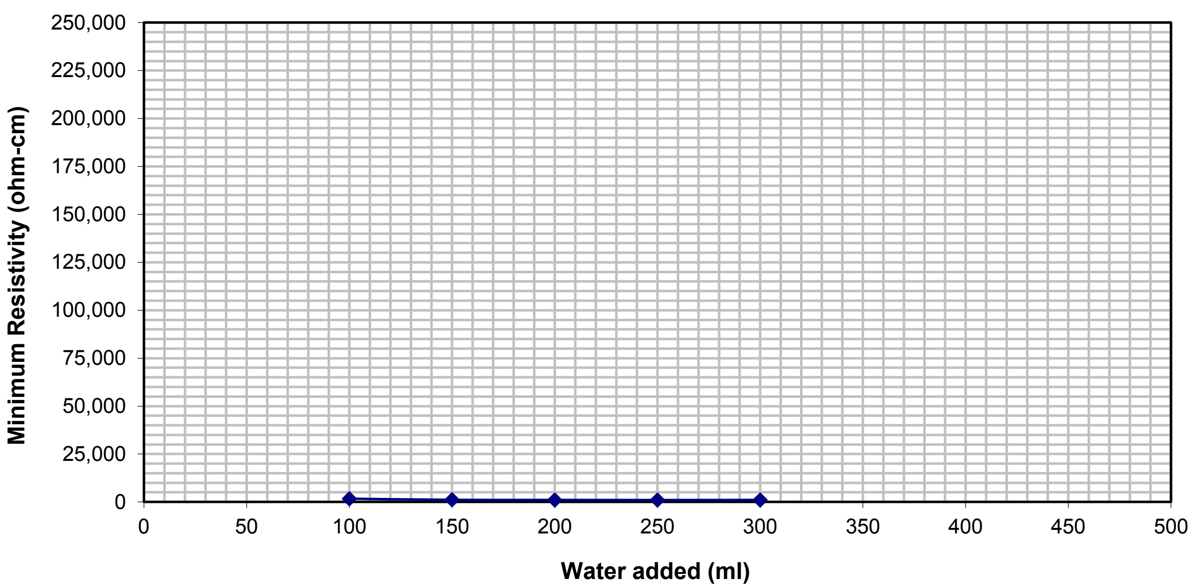
Project Name	Oil and Travel Center	Sample Location	B4 @ 0-3'
Project Number	170748	Test Date	12/4/2017
Sample Date	11/15/2017	Tested By	J.W.
Sampled By	Y. Mendoza	Material Description	Silty SAND (SM)

Sample Condition	**As Received**	**Minimum Resistivity**					
Water Added (ml)	0	100	150	200	250	300	
Resistance (ohm)	1,000,000	1,600	1,050	1,000	950	1,000	
Resistivity (ohm-cm)	1,065,000	1,704	1,118	1,065	1,012	1,065	

Minimum Resistivity (ohm-cm) 1,012 | **Field Resistivity (ohm-cm)**

pH = 6.82 EC =

Box Constant=1.065



Years to perforation* 14

* Caltrans California Test 643 - Method for Estimating the Service Life of Steel Culverts

TECHNICON
ENGINEERING SERVICES, INC.

Chemical Analysis

SO_4 - Modified Caltrans 417 & CL - Modified Caltrans 417/422

Project	Oil and Travel Center	Technician	K.W.
	Fowler, CA	Date	12/4/2017
TES No.	170748	Remarks	Silty SAND (SM)

Sample Location	**Soluble Sulfate SO_4-S**		**Soluble Chloride Cl**	
B-4 @ 0'-3'	13.7	mg/Kg	31.9	mg/Kg
B-4 @ 0'-3'	15.9	mg/Kg	30.1	mg/Kg
B-4 @ 0'-3'	17.3	mg/Kg	28.4	mg/Kg
Average	**15.63**	**mg/Kg**	**30.13**	**mg/Kg**

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Method for Estimating the Service Life of Steel Culverts
Caltrans California Test 643

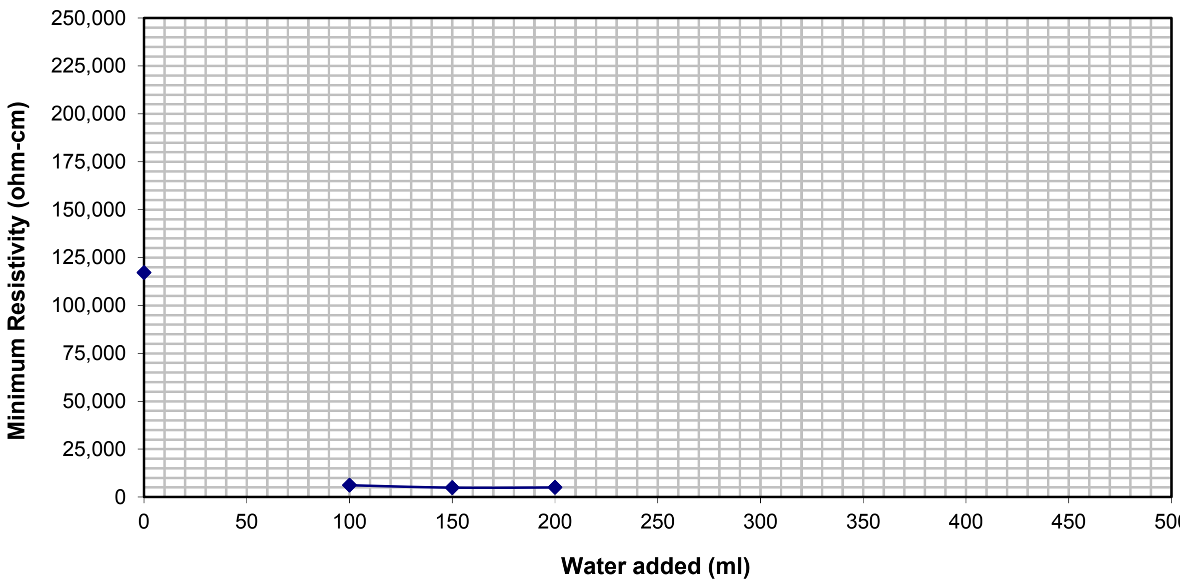
Project Name	Oil and Travel Center	Sample Location	B-9 @ 0'-3'
Project Number	170748	Test Date	12/4/2017
Sample Date	11/15/2017	Tested By	J.W.
Sampled By	Y. Mendoza	Material Description	Silty SAND (SM)

Sample Condition	**As Received**	**Minimum Resistivity**					
Water Added (ml)	0	100	150	200			
Resistance (ohm)	110,000	5,800	4,600	4,700			
Resistivity (ohm-cm)	117,150	6,177	4,899	5,006			

Minimum Resistivity (ohm-cm)	**4,899**	**Field Resistivity (ohm-cm)**

pH = 7.34 **EC =**

Box Constant=1.065



Years to perforation*	47

* Caltrans California Test 643 - Method for Estimating the Service Life of Steel Culverts

TECHNICON
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Chemical Analysis

SO_4 - Modified Caltrans 417 & CL - Modified Caltrans 417/422

Project	Oil and Travel Center	Technician	K.W.
	Fowler, CA	Date	12/4/2017
TES No.	170748	Remarks	Silty SAND (SM)

Sample Location	Soluble Sulfate SO_4-S		Soluble Chloride Cl	
B-9 @ 0'-3'	8.4	mg/Kg	5.3	mg/Kg
B-9 @ 0'-3'	7.5	mg/Kg	5.3	mg/Kg
B-9 @ 0'-3'	7.5	mg/Kg	5.3	mg/Kg
Average	**7.80**	**mg/Kg**	**5.30**	**mg/Kg**

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Laboratory Compaction Characteristics of Soil using Modified Effort (56,000 ft - lbf/ft^3) (D1557-07)

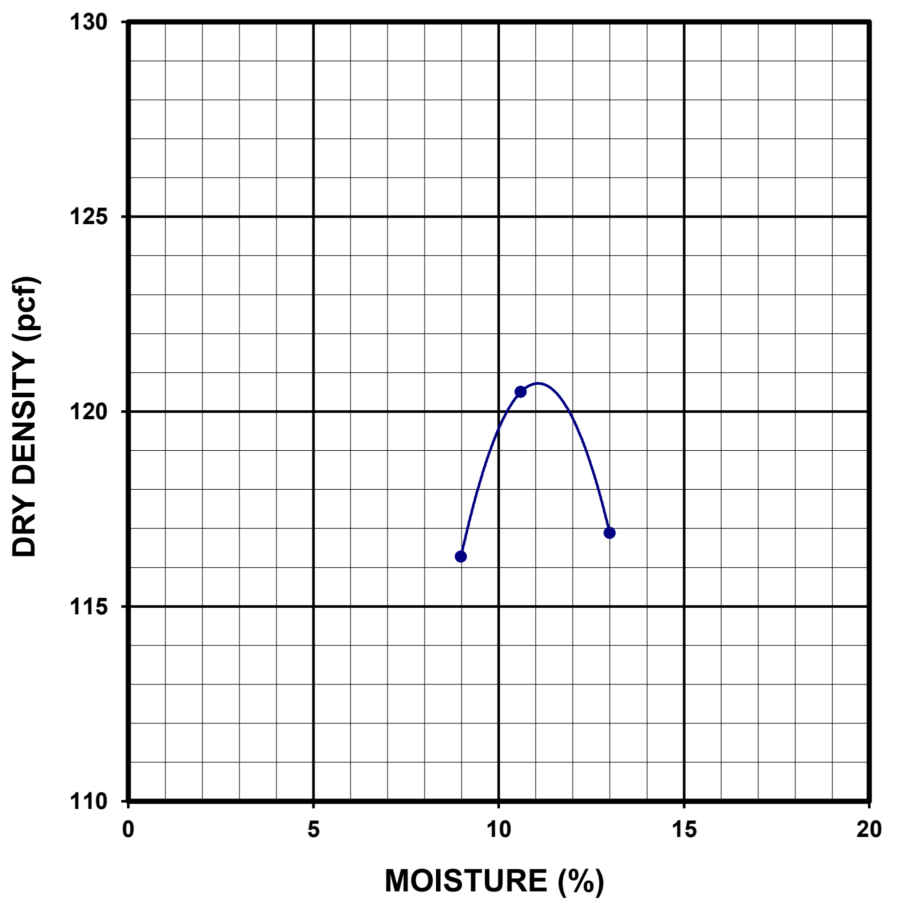
Project: Oil and Travel Center TES # : 170748

Sample No.: B-6 @ 0-3' Tested By: D.F. Date: 1/2/2018

Sample Location:

Soil Classification: Clayey SILT (ML) Specific Gravity: Undetermined Method: **A** B C

		1	2	3	4	5
A.	As Recieved Moisture Content					
B.	Mass of Moist Specimen & Mold, gm	3951.1	4020.2	4027.0		
C.	Mass of Compaction Mold, gm	1976.0	2007.3	2007.3		
D.	Mass of Moist Specimen, gm	1914.1	2013.0	1995.0		
E.	Volume of Mold, ft.^{3}	0.0333	0.0333	0.0333		
F.	Wet Density, lb/ft^3 [D/(E*453.6)]	126.7	133.3	132.1		
G.	Mass of Moisture (wet), gm	200.0	500.0	500.0		
H.	Mass of Moisture (dry), gm	188.2	185.0	182.3		
I.	Moisture Content, % [100*(G-H)/H]	9.0	10.6	13.0		
J.	Dry Density, lb/ft^3 [F/(1+I/100)]	116.3	120.5	116.9		
K.	Moisture for 100% saturation					



Maximum Wet Density, lb/ft^3

134.0

Maximum Dry Density, lb/ft^3

120.8

Optimum Moisture Content,%

11.0

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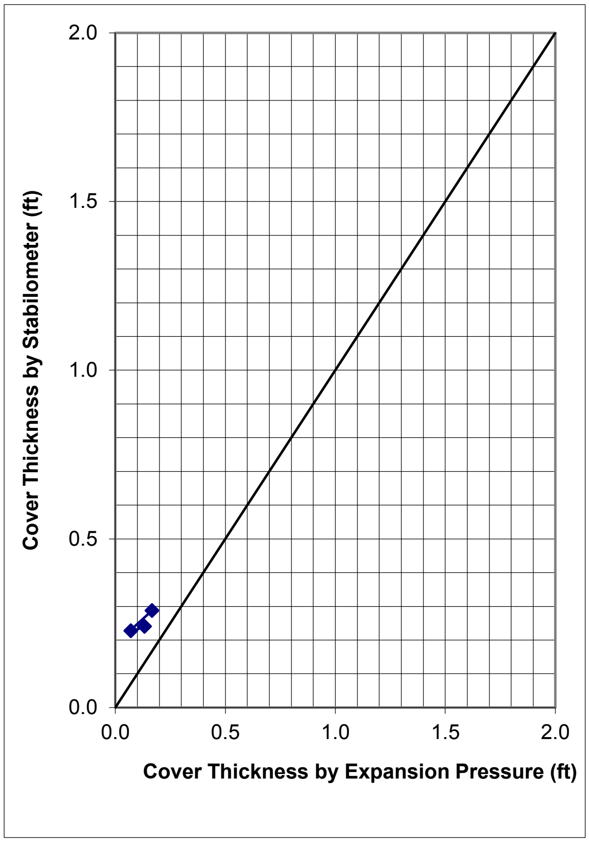
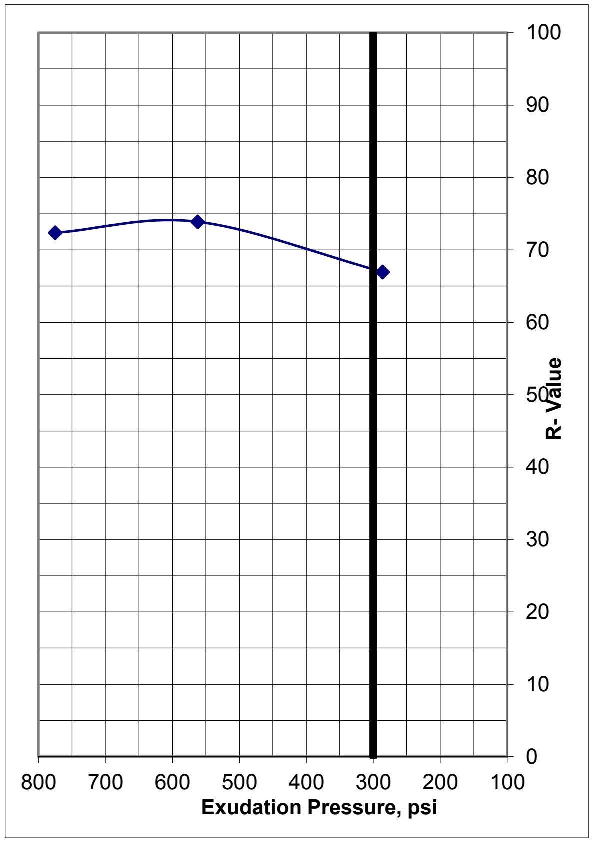
Resistance *R -* Value and Expansion Pressure of Compacted Soils

ASTM D2844-94, Cal 301

Project Name	Oil and Travel Center	Lab ID Number	17-6335
Project Number	170748	Sample Location	RV-1
Sample Date	11/16/17	Tested By	G.N.
Sampled By	Y. Mendoza	Date Tested	12/27/2017
Material Description	Silty SAND (SM)		





Specimen	1	2	3
Exudation Pressure, psi	286	562	775
Moisture at Test, %	9.9	9.6	9.4
Dry Density, pcf	117.5	118.1	118.1
Expansion Pressure, psf	22	9	17
Thickness by Stabilometer, ft.	0.3	0.2	0.2
Thickness by Expansion Pressure, ft.	0.2	0.1	0.1
R-Value by Stabilometer	67	74	72
R-Value by Expansion Pressure (TI=4.5)	NA		
R-Value at 300 psi Exudation Pressure	67		

Controlling R-Value	**67**

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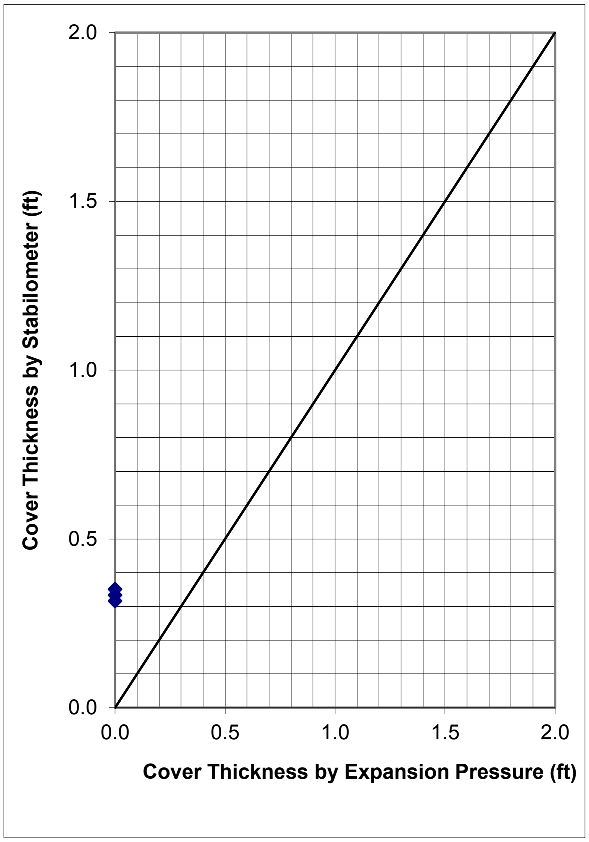
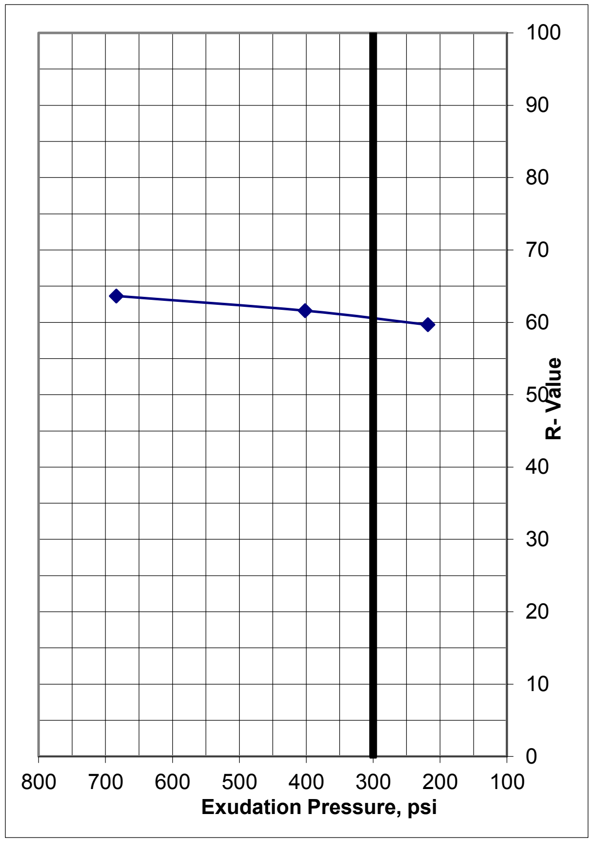
Resistance *R* - Value and Expansion Pressure of Compacted Soils

ASTM D2844-94, Cal 301

Project Name	Oil and Travel Center	Lab ID Number	17-6335
Project Number	170748	Sample Location	RV-2
Sample Date	11/16/17	Tested By	G.N.
Sampled By	Y. Mendoza	Date Tested	12/27/2017
Material Description	Silty SAND (SM)		





Specimen	1	2	3
Exudation Pressure, psi	218	402	684
Moisture at Test, %	9.0	8.8	8.6
Dry Density, pcf	118.6	119.4	118.8
Expansion Pressure, psf	0	0	0
Thickness by Stabilometer, ft.	0.4	0.3	0.3
Thickness by Expansion Pressure, ft.	0.0	0.0	0.0
R-Value by Stabilometer	60	62	64
R-Value by Expansion Pressure (TI=4.5)	NA		
R-Value at 300 psi Exudation Pressure	61		

Controlling R-Value	**61**

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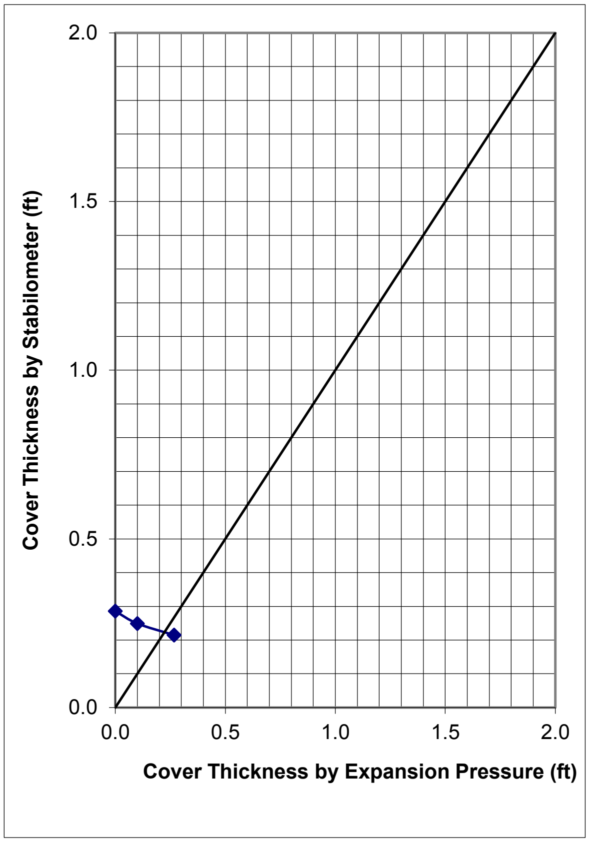
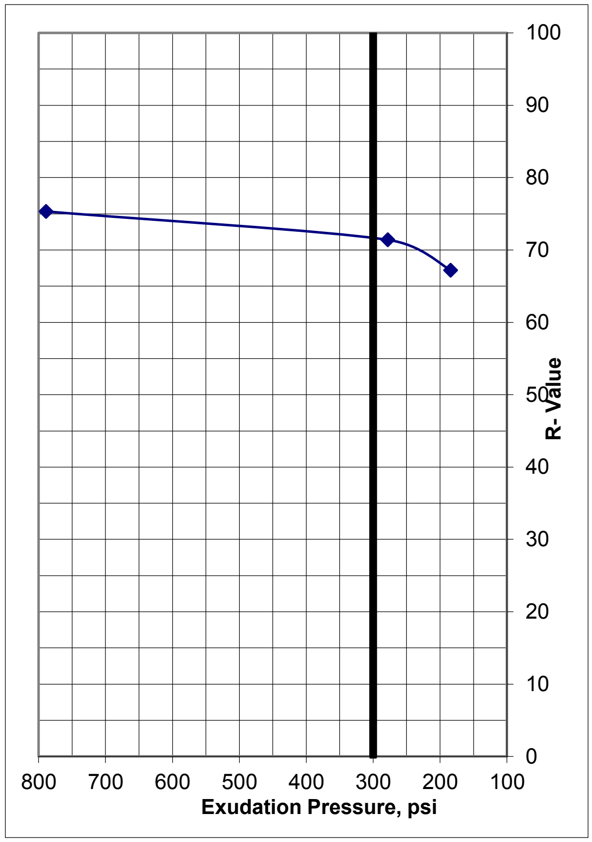
Resistance *R* - Value and Expansion Pressure of Compacted Soils

ASTM D2844-94, Cal 301

Project Name	Oil and Travel Center	Lab ID Number	17-6335
Project Number	170748	Sample Location	RV-3
Sample Date	11/16/17	Tested By	G.N.
Sampled By	Y. Mendoza	Date Tested	12/27/2017
Material Description	Silty SAND (SM)		





Specimen	1	2	3
Exudation Pressure, psi	184	278	789
Moisture at Test, %	8.0	7.8	7.6
Dry Density, pcf	125.5	126.5	126.7
Expansion Pressure, psf	0	13	35
Thickness by Stabilometer, ft.	0.3	0.2	0.2
Thickness by Expansion Pressure, ft.	0.0	0.1	0.3
R-Value by Stabilometer	67	71	75
R-Value by Expansion Pressure (TI=4.5)	NA		
R-Value at 300 psi Exudation Pressure	71		

Controlling R-Value	**71**

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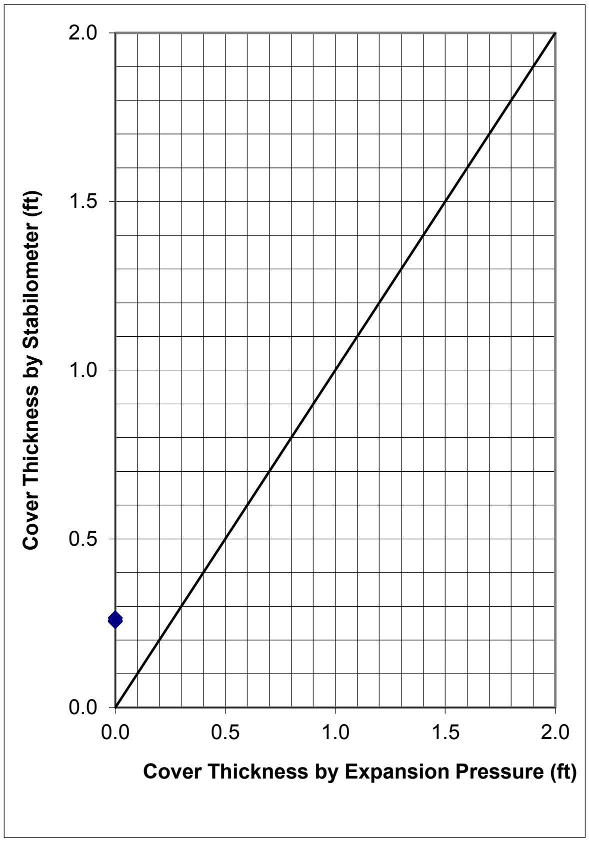
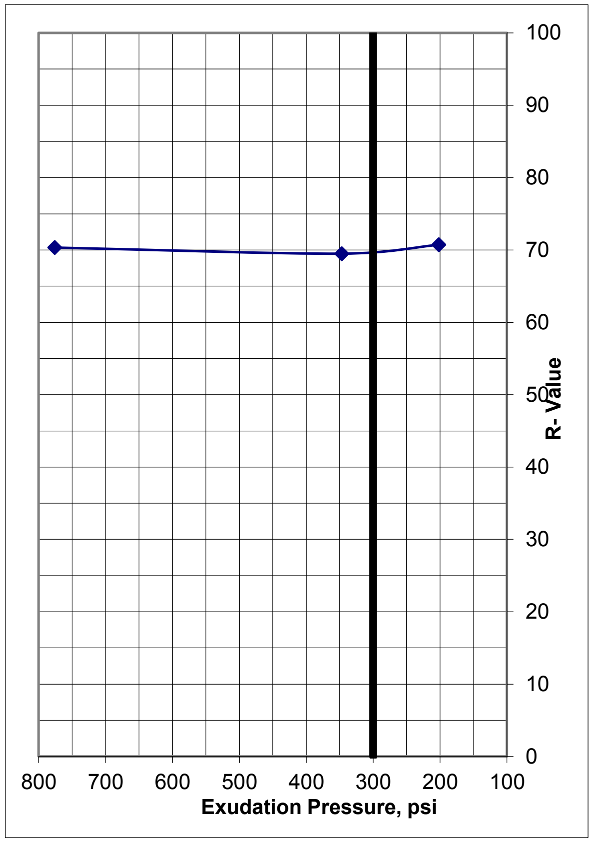
Resistance *R* - Value and Expansion Pressure of Compacted Soils

ASTM D2844-94, Cal 301

Project Name	Oil and Travel Center	Lab ID Number	17-6335
Project Number	170748	Sample Location	RV-4
Sample Date	11/16/17	Tested By	G.N.
Sampled By	Y. Mendoza	Date Tested	12/27/2017
Material Description	Silty SAND (SM)		





Specimen	1	2	3
Exudation Pressure, psi	202	347	776
Moisture at Test, %	15.0	14.5	14.0
Dry Density, pcf	112.4	114.8	114.1
Expansion Pressure, psf	0	0	0
Thickness by Stabilometer, ft.	0.3	0.3	0.3
Thickness by Expansion Pressure, ft.	0.0	0.0	0.0
R-Value by Stabilometer	71	69	70
R-Value by Expansion Pressure (TI=4.5)	NA		
R-Value at 300 psi Exudation Pressure	70		

Controlling R-Value	**70**

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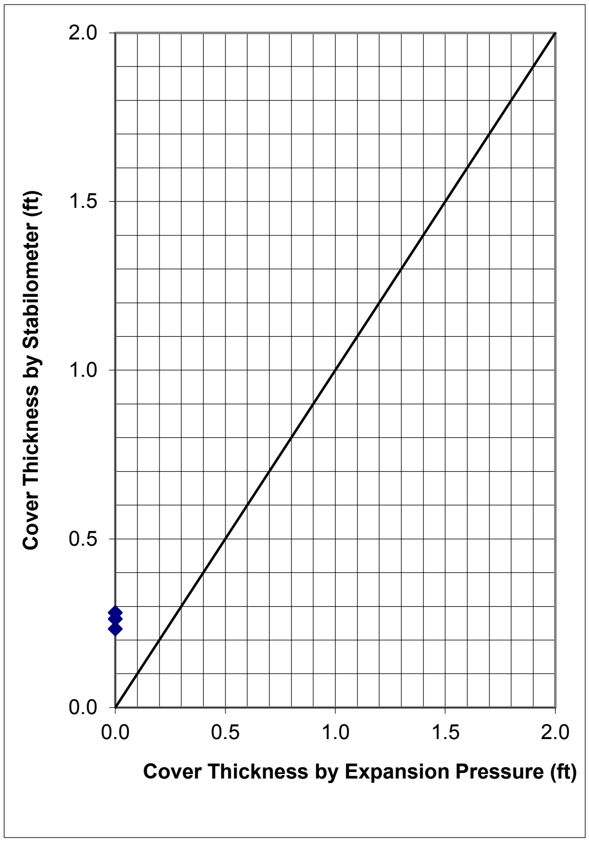
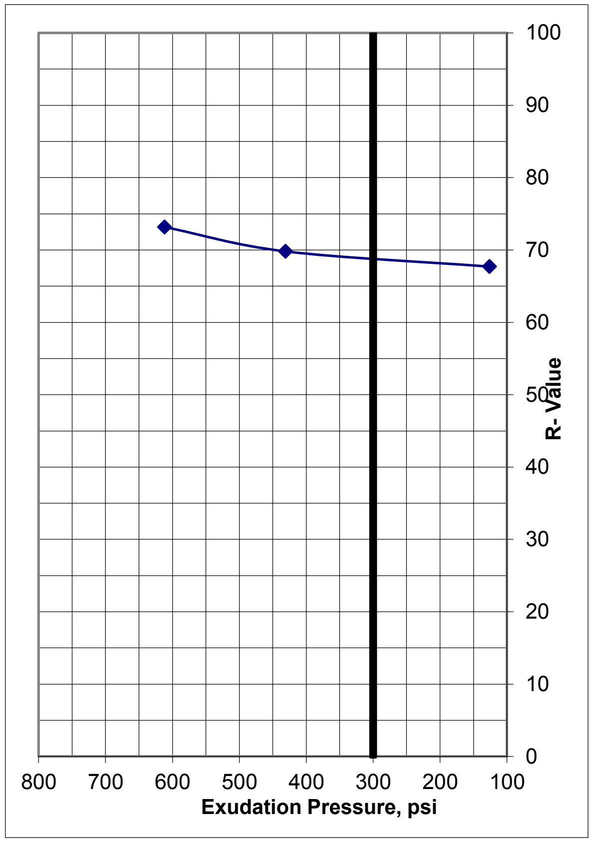
Resistance *R* - Value and Expansion Pressure of Compacted Soils

ASTM D2844-94, Cal 301

Project Name	Oil and Travel Center	Lab ID Number	17-6335
Project Number	170748	Sample Location	RV-5
Sample Date	11/16/17	Tested By	G.N.
Sampled By	Y. Mendoza	Date Tested	12/27/2017
Material Description	Silty SAND (SM)		





Specimen	1	2	3
Exudation Pressure, psi	126	431	612
Moisture at Test, %	9.2	8.6	7.9
Dry Density, pcf	121.8	121.0	122.7
Expansion Pressure, psf	0	0	0
Thickness by Stabilometer, ft.	0.3	0.3	0.2
Thickness by Expansion Pressure, ft.	0.0	0.0	0.0
R-Value by Stabilometer	68	70	73
R-Value by Expansion Pressure (TI=4.5)	NA		
R-Value at 300 psi Exudation Pressure	68		

Controlling R-Value	**68**

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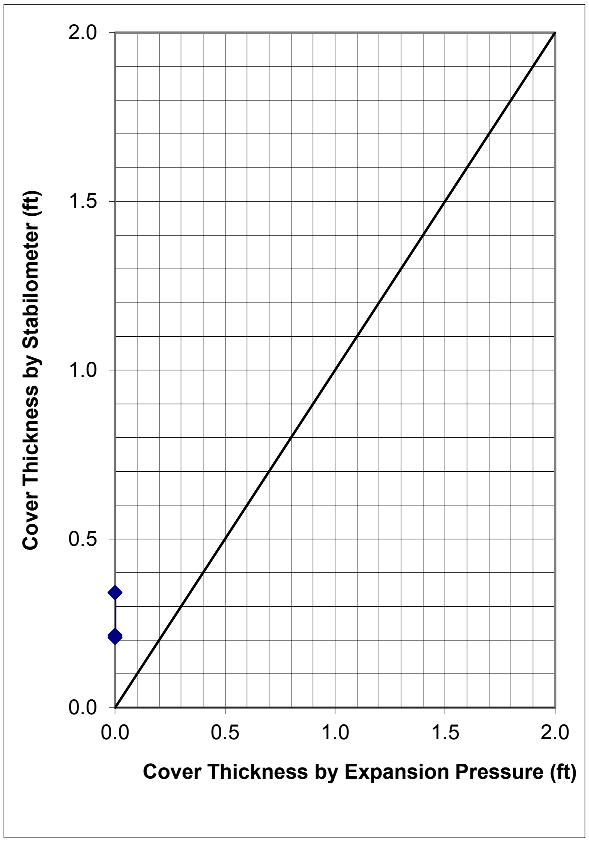
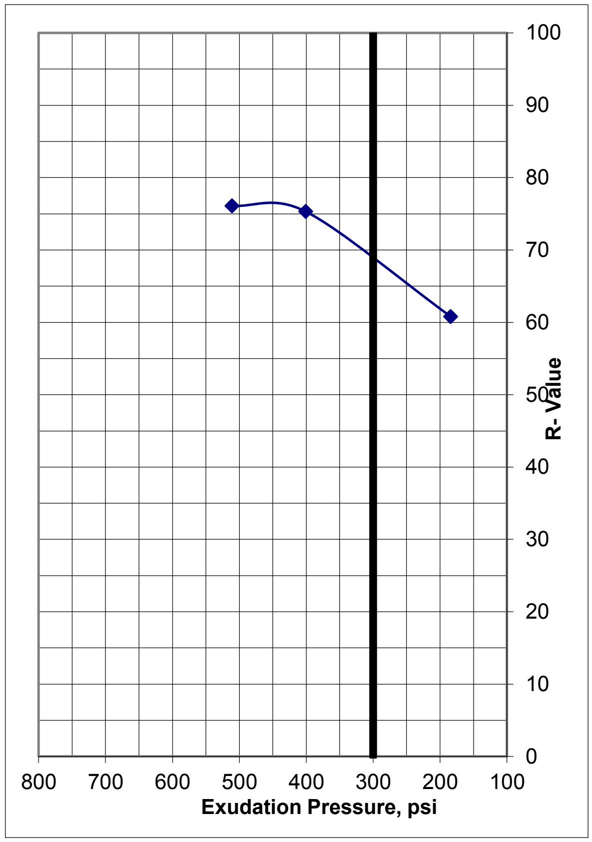
Resistance *R -* Value and Expansion Pressure of Compacted Soils

ASTM D2844-94, Cal 301

Project Name	Oil and Travel Center	Lab ID Number	17-6335
Project Number	170748	Sample Location	RV-6
Sample Date	11/16/17	Tested By	G.N.
Sampled By	Y. Mendoza	Date Tested	12/27/2017
Material Description	Silty SAND (SM)		





Specimen	1	2	3
Exudation Pressure, psi	184	401	511
Moisture at Test, %	7.7	7.2	7.0
Dry Density, pcf	127.4	127.5	128.3
Expansion Pressure, psf	0	0	0
Thickness by Stabilometer, ft.	0.3	0.2	0.2
Thickness by Expansion Pressure, ft.	0.0	0.0	0.0
R-Value by Stabilometer	61	75	76
R-Value by Expansion Pressure (TI=4.5)	NA		
R-Value at 300 psi Exudation Pressure	69		

Controlling R-Value	**69**

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Appendix G

Water Usage Calculations

MEMORANDUM

TO: DAWN MARPLE, CITY PLANNER

FROM: DAVID PETERS, CITY ENGINEER

SUBJECT: BUFORD TRUCK STOP – SPR 15-07

DATE: MAY 8, 2019

CC: MANUEL LOPEZ, PUBLIC WORKS SUPERINTENDENT

Per your request, I have evaluated the capacity of the City's water system and determined that there is sufficient capacity to serve the proposed project based on the following anticipated flows:

Average Daily Water Demand: 33,000 gallons per day
Daily Maximum Peak Factor = 2.0
Daily Maximum Water Demand: 66,000 gallons per day

The project will be required to provide an on-site distribution system capable of delivering fire flows throughout the proposed development. This system will need to be designed and installed by the developer in accordance with City standards and as directed by the City Engineer.

Please let me know if you have any question regarding this matter.

Attachments:

Water Source Capacity Calculations

CITY OF FOWLER
WATER SYSTEM CAPACITY CALCULATIONS

PRODUCTION WITH ALL WELLS OPERATIONAL

Well	Maximum Hourly Pumping Capacity (gallons per minute)	Maximum Hourly Pumping Capacity (gallons per hour)
2	320	19,200
4	500	30,000
5A	1100	66,000
6	1250	75,000
7	650	39,000
8A	750	45,000
Totals =	4570	274,200

SYSTEM DEMAND CALCULATIONS

Exist Maximum Daily Demand =	2,950,000	gallons
Project Max Daily Demand =	66,000	gallons
Minus Existing Daily Demand =	1,740	gallons
Total System Daily Demand =	3,014,260	gallons

Average Hourly Flow = 3,014,260 / 24 = 125,594 gallons

Peak Hour Demand (PDD) = 125,594 X 1.5 = 188,391 gallons

PRODUCTION WITH HIGHEST YIELD WELL OFFLINE

Well	Maximum Hourly Pumping Capacity (gallons per minute)	Maximum Hourly Pumping Capacity (gallons per hour)
2	320	19,200
4	500	30,000
5A	1100	66,000
6	0	0
7	650	39,000
8A	750	45,000
Totals =	3320	199,200

SYSTEM CAPACITY CALCULATIONS

Check: Peak Hour Demand < Maximum Hourly Pumping Capacity

188,391 < 199,200

SYSTEM CAPACITY SUFFICIENT

Calcuations Prepared By: David Peters, City Engineer

5/8/2019
Date

Calculations prepared in accordance with California Waterworks Standards CCR Title 22 Section 64554

Appendix H

Traffic Impact Study

Traffic Impact Study

Proposed Buford Oil Company Travel Center

Northwest of the Intersection of Manning Avenue and Golden State Boulevard

Fowler, California

Prepared For:

City of Fowler
128 South 5th Street
Fowler, California 93625

Date:

April 18, 2019

Job No.:

18-040.01

PETERS ENGINEERING GROUP
A CALIFORNIA CORPORATION

PETERS ENGINEERING GROUP
A CALIFORNIA CORPORATION

Ms. Dawn Marple, City Planner April 18, 2019
City of Fowler
128 South 5th Street
Fowler, California 93625

Subject: Traffic Impact Study
Proposed Buford Oil Company Travel Center
Northwest of the Intersection of Manning Avenue and Golden State Boulevard
Fowler, California

Dear Ms. Marple:

INTRODUCTION

This report presents the results of a traffic impact study for a proposed travel center in Fowler, California. This analysis focuses on the anticipated effect of vehicle traffic resulting from the project.

PROJECT DESCRIPTION

The proposed Buford Oil Company Travel Center (Project) will be located on approximately 18.72 acres northwest of the intersection of Manning Avenue and Golden State Boulevard in Fowler, California. The Project location is presented in the attached Figure 1, Vicinity Map. The proposed site plan is presented in Figure 2, Site Plan.

Site access is proposed via the signalized intersection of Manning Avenue and Vineyard Place, via a major right-in/right-out driveway connecting to Golden State Boulevard, and via a major driveway connecting to Valley Drive. A right-in/right-out driveway is proposed west of Vineyard Place, and a right-in only driveway is proposed immediately east of Vineyard Place (similar to the existing condition). The Project proposes to construct a street (Outlot B, Buford Drive) generally through the middle of the site connecting Manning Avenue to Valley Drive.

The Project will be constructed in six phases as indicated on the site plan revised February 27, 2018. Each phase of the Project is described below. The existing facilities at the site (existing convenience store, fueling facilities, and a weighing station consisting of two truck scales) will be demolished and removed after construction of the first phase of the Project.

Phase 1

Phase 1 of the Project is a 7.96-acre travel center (sometimes referred to as a "travel stop") located between Buford Drive and Golden State Boulevard containing the following:

- Eight diesel fueling lanes (includes diesel, diesel exhaust fluid, and bio diesel) with a 3,280-square-foot diesel fuel canopy
- six gas fueling dispensers (12 fueling positions) for automobiles with a 3,440-square-foot gas canopy
- a weigh station consisting of one truck scale
- 89 truck parking spaces
- 51 standard vehicle parking spaces
- One 9,000-square-foot building that will include:
  - A driver's lounge, game room, ATMs, Western Union Check Cashing, and wi-fi
  - Restroom facilities that include showers and laundry
  - Two quick service restaurants
- Construction of Buford Drive
- Access via an entrance-only driveway from westbound Manning Avenue, five driveways connecting to Buford Drive, and one driveway connecting to Golden State Boulevard.
- This phase also includes construction of a ponding basin on Outlot A, approximately 1.57 acres.

Phase 2

Phase 2 of the Project is a 0.98-acre lot on the east side of Buford Drive that will have a 10,000-square-foot truck tire repair, lube, and wash building. Access will be shared with the Phase 1 driveways.

Phase 3

Phase 3 of the Project is a 0.88-acre lot that will have a 4,627-square-foot dine-in restaurant. Access will be via one driveway connecting to Manning Avenue and connectivity to adjacent Phases 4, 5, and 6.

Phase 4

Phase 4 of the Project is a 0.91-acre lot that will have a 4,378-square-foot restaurant with a drive through. Access will be via one driveway connecting to Buford Drive and connectivity to adjacent Phases 3 and 5.

Phase 5

Phase 5 of the Project is a 0.63-acre lot that will have a 3,116-square-foot restaurant with a drive through. Access will be via one driveway connecting to Buford Drive and connectivity to adjacent Phases 3 and 4.

Phase 6

Phase 6 of the Project is a 2.23-acre lot that will have a four-story, 120-room hotel in a building with a total area of approximately 40,000 square feet. Access will be via two driveways connecting to Buford Drive and connectivity to adjacent Phase 3.

STUDY AREA AND TIME PERIOD

A traffic study scoping letter dated January 14, 2019 was circulated to affected agencies. The study locations were determined in consultation with City of Fowler staff, County of Fresno staff, and Caltrans staff based on the anticipated volume and distribution of traffic expected to be generated by the Project. This report includes analysis of the following intersections:

1. Tract 6027 Access / Valley Drive
2. Buford Drive / Valley Drive
3. Golden State Boulevard / Valley Drive
4. Golden State Boulevard / Site Access
5. Manning Avenue / State Route (SR) 99 Southbound Ramps
6. Manning Avenue / SR 99 Northbound On Ramp
7. Manning Avenue / SR 99 Northbound Off Ramp
8. Manning Avenue / Vineyard Avenue
9. Manning Avenue / Golden State Boulevard
10. Manning Avenue / Temperance Avenue

The intersection analyses include a queuing analysis along the Manning Avenue corridor.

The study time periods are the weekday a.m. and p.m. peak hours determined between 7:00 and 9:00 a.m. and between 4:00 and 6:00 p.m. The peak hours are analyzed for the following conditions:

- Existing Conditions;
- Existing-Plus-Project Conditions;
- Near-Term With-Project Conditions (includes approved and pending projects described in the Pending Projects section of this report); and
- Cumulative (Year 2040) Conditions With Project.

LANE CONFIGURATIONS AND INTERSECTION CONTROL

The existing lane configurations and intersection control at the study intersections are illustrated in Figure 3, Existing Lane Configurations and Intersection Control. The year 2040 analyses assume that the existing lane configurations and control will be maintained through the year 2040.

PROJECT TRIP GENERATION

Existing Conditions

The Project site contains an existing Shell gas station with eight automobile fueling positions, a convenience market with a Port of Subs restaurant, a Buford’s Diesel No. 2 with seven diesel fueling positions for large trucks, and two truck scales. The existing El Mexicano Restaurant is not on the Project site and will remain after the Project is constructed.

Twenty-four-hour traffic counts were performed at the four existing driveways serving the Shell station, convenience store, Port of Subs, diesel station, and truck scales. The data sheets are attached. The results of the counts are summarized in Table 1. For purposes of this study, vehicles with three or more axles (Class 6 or larger) are considered to be "trucks" while vehicles with two axles are considered to be "passenger" vehicles.

Table 1
Existing Trip Generation

Vehicle	**Weekday**	**A.M. Peak Hour (Between 7:00 and 9:00)**				**P.M. Peak Hour (Between 4:00 and 6:00)**			
	Total	In:Out	In	Out	Total	In:Out	In	Out	Total
Passenger	1,476	49:51	41	42	83	47:53	51	58	109
Trucks	964	43:57	29	38	67	48:52	30	33	63
Totals	**2,440**	**47:53**	**70**	**80**	**150**	**47:53**	**81**	**91**	**172**

In:Out are reported as percentages of the total.

Proposed Project

Data provided in the Institute of Transportation Engineers (ITE) *Trip Generation Manual, 10th Edition*, are typically used to estimate the number of trips anticipated to be generated by proposed projects. However, for the Phase 1 and Phase 2 portions of the Project, the ITE data is limited; therefore, recent traffic impact studies for similar truck stops were reviewed (including the Madera Love's and the Tulare Pilot). Trip generation rates for the Phase 1 and Phase 2 portions of the Project were taken from the Madera Love's traffic impact study. Table 2 presents the trip generation calculations.

The Madera Love's traffic impact study indicates that, based on observations at existing Love's Travel Stops, passenger vehicles make up 75 percent of a.m. trips entering and 81 percent of a.m. trips exiting the site. Passenger vehicles make up 71 percent of p.m. trips entering and 69 percent of p.m. trips exiting the site. The Madera Love's traffic impact study also indicated that 70 percent of daily Love's Travel Stops trips are passenger vehicles. Based on that information, for purposes of this study it is assumed that 70 percent of all peak hour trips will be passenger vehicles and 30 percent will be trucks (Class 6 or larger). Table 3 presents estimates of the volume of passenger vehicles and trucks generated by the Project. An assumption is included that 80 percent of the truck tire shop trips are trucks (allowing for employee trips) and that two percent of trips generated by restaurants and hotel are truck trips. These values are estimates based on the types of businesses and accessibility of the parking lots to larger vehicles.

Table 2
Project Trip Generation Calculations

Land Use	Size	Weekday		A.M. Peak Hour					P.M. Peak Hour				
		Rate	Total	Rate	In:Out	In	Out	Total	Rate	In:Out	In	Out	Total
Travel Stop[1]	9,000 sf	470	4,230	31.0	51:49	142	137	279	39.0	51:49	179	172	351
Truck Tire Shop[1]	10,000 sf	7.46	76	0.87	63:37	6	3	9	1.25	43:57	6	7	13
Restaurant[2] (932)	4,627 sf	112.18	520	9.94	55:45	25	21	46	9.77	62:38	29	17	46
Restaurant with Drive Through[2] (934)	4,378 sf	470.95	2,062	40.19	51:49	90	86	176	32.67	52:48	74	69	143
Restaurant with Drive Through[2] (934)	3,116 sf	470.95	1,468	40.19	51:49	64	62	126	32.67	52:48	53	49	102
Hotel[2] (310)	120	8.36	1,004	0.47	59:41	34	23	57	0.60	51:49	37	35	72
TOTALS			**9,360**			**361**	**332**	**693**			**378**	**349**	**727**

References: 1. *City of Madera Love's Travel Center Project Environmental Impact Report (EIR) Traffic Impact Study*
2. *Trip Generation Manual, 10th Edition, Institute of Transportation Engineers 2017*

Rates are reported in trips per 1,000 square feet of building area or per hotel room, as applicable.

Table 3
Estimated Project Automobile and Truck Trips

Land Use	Vehicle	Weekday	A.M. Peak Hour			P.M. Peak Hour		
		Total	In	Out	Total	In	Out	Total
Travel Stop	Passenger	2,960	99	96	195	125	120	245
	Truck	1,270	43	41	84	54	52	106
Truck Tire Shop	Passenger	60	1	0	1	1	2	3
	Truck	16	5	3	8	5	5	10
Restaurant (932)	Passenger	510	24	20	44	28	16	44
	Truck	10	1	1	2	1	1	2
Restaurant with Drive Through (934)	Passenger	2,022	88	84	172	72	67	139
	Truck	40	2	2	4	2	2	4
Restaurant with Drive Through (934)	Passenger	1,440	62	60	122	52	48	100
	Truck	28	2	2	4	1	1	2
Hotel (310)	Passenger	984	33	22	55	36	34	70
	Truck	20	1	1	2	1	1	2
TOTALS	**Passenger**	**7,976**	**307**	**282**	**589**	**316**	**286**	**602**
	Truck	**1,384**	**54**	**50**	**104**	**62**	**63**	**125**

Internal Capture

The Project has been designed to include complementary uses that would encourage internal capture of trips between the various land uses. Data presented in the ITE *Trip Generation Handbook* dated June 2004 (TGH) suggest that captured-trip reductions are applicable to the proposed Project. Captured-trip reductions are applied to account for the interaction between the various individual land uses assumed for the trip generation calculations. A common example of a captured trip occurs in a multi-use development containing both offices and shops. Trips made by office workers to shops within the site are defined as internal to (i.e., "captured within") the multi-use site. A more complete description of captured trips is presented in the TGH. An example of a captured trip for the proposed Project is a person who eats at a fast-food restaurant and also purchases fuel.

Captured-trip reductions were calculated as described by ITE and the calculations are attached. Capture rates were limited to 20 percent for any single use at the site based on a review of data presented in Tables 7.1 and 7.2 of the TGH. Table 4 presents the results of the internally-captured-trip analyses.

Table 4
Estimated Internally-Captured Trips

Vehicle	Weekday		A.M. Peak Hour		P.M. Peak Hour	
	In	Out	In	Out	In	Out
Passenger	-905	-905	-63	-63	-69	-69
Truck	-11	-11	-2	-2	-2	-2
TOTALS	**-916**	**-916**	**-65**	**-65**	**-71**	**-71**

The estimated external Project traffic volumes are presented in Table 5. These values represent the total Project trips that would be expected to occur at the site entrances and exits.

Table 5
Estimated External Project Trips

Vehicle	Weekday			A.M. Peak Hour			P.M. Peak Hour		
	In	Out	Total	In	Out	Total	In	Out	Total
Passenger	3,083	3,083	6,166	244	219	463	247	217	416
Truck	681	681	1,362	52	48	100	60	61	121
TOTALS	**3,763**	**3,763**	**7,528**	**296**	**267**	**563**	**307**	**278**	**585**

The net external Project trips considering demolition of the existing facilities at the site are presented in Table 6.

Table 6
Estimated Net External Project Trips

Vehicle	Weekday			A.M. Peak Hour			P.M. Peak Hour		
	In	Out	Total	In	Out	Total	In	Out	Total
Passenger	2,345	2,345	4,690	203	177	380	196	159	355
Truck	199	199	398	23	10	33	30	28	58
TOTALS	**2,544**	**2,544**	**5,088**	**226**	**187**	**413**	**226**	**187**	**413**

Pass-By Trips

The TGH presents information suggesting that the Project traffic volumes will include pass-by trips. The TGH states: "There are instances, however, when the total number of trips generated by a site is different from the amount of new traffic added to the street system by the generator. For example, retail-oriented developments such as shopping centers…are often located adjacent to busy streets in order to attract the motorists already on the street. These sites attract a portion of their trips from traffic passing the site… These retail trips may not add new traffic to the adjacent street system." Pass-by reductions of 15 percent were applied to the external travel stop and restaurant passenger vehicle trips. The use of a 15-percent pass-by reduction is considered conservative, as the use of values greater than 15 percent typically requires justification. To further allow for a conservative analysis, pass-by reductions are not applied to the truck trips. Table 7 presents a breakdown of Project pass-by trips and primary trips.

Table 7
Pass-By Trips and Net External Primary Project Trips

Trip and Vehicle Type	Weekday		A.M. Peak Hour		P.M. Peak Hour	
	In	Out	In	Out	In	Out
Passenger	2,345	2,345	203	177	196	159
Pass-By	-351	-351	-30	-26	-29	-23
Truck	199	199	23	10	30	28
TOTALS	**2,193**	**2,193**	**196**	**161**	**197**	**164**

Passenger Car Equivalents

Passenger car equivalents (PCE) represent the number of passenger cars displaced by a single heavy vehicle (typically considered to be vehicles with more than four wheels touching the pavement during normal operations) under certain roadway, traffic, and control conditions. The use of PCEs compensates for the operational characteristics of heavy vehicles (e.g., slower acceleration and deceleration than passenger vehicles) as well as the roadway space displaced. The Transportation Research Board *Highway Capacity Manual, 6th Edition*, identifies a PCE factor of 2.0 for a default mix of trucks in level terrain on highway segments. A greater PCE factor is reasonable at intersections. For purposes of this study, a PCE factor of 2.5 is applied to all vehicles with three or more axles. Table 8 presents a summary of the net external peak-hour Project trips in terms of PCE.

Table 8
Net External Primary Project Trips – Passenger Car Equivalents

Vehicle	Weekday		A.M. Peak Hour		P.M. Peak Hour	
	In	Out	In	Out	In	Out
Passenger	2,345	2,345	203	177	196	159
Pass-By	-351	-351	-30	-26	-29	-23
Truck (PCE)	498	498	58	25	75	70
TOTALS (PCE)	**2,492**	**2,492**	**231**	**176**	**242**	**206**

Project Trip Assignment

The distribution of Project trips to the adjacent streets is based on existing traffic volumes, engineering judgment, locations of major routes, and the locations of complementary land uses. The Project trips are presented in the following figures:

Figure 4: Net External Peak-Hour Primary Project Passenger Vehicle Trips

Figure 5: Net External Peak-Hour Primary Project Truck Trips

Figure 6: Net External Peak-Hour Primary Project Trips (All Vehicles)

Figure 7: Peak-Hour Pass-By Project Traffic Trips

Figure 8: Net External Peak-Hour Primary Project Truck PCE Trips

Figure 9: Net External Peak-Hour Primary Project PCE Trips (All Vehicles)

EXISTING TRAFFIC VOLUMES

The existing traffic volumes were determined by performing manual turning movement counts at the study intersections between 7:00 and 9:00 a.m. and between 4:00 and 6:00 p.m. on a typical weekday. The counts also included determination of truck percentages. The traffic count data sheets are attached and include the dates the counts were performed. Peak-hour existing traffic volumes are presented in Figure 10, Existing Peak-Hour Traffic Volumes.

EXISTING-PLUS-PROJECT TRAFFIC VOLUMES

Peak-hour existing-plus-Project traffic volumes are presented in the following figures:

Figure 11: Existing Plus Project Peak-Hour Traffic Volumes (determined by adding the values in Figures 6, 7, and 10)

Figure 12: Existing Plus Project PCE Peak-Hour Traffic Volumes (determined by adding the values in Figures 7, 9, and 10)

PENDING PROJECTS

The analyses consider Tract 6027 located southwest of the intersection of Golden State Boulevard and Valley Drive. Tract 6027 includes 14.06 gross acres of M-1 zoning with a proposed tract map that creates 10 parcels ranging in size from 0.80 acres to 2.28 acres. The analyses also consider the Maxco Packaging Facility located northeast of the intersection of Manning Avenue and Golden State Boulevard. The proposed manufacturing facility will produce cardboard boxes for agricultural uses at a proposed 295,380-square-foot building with a future 12,519-square-foot office building. Finally, the funded Golden State Corridor project will construct a second left-turn lane on northbound Golden State Boulevard at Manning Avenue. The locations of the pending projects are presented in the attached Figure 13, Pending Projects Map.

NEAR-TERM WITH-PROJECT CONDITIONS

Peak-hour near-term with-Project conditions include the existing traffic volumes, the Project trips, and the pending projects. The near-term with-Project traffic volumes are presented in the following figures:

Figure 14: Near-Term With-Project Peak-Hour Traffic Volumes

Figure 15: Near-Term With-Project PCE Peak-Hour Traffic Volumes

It should be noted that the phrase "near-term" is not associated with a year; rather, it represents a condition in which the Project and other known pending projects have been constructed.

CUMULATIVE TRAFFIC VOLUMES (YEAR 2040)

Cumulative traffic volumes for the year 2040 were projected using the Fresno County travel model and the *Increment Method* approved by the Council of Fresno County Governments (COG) to the extent possible. The base year and year 2035 model traffic output used in the analyses are attached. The growth was extrapolated to the year 2040. Future turning movements were projected based on the methods presented in Chapter 8 of the Transportation Research Board National Cooperative Highway Research Program Report 255 entitled *"Highway Traffic Data for Urbanized Area Project Planning and Design."* Cumulative With-Project traffic volumes are presented in the following figures:

Figure 16: Cumulative 2040 With-Project Peak-Hour Traffic Volumes

Figure 17: Cumulative 2040 With-Project PCE Peak-Hour Traffic Volumes

SIGNIFICANCE CRITERIA

The Transportation Research Board *Highway Capacity Manual*, 2010, (HCM2010) defines level of service (LOS) as, "A quantitative stratification of a performance measure or measures that represent quality of service, measured on an A-F scale, with LOS A representing the best operating conditions from the traveler's perspective and LOS F the worst."

Automobile mode LOS characteristics for both unsignalized and signalized intersections are presented in Tables 9 and 10.

Table 9
Level of Service Characteristics for Unsignalized Intersections

Level of Service	Average Vehicle Delay (seconds)
A	0-10
B	>10-15
C	>15-25
D	>25-35
E	>35-50
F	>50

Reference: *Highway Capacity Manual*, Transportation Research Board, 2010

Table 10
Level of Service Characteristics for Signalized Intersections

Level of Service	Description	Average Vehicle Delay (seconds)
A	Volume-to-capacity ratio is low. Progression is exceptionally favorable or the cycle length is very short.	<10
B	Volume-to-capacity ratio is low. Progression is highly favorable or the cycle length is very short.	>10-20
C	Volume-to-capacity ratio is no greater than 1.0. Progression is favorable or cycle length is moderate.	>20-35
D	Volume-to-capacity ratio is high but no greater than 1.0. Progression is ineffective or cycle length is long. Many vehicles stop and individual cycle failures are noticeable.	>35-55
E	Volume-to-capacity ratio is high but no greater than 1.0. Progression is unfavorable and cycle length is long. Individual cycle failures are frequent.	>55-80
F	Volume-to-capacity ratio is greater than 1.0. Progression is very poor and cycle length is long. Most cycles fail to clear the queue.	>80

Reference: *Highway Capacity Manual*, Transportation Research Board, 2010

The City of Fowler 2025 General Plan establishes the following policy:

> *"Encourage a Level of Service (LOS) "C" throughout the local circulation network, with an LOS "D" along SR 99. An exception to the local road standard is that LOS "D" may be allowed at intersections of major streets, at SR 99 interchanges, and along street segments where additional improvements are not feasible."*

A project is considered to have a significant impact at an intersection if its traffic, when added to the traffic of the no-project condition, would cause any of the changes in traffic conditions described below.

1. Cause an intersection that is operating at an acceptable LOS D or better to deteriorate to an unacceptable LOS E or worse;

   OR

2. Cause the average delay to increase by more than 5.0 seconds on a movement or approach that is already operating at an unacceptable LOS. It should be noted that a decrease from an unacceptable LOS to a lesser LOS (e.g. from LOS E to LOS F) is not considered an impact unless the corresponding delay increase is greater than 5.0 seconds.

INTERSECTION ANALYSES

The intersection levels of service were determined using the computer program Synchro 9, which is based on HCM2010 procedures for calculating levels of service. The intersection analysis sheets are attached.

Tables 11 through 14 present the results of the intersection analyses. For one-way and two-way stop-controlled intersections an overall intersection level of service is not defined by the HCM2010. Therefore, for one-way and two-way stop-controlled intersections the level of service and average delay per vehicle for the approach with the greatest delay is reported. For existing conditions, levels of service below the minimum level of service are presented in bold type. For Project scenarios, significant impacts are presented in bold type. Italic type indicates levels of service below the target LOS where the increase in delay is not great enough to be identified as a significant impact (i.e., not greater than 5.0 seconds per vehicle).

Table 11
Intersection Level of Service Summary – Existing Conditions

Intersection	Control	A.M.		P.M.	
		Delay (sec)	LOS	Delay (sec)	LOS
Tract 6027 Access / Valley Drive	Does not exist				
Buford Drive / Valley Drive	Does not exist				
Golden State / Valley Drive	One-way stop	13.2	B	15.4	C
Golden State / Site Access	Does not exist				
Manning / SR 99 SB Ramps	One-way stop	12.8	B	14.7	B
Manning / SR 99 NB On Ramp	Yield	7.9	A	8.1	A
Manning / SR 99 NB Off Ramp	One-way stop	33.1	D	**64.5**	**F**
Manning / Vineyard	Signals	10.3	B	14.7	B
Manning / Golden State	Signals	19.6	B	23.6	C
Manning / Temperance	Two-way stop	11.7	B	13.2	B

Table 12
Intersection Level of Service Summary – Existing-Plus-Project Conditions

Intersection	Control	A.M.		P.M.	
		Delay (sec)	LOS	Delay (sec)	LOS
Tract 6027 Access / Valley Drive	One-way stop				
Buford Drive / Valley Drive	One-way stop	8.8	A	8.9	A
Golden State / Valley Drive	One-way stop	14.0	B	16.8	C
Golden State / Site Access	One-way stop	9.2	A	10.8	B
Manning / SR 99 SB Ramps	One-way stop	15.2	C	18.8	C
Manning / SR 99 NB On Ramp	Yield	8.1	A	8.4	A
Manning / SR 99 NB Off Ramp	One-way stop	**43.8**	**E**	**114.3**	**F**
Manning / Vineyard	Signals	25.7	C	24.1	C
Manning / Golden State	Signals	20.8	C	26.8	C
Manning / Temperance	Two-way stop	12.0	B	13.6	B

Table 13
Intersection Level of Service Summary – Near-Term With-Project Conditions

Intersection	Control	A.M.		P.M.	
		Delay (sec)	LOS	Delay (sec)	LOS
Tract 6027 Access / Valley Drive	One-way stop	8.7	A	8.9	A
Buford Drive / Valley Drive	One-way stop	9.4	A	9.5	A
Golden State / Valley Drive	One-way stop	17.3	C	19.8	C
Golden State / Site Access	One-way stop	9.3	A	11.1	B
Manning / SR 99 SB Ramps	One-way stop	15.6	C	20.6	C
Manning / SR 99 NB On Ramp	Yield	8.1	A	8.5	A
Manning / SR 99 NB Off Ramp	One-way stop	**50.6**	**F**	**143.8**	**F**
Manning / Vineyard	Signals	263.4	C	26.4	C
Manning / Golden State	Signals	19.6	B	25.0	C
Manning / Temperance	Two-way stop	12.1	B	13.7	B

Table 14
Intersection Level of Service Summary – Cumulative (2040) With-Project Conditions

Intersection	Control	A.M.		P.M.	
		Delay (sec)	LOS	Delay (sec)	LOS
Tract 6027 Access / Valley Drive	One-way stop	8.8	A	9.1	A
Buford Drive / Valley Drive	One-way stop	9.5	A	9.7	A
Golden State / Valley Drive	One-way stop	**43.7**	**E**	**>300**	**F**
Golden State / Site Access	One-way stop	10.8	B	21.2	C
Manning / SR 99 SB Ramps	One-way stop	31.1	D	**57.5**	**F**
Manning / SR 99 NB On Ramp	Yield	9.0	A	9.2	A
Manning / SR 99 NB Off Ramp	One-way stop	**210.4**	**F**	**>300**	**F**
Manning / Vineyard	Signals	34.7	C	43.1	D
Manning / Golden State	Signals	**73.2**	**E**	**143.6**	**F**
Manning / Temperance	Two-way stop	16.1	C	21.1	C

Tables 15 and 16 present the calculated 95th-percentile queues at the study intersections along the Manning Avenue corridor. Calculated 95th-percentile queues exceeding the length of the turn lane by at least 25 feet (the typical storage required for one automobile) are presented in bold type. For purposes of Tables 15 and 16, Golden State Boulevard is considered a north-south street.

Table 15
Intersection Queuing Summary - A.M. Peak Hour

Intersection Approach	**Length of Lane (feet)***	**95th-Percentile Queue Length (feet)**			
		Existing	Existing Plus Project	Near Term With Project	Cumulative With Project
Manning / SR 99 SB					
Eastbound TR	DNS				
Westbound LT	700	8	13	13	23
Northbound L	60	0	0	3	8
Northbound R	DNS				
Manning / SR 99 NB On					
Eastbound LT	710	0	0	0	3
Eastbound T	DNS				
Westbound T	DNS				
Westbound R	DNS				
Manning / SR 99 NB Off					
Eastbound T	DNS				
Westbound T	DNS				
Northbound L	45	23	30	35	**110**
Northbound R	>1,000	20	45	58	105
Manning / Temperance					
Eastbound LTR	>1,000	0	0	0	0
Westbound LTR	350	0	0	0	0
Northbound LTR	>1,000	3	3	3	3
Southbound LTR	550	0	0	0	0
Manning / Vineyard					
Eastbound L	260	23	209	209	250
Eastbound TR	>1,000	138	156	178	284
Westbound L	270	47	67	67	85
Westbound TR	540	272	395	414	**583**
Northbound LTR	>1,000	59	88	89	127
Southbound LTR	Private	22	96	96	148
Manning / Golden State					
Eastbound L	200	64	82	137	**425**
Eastbound T	570	118	132	125	233
Eastbound R	295	32	28	31	39
Westbound L	205	20	21	23	47
Westbound TR	>1,000	266	302	288	910
Northbound L	170	184	**207**	99	168
Northbound T	620	67	72	80	442
Northbound R	25	0	0	0	0
Southbound L	250	45	57	63	251
Southbound T	>1,000	52	63	63	217
Southbound R	150	5	0	18	60

* Distance to next intersection for through lanes.
DNS: Does not stop

Table 16
Intersection Queuing Summary - P.M. Peak Hour

Intersection Approach	**Length of Lane (feet)***	**95th-Percentile Queue Length (feet)**			
		Existing	Existing Plus Project	Near Term With Project	Cumulative With Project
Manning / SR 99 SB					
Eastbound TR	DNS				
Westbound LT	700	10	15	18	28
Northbound L	60	5	8	8	40
Northbound R	DNS				
Manning / SR 99 NB On					
Eastbound LT	710	0	0	0	3
Eastbound T	DNS				
Westbound T	DNS				
Westbound R	DNS				
Manning / SR 99 NB Off					
Eastbound T	DNS				
Westbound T	DNS				
Northbound L	45	**90**	**125**	**140**	**418**
Northbound R	>1,000	70	145	163	850
Manning / Temperance					
Eastbound LTR	>1,000	0	0	0	0
Westbound LTR	350	0	0	0	0
Northbound LTR	>1,000	3	3	3	3
Southbound LTR	550	0	0	0	0
Manning / Vineyard					
Eastbound L	260	45	204	204	**270**
Eastbound TR	>1,000	284	277	312	480
Westbound L	270	64	64	65	114
Westbound TR	540	150	192	247	356
Northbound LTR	>1,000	77	81	82	214
Southbound LTR	Private	29	83	83	190
Manning / Golden State					
Eastbound L	200	177	205	203	**751**
Eastbound T	570	210	217	213	393
Eastbound R	295	33	34	32	101
Westbound L	205	32	32	38	77
Westbound TR	>1,000	236	253	267	712
Northbound L	170	137	171	79	**204**
Northbound T	620	102	95	102	523
Northbound R	25	0	0	0	0
Southbound L	250	134	174	184	**883**
Southbound T	>1,000	152	155	154	692
Southbound R	150	23	23	43	145

* Distance to next intersection for through lanes.
DNS: Does not stop

DISCUSSION OF ANALYSES

Existing Conditions

The results of the intersection analyses indicate that the intersection of Manning Avenue and the SR 99 northbound off ramp (specifically the northbound left-turn) is currently operating at LOS F during the p.m. peak hour. The other study intersections are currently operating at acceptable levels of service.

The queuing analyses indicates that the calculated 95th-percentile queues exceed the storage capacity at the following locations:

- Intersection of Manning Avenue and Golden State Boulevard: the calculated 95th-percentile queue exceeds the storage capacity in the left-turn lane on the northbound approach by 14 feet.
- Intersection of Manning Avenue and the SR 99 northbound off ramp: the calculated 95th-percentile queue exceeds the storage capacity in the left-turn lane on the northbound approach by 45 feet.

Existing-Plus-Project Conditions

The existing-plus-Project conditions analyses represent conditions that would occur after construction of all phases of the Project in the absence of other pending projects and regional growth. This scenario isolates the specific impacts of the Project.

The results of the analyses indicate that the Project is expected to cause a significant impact at the intersection of Manning Avenue and the SR 99 northbound off ramp. The Project will cause the LOS on the northbound approach to drop from D to E during the a.m. peak hour and the Project will cause the average delay associated with the existing LOS F to increase by approximately 50 seconds per vehicle during the p.m. peak hour.

The other study intersections are expected to continue to operate at acceptable levels of service.

In order to mitigate the significant impact at the intersection of Manning Avenue and the SR 99 northbound off ramp, the intersection would require signalization or conversion to a two-lane roundabout.

The Manning Avenue / SR 99 interchange was included in a COG interchange deficiency study. A report entitled *Final Report, Interchange Deficiency Study in Fresno and Madera Counties* dated December 9, 2005 indicated that the on ramp lengths are deficient and a gore object needs to be removed from the southbound off ramp. Other improvements considered include consideration of rumble strips, adding chevron signs to loop ramps, and widening the northbound on ramp to two lanes to eliminate the short merge between the eastbound left turn and the westbound right turn. Caltrans also indicated at the time that the over-crossing may need to be widened and the southbound off ramp intersection needed an additional lane and signalization.

The Manning Avenue / SR 99 interchange was subsequently studied and included in a report entitled *Fresno-Madera Metropolitan Freeway/Interchange Deficiency Study Phase II* dated

November 24, 2008. The report identified the following improvements needed at the interchange:

- Replace southbound loop off-ramp with slip off-ramp. Caltrans identified this is a required improvement to signalize the southbound ramps intersection.
- Signalize southbound ramps intersection.
- Signalize northbound ramps intersection.
- Align northbound off-ramp across from northbound on-ramp. Caltrans identified this as a required improvement to signalize the northbound ramps intersection.

Although interchange improvements were identified as needed in the deficiency study, the Manning Avenue / SR 99 interchange was not included in the 2014 Fresno County Regional Transportation Plan and is not included in any funding programs.

Since complete reconstruction of the interchange is not considered a feasible mitigation measure for a single development project because it is cost prohibitive (estimated at more than $11 million in the *Fresno-Madera Metropolitan Freeway/Interchange Deficiency Study Phase II* dated November 24, 2008), the reconstruction discussed above is not recommended as a feasible mitigation measure. However, signalization of the intersection of the northbound off ramp and Manning Avenue in its current configuration would function as a feasible mitigation measure. The improvement may be considered as an interim measure as other funding sources for interchange reconstruction should be explored by the City of Fowler, County of Fresno, Caltrans, and other agencies responsible for approving projects that contribute trips to the intersection. To be considered as a feasible interim measure, the recommended mitigation measure is required to have a design life of at least 10 years. Therefore, additional analyses were performed based on estimated 10-year traffic volumes (approximately year 2030) projected in the same manner as the year 2040 with-Project traffic volumes.

Tables 17 and 18 present the results of intersection analyses for mitigated existing-plus-Project conditions. The mitigated intersection analysis sheets are attached.

Table 17
Mitigated Intersection LOS Summary – Existing-Plus-Project Conditions

Intersection	Control	A.M. Peak Hour		P.M. Peak Hour	
		Delay (sec)	LOS	Delay (sec)	LOS
Manning / SR 99 NB Ramps	Signals	4.1	A	4.6	A
Manning / SR 99 NB Ramps (10-year life, Year 2030)	Signals	4.0	A	5.2	A
Manning / SR 99 NB Ramps	Roundabout	15.9	C	16.4	C

Table 18
Mitigated Intersection Queuing Summary – Existing-Plus-Project Conditions

Intersection	**95th-Percentile Queue Length (feet)**	
Approach	A.M. Peak Hour	P.M. Peak Hour
Manning / SR 99 NB Ramps (Traffic Signals)		
Eastbound Through	80	221
Westbound Through/Right	175	208
Northbound Left	28	48
Northbound Through/Right	27	149
Manning / SR 99 NB Ramps (Traffic Signals – Year 2030)		
Eastbound Through	178	374
Westbound Through/Right	378	396
Northbound Left	47	66
Northbound Through/Right	131	244
Manning / SR 99 NB Ramps (Roundabout)		
Eastbound	50	75
Westbound	75	50
Northbound	0	25

Significant Impact Phasing Threshold Analysis

Additional analyses were performed at the intersection of Manning Avenue and the SR 99 northbound off ramp to determine whether any phases of Project can be constructed prior to triggering the existing-plus-Project significant impact described above. The additional analyses are attached and indicate that the significant impact would occur at the time that the Project generates approximately 60 net peak-hour trips. A comparison of the values presented in Tables 1 and 2 suggests that Phase 1 of the Project will trigger the significant impact.

Near-Term With-Project Conditions

The near-term with-Project conditions analyses represent conditions that are expected to occur after construction of the Project plus construction of the pending projects. This scenario estimates the near-term cumulative impacts. Mitigation measures associated with the existing-plus-Project conditions are not assumed to be in place. The results of the analyses indicate that a combination of the pending projects and the Project would result in cumulative significant impacts at the intersection of Manning Avenue and the SR 99 northbound off ramp. The near-term cumulative projects will cause the intersection LOS to drop from D to F during the a.m. peak hour and will cause the average delay associated with the existing LOS F to increase by approximately 79 seconds per vehicle during the p.m. peak hour.

The discussion of the Manning Avenue / SR 99 interchange presented above in the existing-plus-Project scenario section applies in the near-term condition as well. Signalization of the intersection of the northbound off ramp and Manning Avenue in its current configuration would function as a feasible mitigation measure. The improvement may be considered as an interim measure as other funding sources for interchange reconstruction should be explored by the City of Fowler, County of Fresno, Caltrans, and other agencies responsible for approving projects that contribute trips to the intersection.

The other study intersections and the study road segments are expected to continue to operate at acceptable levels of service.

Tables 19 and 20 present the results of intersection analyses for mitigated near-term conditions. The mitigated intersection analysis sheets are attached.

Table 19
Mitigated Intersection LOS Summary – Near-Term With-Project Conditions

Intersection	Control	A.M. Peak Hour		P.M. Peak Hour	
		Delay (sec)	LOS	Delay (sec)	LOS
Manning / SR 99 NB Ramps	Signals	4.1	A	4.6	A
Manning / SR 99 NB Ramps (10-year life, Year 2030)	Signals	4.0	A	5.2	A
Manning / SR 99 NB Ramps	Roundabout	17.4	C	18.5	C

Table 20
Mitigated Intersection Queuing Summary – Near-Term With-Project Conditions

Intersection	95th-Percentile Queue Length (feet)	
Approach	A.M. Peak Hour	P.M. Peak Hour
Manning / SR 99 NB Ramps (Traffic Signals)		
Eastbound Through	111	240
Westbound Through/Right	230	243
Northbound Left	30	52
Northbound Through/Right	49	165
Manning / SR 99 NB Ramps (Traffic Signals – Year 2030)		
Eastbound Through	178	374
Westbound Through/Right	378	396
Northbound Left	47	66
Northbound Through/Right	131	244
Manning / SR 99 NB Ramps (Roundabout)		
Eastbound	50	75
Westbound	75	50
Northbound	100	25

Cumulative 2040 With-Project Conditions

The year 2040 With-Project conditions analyses are based on the assumption that the Project site is developed with the proposed Project and that regional growth has occurred as projected in the Fresno County travel model. This scenario estimates the long-term cumulative impacts. Mitigation measures associated with the existing-plus-Project conditions and the near-term with-Project conditions are not assumed to be in place.

The results of the analyses indicate the combination of the Project, the pending projects, and regional growth through the year 2040 (in the absence of planned transportation improvements) is expected to cause a significant impact at the following study intersections:

- Golden State Boulevard / Valley Drive
- Manning Avenue / SR 99 Southbound Ramps
- Manning Avenue / SR 99 Northbound Off Ramp
- Manning Avenue / Golden State Boulevard

The significantly impacted intersections are discussed in the following sections.

Golden State Boulevard / Valley Drive

To mitigate the significant cumulative impact at the intersection of Golden State Boulevard and Valley Drive, the intersection should either be modified to prevent left turns from eastbound Valley Drive to northbound Golden State Boulevard or the intersection should be signalized. The Project will be responsible for its fair share of the cost of the future intersection modification.

Manning Avenue / SR 99 southbound ramps

The discussion of the Manning Avenue / SR 99 interchange presented above in the existing-plus-Project scenario section applies in the cumulative year 2040 condition as well. The interchange will require a major reconstruction to function at acceptable LOS. However, the future reconstruction is not in the Fresno County RTIP and is not included in any funding programs.

Manning Avenue / SR 99 northbound off ramp

The discussion of the Manning Avenue / SR 99 interchange presented above in the existing-plus-Project scenario section applies in the cumulative year 2040 condition as well. The interchange will require a major reconstruction to function at acceptable LOS. However, the future reconstruction is not in the Fresno County RTIP and is not included in any funding programs.

Manning Avenue / Golden State Boulevard

To mitigate the significant cumulative impact at the intersection of Manning Avenue and Golden State Boulevard, the intersection will require widening to provide two left-turn lanes, two through lanes, and one dedicated right-turn lane on all four approaches to the intersection. The Project will be responsible for its fair share of the cost of the future intersection modification.

Tables 21 and 22 present the results of intersection analyses for mitigated cumulative 2040 with-Project conditions. The mitigated intersection analysis sheets are attached.

Table 21
Mitigated Intersection LOS Summary – Cumulative 2040 With-Project Conditions

Intersection	Control	A.M. Peak Hour		P.M. Peak Hour	
		Delay (sec)	LOS	Delay (sec)	LOS
Golden State / Valley Drive	Signals	6.2	A	9.4	A
Manning / SR 99 SB Ramps	Signals	11.5	B	11.8	B
	Roundabout	6.4	A	6.9	A
Manning / SR 99 NB Ramps	Signals	36.9	D	37.2	D
	Roundabout	8.6	A	6.6	A
Manning / Golden State	Signals	30.3	C	53.1	D

EQUITABLE SHARE CALCULATIONS

Where required future mitigation measures are not included in established development fees and are not the sole responsibility of a particular project, but rather a cumulative result of regional growth, the responsibility for mitigation measures is determined based on equitable share calculations as presented in the Caltrans *Guide for the Preparation of Traffic Impact Studies*. Caltrans recommends the following equation to determine a project's equitable share of the cost of improvements:

$$P = \frac{T}{T_B - T_E}$$

where:

P = The equitable share of the project's traffic impact;
T = The project trips generated during the peak hour of the adjacent State Highway facility;
T_B = The forecasted (future with project) traffic volume on the impacted State highway facility;
T_E = The existing traffic on the State Highway facility plus approved projects traffic.

Table 22
Mitigated Intersection Queuing Summary – Cumulative 2040 With-Project Conditions

Intersection	**95th-Percentile Queue Length (feet)**	
Approach	A.M. Peak Hour	P.M. Peak Hour
Golden State / Valley		
Eastbound Left	29	70
Eastbound Right	17	42
Northbound Left	48	51
Northbound Through/Right	57	213
Southbound Left	113	509
Southbound Through/Right	13	10
Manning / SR 99 SB Ramps (Traffic Signals)		
Eastbound Through/Right	324	454
Westbound Left	283	355
Westbound Through	194	272
Southbound Left/Through	15	39
Southbound Right	252	638
Manning / SR 99 SB Ramps (Roundabout)		
Eastbound	50	75
Westbound	100	125
Southbound	50	75
Manning / SR 99 NB Ramps (Traffic Signals)		
Eastbound Left	43	34
Eastbound Through	214	390
Westbound Through	413	591
Westbound Right	391	114
Northbound Left/Through	73	110
Northbound Right	198	522
Manning / SR 99 NB Ramps (Roundabout)		
Eastbound	75	100
Westbound	125	125
Northbound	125	25
Manning / Golden State		
Eastbound Left	152	260
Eastbound Through	218	374
Eastbound Right	43	78
Westbound Left	18	34
Westbound Through	444	332
Westbound Right	192	167
Northbound Left	129	164
Northbound Through	272	362
Northbound Right	0	0
Southbound Left	63	295
Southbound Through	143	539
Southbound Right	47	107

Table 23 presents equitable share responsibility calculations for the Project's share of mitigation measures at City of Fowler intersections based on weekday p.m. peak hour traffic volumes.

Table 23
Equitable Share Responsibility – City of Fowler Locations

Location	Mitigation Measure	Project Trips	Existing Traffic	2040 Traffic	Equitable Share
Golden State / Valley Drive	Signals	56	799	3,332	2.21%
Manning / Golden State	Widening	82	2,511	5,117	3.14%

Per-trip equitable share costs for the Manning Avenue / SR 99 interchange have been derived from costs presented in a letter by Caltrans dated July 19, 2017 for the Maxco project as presented in Table 24.

Table 24
Derivation of Per-Trip Fee

Location	Mitigation Measure	Caltrans Cost Estimate	Maxco Fair Share	Maxco Trips	Per-Trip Fee
Overcrossing	Widening	$1,721,590	$69,036	17	$4,060.94
Manning / SR 99 NB ramps	Signals	$693,000	$34,581	38	$910.03
Manning / SR 99 SB ramps	Signals	$693,000	$20,444	17	$1,202.59

Table 25 presents the Project's equitable share costs applicable to the interchange based on weekday p.m. peak hour traffic volumes.

Table 25
Manning Avenue / SR 99 Buford Equitable Share Responsibility

Location	Mitigation Measure	Project Trips	Per-Trip Fee	Buford Equitable Share
Overcrossing	Widening	226	$4,060.94	$917,772.44
Manning / SR 99 NB ramps	Signals	234	$910.03	$212,947.02
Manning / SR 99 SB ramps	Signals	226	$1,202.59	$271,785.34
			TOTAL	**$1,402,504.80**

CONCLUSIONS AND RECOMMENDATIONS

Generally-accepted traffic engineering principles and methods were employed to estimate the amount of traffic expected to be generated by the Project, to analyze the existing traffic conditions, and to analyze the traffic conditions projected to occur in the future.

The study found that the intersection of Manning Avenue and the SR 99 northbound off ramp is currently operating at LOS F during the p.m. peak hour. The other study intersections are currently operating at acceptable levels of service.

The Project will cause a significant impact at the intersection of Manning Avenue and the SR 99 northbound off ramp by causing the LOS to drop from D to E during the a.m. peak hour and the Project will cause the average delay associated with the existing LOS F to increase by approximately 50 seconds per vehicle during the p.m. peak hour. This significant impact will be triggered during Phase 1 of the Project.

The near-term cumulative conditions analyses, in the absence of mitigation measures, reveal the same significant impact as the existing-plus-Project condition.

In the year 2040 cumulative condition, in the absence of mitigation measures, significant impacts are identified at the following locations:

- Golden State Boulevard / Valley Drive
- Manning Avenue / SR 99 Southbound Ramps
- Manning Avenue / SR 99 Northbound Off Ramp
- Manning Avenue / Golden State Boulevard

Summary of Significant Impacts and Recommended Mitigation Measures

Significant Impact Transportation 1

The Project (Phase 1) will cause a significant impact at the intersection of Manning Avenue and the SR 99 northbound off ramp by causing the LOS to drop from D to E during the a.m. peak hour and the Project will cause the average delay associated with the existing LOS F to increase by approximately 50 seconds per vehicle during the p.m. peak hour.

Mitigation Measure Transportation 1

> To mitigate the Project's significant impact at the intersection of Manning Avenue and the SR 99northbound off ramp, the Project shall construct traffic signals at the intersection in its current configuration prior to opening Phase 1. The traffic signals are considered an interim improvement with a 10-year design life. As such, other funding sources for interchange reconstruction should be explored by the City of Fowler, County of Fresno, Caltrans, and other agencies responsible for approving projects that contribute trips to the intersection. With implementation of the mitigation measure, the intersection is expected to operate at LOS A for the next 10 years and the impact in both the existing-plus-Project and near-term with-Project conditions will be mitigated to less than significant.

Significant Impact Transportation 2

The Project will contribute to a cumulative significant impact at the intersection of Manning Avenue and the SR 99 northbound off ramp; the intersection is expected to operate at LOS F during both peak hours by the year 2040 and the average delay associated with the existing LOS will increase by more than 175 seconds per vehicle as compared to the existing condition.

Mitigation Measure Transportation 2

> To mitigate its share of the year 2040 cumulative significant impacts at the Manning Avenue / SR 99 interchange, the Project shall pay an equitable share in the amount of

$1,402,504.80. The impact would remain significant until the required improvements are constructed.

The equitable share may be divided by phase as follows:

Phase 1: $677,137.81

Phase 2: $25,079.17

Phase 3: $88,741.71

Phase 4: $275,870.96

Phase 5: $196,775.09

Phase 6: $138,900.06

Significant Impact Transportation 3

The Project will contribute to a cumulative significant impact at the intersection of Golden State Boulevard and Manning Avenue; the intersection is expected to operate at LOS E during the a.m. peak hour and LOS F during the p.m. peak hour by the year 2040.

Mitigation Measure Transportation 3

To mitigate its share of the year 2040 cumulative significant impact at the intersection of Golden State Boulevard and Manning Avenue, the Project shall pay an equitable share in the amount of 3.14 percent of the cost of widening the intersection to provide two left-turn lanes, two through lanes, and one dedicated right-turn lane on all four approaches to the intersection. Once the significant impact actually occurs, the impact would remain significant until the required improvements are constructed.

The equitable share may be divided by phase as follows:

Phase 1: 1.52 percent

Phase 2: 0.05 percent

Phase 3: 0.20 percent

Phase 4: 0.62 percent

Phase 5: 0.44 percent

Phase 6: 0.31 percent

Significant Impact Transportation 4

The Project will contribute to a cumulative significant impact at the intersection of Golden State Boulevard and Valley Drive; the intersection is expected to operate at LOS E during the a.m. peak hour and LOS F during the p.m. peak hour by the year 2040.

Mitigation Measure Transportation 4

To mitigate its share of the year 2040 cumulative significant impact at the intersection of Golden State Boulevard and Valley Drive, the Project shall pay an equitable share in the amount of 2.21 percent of the cost of signalizing the intersection. Once the significant impact actually occurs, the impact would remain significant until the required improvements are constructed.

The equitable share may be divided by phase as follows:

Phase 1: 1.07 percent

Phase 2: 0.04 percent

Phase 3: 0.14 percent

Phase 4: 0.43 percent

Phase 5: 0.31 percent

Phase 6: 0.22 percent

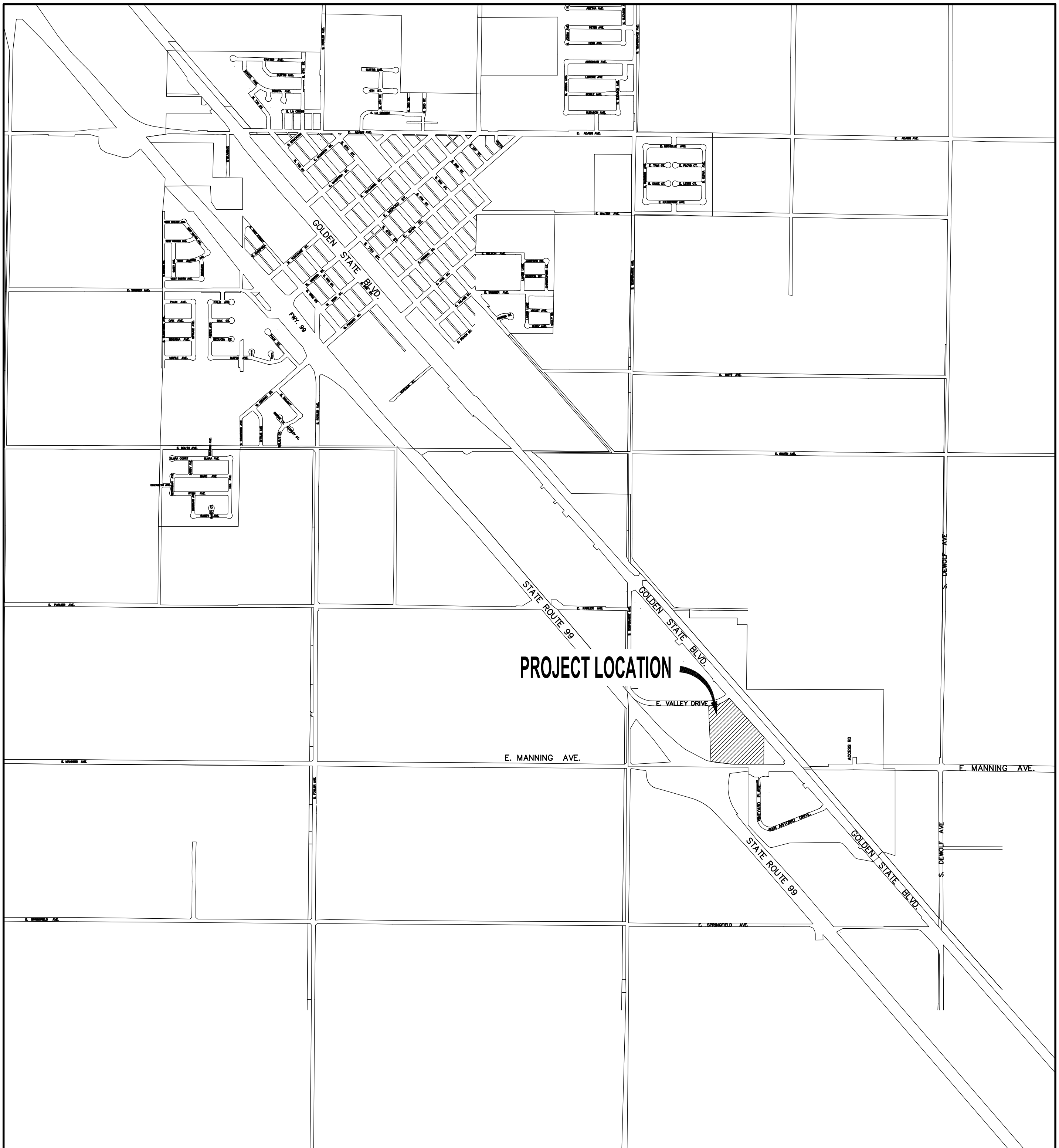
Thank you for the opportunity to perform this traffic impact study. Please feel free to contact our office if you have any questions.

PETERS ENGINEERING GROUP

John Rowland, PE, TE

Attachments: Figures 1 through 17
Traffic Count Data Sheets
Internal Capture Calculations
Fresno County Travel Model Output
Intersection Analyses
Mitigated Intersection Analyses

FIGURES



Proposed Buford Oil Company Travel Center
Fowler, California

LEGEND

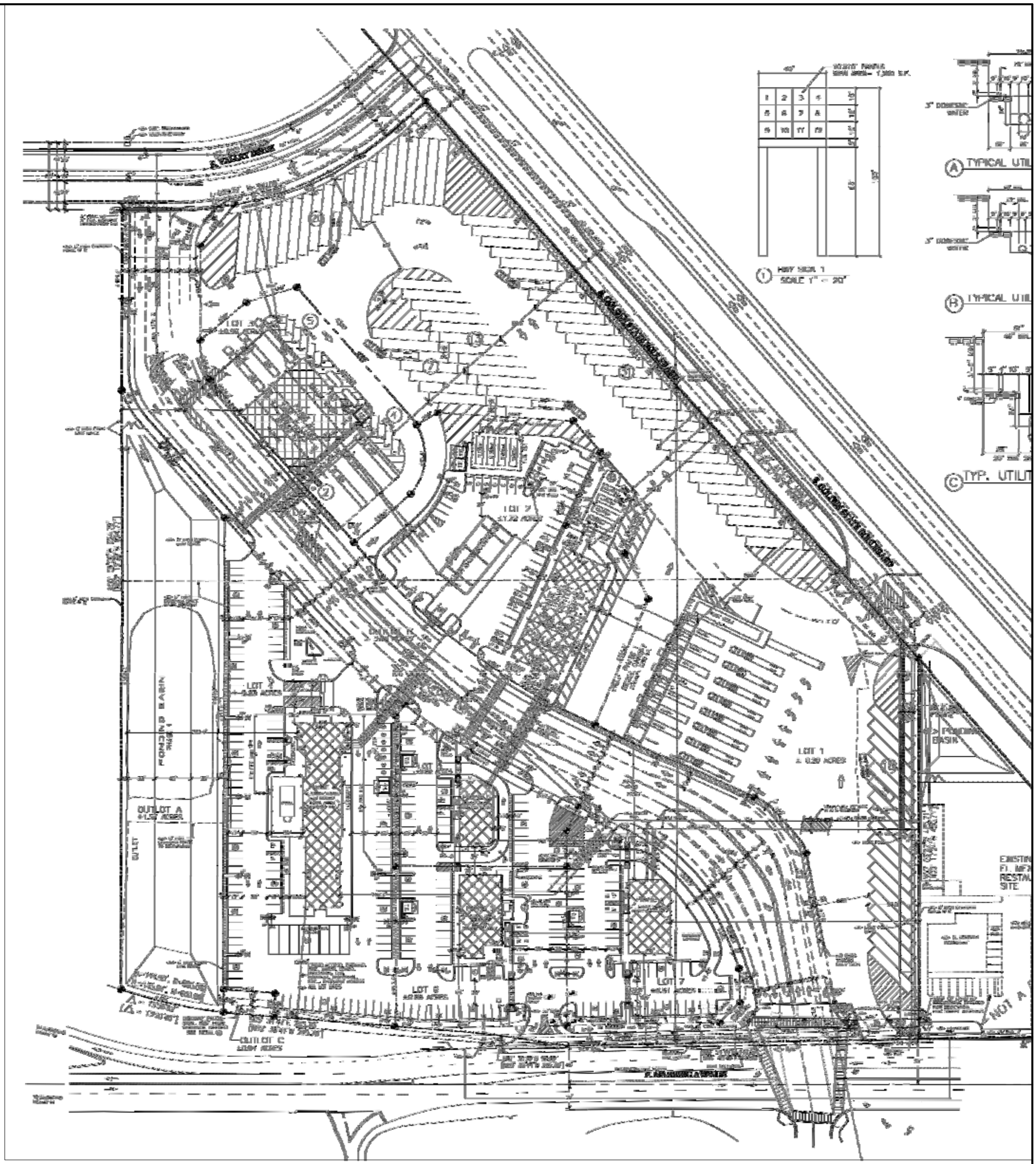
PROJECT SITE

VICINITY MAP

Not to Scale

PE Peters Engineering Group

Figure 1



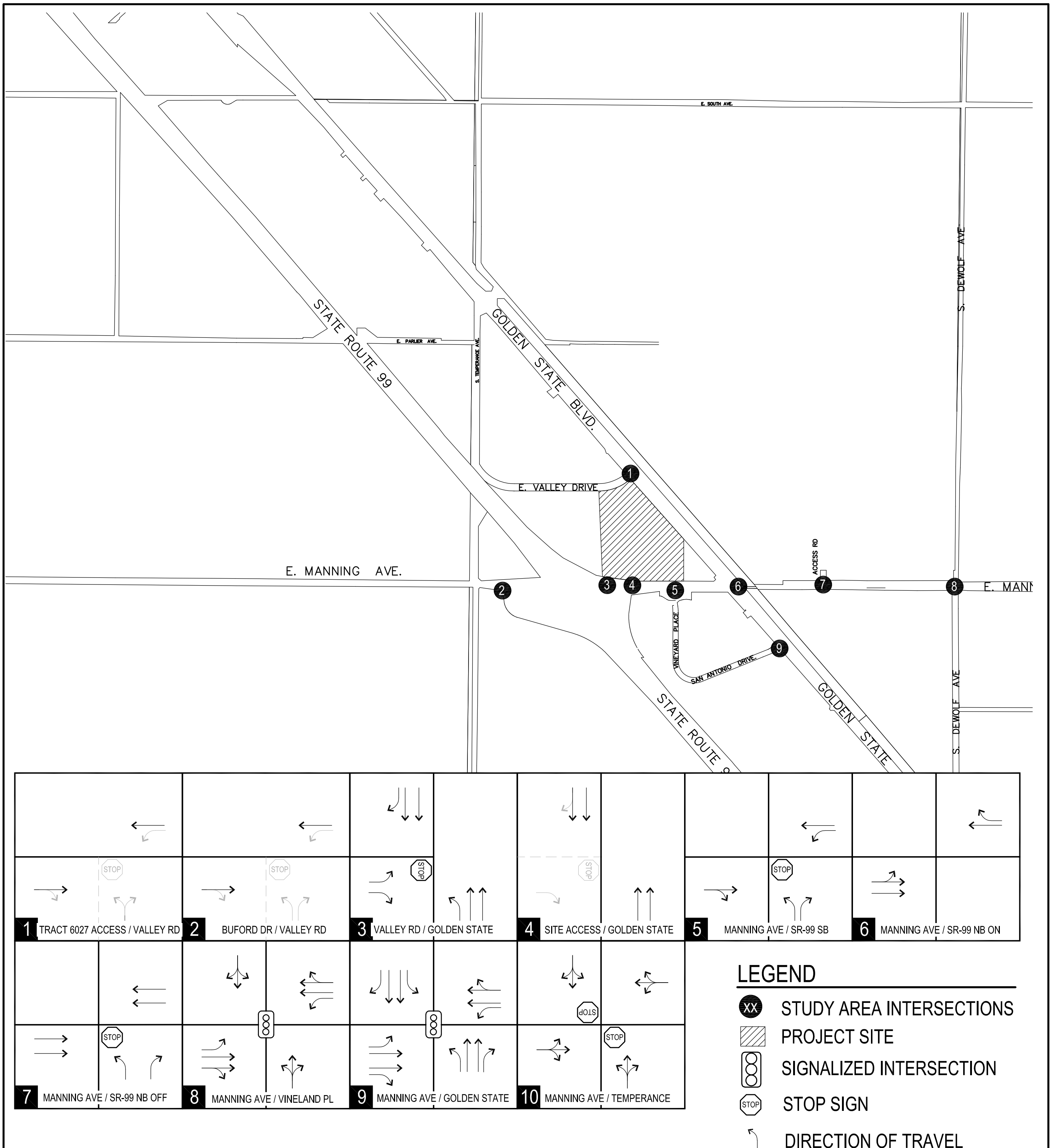
Proposed Buford Oil Company Travel Center
Fowler, California

SITE PLAN

Not to Scale

PETERS ENGINEERING GROUP

Figure 2



Proposed Buford Oil Company Travel Center

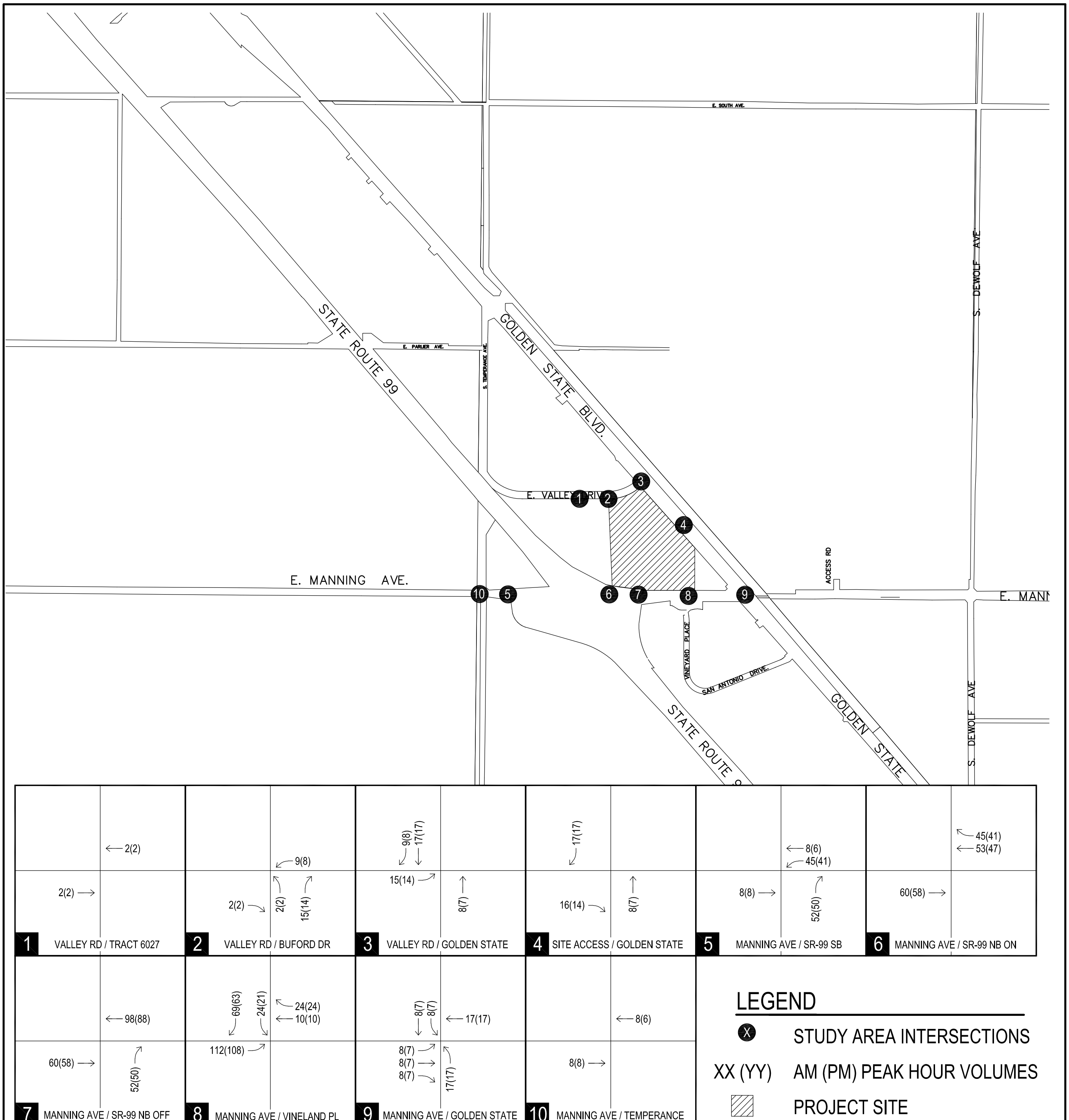
Fowler, California

EXISTING LANE CONFIGURATIONS AND INTERSECTION CONTROL

Not to Scale

PETERS ENGINEERING GROUP

Figure 3



Proposed Buford Oil Company Travel Center

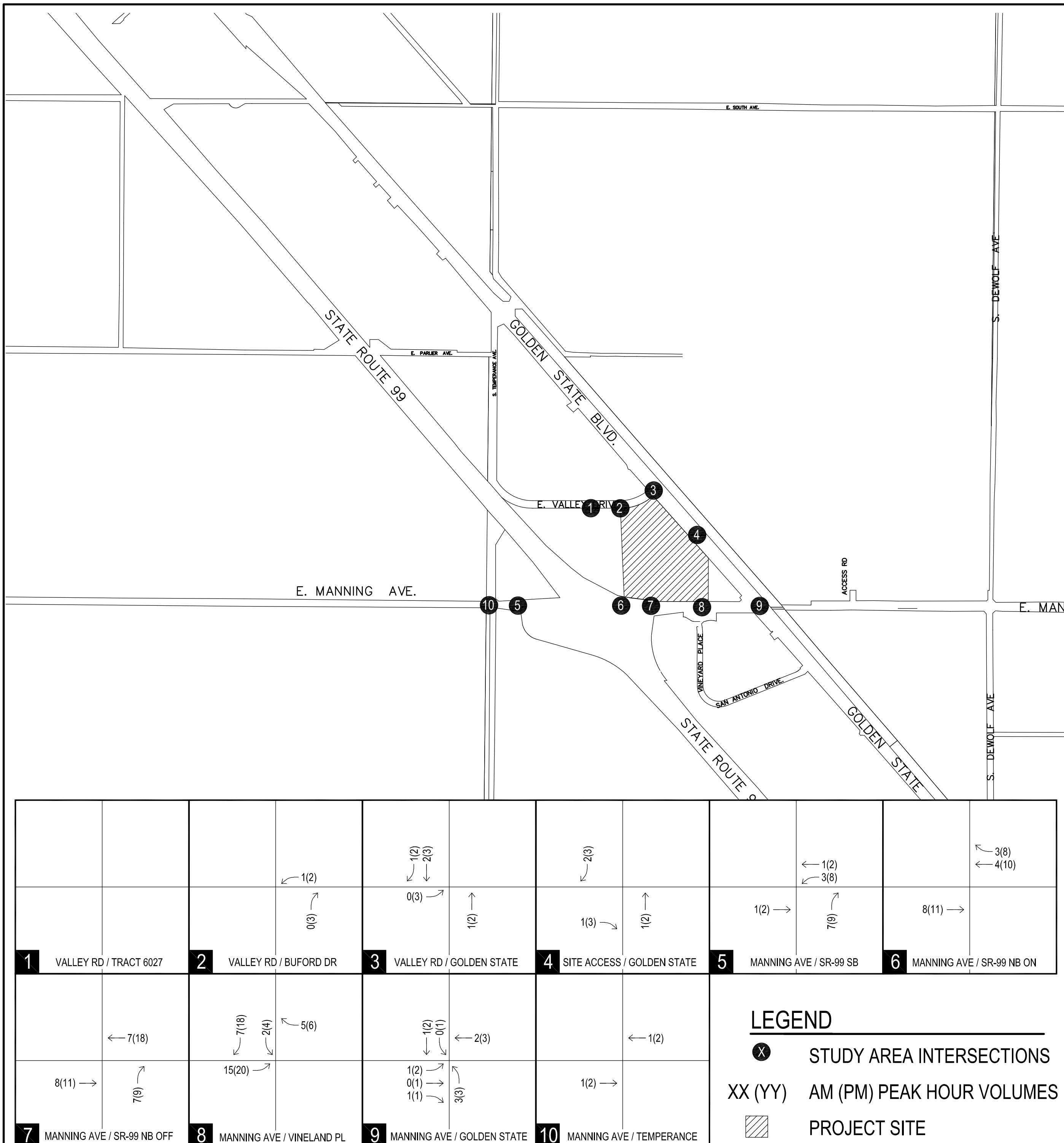
Fowler, California

NET EXTERNAL PEAK-HOUR PRIMARY PROJECT PASSENGER VEHICLE TRIPS

Not to Scale

PETERS ENGINEERING GROUP

Figure 4



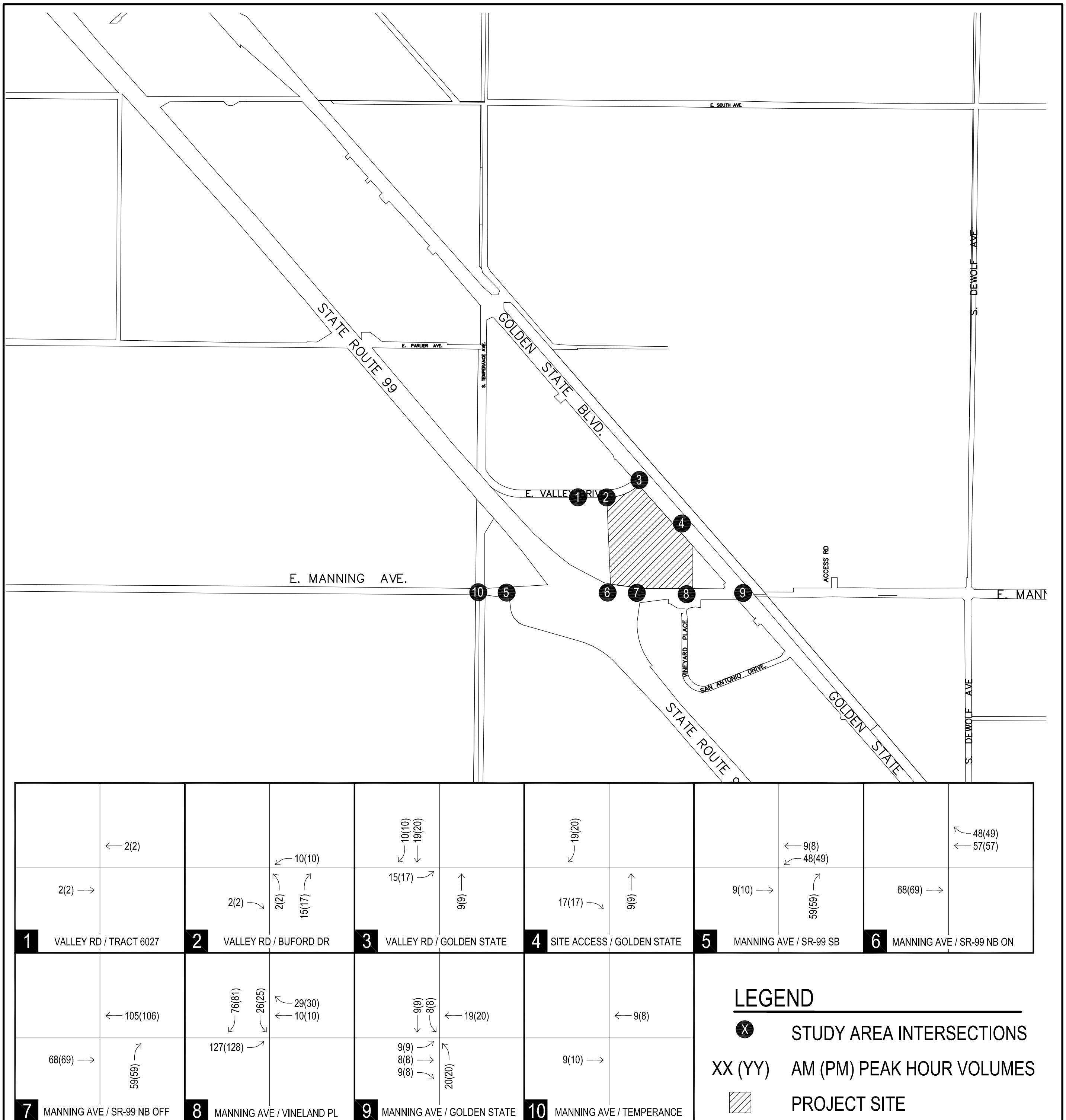
Proposed Buford Oil Company Travel Center
Fowler, California

NET EXTERNAL PEAK-HOUR PRIMARY
PROJECT TRUCK TRIPS

Not to Scale

PETERS ENGINEERING GROUP

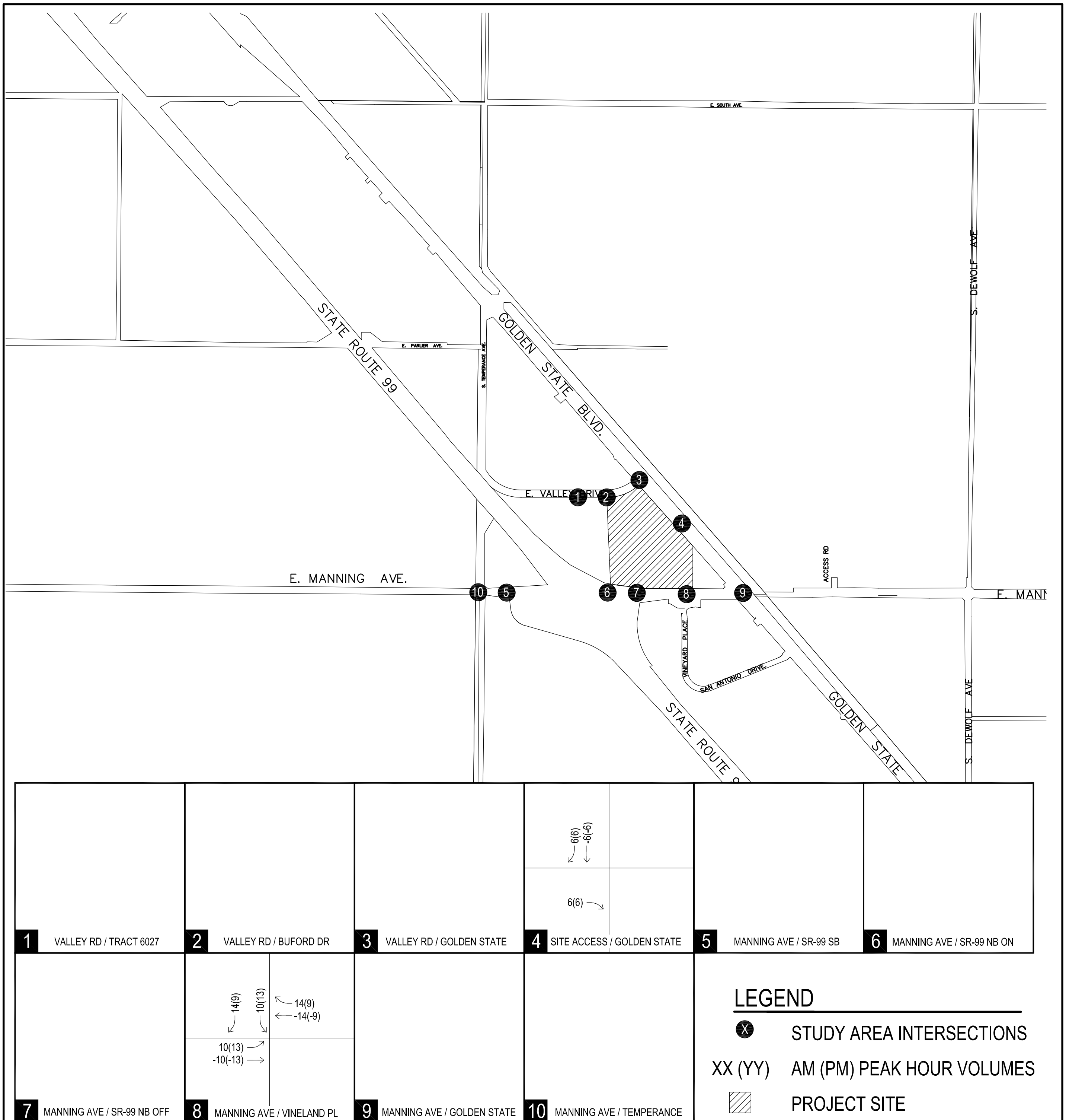
Figure 5



Proposed Buford Oil Company Travel Center

Fowler, California

NET EXTERNAL PEAK-HOUR PRIMARY PROJECT TRIPS (ALL VEHICLES)



Proposed Buford Oil Company Travel Center

Fowler, California

PEAK-HOUR PASS-BY PROJECT TRAFFIC TRIPS

Not to Scale

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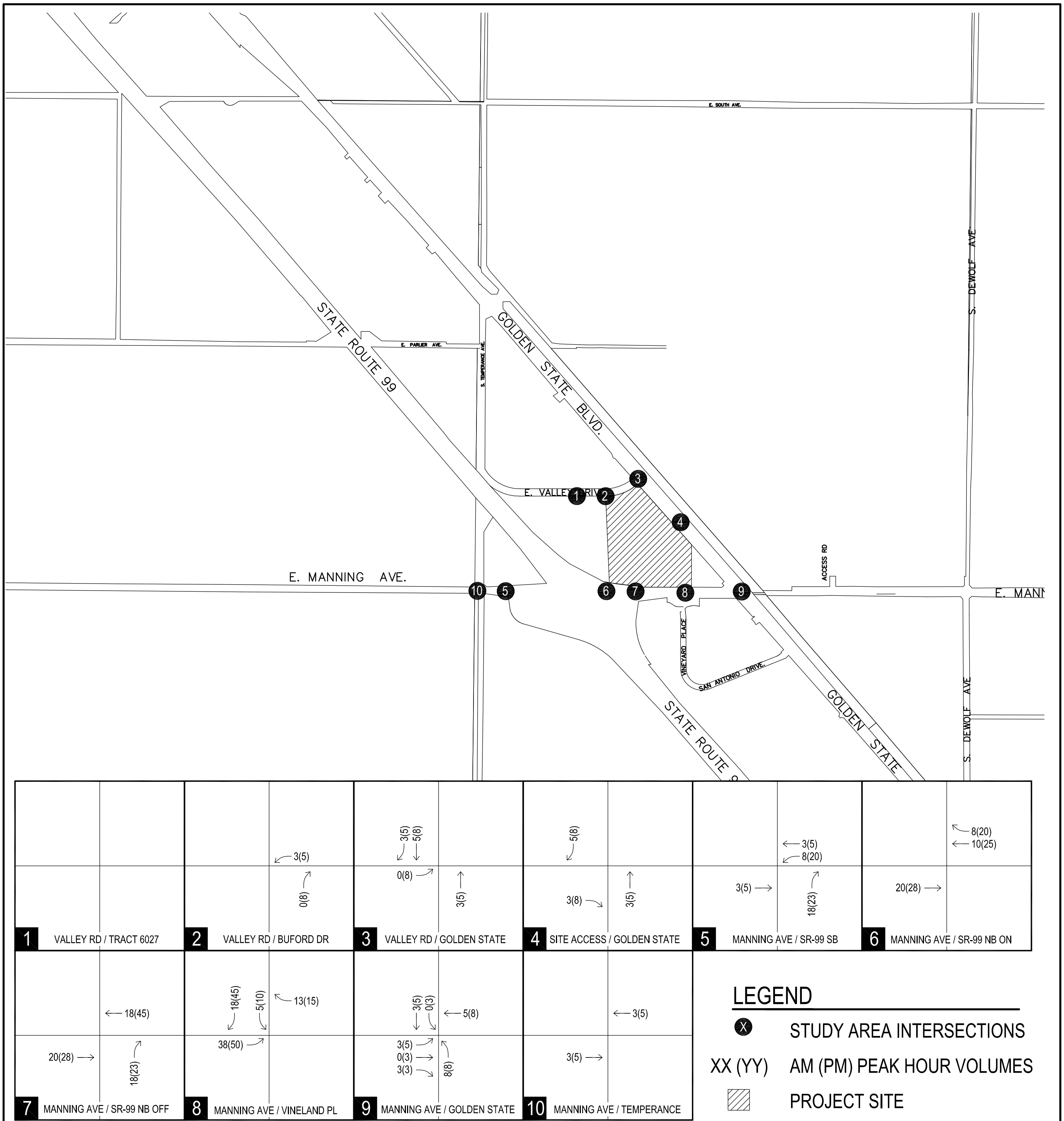
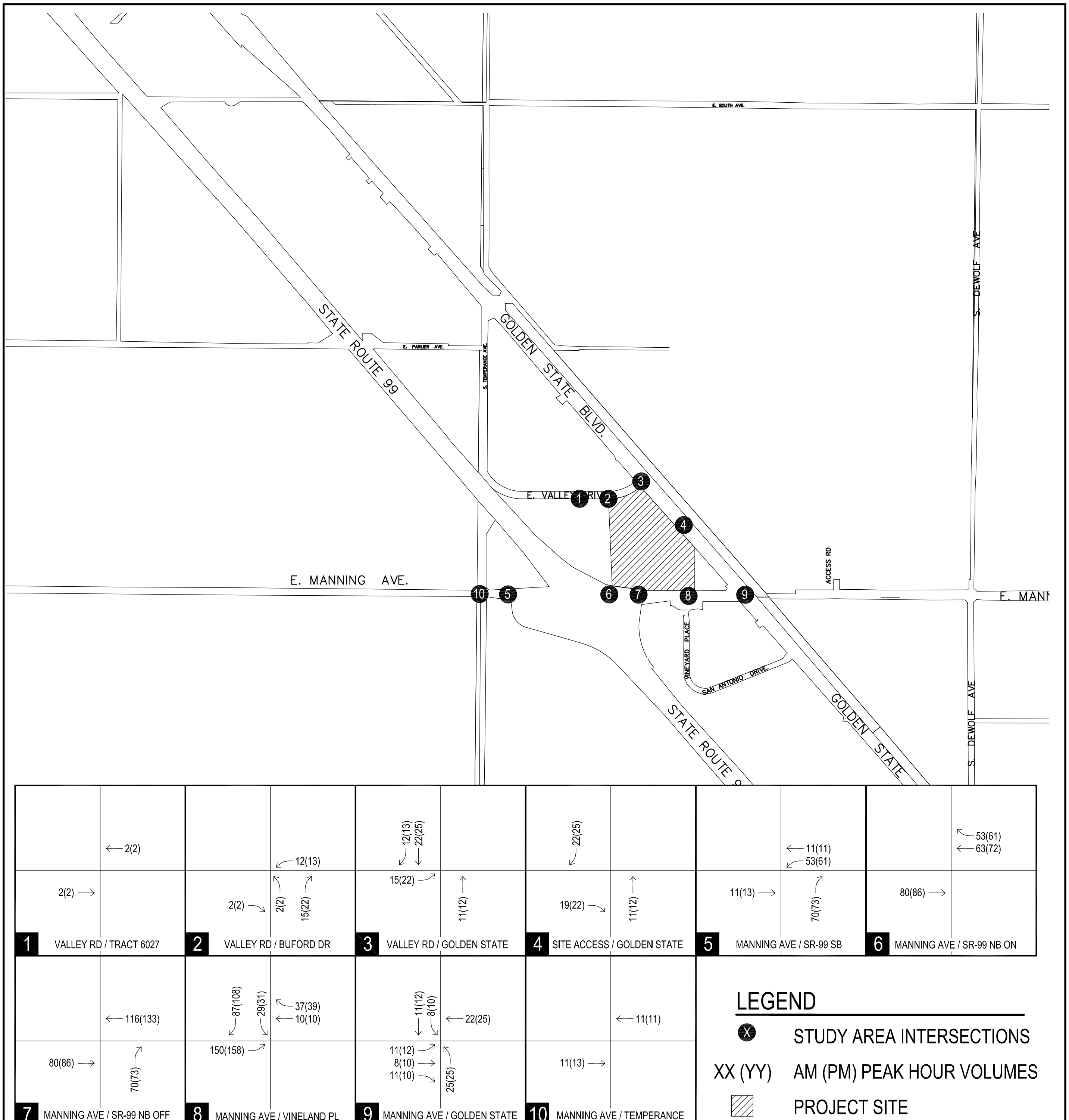
Figure 7



Proposed Buford Oil Company Travel Center
Fowler, California

NET EXTERNAL PEAK-HOUR PRIMARY PROJECT TRUCK PCE TRIPS

Not to Scale



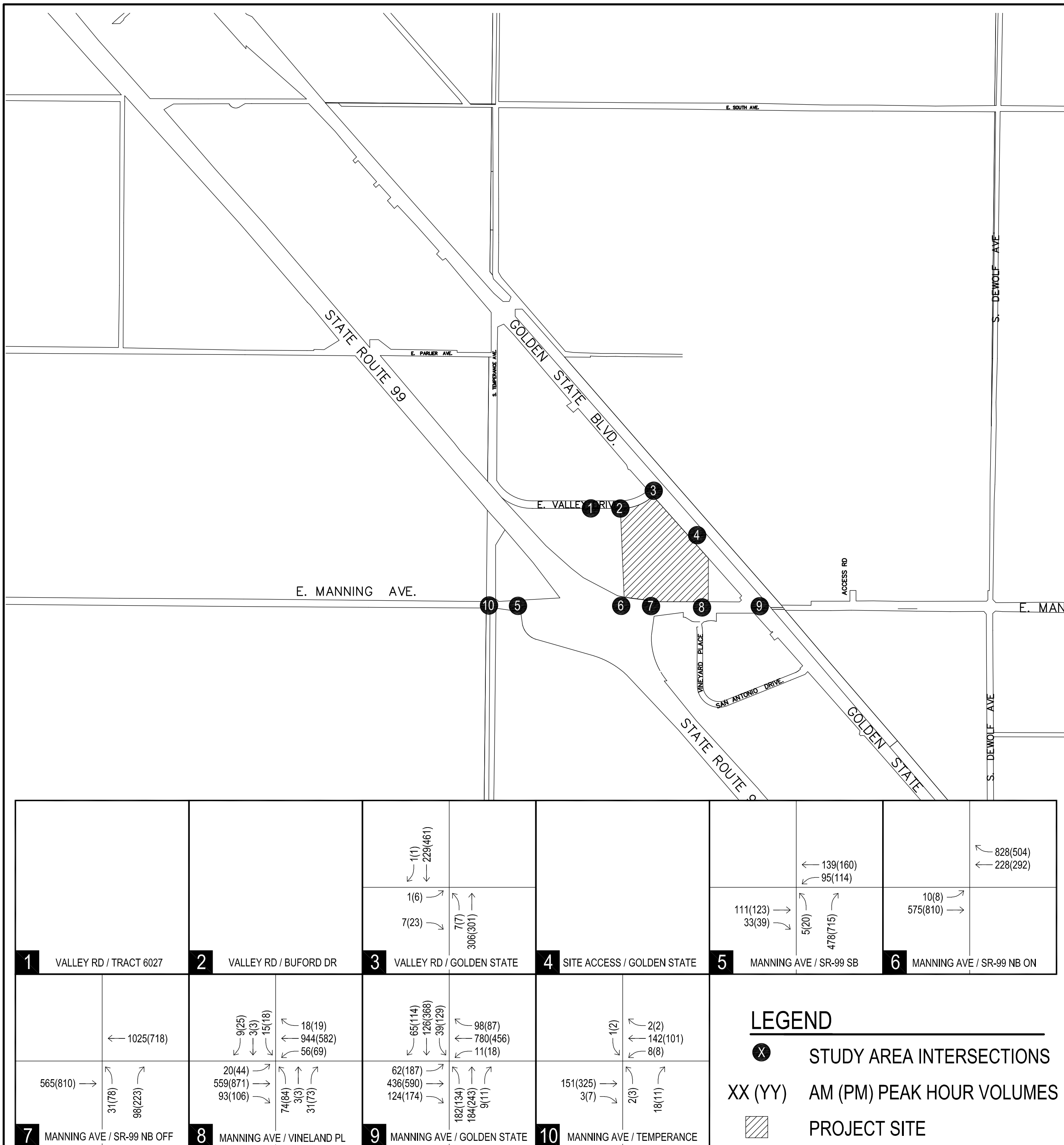
Proposed Buford Oil Company Travel Center

Fowler, California

NET EXTERNAL PEAK-HOUR PRIMARY PROJECT PCE TRIPS (ALL VEHICLES)

Not to Scale

PETERS ENGINEERING GROUP



Proposed Buford Oil Company Travel Center

Fowler, California

EXISTING PEAK-HOUR TRAFFIC VOLUMES

Not to Scale

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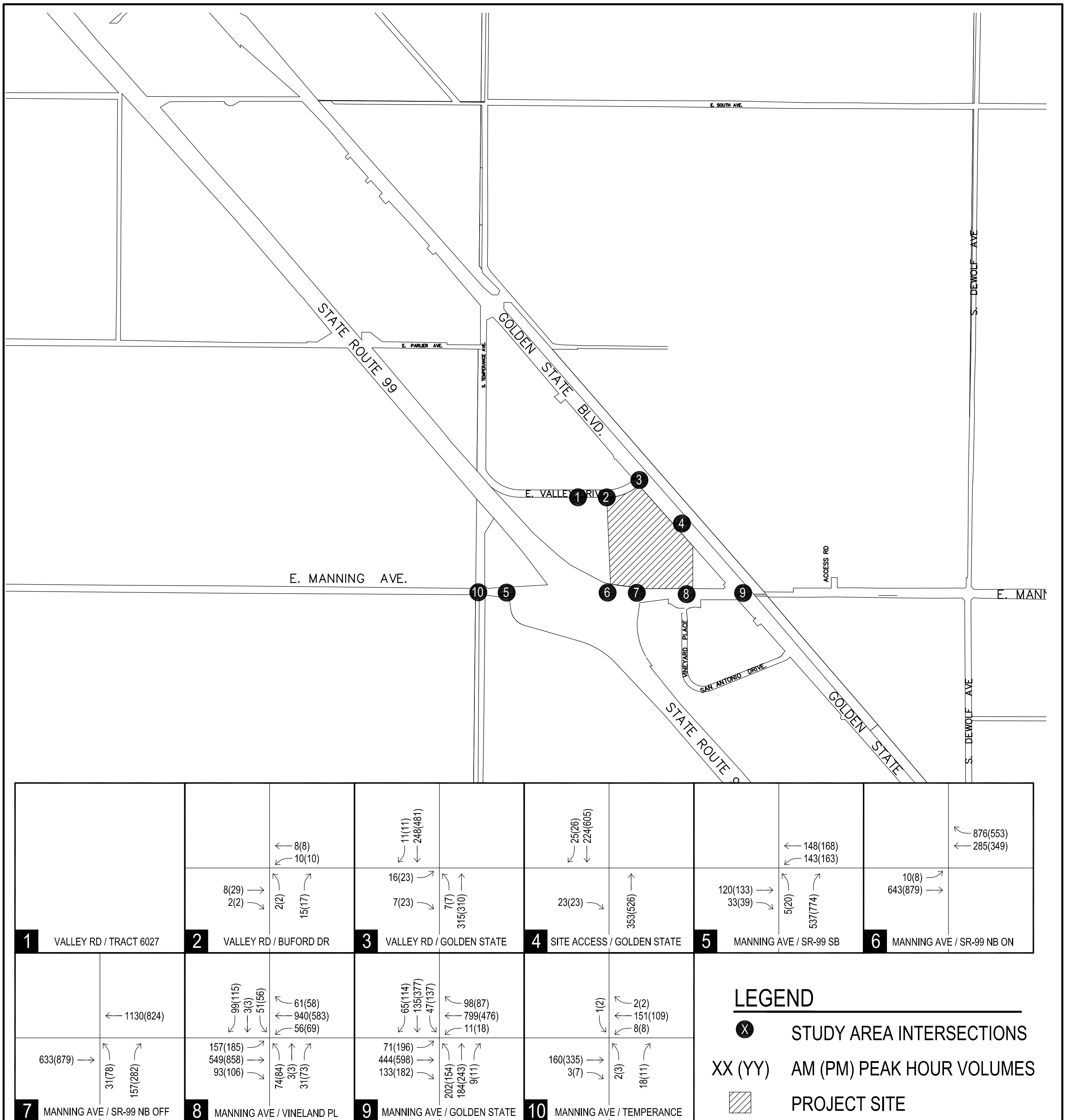
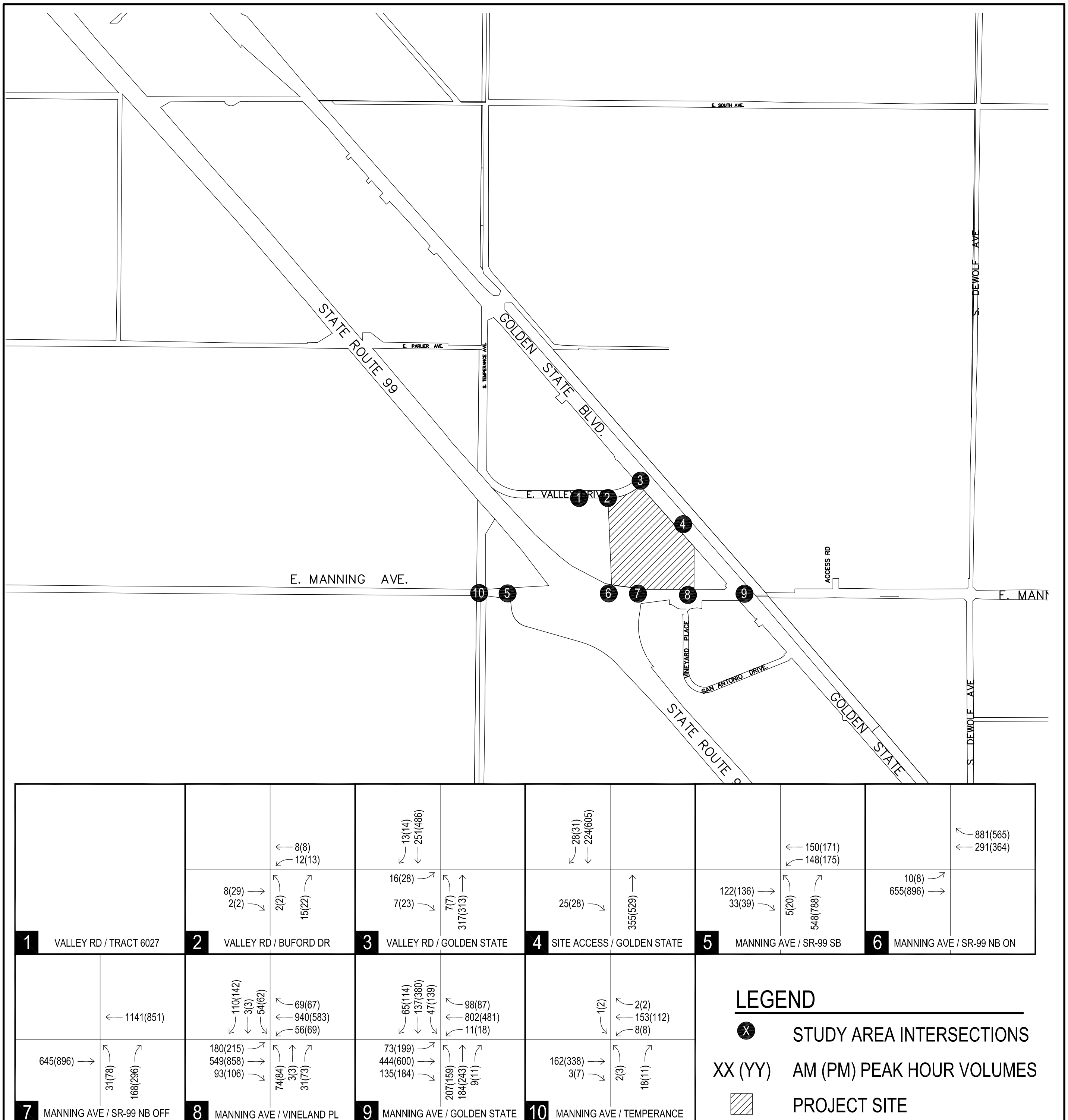
Figure 10



Proposed Buford Oil Company Travel Center
Fowler, California

EXISTING PLUS PROJECT PEAK-HOUR TRAFFIC VOLUMES

Not to Scale



Proposed Buford Oil Company Travel Center

Fowler, California

EXISTING PLUS PROJECT PCE PEAK-HOUR TRAFFIC VOLUMES

Not to Scale

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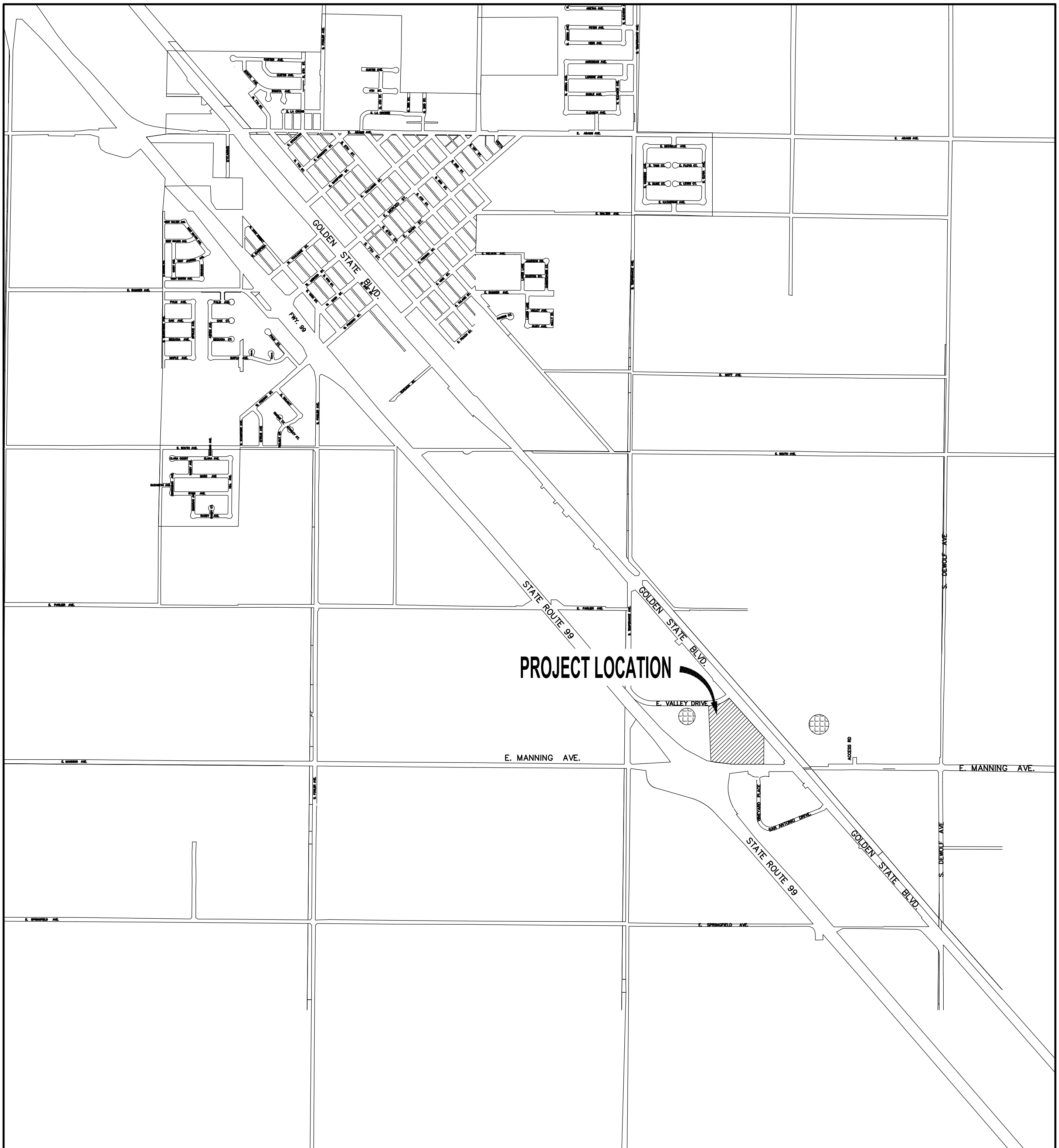
Figure 12



Proposed Buford Oil Company Travel Center
Fowler, California

LEGEND
PROJECT SITE
PENDING PROJECT SITES

PENDING PROJECTS MAP

Not to Scale

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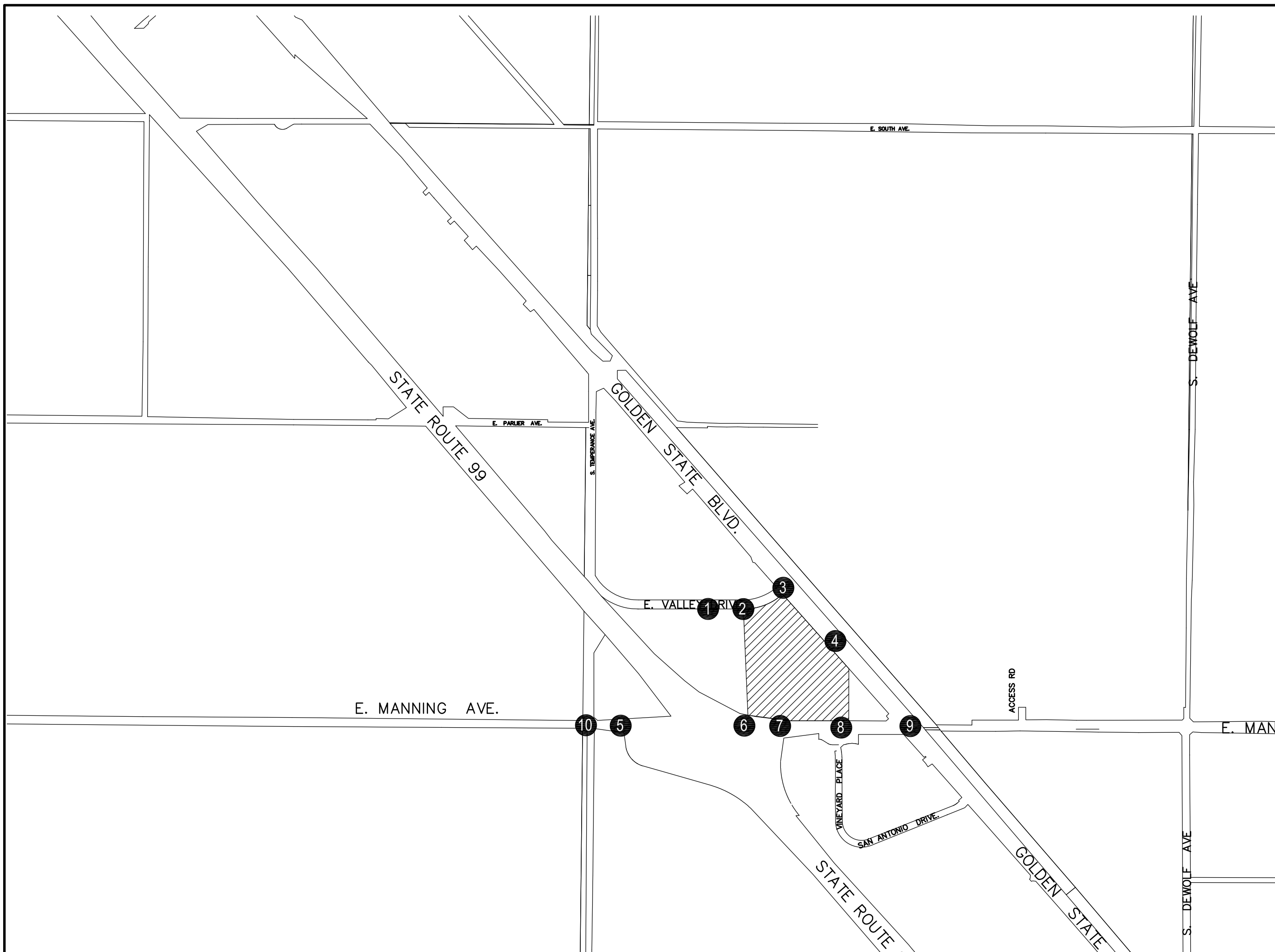
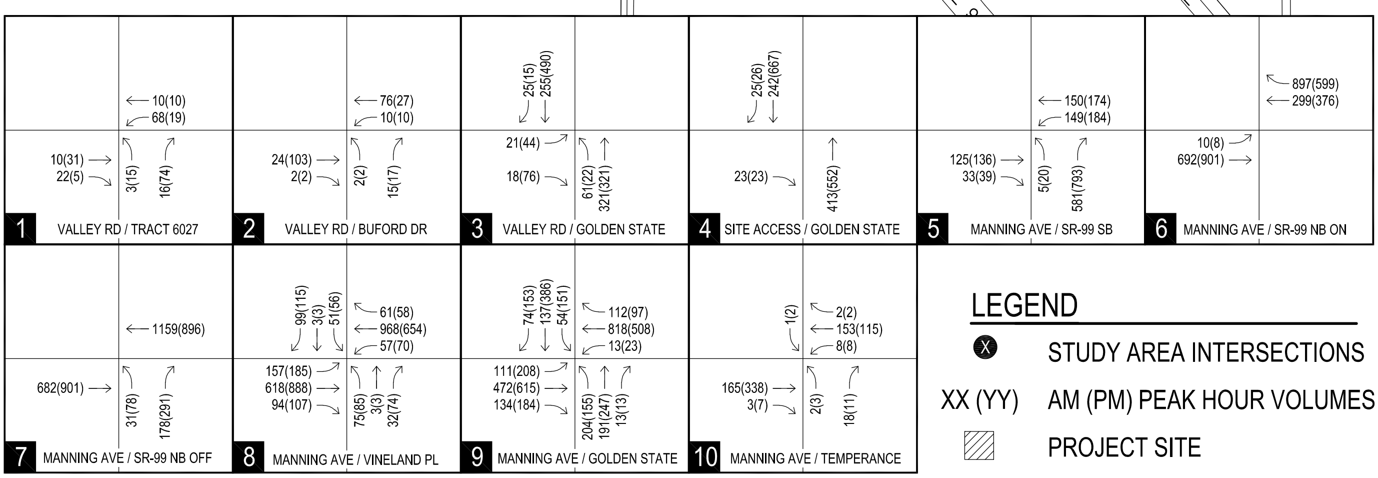
Figure 13





LEGEND

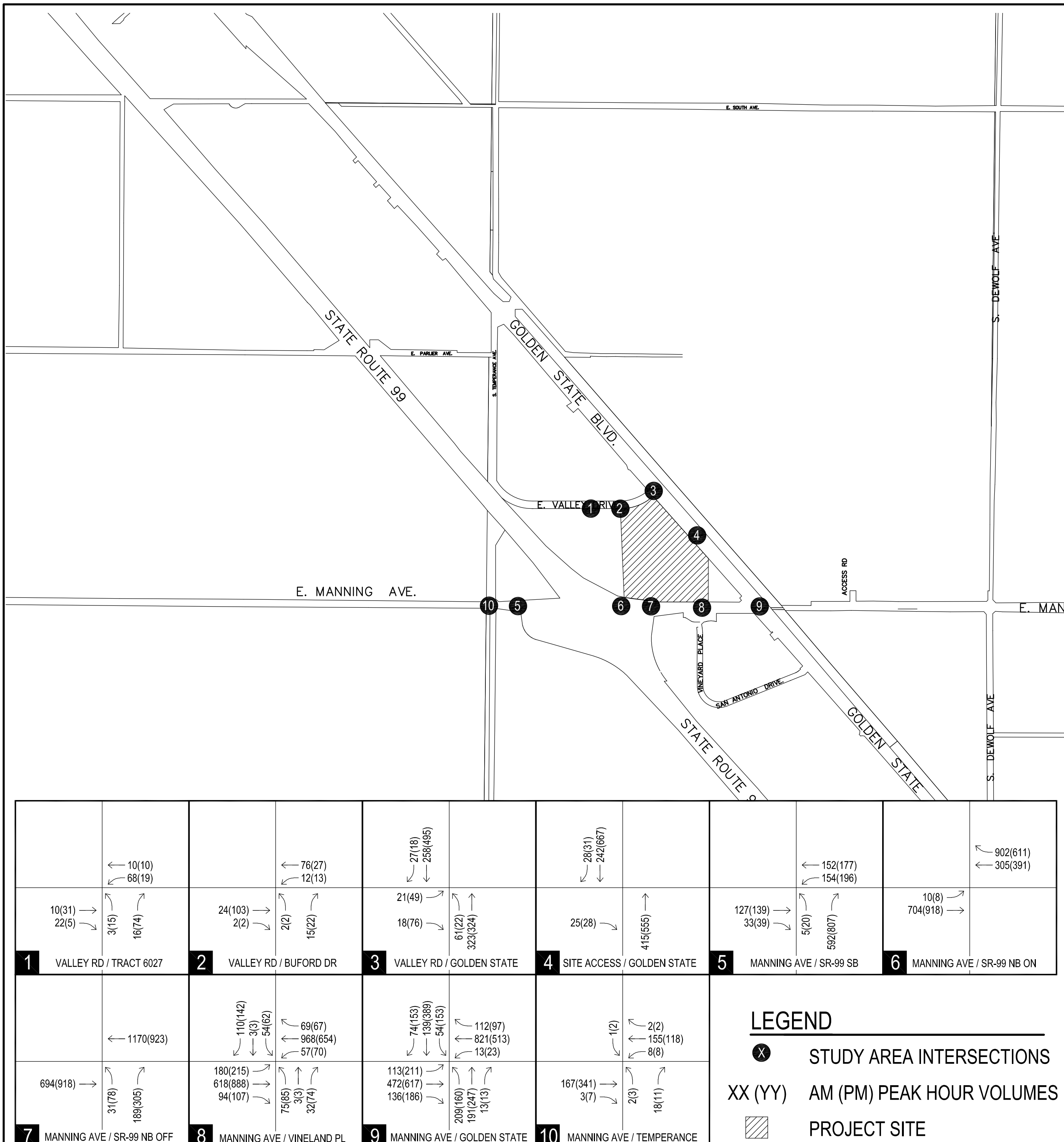
- X STUDY AREA INTERSECTIONS
- XX (YY) AM (PM) PEAK HOUR VOLUMES
- PROJECT SITE

Proposed Buford Oil Company Travel Center

Fowler, California

NEAR-TERM WITH PROJECT PEAK-HOUR TRAFFIC VOLUMES

Not to Scale



Proposed Buford Oil Company Travel Center
Fowler, California

NEAR-TERM WITH PROJECT PCE PEAK-HOUR TRAFFIC VOLUMES

Not to Scale

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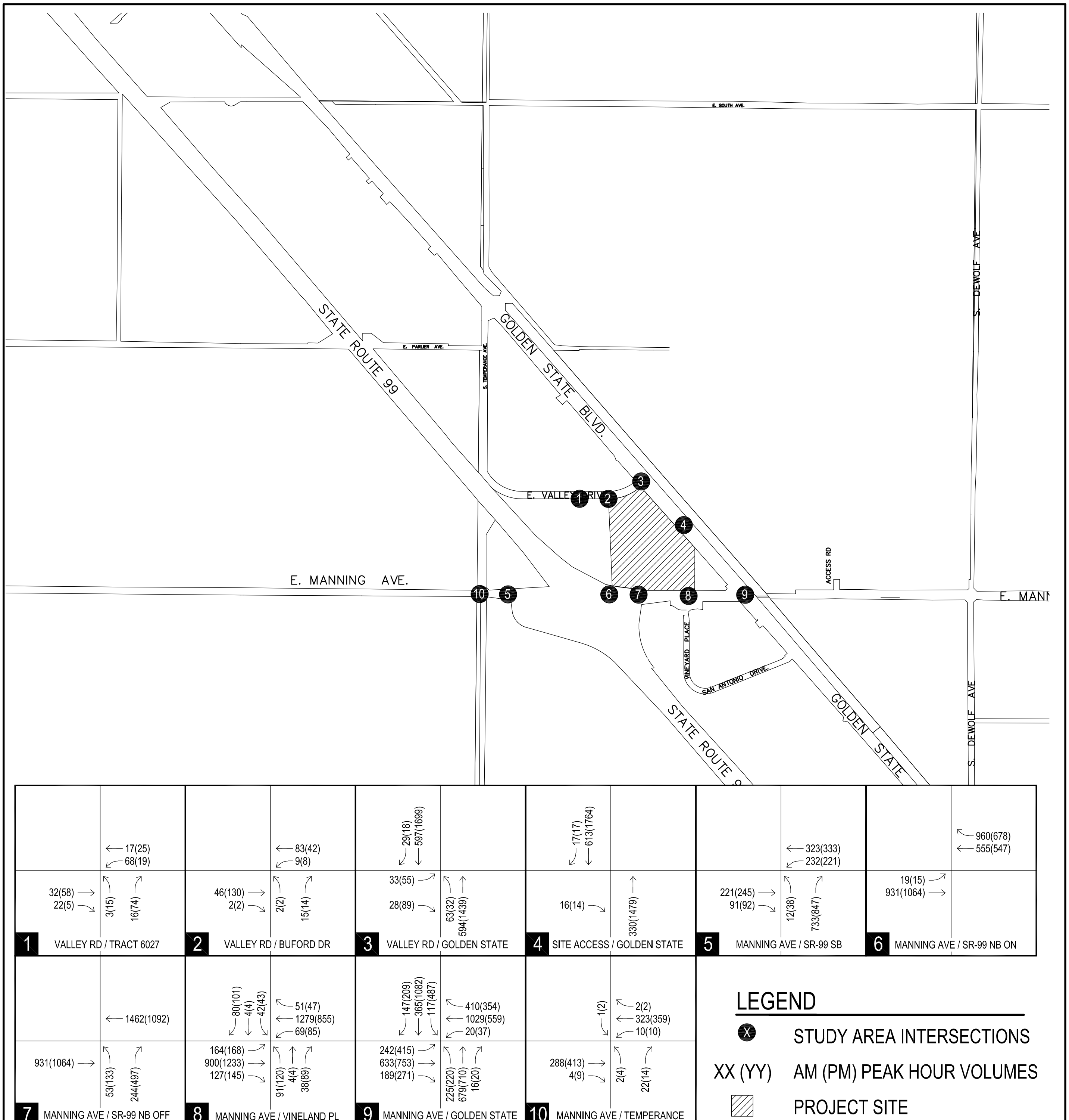
Figure 15



Proposed Buford Oil Company Travel Center

Fowler, California

CUMULATIVE 2040 WITH PROJECT PEAK-HOUR TRAFFIC VOLUMES

Not to Scale

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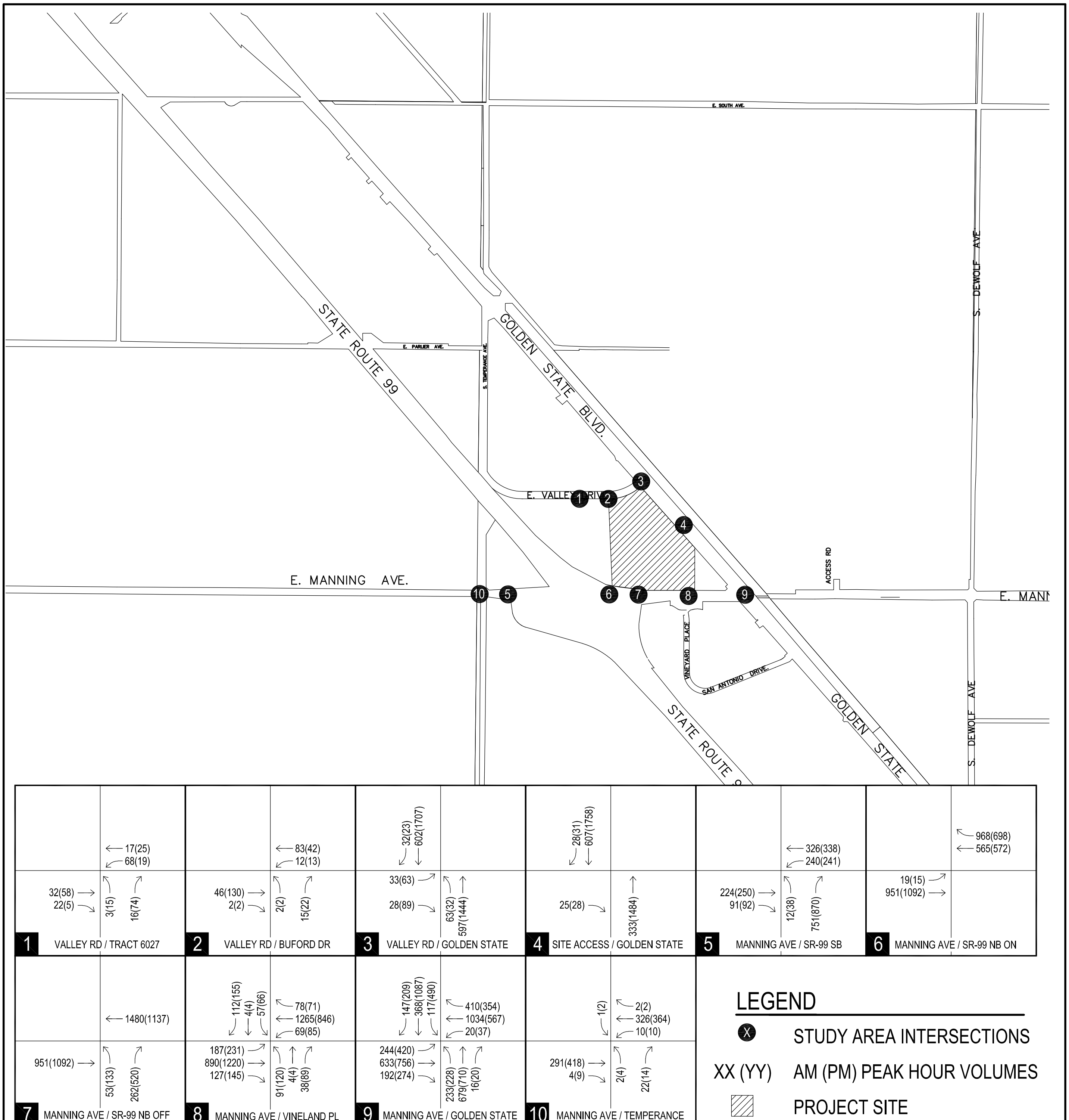
Figure 16



Proposed Buford Oil Company Travel Center
Fowler, California

CUMULATIVE 2040 WITH PROJECT PCE PEAK-HOUR TRAFFIC VOLUMES

Not to Scale

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Figure 17

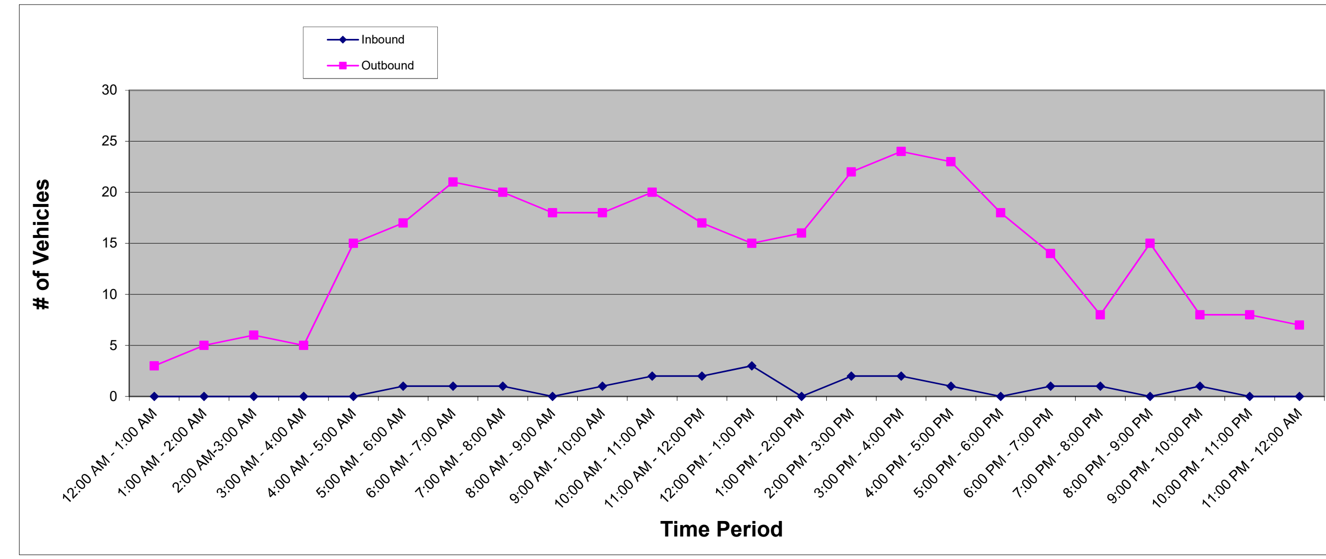
TRAFFIC COUNT DATA SHEETS

Metro Traffic Data Inc.

Description	Driveway #1 (Shell West)
Survey Date	Tuesday, June 26, 2018
Latitude	36.605490
Longitude	-119.658371
Number of Lanes	2
Total Volume	362
HV Percentage	8.3%
AM Peak Period	6:45am-7:45am
AM Peak Volume	24
AM PHF	0.75
PM Peak Period	2:15pm-3:15pm
PM Peak Volume	26
PM PHF	0.72

Class 1 - Motorcycles, 2 axles
Class 2 - Passenger cars, 2 axles
Class 3 - Pickup trucks, vans, 2 axles
Class 4 - Busses
Class 5 - Single unit, 2 axle, 6 tires
Class 6 - Single unit truck, 3 axles
Class 7 - Single unit, 4 axles
Class 8 - Double unit, < 5 axles
Class 9 - Double unit, 5 axles
Class 10 - Double unit, > 5 axles
Class 11 - Multi unit, 5 axles
Class 12 - Multi unit, 6 axles
Class 13 - Multi unit, > 6 axles
Class 14 - Unclassifiable

1st First 15 minute interval
2nd Second 15 minute interval
3rd Third 15 minute interval
4th Fourth 15 minute interval
T Hourly Total



Prepared For:

Peters Engineering Group
952 Pollasky Avenue
Clovis, CA 93612

Metro Traffic Data Inc.
310 N. Irwin Street - Suite 20
Hanford, CA 93230

800-975-6938 Phone/Fax
www.metrotraffic data.com

Inbound

Hour	Class 1					Class 2					Class 3					Class 4					Class 5				
	1st	2nd	3rd	4th	T	1st	2nd	3rd	4th	T	1st	2nd	3rd	4th	T	1st	2nd	3rd	4th	T	1st	2nd	3rd	4th	T
12:00 AM - 1:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:00 AM - 2:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:00 AM-3:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:00 AM - 4:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:00 AM - 5:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 AM - 6:00 AM	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:00 AM - 7:00 AM	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:00 AM - 8:00 AM	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM - 9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:00 AM - 10:00 AM	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:00 AM - 11:00 AM	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:00 AM - 12:00 PM	0	0	0	0	0	0	1	1	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:00 PM - 1:00 PM	0	0	0	0	0	1	0	1	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:00 PM - 2:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:00 PM - 3:00 PM	0	0	0	0	0	0	1	1	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:00 PM - 4:00 PM	0	0	0	0	0	0	0	0	1	1	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0
4:00 PM - 5:00 PM	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM - 6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:00 PM - 7:00 PM	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:00 PM - 8:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 PM - 9:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:00 PM - 10:00 PM	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:00 PM - 11:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:00 PM - 12:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0					15					1					0					0				
Percentage	0.0%					78.9%					5.3%					0.0%					0.0%				

Hour	Class 6					Class 7					Class 8					Class 9					Class 10				
	1st	2nd	3rd	4th	T	1st	2nd	3rd	4th	T	1st	2nd	3rd	4th	T	1st	2nd	3rd	4th	T	1st	2nd	3rd	4th	T
12:00 AM - 1:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:00 AM - 2:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:00 AM-3:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:00 AM - 4:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:00 AM - 5:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 AM - 6:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:00 AM - 7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:00 AM - 8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM - 9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:00 AM - 10:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:00 AM - 11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:00 AM - 12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:00 PM - 1:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:00 PM - 2:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:00 PM - 3:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:00 PM - 4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:00 PM - 5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM - 6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:00 PM - 7:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:00 PM - 8:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 PM - 9:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:00 PM - 10:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:00 PM - 11:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:00 PM - 12:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0					0					0					0					0				
Percentage	0.0%					0.0%					0.0%					0.0%					0.0%				

Hour	Class 11					Class 12					Class 13					Class 14					Total
	1st	2nd	3rd	4th	T	1st	2nd	3rd	4th	T	1st	2nd	3rd	4th	T	1st	2nd	3rd	4th	T	
12:00 AM - 1:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:00 AM - 2:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:00 AM-3:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:00 AM - 4:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:00 AM - 5:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 AM - 6:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
6:00 AM - 7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
7:00 AM - 8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
8:00 AM - 9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:00 AM - 10:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
10:00 AM - 11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	2
11:00 AM - 12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
12:00 PM - 1:00 PM	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
1:00 PM - 2:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:00 PM - 3:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
3:00 PM - 4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
4:00 PM - 5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
5:00 PM - 6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:00 PM - 7:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
7:00 PM - 8:00 PM	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
8:00 PM - 9:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:00 PM - 10:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
10:00 PM - 11:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:00 PM - 12:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	2					0					0					1					19
Percentage	10.5%					0.0%					0.0%					5.3%					100.0%

9:15am-10:15am AM PK 2 AM PHF 0.25 11:15pm-12:15pm PM PK 3 PM PHF 0.75 HV Percent 15.8%

Outbound

Hour	Class 1					Class 2					Class 3					Class 4					Class 5				
	1st	2nd	3rd	4th	T	1st	2nd	3rd	4th	T	1st	2nd	3rd	4th	T	1st	2nd	3rd	4th	T	1st	2nd	3rd	4th	T
12:00 AM - 1:00 AM	0	0	0	0	0	0	0	0	2	2	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0
1:00 AM - 2:00 AM	0	0	0	0	0	3	1	1	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:00 AM-3:00 AM	0	0	0	0	0	2	0	1	3	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:00 AM - 4:00 AM	0	0	0	0	0	0	1	1	2	4	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
4:00 AM - 5:00 AM	0	0	0	0	0	4	2	6	2	14	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
5:00 AM - 6:00 AM	0	0	0	0	0	6	2	6	3	17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:00 AM - 7:00 AM	0	0	0	0	0	5	4	2	6	17	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
7:00 AM - 8:00 AM	0	0	0	0	0	4	4	5	4	17	0	0	0	0	0	0	0	1	0	1	0	0	0	1	1
8:00 AM - 9:00 AM	0	0	0	0	0	5	5	5	2	17	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
9:00 AM - 10:00 AM	0	0	0	1	1	4	4	5	3	16	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0
10:00 AM - 11:00 AM	0	0	0	0	0	5	5	4	4	18	0	0	0	0	0	0	0	0	0	0	1	0	0	1	2
11:00 AM - 12:00 PM	0	0	0	0	0	4	5	3	4	16	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
12:00 PM - 1:00 PM	0	0	0	0	0	2	4	1	5	12	0	0	0	0	0	0	0	0	0	0	2	0	0	1	3
1:00 PM - 2:00 PM	0	0	0	0	0	6	2	3	4	15	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
2:00 PM - 3:00 PM	0	0	0	0	0	7	4	5	4	20	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2
3:00 PM - 4:00 PM	0	0	0	0	0	8	3	7	5	23	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
4:00 PM - 5:00 PM	0	0	0	0	0	4	6	5	6	21	0	0	0	0	0	0	0	0	0	0	0	1	1	0	2
5:00 PM - 6:00 PM	0	0	0	0	0	7	4	5	2	18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:00 PM - 7:00 PM	0	0	0	0	0	2	4	6	2	14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:00 PM - 8:00 PM	0	0	0	0	0	2	2	3	1	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 PM - 9:00 PM	0	0	0	0	0	8	0	3	3	14	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1
9:00 PM - 10:00 PM	0	0	0	0	0	1	2	3	0	6	0	0	0	0	0	0	0	0	0	0	0	0	1	1	2
10:00 PM - 11:00 PM	0	0	0	0	0	4	3	0	1	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:00 PM - 12:00 AM	0	0	0	0	0	4	1	1	1	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	1					315					0					3					20				
Percentage	0.3%					91.8%					0.0%					0.9%					5.8%				

Hour	Class 6					Class 7					Class 8					Class 9					Class 10				
	1st	2nd	3rd	4th	T	1st	2nd	3rd	4th	T	1st	2nd	3rd	4th	T	1st	2nd	3rd	4th	T	1st	2nd	3rd	4th	T
12:00 AM - 1:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:00 AM - 2:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:00 AM-3:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:00 AM - 4:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:00 AM - 5:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 AM - 6:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:00 AM - 7:00 AM	2	1	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:00 AM - 8:00 AM	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM - 9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:00 AM - 10:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:00 AM - 11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:00 AM - 12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:00 PM - 1:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:00 PM - 2:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:00 PM - 3:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:00 PM - 4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:00 PM - 5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM - 6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:00 PM - 7:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:00 PM - 8:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 PM - 9:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:00 PM - 10:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:00 PM - 11:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:00 PM - 12:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	4					0					0					0					0				
Percentage	1.2%					0.0%					0.0%					0.0%					0.0%				

Hour	Class 11					Class 12					Class 13					Class 14					Total
	1st	2nd	3rd	4th	T	1st	2nd	3rd	4th	T	1st	2nd	3rd	4th	T	1st	2nd	3rd	4th	T	
12:00 AM - 1:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
1:00 AM - 2:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5
2:00 AM-3:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6
3:00 AM - 4:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5
4:00 AM - 5:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	15
5:00 AM - 6:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	17
6:00 AM - 7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	21
7:00 AM - 8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	20
8:00 AM - 9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	18
9:00 AM - 10:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	18
10:00 AM - 11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	20
11:00 AM - 12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	17
12:00 PM - 1:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	15
1:00 PM - 2:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	16
2:00 PM - 3:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	22
3:00 PM - 4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	24
4:00 PM - 5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	23
5:00 PM - 6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	18
6:00 PM - 7:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	14
7:00 PM - 8:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8
8:00 PM - 9:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	15
9:00 PM - 10:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8
10:00 PM - 11:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8
11:00 PM - 12:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7
Total	0					0					0					0					343
Percentage	0.0%					0.0%					0.0%					0.0%					100.0%

6:45am-7:45am AM PK 22 AM PHF 0.79 2:45pm-3:45pm PM PK 25 PM PHF 0.78 HV Percent 7.9%

Description: Driveway #2 (Shell East)
Survey Date: Tuesday, June 26, 2018
Latitude: 36.605502
Longitude: -119.657858
Number of Lanes: 2
Total Volume: 746
HV Percentage: 39.0%
AM Peak Period: 6:30am-7:30am
AM Peak Volume: 58
AM PHF: 0.91
PM Peak Period: 4:15pm-5:15pm
PM Peak Volume: 58
PM PHF: 0.76

Metro Traffic Data Inc.
310 N. Irwin Street - Suite 20
Hanford, CA 93230

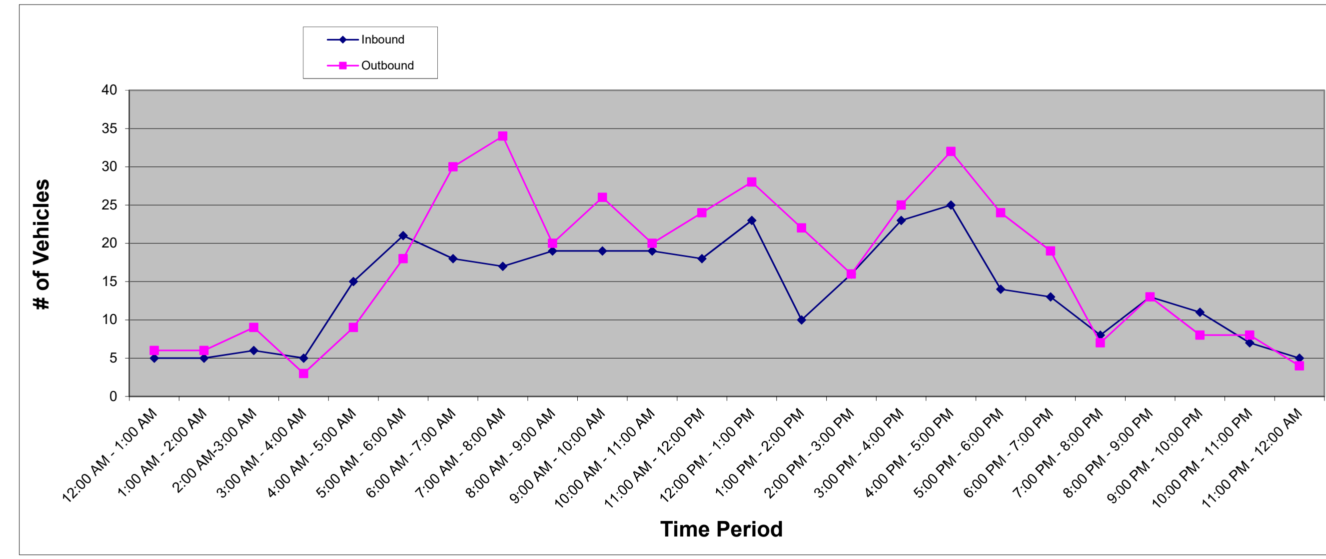
800-975-6938 Phone/Fax
www.metrotraffic data.com

Prepared For:

Peters Engineering Group
952 Pollasky Avenue
Clovis, CA 93612

Class 1 - Motorcycles, 2 axles
Class 2 - Passenger cars, 2 axles
Class 3 - Pickup trucks, vans, 2 axles
Class 4 - Busses
Class 5 - Single unit, 2 axle, 6 tires
Class 6 - Single unit truck, 3 axles
Class 7 - Single unit, 4 axles
Class 8 - Double unit, < 5 axles
Class 9 - Double unit, 5 axles
Class 10 - Double unit, > 5 axles
Class 11 - Multi unit, 5 axles
Class 12 - Multi unit, 6 axles
Class 13 - Multi unit, > 6 axles
Class 14 - Unclassifiable

1st First 15 minute interval
2nd Second 15 minute interval
3rd Third 15 minute interval
4th Fourth 15 minute interval
T Hourly Total



Inbound

Hour	Class 1					Class 2					Class 3					Class 4					Class 5					Class 6					Class 7				
	1st	2nd	3rd	4th	T	1st	2nd	3rd	4th	T	1st	2nd	3rd	4th	T	1st	2nd	3rd	4th	T	1st	2nd	3rd	4th	T	1st	2nd	3rd	4th	T	1st	2nd	3rd	4th	T
12:00 AM - 1:00 AM	0	0	0	0	0	1	0	1	3	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:00 AM - 2:00 AM	0	0	0	0	0	2	2	1	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:00 AM-3:00 AM	0	0	0	0	0	2	0	1	3	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:00 AM - 4:00 AM	0	0	0	0	0	0	1	1	3	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:00 AM - 5:00 AM	0	0	0	0	0	2	3	7	3	15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 AM - 6:00 AM	0	0	0	0	0	8	1	8	2	19	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2	0	0	0	0	0
6:00 AM - 7:00 AM	0	0	0	0	0	4	2	5	6	17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0
7:00 AM - 8:00 AM	0	0	0	0	0	6	3	3	3	15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	2	0	0	0	0	0
8:00 AM - 9:00 AM	0	0	0	0	0	4	6	6	3	19	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:00 AM - 10:00 AM	0	0	0	1	1	6	5	2	5	18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:00 AM - 11:00 AM	0	0	0	0	0	6	4	2	6	18	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:00 AM - 12:00 PM	0	0	0	0	0	2	5	4	6	17	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0
12:00 PM - 1:00 PM	0	0	0	0	0	4	5	4	7	20	0	0	0	0	0	0	0	0	0	0	0	1	0	1	2	0	0	0	0	0	0	0	0	0	0
1:00 PM - 2:00 PM	0	0	0	0	0	2	3	2	2	9	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0
2:00 PM - 3:00 PM	0	0	0	0	0	7	2	1	5	15	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0
3:00 PM - 4:00 PM	0	0	0	0	0	6	3	7	3	19	2	0	0	1	3	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0
4:00 PM - 5:00 PM	0	0	0	0	0	4	6	7	7	24	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM - 6:00 PM	0	0	0	0	0	4	2	4	4	14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:00 PM - 7:00 PM	0	0	0	0	0	5	6	1	1	13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:00 PM - 8:00 PM	0	0	0	1	1	2	4	0	1	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 PM - 9:00 PM	0	0	0	0	0	7	2	3	0	12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:00 PM - 10:00 PM	0	0	0	0	0	2	2	2	4	10	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0
10:00 PM - 11:00 PM	0	0	0	0	0	1	3	0	3	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:00 PM - 12:00 AM	0	0	0	0	0	2	1	1	1	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	2					314					5					0					7					5					0				
Percentage	0.6%					93.7%					1.5%					0.0%					2.1%					1.5%					0.0%				

Hour	Class 8					Class 9					Class 10					Class 11					Class 12					Class 13					Class 14					Total
	1st	2nd	3rd	4th	T	1st	2nd	3rd	4th	T	1st	2nd	3rd	4th	T	1st	2nd	3rd	4th	T	1st	2nd	3rd	4th	T	1st	2nd	3rd	4th	T	1st	2nd	3rd	4th	T	
12:00 AM - 1:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5
1:00 AM - 2:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5
2:00 AM-3:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6
3:00 AM - 4:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5
4:00 AM - 5:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	15
5:00 AM - 6:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	21
6:00 AM - 7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	18
7:00 AM - 8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	17
8:00 AM - 9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	19
9:00 AM - 10:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	19
10:00 AM - 11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	19
11:00 AM - 12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	18
12:00 PM - 1:00 PM	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	23
1:00 PM - 2:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	10
2:00 PM - 3:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	16
3:00 PM - 4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	23
4:00 PM - 5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	25
5:00 PM - 6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	14
6:00 PM - 7:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	13
7:00 PM - 8:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8
8:00 PM - 9:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	13
9:00 PM - 10:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	11
10:00 PM - 11:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7
11:00 PM - 12:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5
Total	1					0					0					1					0					0					0					335
Percentage	0.3%					0.0%					0.0%					0.3%					0.0%					0.0%					0.0%					100.0%

4:15am-5:15am AM PK 21 AM PHF 0.66 4:00pm-5:00pm PM PK 25 PM PHF 0.89 HV Percent 4.2%

Outbound

Hour	Class 1					Class 2					Class 3					Class 4					Class 5					Class 6					Class 7				
	1st	2nd	3rd	4th	T	1st	2nd	3rd	4th	T	1st	2nd	3rd	4th	T	1st	2nd	3rd	4th	T	1st	2nd	3rd	4th	T	1st	2nd	3rd	4th	T	1st	2nd	3rd	4th	T
12:00 AM - 1:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0
1:00 AM - 2:00 AM	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:00 AM-3:00 AM	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0
3:00 AM - 4:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:00 AM - 5:00 AM	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0
5:00 AM - 6:00 AM	0	0	0	0	0	3	0	1	0	4	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:00 AM - 7:00 AM	0	0	0	0	0	2	1	2	5	10	0	0	0	0	0	0	0	0	0	0	1	0	1	0	2	1	0	1	0	2	0	0	0	0	0
7:00 AM - 8:00 AM	0	0	0	0	0	3	2	1	2	8	1	0	0	0	1	0	0	0	0	0	2	2	0	1	5	0	0	1	2	3	0	0	0	0	0
8:00 AM - 9:00 AM	0	0	0	0	0	2	1	3	2	8	0	0	0	0	0	0	0	0	0	0	1	0	0	1	2	0	0	0	0	0	0	0	0	0	0
9:00 AM - 10:00 AM	0	0	0	0	0	2	3	2	2	9	0	0	0	0	0	0	0	0	0	0	1	1	0	0	2	0	0	0	0	0	0	0	0	0	0
10:00 AM - 11:00 AM	0	0	0	0	0	1	1	2	1	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0
11:00 AM - 12:00 PM	0	0	0	0	0	1	4	1	1	7	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1	0	0	0	1	0	0	0	0	0
12:00 PM - 1:00 PM	0	0	0	0	0	4	3	2	6	15	0	0	0	0	0	0	0	0	0	0	0	2	0	1	3	0	0	0	0	0	0	0	0	0	0
1:00 PM - 2:00 PM	0	0	0	0	0	4	3	2	0	9	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0
2:00 PM - 3:00 PM	0	0	0	0	0	2	2	1	1	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0
3:00 PM - 4:00 PM	0	0	0	0	0	0	0	4	2	6	0	0	0	0	0	0	0	0	0	0	0	4	0	1	5	0	0	0	0	0	0	0	0	0	0
4:00 PM - 5:00 PM	0	0	0	1	1	2	5	1	2	10	0	1	0	1	2	0	0	0	0	0	0	0	1	2	3	0	0	0	1	1	0	0	0	0	0
5:00 PM - 6:00 PM	0	0	0	0	0	3	4	5	0	12	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0
6:00 PM - 7:00 PM	0	0	0	0	0	1	4	1	0	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:00 PM - 8:00 PM	0	0	0	0	0	1	1	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 PM - 9:00 PM	0	0	0	0	0	0	0	1	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:00 PM - 10:00 PM	0	0	0	0	0	2	1	0	3	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:00 PM - 11:00 PM	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:00 PM - 12:00 AM	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	1					130					3					2					25					12					0				
Percentage	0.2%					31.6%					0.7%					0.5%					6.1%					2.9%					0.0%				

Hour	Class 8					Class 9					Class 10					Class 11					Class 12					Class 13					Class 14					Total
	1st	2nd	3rd	4th	T	1st	2nd	3rd	4th	T	1st	2nd	3rd	4th	T	1st	2nd	3rd	4th	T	1st	2nd	3rd	4th	T	1st	2nd	3rd	4th	T	1st	2nd	3rd	4th	T	
12:00 AM - 1:00 AM	0	0	0	0	0	0	4	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6
1:00 AM - 2:00 AM	0	0	0	0	0	2	1	0	1	4	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6
2:00 AM-3:00 AM	0	0	0	0	0	1	3	1	1	6	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	9
3:00 AM - 4:00 AM	0	0	0	0	0	1	0	2	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
4:00 AM - 5:00 AM	0	0	0	0	0	0	2	2	0	4	0	0	1	0	1	1	0	0	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9
5:00 AM - 6:00 AM	0	0	0	0	0	2	5	4	0	11	0	0	0	0	0	0	0	0	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	18
6:00 AM - 7:00 AM	0	0	0	0	0	3	3	5	4	15	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	30
7:00 AM - 8:00 AM	0	0	0	0	0	2	6	5	4	17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	34
8:00 AM - 9:00 AM	0	1	0	0	1	4	1	1	3	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	20
9:00 AM - 10:00 AM	0	0	0	0	0	4	1	5	5	15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	26
10:00 AM - 11:00 AM	0	0	0	0	0	2	2	5	4	13	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	20
11:00 AM - 12:00 PM	0	0	0	0	0	2	2	7	4	15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	24
12:00 PM - 1:00 PM	0	0	1	0	1	0	5	2	1	8	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	28
1:00 PM - 2:00 PM	0	0	1	0	1	1	5	1	2	9	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	22
2:00 PM - 3:00 PM	0	0	0	0	0	1	4	4	0	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	16
3:00 PM - 4:00 PM	0	1	0	0	1	0	3	5	3	11	0	0	0	0	0	0	0	2	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	25
4:00 PM - 5:00 PM	0	1	0	0	1	3	2	4	5	14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	32
5:00 PM - 6:00 PM	0	0	1	0	1	3	2	2	2	9	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	24
6:00 PM - 7:00 PM	0	0	0	0	0	1	3	2	5	11	0	0	0	0	0	1	1	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	19
7:00 PM - 8:00 PM	0	0	0	0	0	3	0	1	1	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7
8:00 PM - 9:00 PM	0	0	0	0	0	2	2	3	2	9	0	0	0	0	0	0	0	0	1	1	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	13
9:00 PM - 10:00 PM	0	0	0	0	0	0	1	1	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8
10:00 PM - 11:00 PM	0	1	0	0	1	1	1	3	1	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8
11:00 PM - 12:00 AM	0	0	0	0	0	1	1	0	1	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4
Total	7					212					1					16					2					0					0					411
Percentage	1.7%					51.6%					0.2%					3.9%					0.5%					0.0%					0.0%					100.0%

6:30am-7:30am AM PK 37 AM PHF 0.92 4:15pm-5:15pm PM PK 33 PM PHF 0.69 HV Percent 67.4%

Metro Traffic Data Inc.

Metro Traffic Data Inc.
310 N. Irwin Street - Suite 20
Hanford, CA 93230

800-975-6938 Phone/Fax
www.metrotraffic data.com

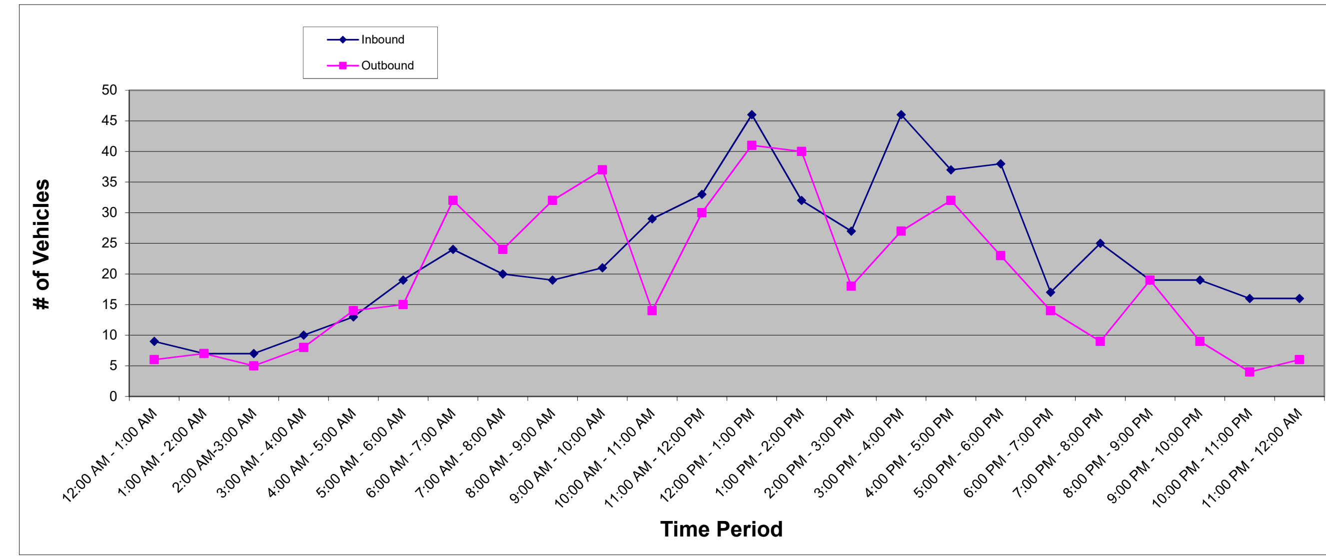
Prepared For:

Peters Engineering Group
952 Pollasky Avenue
Clovis, CA 93612

Description	Driveway #3 (Vineyard Pl)
Survey Date	Tuesday, June 26, 2018
Latitude	36.605528
Longitude	-119.6571967
Number of Lanes	2
Total Volume	1015
HV Percentage	57.2%
AM Peak Period	11:30am-12:30am
AM Peak Volume	83
AM PHF	0.72
PM Peak Period	12:00pm-1:00pm
PM Peak Volume	87
PM PHF	0.75

Class 1 - Motorcycles, 2 axles
Class 2 - Passenger cars, 2 axles
Class 3 - Pickup trucks, vans, 2 axles
Class 4 - Busses
Class 5 - Single unit, 2 axle, 6 tires
Class 6 - Single unit truck, 3 axles
Class 7 - Single unit, 4 axles
Class 8 - Double unit, < 5 axles
Class 9 - Double unit, 5 axles
Class 10 - Double unit, > 5 axles
Class 11 - Multi unit, 5 axles
Class 12 - Multi unit, 6 axles
Class 13 - Multi unit, > 6 axles
Class 14 - Unclassifiable

1st First 15 minute interval
2nd Second 15 minute interval
3rd Third 15 minute interval
4th Fourth 15 minute interval
T Hourly Total



Inbound

Hour	Class 1					Class 2					Class 3					Class 4					Class 5					Class 6					Class 7				
	1st	2nd	3rd	4th	T	1st	2nd	3rd	4th	T	1st	2nd	3rd	4th	T	1st	2nd	3rd	4th	T	1st	2nd	3rd	4th	T	1st	2nd	3rd	4th	T	1st	2nd	3rd	4th	T
12:00 AM - 1:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:00 AM - 2:00 AM	0	0	0	0	0	0	0	0	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:00 AM-3:00 AM	0	0	0	0	0	0	1	1	0	2	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1	0	0	0	1	0	0	0	0	0
3:00 AM - 4:00 AM	0	0	0	0	0	0	1	1	1	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0
4:00 AM - 5:00 AM	0	0	0	0	0	2	1	2	0	5	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 AM - 6:00 AM	0	0	0	0	0	2	2	3	1	8	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0
6:00 AM - 7:00 AM	0	0	0	0	0	4	2	5	2	13	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0
7:00 AM - 8:00 AM	0	0	0	0	0	0	1	2	3	6	1	0	0	0	1	0	0	0	0	0	0	1	0	0	1	1	1	0	1	3	0	0	0	0	0
8:00 AM - 9:00 AM	0	0	0	0	0	0	3	0	4	7	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:00 AM - 10:00 AM	0	0	0	0	0	4	3	2	0	9	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	1	1	2	0	0	0	0	0
10:00 AM - 11:00 AM	0	0	0	0	0	1	2	4	5	12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	1	3	0	0	0	0	0
11:00 AM - 12:00 PM	0	0	0	0	0	5	2	5	6	18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0
12:00 PM - 1:00 PM	0	0	0	0	0	8	6	3	7	24	0	0	0	0	0	0	0	0	0	0	2	1	1	2	6	0	0	0	0	0	0	0	0	0	0
1:00 PM - 2:00 PM	0	0	0	0	0	3	1	5	6	15	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2	0	0	0	0	0	0	0	0	0	0
2:00 PM - 3:00 PM	0	0	0	0	0	3	1	3	4	11	0	0	0	0	0	0	0	0	0	0	1	0	2	2	5	0	0	0	0	0	0	0	0	0	0
3:00 PM - 4:00 PM	0	0	0	0	0	3	0	9	7	19	1	0	0	0	1	0	0	0	0	0	0	2	0	0	2	0	0	0	1	1	0	0	0	0	0
4:00 PM - 5:00 PM	0	0	0	0	0	6	2	4	2	14	0	0	1	1	2	0	0	0	0	0	0	2	2	0	4	0	0	0	0	0	0	0	0	0	0
5:00 PM - 6:00 PM	0	0	0	0	0	4	3	5	2	14	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	1	1	0	0	0	0	0
6:00 PM - 7:00 PM	0	0	0	0	0	0	1	0	2	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:00 PM - 8:00 PM	0	0	0	0	0	1	0	1	5	7	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0
8:00 PM - 9:00 PM	0	0	0	0	0	1	3	0	3	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:00 PM - 10:00 PM	0	0	0	0	0	0	1	1	3	5	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0
10:00 PM - 11:00 PM	0	0	0	0	0	2	1	0	3	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:00 PM - 12:00 AM	0	0	0	1	1	0	1	0	2	3	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0
Total	1					213					8					2					25					16					0				
Percentage	0.2%					38.8%					1.5%					0.4%					4.6%					2.9%					0.0%				

Hour	Class 8					Class 9					Class 10					Class 11					Class 12					Class 13					Class 14					Total
	1st	2nd	3rd	4th	T	1st	2nd	3rd	4th	T	1st	2nd	3rd	4th	T	1st	2nd	3rd	4th	T	1st	2nd	3rd	4th	T	1st	2nd	3rd	4th	T	1st	2nd	3rd	4th	T	
12:00 AM - 1:00 AM	0	0	0	0	0	4	0	3	0	7	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	9
1:00 AM - 2:00 AM	0	0	0	0	0	2	0	0	1	3	1	1	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7
2:00 AM-3:00 AM	0	0	0	0	0	1	0	1	0	2	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7
3:00 AM - 4:00 AM	0	0	0	0	0	1	3	0	1	5	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	10
4:00 AM - 5:00 AM	0	0	0	0	0	1	2	2	1	6	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	13
5:00 AM - 6:00 AM	0	0	0	0	0	1	4	0	1	6	0	0	0	0	0	0	0	1	2	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	19
6:00 AM - 7:00 AM	0	0	0	0	0	2	1	4	2	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	24
7:00 AM - 8:00 AM	0	0	0	0	0	3	2	3	1	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	20
8:00 AM - 9:00 AM	0	0	0	0	0	3	5	0	3	11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	19
9:00 AM - 10:00 AM	0	1	0	0	1	2	3	2	1	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	21
10:00 AM - 11:00 AM	0	0	0	0	0	6	2	2	3	13	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	29
11:00 AM - 12:00 PM	0	0	0	0	0	4	3	5	2	14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	33
12:00 PM - 1:00 PM	1	0	0	0	1	5	3	3	3	14	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	46
1:00 PM - 2:00 PM	0	0	0	0	0	4	2	3	2	11	0	0	0	0	0	1	1	0	0	2	0	1	0	0	1	0	0	0	0	0	1	0	0	0	1	32
2:00 PM - 3:00 PM	0	0	0	0	0	3	2	2	4	11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	27
3:00 PM - 4:00 PM	1	0	0	0	1	5	6	5	3	19	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	46
4:00 PM - 5:00 PM	1	0	0	0	1	5	4	4	3	16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	37
5:00 PM - 6:00 PM	0	0	0	0	0	5	3	5	7	20	0	0	0	0	0	0	0	1	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	38
6:00 PM - 7:00 PM	0	0	0	0	0	4	4	2	2	12	0	0	0	0	0	1	1	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	17
7:00 PM - 8:00 PM	0	0	0	1	1	3	4	3	3	13	0	0	1	0	1	0	0	1	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	25
8:00 PM - 9:00 PM	0	0	0	0	0	3	4	3	2	12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	19
9:00 PM - 10:00 PM	0	0	1	0	1	4	1	1	5	11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	19
10:00 PM - 11:00 PM	0	0	0	0	0	0	3	4	3	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	16
11:00 PM - 12:00 AM	0	0	0	0	0	2	2	0	5	9	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	16
Total	6					251					4					18					2					0					3					549
Percentage	1.1%					45.7%					0.7%					3.3%					0.4%					0.0%					0.5%					100.0%

11:30am-12:30am AM PK 46 AM PHF 0.68 11:30pm-12:30pm PM PK 46 PM PHF 0.68 HV Percent 59.6%

Outbound

Hour	Class 1					Class 2					Class 3					Class 4					Class 5					Class 6					Class 7				
	1st	2nd	3rd	4th	T	1st	2nd	3rd	4th	T	1st	2nd	3rd	4th	T	1st	2nd	3rd	4th	T	1st	2nd	3rd	4th	T	1st	2nd	3rd	4th	T	1st	2nd	3rd	4th	T
12:00 AM - 1:00 AM	0	0	0	0	0	2	1	0	0	3	0	0	0	0	0	0	0	0	0	0	2	0	0	0	2	0	0	0	0	0	0	0	0	0	0
1:00 AM - 2:00 AM	0	0	0	0	0	0	2	0	0	2	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:00 AM-3:00 AM	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:00 AM - 4:00 AM	0	0	0	0	0	0	1	1	0	2	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0
4:00 AM - 5:00 AM	0	0	0	0	0	1	1	3	1	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 AM - 6:00 AM	0	0	0	0	0	2	2	4	0	8	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0
6:00 AM - 7:00 AM	0	0	0	0	0	5	3	6	1	15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0
7:00 AM - 8:00 AM	0	0	0	0	0	0	1	1	2	4	0	0	0	0	0	0	0	0	0	0	1	1	1	1	4	0	1	0	0	1	0	0	0	0	0
8:00 AM - 9:00 AM	0	0	0	0	0	5	2	1	3	11	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0
9:00 AM - 10:00 AM	0	0	0	0	0	7	2	0	0	9	0	0	0	0	0	0	0	0	0	0	1	1	0	0	2	2	1	0	0	3	0	0	0	0	0
10:00 AM - 11:00 AM	0	0	0	0	0	3	1	0	2	6	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0
11:00 AM - 12:00 PM	0	0	0	0	0	1	5	7	3	16	0	0	2	0	2	0	0	0	0	0	1	1	0	0	2	0	0	0	0	0	0	0	0	0	0
12:00 PM - 1:00 PM	0	0	0	0	0	9	4	6	4	23	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	2	0	0	0	0	0
1:00 PM - 2:00 PM	0	0	0	0	0	11	2	3	6	22	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1	0	1	0	2	0	0	0	0	0
2:00 PM - 3:00 PM	0	0	0	0	0	3	2	1	1	7	1	0	0	0	1	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0
3:00 PM - 4:00 PM	0	0	0	0	0	4	2	5	4	15	2	0	0	0	2	0	0	0	0	0	0	0	1	1	2	0	0	0	0	0	0	0	0	0	0
4:00 PM - 5:00 PM	0	0	0	0	0	6	5	3	4	18	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0
5:00 PM - 6:00 PM	0	0	0	0	0	2	1	3	2	8	0	0	0	0	0	0	0	0	0	0	0	1	0	1	2	0	0	0	1	1	0	0	0	0	0
6:00 PM - 7:00 PM	0	0	0	0	0	1	1	0	1	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	2	0	0	0	0	0
7:00 PM - 8:00 PM	0	0	0	1	1	0	1	1	1	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 PM - 9:00 PM	0	0	0	0	0	4	4	3	1	12	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0
9:00 PM - 10:00 PM	0	0	0	0	0	1	0	1	2	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:00 PM - 11:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0
11:00 PM - 12:00 AM	0	0	0	0	0	2	1	0	1	4	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0
Total	1					204					7					0					23					13					0				
Percentage	0.2%					43.8%					1.5%					0.0%					4.9%					2.8%					0.0%				

Hour	Class 8					Class 9					Class 10					Class 11					Class 12					Class 13					Class 14					Total
	1st	2nd	3rd	4th	T	1st	2nd	3rd	4th	T	1st	2nd	3rd	4th	T	1st	2nd	3rd	4th	T	1st	2nd	3rd	4th	T	1st	2nd	3rd	4th	T	1st	2nd	3rd	4th	T	
12:00 AM - 1:00 AM	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6
1:00 AM - 2:00 AM	0	0	0	0	0	2	1	0	1	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7
2:00 AM-3:00 AM	0	0	0	0	0	0	1	0	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5
3:00 AM - 4:00 AM	0	0	0	0	0	1	0	2	1	4	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8
4:00 AM - 5:00 AM	0	0	0	0	0	2	1	0	5	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	14
5:00 AM - 6:00 AM	0	0	0	0	0	0	2	2	2	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	15
6:00 AM - 7:00 AM	0	0	0	0	0	0	2	8	6	16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	32
7:00 AM - 8:00 AM	0	0	0	0	0	4	1	8	2	15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	24
8:00 AM - 9:00 AM	1	0	0	0	1	5	4	1	9	19	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	32
9:00 AM - 10:00 AM	1	0	0	0	1	8	3	8	3	22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	37
10:00 AM - 11:00 AM	0	0	0	0	0	0	2	2	1	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	14
11:00 AM - 12:00 PM	0	0	1	0	1	3	2	3	1	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	30
12:00 PM - 1:00 PM	0	0	0	0	0	2	3	6	4	15	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	41
1:00 PM - 2:00 PM	0	0	1	0	1	5	4	3	1	13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	40
2:00 PM - 3:00 PM	0	0	0	0	0	2	2	1	4	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	18
3:00 PM - 4:00 PM	0	0	0	1	1	0	2	2	3	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	27
4:00 PM - 5:00 PM	0	0	0	0	0	2	6	1	3	12	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	32
5:00 PM - 6:00 PM	0	1	0	0	1	6	1	2	2	11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	23
6:00 PM - 7:00 PM	0	0	0	0	0	1	3	2	2	8	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	14
7:00 PM - 8:00 PM	0	0	0	0	0	1	0	1	3	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9
8:00 PM - 9:00 PM	0	0	0	0	0	1	0	2	3	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	19
9:00 PM - 10:00 PM	0	0	0	0	0	2	0	1	2	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9
10:00 PM - 11:00 PM	0	0	0	0	0	0	0	1	2	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4
11:00 PM - 12:00 AM	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6
Total	6					206					0					4					0					0					2					466
Percentage	1.3%					44.2%					0.0%					0.9%					0.0%					0.0%					0.4%					100.0%

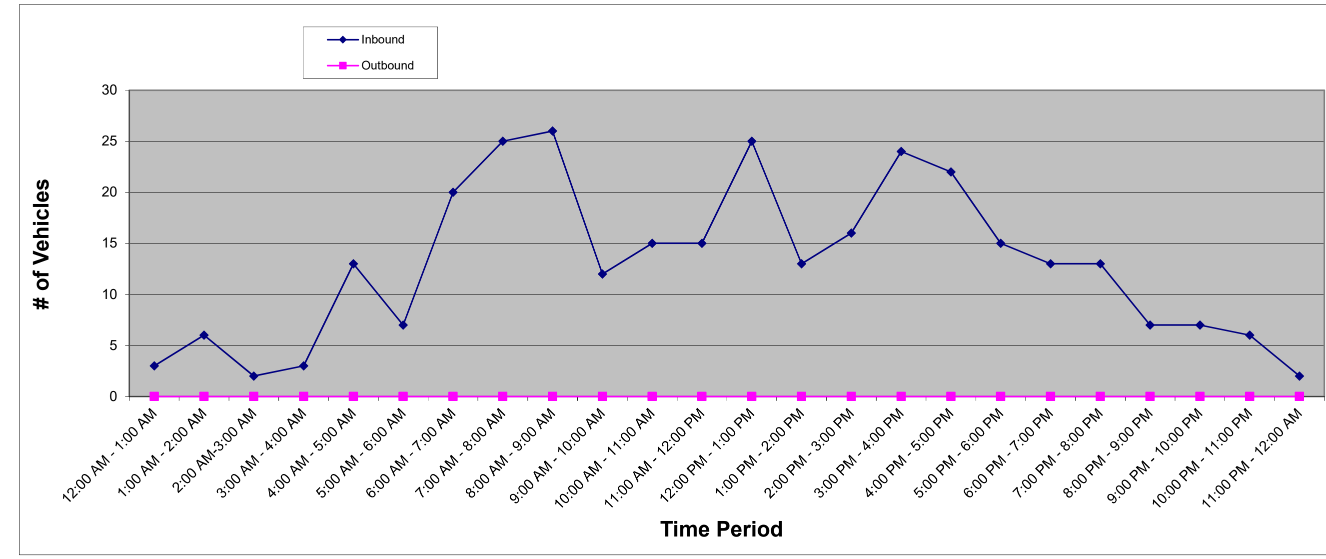
8:45am-9:45am AM PK 46 AM PHF 0.61 12:15pm-1:15pm PM PK 46 PM PHF 0.68 HV Percent 54.5%

Metro Traffic Data Inc.

Description	Driveway #4 (East of Vineyard)
Survey Date	Tuesday, June 26, 2018
Latitude	36.605523
Longitude	-119.6568243
Number of Lanes	2
Total Volume	310
HV Percentage	63.5%
AM Peak Period	7:30am-8:30am
AM Peak Volume	30
AM PHF	0.83
PM Peak Period	12:00pm-1:00pm
PM Peak Volume	25
PM PHF	0.78

Class 1 - Motorcycles, 2 axles
Class 2 - Passenger cars, 2 axles
Class 3 - Pickup trucks, vans, 2 axles
Class 4 - Busses
Class 5 - Single unit, 2 axle, 6 tires
Class 6 - Single unit truck, 3 axles
Class 7 - Single unit, 4 axles
Class 8 - Double unit, < 5 axles
Class 9 - Double unit, 5 axles
Class 10 - Double unit, > 5 axles
Class 11 - Multi unit, 5 axles
Class 12 - Multi unit, 6 axles
Class 13 - Multi unit, > 6 axles
Class 14 - Unclassifiable

1st First 15 minute interval
2nd Second 15 minute interval
3rd Third 15 minute interval
4th Fourth 15 minute interval
T Hourly Total



Prepared For:

Metro Traffic Data Inc.
310 N. Irwin Street - Suite 20
Hanford, CA 93230

800-975-6938 Phone/Fax
www.metrotraffic data.com

Peters Engineering Group
952 Pollasky Avenue
Clovis, CA 93612

Inbound

Hour	Class 1					Class 2					Class 3					Class 4					Class 5				
	1st	2nd	3rd	4th	T	1st	2nd	3rd	4th	T	1st	2nd	3rd	4th	T	1st	2nd	3rd	4th	T	1st	2nd	3rd	4th	T
12:00 AM - 1:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:00 AM - 2:00 AM	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:00 AM-3:00 AM	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:00 AM - 4:00 AM	0	0	0	0	0	0	1	1	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:00 AM - 5:00 AM	0	0	0	0	0	5	0	4	1	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 AM - 6:00 AM	0	0	0	0	0	0	1	1	2	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:00 AM - 7:00 AM	0	0	0	0	0	4	1	2	0	7	0	0	0	0	0	0	0	0	0	0	1	0	2	0	3
7:00 AM - 8:00 AM	0	0	0	0	0	1	0	4	2	7	0	0	0	0	0	0	0	0	0	0	2	2	3	1	8
8:00 AM - 9:00 AM	0	0	0	0	0	1	1	1	1	4	0	0	0	0	0	0	0	0	0	0	2	1	0	0	3
9:00 AM - 10:00 AM	0	0	0	0	0	1	1	0	0	2	0	0	0	0	0	0	0	0	0	0	1	1	1	0	3
10:00 AM - 11:00 AM	0	0	0	0	0	2	1	0	1	4	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
11:00 AM - 12:00 PM	0	0	0	0	0	3	0	4	2	9	0	0	0	0	0	0	0	0	0	0	2	0	0	0	2
12:00 PM - 1:00 PM	0	0	0	0	0	3	2	0	4	9	1	1	0	0	2	0	0	0	0	0	0	0	0	0	0
1:00 PM - 2:00 PM	0	0	0	0	0	4	1	2	2	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:00 PM - 3:00 PM	0	0	0	0	0	0	1	2	3	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:00 PM - 4:00 PM	0	0	0	0	0	2	3	3	2	10	0	0	0	0	0	0	0	0	0	0	0	1	3	0	4
4:00 PM - 5:00 PM	0	0	0	1	1	2	0	1	1	4	0	0	1	0	1	0	0	0	0	0	1	0	0	0	1
5:00 PM - 6:00 PM	0	0	0	0	0	2	3	1	0	6	0	0	0	0	0	0	0	0	0	0	0	0	1	1	2
6:00 PM - 7:00 PM	0	0	0	0	0	0	4	1	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
7:00 PM - 8:00 PM	0	0	0	0	0	2	0	2	2	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 PM - 9:00 PM	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:00 PM - 10:00 PM	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:00 PM - 11:00 PM	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:00 PM - 12:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	1					109					3					0					28				
Percentage	0.3%					35.2%					1.0%					0.0%					9.0%				

Hour	Class 6					Class 7					Class 8					Class 9					Class 10				
	1st	2nd	3rd	4th	T	1st	2nd	3rd	4th	T	1st	2nd	3rd	4th	T	1st	2nd	3rd	4th	T	1st	2nd	3rd	4th	T
12:00 AM - 1:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	1	3	0	0	0	0	0
1:00 AM - 2:00 AM	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	1	0	1	1	3	0	0	0	0	0
2:00 AM-3:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0
3:00 AM - 4:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0
4:00 AM - 5:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	1	0	0	3	0	0	0	0	0
5:00 AM - 6:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1	3	0	0	0	0	0
6:00 AM - 7:00 AM	2	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	4	1	2	7	0	0	0	0	0
7:00 AM - 8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	4	2	3	10	0	0	0	0	0
8:00 AM - 9:00 AM	0	1	0	1	2	0	0	0	0	0	2	0	0	1	3	3	4	3	4	14	0	0	0	0	0
9:00 AM - 10:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	3	1	2	7	0	0	0	0	0
10:00 AM - 11:00 AM	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	2	3	1	3	9	0	0	0	0	0
11:00 AM - 12:00 PM	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	3	0	3	0	0	0	0	0
12:00 PM - 1:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	2	4	3	3	12	0	0	0	0	0
1:00 PM - 2:00 PM	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0	1	2	0	0	0	0	0
2:00 PM - 3:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	4	1	2	10	0	0	0	0	0
3:00 PM - 4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	2	1	4	10	0	0	0	0	0
4:00 PM - 5:00 PM	0	0	2	0	2	0	0	0	0	0	0	0	0	0	0	2	0	7	3	12	0	0	0	0	0
5:00 PM - 6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	2	1	2	6	0	0	0	0	0
6:00 PM - 7:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	3	0	3	7	0	0	0	0	0
7:00 PM - 8:00 PM	0	1	0	0	1	0	0	0	0	0	1	0	0	0	1	2	0	2	1	5	0	0	0	0	0
8:00 PM - 9:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	1	1	0	5	0	0	0	0	0
9:00 PM - 10:00 PM	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	1	2	1	5	0	0	0	0	0
10:00 PM - 11:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	3	0	5	0	0	0	0	0
11:00 PM - 12:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	2	0	0	0	0	0
Total	12					0					5					145					0				
Percentage	3.9%					0.0%					1.6%					46.8%					0.0%				

Hour	Class 11					Class 12					Class 13					Class 14					Total
	1st	2nd	3rd	4th	T	1st	2nd	3rd	4th	T	1st	2nd	3rd	4th	T	1st	2nd	3rd	4th	T	
12:00 AM - 1:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
1:00 AM - 2:00 AM	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6
2:00 AM-3:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
3:00 AM - 4:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
4:00 AM - 5:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	13
5:00 AM - 6:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7
6:00 AM - 7:00 AM	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	20
7:00 AM - 8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	25
8:00 AM - 9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	26
9:00 AM - 10:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	12
10:00 AM - 11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	15
11:00 AM - 12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	15
12:00 PM - 1:00 PM	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	25
1:00 PM - 2:00 PM	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	13
2:00 PM - 3:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	16
3:00 PM - 4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	24
4:00 PM - 5:00 PM	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	22
5:00 PM - 6:00 PM	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	15
6:00 PM - 7:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	13
7:00 PM - 8:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	13
8:00 PM - 9:00 PM	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7
9:00 PM - 10:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7
10:00 PM - 11:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6
11:00 PM - 12:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
Total	7					0					0					0					310
Percentage	2.3%					0.0%					0.0%					0.0%					100.0%

7:30am-8:30am AM PK 30 AM PHF 0.83 12:00pm-1:00pm PM PK 25 PM PHF 0.78 HV Percent 63.5%

Outbound

Hour	Class 1					Class 2					Class 3					Class 4					Class 5				
	1st	2nd	3rd	4th	T	1st	2nd	3rd	4th	T	1st	2nd	3rd	4th	T	1st	2nd	3rd	4th	T	1st	2nd	3rd	4th	T
12:00 AM - 1:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:00 AM - 2:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:00 AM-3:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:00 AM - 4:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:00 AM - 5:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 AM - 6:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:00 AM - 7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:00 AM - 8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM - 9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:00 AM - 10:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:00 AM - 11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:00 AM - 12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:00 PM - 1:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:00 PM - 2:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:00 PM - 3:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:00 PM - 4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:00 PM - 5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM - 6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:00 PM - 7:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:00 PM - 8:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 PM - 9:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:00 PM - 10:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:00 PM - 11:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:00 PM - 12:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0					0					0					0					0				
Percentage	#DIV/0!					#DIV/0!					#DIV/0!					#DIV/0!					#DIV/0!				

Hour	Class 6					Class 7					Class 8					Class 9					Class 10				
	1st	2nd	3rd	4th	T	1st	2nd	3rd	4th	T	1st	2nd	3rd	4th	T	1st	2nd	3rd	4th	T	1st	2nd	3rd	4th	T
12:00 AM - 1:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:00 AM - 2:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:00 AM-3:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:00 AM - 4:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:00 AM - 5:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 AM - 6:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:00 AM - 7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:00 AM - 8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM - 9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:00 AM - 10:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:00 AM - 11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:00 AM - 12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:00 PM - 1:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:00 PM - 2:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:00 PM - 3:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:00 PM - 4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:00 PM - 5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM - 6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:00 PM - 7:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:00 PM - 8:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 PM - 9:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:00 PM - 10:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:00 PM - 11:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:00 PM - 12:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0					0					0					0					0				
Percentage	#DIV/0!					#DIV/0!					#DIV/0!					#DIV/0!					#DIV/0!				

Hour	Class 11					Class 12					Class 13					Class 14					Total
	1st	2nd	3rd	4th	T	1st	2nd	3rd	4th	T	1st	2nd	3rd	4th	T	1st	2nd	3rd	4th	T	
12:00 AM - 1:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:00 AM - 2:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:00 AM-3:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:00 AM - 4:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:00 AM - 5:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 AM - 6:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:00 AM - 7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:00 AM - 8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM - 9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:00 AM - 10:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:00 AM - 11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:00 AM - 12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:00 PM - 1:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:00 PM - 2:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:00 PM - 3:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:00 PM - 4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:00 PM - 5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM - 6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:00 PM - 7:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:00 PM - 8:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 PM - 9:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:00 PM - 10:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:00 PM - 11:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:00 PM - 12:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0					0					0					0					0
Percentage	#DIV/0!					#DIV/0!					#DIV/0!					#DIV/0!					#DIV/0!

AM PK AM PHF PM PK PM PHF HV Percent #DIV/0!

Metro Traffic Data Inc.
310 N. Irwin Street - Suite 20
Hanford, CA 93230

800-975-6938 Phone/Fax
www.metrotrafficdata.com

Turning Movement Report

Prepared For:

Peters Engineering Group
952 Pollasky Avenue
Clovis, CA 93612

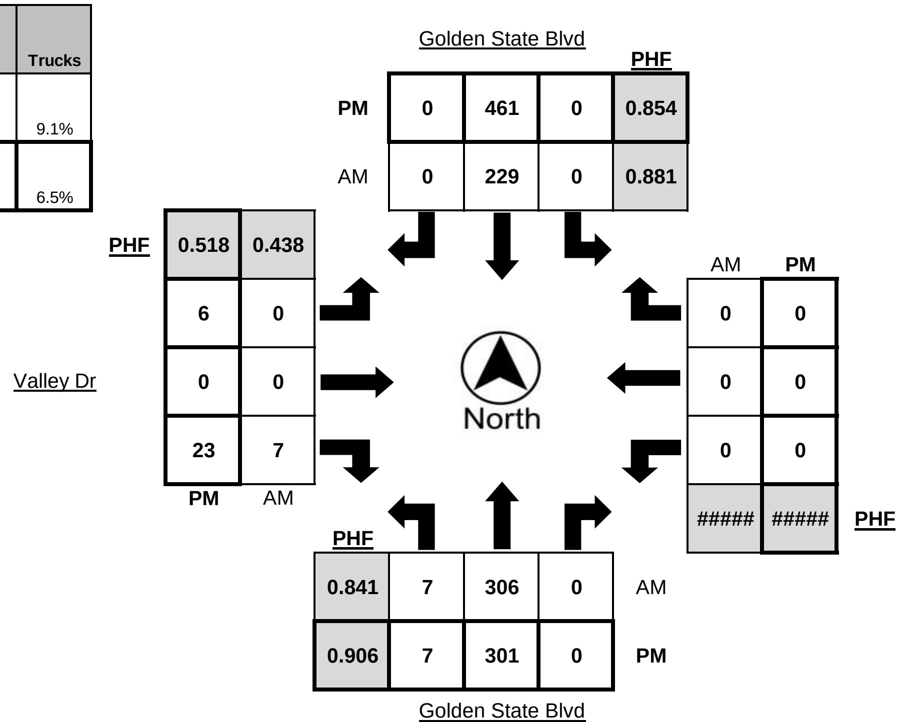
LOCATION	Golden State Blvd @ Valley Dr	**LATITUDE**	36.6088
COUNTY	Fresno	**LONGITUDE**	-119.6586
COLLECTION DATE	Tuesday, June 26, 2018	**WEATHER**	Clear

	Northbound				Southbound				Eastbound				Westbound			
Time	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**
7:00 AM - 7:15 AM	3	51	0	3	0	33	1	3	0	0	2	1	0	0	0	0
7:15 AM - 7:30 AM	1	59	0	6	0	47	0	7	0	0	1	1	0	0	0	0
7:30 AM - 7:45 AM	2	91	0	7	0	64	0	1	0	0	2	1	0	0	0	0
7:45 AM - 8:00 AM	1	85	0	1	0	65	0	10	0	0	0	0	0	0	0	0
8:00 AM - 8:15 AM	3	71	0	6	0	53	0	7	0	0	4	3	0	0	0	0
8:15 AM - 8:30 AM	0	49	0	5	0	53	0	3	0	0	2	1	0	0	0	0
8:30 AM - 8:45 AM	2	48	0	3	0	37	1	4	0	0	0	0	0	0	0	0
8:45 AM - 9:00 AM	1	50	0	4	0	52	0	6	1	0	1	0	0	0	0	0
TOTAL	**13**	**504**	**0**	**35**	**0**	**404**	**2**	**41**	**1**	**0**	**12**	**7**	**0**	**0**	**0**	**0**

	Northbound				Southbound				Eastbound				Westbound			
Time	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**
4:00 PM - 4:15 PM	1	66	0	11	0	96	0	3	0	0	1	1	0	0	0	0
4:15 PM - 4:30 PM	1	69	0	9	0	105	1	7	0	0	2	0	0	0	0	0
4:30 PM - 4:45 PM	1	66	0	9	0	115	0	9	1	0	13	0	0	0	0	0
4:45 PM - 5:00 PM	5	80	0	6	0	85	0	2	0	0	5	0	0	0	0	0
5:00 PM - 5:15 PM	0	85	0	5	0	135	0	10	5	0	3	1	0	0	0	0
5:15 PM - 5:30 PM	1	70	0	6	0	126	0	4	0	0	2	0	0	0	0	0
5:30 PM - 5:45 PM	1	48	0	1	0	108	0	6	0	0	2	0	0	0	0	0
5:45 PM - 6:00 PM	1	56	0	3	0	75	0	1	0	0	0	0	0	0	0	0
TOTAL	**11**	**540**	**0**	**50**	**0**	**845**	**1**	**42**	**6**	**0**	**28**	**2**	**0**	**0**	**0**	**0**

	Northbound				Southbound				Eastbound				Westbound			
PEAK HOUR	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**
7:15 AM - 8:15 AM	7	306	0	20	0	229	0	25	0	0	7	5	0	0	0	0
4:30 PM - 5:30 PM	7	301	0	26	0	461	0	25	6	0	23	1	0	0	0	0

	PHF	Trucks
AM	0.863	9.1%
PM	0.875	6.5%



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Turning Movement Report

Prepared For:
Peters Engineering Group
952 Pollasky Avenue
Clovis, CA 93612

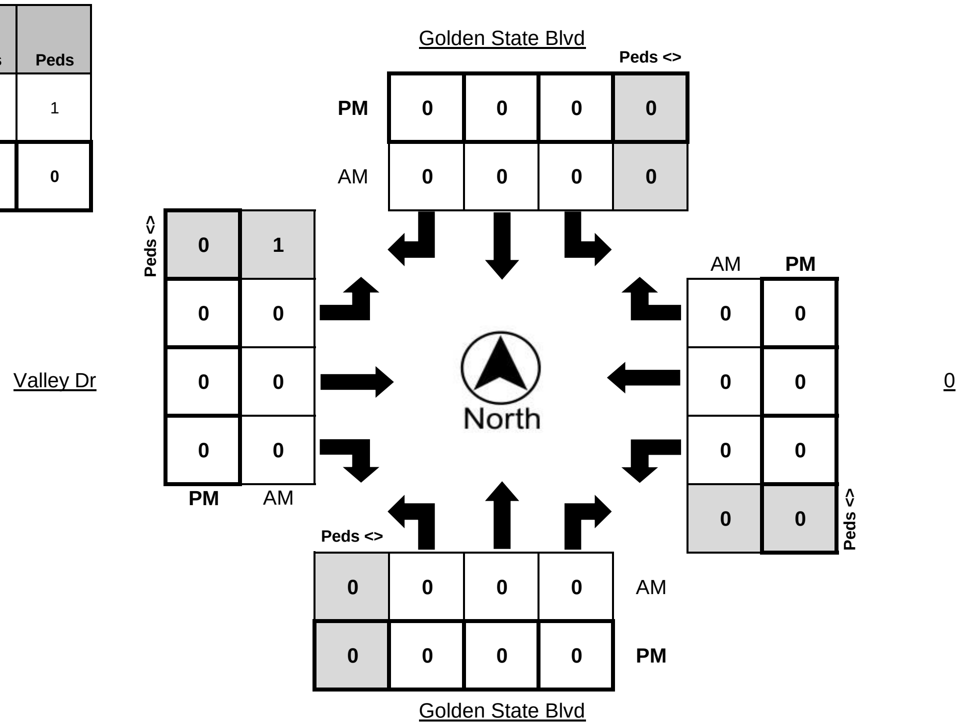
LOCATION	Golden State Blvd @ Valley Dr	**LATITUDE**	36.6088
COUNTY	Fresno	**LONGITUDE**	-119.6586
COLLECTION DATE	Tuesday, June 26, 2018	**WEATHER**	Clear

	Northbound Bikes			N.Leg	Southbound Bikes			S.Leg	Eastbound Bikes			E.Leg	Westbound Bikes			W.Leg
Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds
7:00 AM - 7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM - 7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM - 7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM - 8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM - 8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
8:15 AM - 8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
8:30 AM - 8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM - 9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**

	Northbound Bikes			N.Leg	Southbound Bikes			S.Leg	Eastbound Bikes			E.Leg	Westbound Bikes			W.Leg
Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds
4:00 PM - 4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM - 4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM - 4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM - 5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM - 5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM - 5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM - 5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM - 6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
TOTAL	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**

	Northbound Bikes			N.Leg	Southbound Bikes			S.Leg	Eastbound Bikes			E.Leg	Westbound Bikes			W.Leg
PEAK HOUR	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds
7:15 AM - 8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
4:30 PM - 5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

	Bikes	Peds
AM Peak Total	0	1
PM Peak Total	**0**	**0**



Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 16-8168-007 | **Day:** Thursday

TOTALS

City: Fresno | **Date:** 12/8/2016

AM

NS/EW Streets:	SR 99 SB Ramps			SR 99 SB Ramps			Manning Ave			Manning Ave			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	0	0	0	0	0	0	0	0	0	0	0	
7:00 AM	1	0	92	0	0	0	0	33	9	16	23	0	174
7:15 AM	0	0	121	0	0	0	0	28	7	24	39	0	219
7:30 AM	1	0	118	0	0	0	0	41	11	32	36	0	239
7:45 AM	1	0	137	0	0	0	0	25	8	12	32	0	215
8:00 AM	3	0	102	0	0	0	0	17	7	27	32	0	188
8:15 AM	3	0	92	0	0	0	0	18	5	21	22	0	161
8:30 AM	2	0	88	0	0	0	0	17	7	13	25	0	152
8:45 AM	2	0	85	0	0	0	0	29	7	21	22	0	166

	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	13	0	835	0	0	0	0	208	61	166	231	0	1514
APPROACH %'s :	1.53%	0.00%	98.47%	#DIV/0!	#DIV/0!	#DIV/0!	0.00%	77.32%	22.68%	41.81%	58.19%	0.00%	

PEAK HR START TIME :	715 AM												TOTAL
PEAK HR VOL :	5	0	478	0	0	0	0	111	33	95	139	0	861
PEAK HR FACTOR :		0.875			0.000			0.692			0.860		0.901

CONTROL : 0

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 16-8168-007 **Day:** Thursday

TOTALS

City: Fresno **Date:** 12/8/2016

PM

NS/EW Streets:	SR 99 SB Ramps			SR 99 SB Ramps			Manning Ave			Manning Ave			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	0	0	0	0	0	0	0	0	0	0	0	
4:00 PM	3	0	152	0	0	0	0	19	9	26	32	0	241
4:15 PM	10	0	116	0	0	0	0	29	4	45	33	0	237
4:30 PM	4	0	135	0	0	0	0	33	10	26	30	0	238
4:45 PM	5	0	141	0	0	0	0	35	9	29	55	0	274
5:00 PM	5	0	204	0	0	0	0	26	12	35	43	0	325
5:15 PM	6	0	190	0	0	0	0	36	10	28	45	0	315
5:30 PM	4	0	180	0	0	0	0	26	8	22	17	0	257
5:45 PM	3	0	155	0	0	0	0	13	10	16	19	0	216

	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	40	0	1273	0	0	0	0	217	72	227	274	0	2103
APPROACH %'s :	3.05%	0.00%	96.95%	#DIV/0!	#DIV/0!	#DIV/0!	0.00%	75.09%	24.91%	45.31%	54.69%	0.00%	

PEAK HR START TIME :	445 PM												TOTAL
PEAK HR VOL :	20	0	715	0	0	0	0	123	39	114	160	0	1171
PEAK HR FACTOR :	0.879			0.000			0.880			0.815			0.901

CONTROL : 0

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 16-8168-007

City: Fresno

Cars

AM

Day: Thursday

Date: 12/8/2016

NS/EW Streets:	SR 99 SB Ramps			SR 99 SB Ramps			Manning Ave			Manning Ave			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	0	0	0	0	0	0	0	0	0	0	0	
7:00 AM	1	0	88	0	0	0	0	33	9	11	20	0	162
7:15 AM	0	0	113	0	0	0	0	26	7	15	38	0	199
7:30 AM	1	0	116	0	0	0	0	40	7	30	34	0	228
7:45 AM	1	0	129	0	0	0	0	23	6	9	31	0	199
8:00 AM	3	0	91	0	0	0	0	16	6	21	28	0	165
8:15 AM	3	0	81	0	0	0	0	17	4	14	22	0	141
8:30 AM	2	0	78	0	0	0	0	17	5	10	19	0	131
8:45 AM	1	0	76	0	0	0	0	25	5	10	18	0	135
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	12	0	772	0	0	0	0	197	49	120	210	0	1360
APPROACH %'s :	1.53%	0.00%	98.47%	#DIV/0!	#DIV/0!	#DIV/0!	0.00%	80.08%	19.92%	36.36%	63.64%	0.00%	
PEAK HR START TIME :	715 AM												TOTAL
PEAK HR VOL :	5	0	449	0	0	0	0	105	26	75	131	0	791
PEAK HR FACTOR :		0.873			0.000			0.697			0.805		0.867

UTURNS			
NB	SB	EB	WB
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
1	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
NB	SB	EB	WB
1	0	0	0

CONTROL : 0

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 16-8168-007 **Day:** Thursday

Cars

City: Fresno **Date:** 12/8/2016

PM

NS/EW Streets:	SR 99 SB Ramps			SR 99 SB Ramps			Manning Ave			Manning Ave				UTURNS			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND							
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL	NB	SB	EB	WB
LANES:	0	0	0	0	0	0	0	0	0	0	0	0					
4:00 PM	3	0	143	0	0	0	0	17	8	20	31	0	222	0	0	0	0
4:15 PM	10	0	113	0	0	0	0	29	4	40	32	0	228	0	0	0	0
4:30 PM	4	0	130	0	0	0	0	31	8	18	28	0	219	0	0	0	0
4:45 PM	5	0	137	0	0	0	0	33	9	22	51	0	257	0	0	0	0
5:00 PM	5	0	197	0	0	0	0	25	11	28	36	0	302	0	0	0	0
5:15 PM	5	0	187	0	0	0	0	35	10	23	41	0	301	0	0	0	0
5:30 PM	4	0	172	0	0	0	0	22	6	15	16	0	235	0	0	0	0
5:45 PM	3	0	150	0	0	0	0	12	8	10	15	0	198	0	0	0	0
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL	NB	SB	EB	WB
TOTAL VOLUMES :	39	0	1229	0	0	0	0	204	64	176	250	0	1962	0	0	0	0
APPROACH %'s :	3.08%	0.00%	96.92%	#DIV/0!	#DIV/0!	#DIV/0!	0.00%	76.12%	23.88%	41.31%	58.69%	0.00%					
PEAK HR START TIME :	445 PM												TOTAL				
PEAK HR VOL :	19	0	693	0	0	0	0	115	36	88	144	0	1095				
PEAK HR FACTOR :		0.881			0.000			0.839			0.795		0.906				

CONTROL : 0

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 16-8168-007 **Day:** Thursday

HT

City: Fresno **Date:** 12/8/2016

AM

NS/EW Streets:	SR 99 SB Ramps			SR 99 SB Ramps			Manning Ave			Manning Ave			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	0	0	0	0	0	0	0	0	0	0	0	
7:00 AM	0	0	4	0	0	0	0	0	0	5	3	0	12
7:15 AM	0	0	8	0	0	0	0	2	0	9	1	0	20
7:30 AM	0	0	2	0	0	0	0	1	4	2	2	0	11
7:45 AM	0	0	8	0	0	0	0	2	2	3	1	0	16
8:00 AM	0	0	11	0	0	0	0	1	1	6	4	0	23
8:15 AM	0	0	11	0	0	0	0	1	1	7	0	0	20
8:30 AM	0	0	10	0	0	0	0	0	2	3	6	0	21
8:45 AM	1	0	9	0	0	0	0	4	2	11	4	0	31
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	1	0	63	0	0	0	0	11	12	46	21	0	154
APPROACH %'s :	1.56%	0.00%	98.44%	#DIV/0!	#DIV/0!	#DIV/0!	0.00%	47.83%	52.17%	68.66%	31.34%	0.00%	
PEAK HR START TIME :	715 AM												TOTAL
PEAK HR VOL :	0	0	29	0	0	0	0	6	7	20	8	0	70
PEAK HR FACTOR :	0.659			0.000			0.650			0.700			0.867

CONTROL : 0

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 16-8168-007 | **Day:** Thursday

HT

City: Fresno | **Date:** 12/8/2016

PM

NS/EW Streets:	SR 99 SB Ramps			SR 99 SB Ramps			Manning Ave			Manning Ave			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	0	0	0	0	0	0	0	0	0	0	0	
4:00 PM	0	0	9	0	0	0	0	2	1	6	1	0	19
4:15 PM	0	0	3	0	0	0	0	0	0	5	1	0	9
4:30 PM	0	0	5	0	0	0	0	2	2	8	2	0	19
4:45 PM	0	0	4	0	0	0	0	2	0	7	4	0	17
5:00 PM	0	0	7	0	0	0	0	1	1	7	7	0	23
5:15 PM	1	0	3	0	0	0	0	1	0	5	4	0	14
5:30 PM	0	0	8	0	0	0	0	4	2	7	1	0	22
5:45 PM	0	0	5	0	0	0	0	1	2	6	4	0	18

	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	1	0	44	0	0	0	0	13	8	51	24	0	141
APPROACH %'s :	2.22%	0.00%	97.78%	#DIV/0!	#DIV/0!	#DIV/0!	0.00%	61.90%	38.10%	68.00%	32.00%	0.00%	

PEAK HR START TIME :	445 PM												TOTAL
PEAK HR VOL :	1	0	22	0	0	0	0	8	3	26	16	0	76
PEAK HR FACTOR :	0.719			0.000			0.458			0.750			0.906

CONTROL : 0

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 16-8168-006 | **Day:** Thursday

TOTALS

City: Fresno | **Date:** 12/8/2016

AM

NS/EW Streets:	SR 99 NB Ramps			SR 99 NB Ramps			Manning Ave			Manning Ave			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	0	0	0	0	0	0	0	0	0	0	0	
7:00 AM	9	2	16	0	0	0	2	127	0	0	28	120	304
7:15 AM	12	0	12	0	0	0	2	137	0	0	47	233	443
7:30 AM	5	0	24	0	0	0	2	154	0	0	61	211	457
7:45 AM	5	1	37	0	0	0	4	157	0	0	38	184	426
8:00 AM	8	0	25	0	0	0	1	117	0	0	52	199	402
8:15 AM	3	0	20	0	0	0	0	109	0	0	40	170	342
8:30 AM	12	0	13	0	0	0	1	104	0	0	29	125	284
8:45 AM	10	0	21	0	0	0	1	119	0	0	31	120	302

	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	64	3	168	0	0	0	13	1024	0	0	326	1362	2960
APPROACH %'s :	27.23%	1.28%	71.49%	#DIV/0!	#DIV/0!	#DIV/0!	1.25%	98.75%	0.00%	0.00%	19.31%	80.69%	

PEAK HR START TIME :	715 AM												TOTAL
PEAK HR VOL :	30	1	98	0	0	0	9	565	0	0	198	827	1728
PEAK HR FACTOR :		0.750			0.000			0.891			0.915		0.945

CONTROL : 0

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 16-8168-006 | **Day:** Thursday

TOTALS

City: Fresno | **Date:** 12/8/2016

PM

NS/EW Streets:	SR 99 NB Ramps			SR 99 NB Ramps			Manning Ave			Manning Ave			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	0	0	0	0	0	0	0	0	0	0	0	
4:00 PM	6	0	28	0	0	0	2	183	0	0	54	136	409
4:15 PM	8	0	33	0	0	0	1	149	0	0	70	129	390
4:30 PM	7	1	37	0	0	0	1	159	0	0	47	142	394
4:45 PM	23	0	51	0	0	0	1	179	0	0	61	106	421
5:00 PM	14	9	72	0	0	0	1	218	0	0	71	135	520
5:15 PM	12	10	72	0	0	0	2	223	0	0	68	115	502
5:30 PM	8	2	28	0	0	0	4	190	0	0	35	127	394
5:45 PM	5	1	22	0	0	0	1	171	0	0	31	107	338
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	83	23	343	0	0	0	13	1472	0	0	437	997	3368
APPROACH %'s :	18.49%	5.12%	76.39%	#DIV/0!	#DIV/0!	#DIV/0!	0.88%	99.12%	0.00%	0.00%	30.47%	69.53%	
PEAK HR START TIME :	445 PM												TOTAL
PEAK HR VOL :	57	21	223	0	0	0	8	810	0	0	235	483	1837
PEAK HR FACTOR :		0.792			0.000			0.909			0.871		0.883

CONTROL : 0

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 16-8168-006 **Day:** Thursday

Cars

City: Fresno **Date:** 12/8/2016

AM

NS/EW Streets:	SR 99 NB Ramps			SR 99 NB Ramps			Manning Ave			Manning Ave			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	0	0	0	0	0	0	0	0	0	0	0	
7:00 AM	9	0	11	0	0	0	2	123	0	0	20	109	274
7:15 AM	11	0	8	0	0	0	2	128	0	0	38	224	411
7:30 AM	4	0	19	0	0	0	1	152	0	0	58	198	432
7:45 AM	5	0	29	0	0	0	4	148	0	0	34	173	393
8:00 AM	7	0	20	0	0	0	1	105	0	0	45	186	364
8:15 AM	3	0	15	0	0	0	0	95	0	0	34	154	301
8:30 AM	9	0	12	0	0	0	1	95	0	0	21	115	253
8:45 AM	7	0	12	0	0	0	1	106	0	0	19	112	257
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	55	0	126	0	0	0	12	952	0	0	269	1271	2685
APPROACH %'s :	30.39%	0.00%	69.61%	#DIV/0!	#DIV/0!	#DIV/0!	1.24%	98.76%	0.00%	0.00%	17.47%	82.53%	
PEAK HR START TIME :	715 AM												TOTAL
PEAK HR VOL :	27	0	76	0	0	0	8	533	0	0	175	781	1600
PEAK HR FACTOR :	0.757			0.000			0.884			0.912			0.926

UTURNS			
NB	SB	EB	WB
0	0	0	0

CONTROL : 0

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 16-8168-006 | **Day:** Thursday

Cars

City: Fresno | **Date:** 12/8/2016

PM

NS/EW Streets:	SR 99 NB Ramps			SR 99 NB Ramps			Manning Ave			Manning Ave			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	0	0	0	0	0	0	0	0	0	0	0	
4:00 PM	6	0	18	0	0	0	2	173	0	0	47	127	373
4:15 PM	7	0	24	0	0	0	1	145	0	0	64	122	363
4:30 PM	6	1	30	0	0	0	1	153	0	0	38	135	364
4:45 PM	21	0	38	0	0	0	1	173	0	0	52	103	388
5:00 PM	8	9	64	0	0	0	1	211	0	0	63	126	482
5:15 PM	11	10	62	0	0	0	2	217	0	0	59	112	473
5:30 PM	7	2	24	0	0	0	3	180	0	0	29	122	367
5:45 PM	2	1	17	0	0	0	1	163	0	0	24	101	309
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	68	23	277	0	0	0	12	1415	0	0	376	948	3119
APPROACH %'s :	18.48%	6.25%	75.27%	#DIV/0!	#DIV/0!	#DIV/0!	0.84%	99.16%	0.00%	0.00%	28.40%	71.60%	
PEAK HR START TIME :	445 PM												TOTAL
PEAK HR VOL :	47	21	188	0	0	0	7	781	0	0	203	463	1710
PEAK HR FACTOR :		0.771			0.000			0.900			0.881		0.887

UTURNS			
NB	SB	EB	WB
0	0	0	0

CONTROL : 0

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 16-8168-006 | **Day:** Thursday

HT

City: Fresno | **Date:** 12/8/2016

AM

NS/EW Streets:	SR 99 NB Ramps			SR 99 NB Ramps			Manning Ave			Manning Ave			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	0	0	0	0	0	0	0	0	0	0	0	
7:00 AM	0	2	5	0	0	0	0	4	0	0	8	11	30
7:15 AM	1	0	4	0	0	0	0	9	0	0	9	9	32
7:30 AM	1	0	5	0	0	0	1	2	0	0	3	13	25
7:45 AM	0	1	8	0	0	0	0	9	0	0	4	11	33
8:00 AM	1	0	5	0	0	0	0	12	0	0	7	13	38
8:15 AM	0	0	5	0	0	0	0	14	0	0	6	16	41
8:30 AM	3	0	1	0	0	0	0	9	0	0	8	10	31
8:45 AM	3	0	9	0	0	0	0	13	0	0	12	8	45
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	9	3	42	0	0	0	1	72	0	0	57	91	275
APPROACH %'s :	16.67%	5.56%	77.78%	#DIV/0!	#DIV/0!	#DIV/0!	1.37%	98.63%	0.00%	0.00%	38.51%	61.49%	
PEAK HR START TIME :	715 AM												TOTAL
PEAK HR VOL :	3	1	22	0	0	0	1	32	0	0	23	46	128
PEAK HR FACTOR :		0.722			0.000			0.688			0.863		0.926

CONTROL : 0

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 16-8168-006 | **Day:** Thursday

HT

City: Fresno | **Date:** 12/8/2016

PM

NS/EW Streets:	SR 99 NB Ramps			SR 99 NB Ramps			Manning Ave			Manning Ave			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	0	0	0	0	0	0	0	0	0	0	0	
4:00 PM	0	0	10	0	0	0	0	10	0	0	7	9	36
4:15 PM	1	0	9	0	0	0	0	4	0	0	6	7	27
4:30 PM	1	0	7	0	0	0	0	6	0	0	9	7	30
4:45 PM	2	0	13	0	0	0	0	6	0	0	9	3	33
5:00 PM	6	0	8	0	0	0	0	7	0	0	8	9	38
5:15 PM	1	0	10	0	0	0	0	6	0	0	9	3	29
5:30 PM	1	0	4	0	0	0	1	10	0	0	6	5	27
5:45 PM	3	0	5	0	0	0	0	8	0	0	7	6	29

	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	15	0	66	0	0	0	1	57	0	0	61	49	249
APPROACH %'s :	18.52%	0.00%	81.48%	#DIV/0!	#DIV/0!	#DIV/0!	1.72%	98.28%	0.00%	0.00%	55.45%	44.55%	

PEAK HR START TIME :	445 PM												TOTAL
PEAK HR VOL :	10	0	35	0	0	0	1	29	0	0	32	20	127
PEAK HR FACTOR :		0.750			0.000			0.682			0.765		0.887

CONTROL : 0

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 16-8168-002 **Day:** Thursday

TOTALS

City: Fresno **Date:** 12/8/2016

AM

NS/EW Streets:	Vineyard Pl			Vineyard Pl			Manning Ave			Manning Ave			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	0	0	0	0	0	0	0	0	0	0	0	
7:00 AM	12	0	4	5	0	5	4	121	15	4	124	2	296
7:15 AM	10	0	7	5	0	2	2	124	18	19	264	3	454
7:30 AM	27	2	8	4	1	1	5	156	26	7	244	5	486
7:45 AM	13	1	9	2	0	5	8	161	24	12	218	4	457
8:00 AM	24	0	7	4	2	1	5	118	25	18	218	6	428
8:15 AM	22	0	8	2	0	2	7	108	15	12	177	4	357
8:30 AM	16	0	8	3	1	1	5	96	17	13	128	4	292
8:45 AM	14	1	8	3	0	2	8	115	13	12	136	5	317
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	138	4	59	28	4	19	44	999	153	97	1509	33	3087
APPROACH %'s :	68.66%	1.99%	29.35%	54.90%	7.84%	37.25%	3.68%	83.53%	12.79%	5.92%	92.07%	2.01%	
PEAK HR START TIME :	715 AM												TOTAL
PEAK HR VOL :	74	3	31	15	3	9	20	559	93	56	944	18	1825
PEAK HR FACTOR :		0.730			0.964			0.870			0.890		0.939

CONTROL : 0

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 16-8168-002 **Day:** Thursday

TOTALS

City: Fresno **Date:** 12/8/2016

PM

NS/EW Streets:	Vineyard Pl			Vineyard Pl			Manning Ave			Manning Ave			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	0	0	0	0	0	0	0	0	0	0	0	
4:00 PM	26	0	11	6	1	1	7	172	26	15	142	2	409
4:15 PM	23	0	10	2	0	0	6	155	15	12	166	8	397
4:30 PM	23	2	15	3	0	12	11	160	21	19	143	1	410
4:45 PM	21	1	16	5	0	5	11	190	23	20	133	9	434
5:00 PM	25	0	29	8	3	5	10	249	29	17	170	3	548
5:15 PM	15	0	13	2	0	3	12	272	33	13	136	6	505
5:30 PM	17	2	13	2	0	4	14	186	15	8	123	6	390
5:45 PM	18	0	11	6	0	3	5	167	22	13	111	4	360

	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	168	5	118	34	4	33	76	1551	184	117	1124	39	3453
APPROACH %'s :	57.73%	1.72%	40.55%	47.89%	5.63%	46.48%	4.20%	85.64%	10.16%	9.14%	87.81%	3.05%	

PEAK HR START TIME :	430 PM												TOTAL
PEAK HR VOL :	84	3	73	18	3	25	44	871	106	69	582	19	1897
PEAK HR FACTOR :		0.741			0.719			0.805			0.882		0.865

CONTROL : 0

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 16-8168-002

City: Fresno

Cars

AM

Day: Thursday

Date: 12/8/2016

NS/EW Streets:	Vineyard Pl			Vineyard Pl			Manning Ave			Manning Ave				UTURNS			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND							
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL	NB	SB	EB	WB
LANES:	0	0	0	0	0	0	0	0	0	0	0	0					
7:00 AM	12	0	4	2	0	0	2	115	14	4	117	0	270	0	0	0	1
7:15 AM	10	0	7	1	0	0	0	114	17	19	253	2	423	0	0	0	0
7:30 AM	26	1	8	3	0	1	3	150	26	7	232	5	462	0	0	0	0
7:45 AM	13	1	9	1	0	1	5	147	24	12	210	1	424	0	0	0	0
8:00 AM	22	0	7	3	2	0	2	105	24	16	203	2	386	0	0	0	0
8:15 AM	22	0	8	1	0	1	3	95	13	12	163	2	320	0	0	1	0
8:30 AM	15	0	8	2	1	1	3	90	14	12	116	2	264	0	0	0	0
8:45 AM	13	1	8	2	0	0	6	99	10	12	122	2	275	0	0	1	1
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL	NB	SB	EB	WB
TOTAL VOLUMES :	133	3	59	15	3	4	24	915	142	94	1416	16	2824	0	0	2	2
APPROACH %'s :	68.21%	1.54%	30.26%	68.18%	13.64%	18.18%	2.22%	84.64%	13.14%	6.16%	92.79%	1.05%					
PEAK HR START TIME :	715 AM												TOTAL				
PEAK HR VOL :	71	2	31	8	2	2	10	516	91	54	898	10	1695				
PEAK HR FACTOR :		0.743			0.600			0.862			0.878		0.917				

CONTROL : 0

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 16-8168-002

Day: Thursday

Cars

City: Fresno

Date: 12/8/2016

PM

NS/EW Streets:	Vineyard Pl			Vineyard Pl			Manning Ave			Manning Ave					UTURNS		
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND							
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL	NB	SB	EB	WB
LANES:	0	0	0	0	0	0	0	0	0	0	0	0					
4:00 PM	26	0	11	6	1	-1	4	155	26	15	129	1	373	0	0	0	0
4:15 PM	23	0	10	1	0	0	2	149	13	12	157	4	371	0	0	0	0
4:30 PM	23	1	15	3	0	7	5	154	21	18	136	1	384	0	0	0	0
4:45 PM	21	0	16	3	0	1	6	177	23	20	126	5	398	0	0	0	0
5:00 PM	24	0	29	6	3	2	5	237	29	17	160	2	514	0	0	0	0
5:15 PM	15	0	13	1	0	1	9	259	33	13	130	6	480	0	0	1	0
5:30 PM	17	2	13	2	0	1	5	181	15	8	118	3	365	0	0	0	0
5:45 PM	18	0	11	3	0	1	0	160	22	13	104	0	332	0	0	0	1
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL	NB	SB	EB	WB
TOTAL VOLUMES :	167	3	118	25	4	12	36	1472	182	116	1060	22	3217	0	0	1	1
APPROACH %'s :	57.99%	1.04%	40.97%	60.98%	9.76%	29.27%	2.13%	87.10%	10.77%	9.68%	88.48%	1.84%					

PEAK HR START TIME :	430 PM												TOTAL
PEAK HR VOL :	83	1	73	13	3	11	25	827	106	68	552	14	1776
PEAK HR FACTOR :	0.741			0.614			0.796			0.885			0.864

CONTROL : 0

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 16-8168-002 **Day:** Thursday

HT

City: Fresno **Date:** 12/8/2016

AM

NS/EW Streets:	Vineyard Pl			Vineyard Pl			Manning Ave			Manning Ave			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	0	0	0	0	0	0	0	0	0	0	0	
7:00 AM	0	0	0	3	0	5	2	6	1	0	7	2	26
7:15 AM	0	0	0	4	0	2	2	10	1	0	11	1	31
7:30 AM	1	1	0	1	1	0	2	6	0	0	12	0	24
7:45 AM	0	0	0	1	0	4	3	14	0	0	8	3	33
8:00 AM	2	0	0	1	0	1	3	13	1	2	15	4	42
8:15 AM	0	0	0	1	0	1	4	13	2	0	14	2	37
8:30 AM	1	0	0	1	0	0	2	6	3	1	12	2	28
8:45 AM	1	0	0	1	0	2	2	16	3	0	14	3	42

	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	5	1	0	13	1	15	20	84	11	3	93	17	263
APPROACH %'s :	83.33%	16.67%	0.00%	44.83%	3.45%	51.72%	17.39%	73.04%	9.57%	2.65%	82.30%	15.04%	

PEAK HR START TIME :	715 AM												TOTAL
PEAK HR VOL :	3	1	0	7	1	7	10	43	2	2	46	8	130
PEAK HR FACTOR :		0.500			0.625			0.809			0.667		0.917

CONTROL : 0

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 16-8168-002 | **Day:** Thursday

HT

City: Fresno | **Date:** 12/8/2016

PM

NS/EW Streets:	Vineyard Pl			Vineyard Pl			Manning Ave			Manning Ave			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	0	0	0	0	0	0	0	0	0	0	0	
4:00 PM	0	0	0	0	0	2	3	17	0	0	13	1	36
4:15 PM	0	0	0	1	0	0	4	6	2	0	9	4	26
4:30 PM	0	1	0	0	0	5	6	6	0	1	7	0	26
4:45 PM	0	1	0	2	0	4	5	13	0	0	7	4	36
5:00 PM	1	0	0	2	0	3	5	12	0	0	10	1	34
5:15 PM	0	0	0	1	0	2	3	13	0	0	6	0	25
5:30 PM	0	0	0	0	0	3	9	5	0	0	5	3	25
5:45 PM	0	0	0	3	0	2	5	7	0	0	7	4	28

	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	1	2	0	9	0	21	40	79	2	1	64	17	236
APPROACH %'s :	33.33%	66.67%	0.00%	30.00%	0.00%	70.00%	33.06%	65.29%	1.65%	1.22%	78.05%	20.73%	

PEAK HR START TIME :	430 PM												TOTAL
PEAK HR VOL :	1	2	0	5	0	14	19	44	0	1	30	5	121
PEAK HR FACTOR :		0.750			0.792			0.875			0.818		0.864

CONTROL : 0

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 16-8168-001 | **Day:** Thursday

TOTALS

City: Fresno | **Date:** 12/8/2016

AM

NS/EW Streets:	Golden State Blvd			Golden State Blvd			Manning Ave			Manning Ave			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	0	0	0	0	0	0	0	0	0	0	0	
7:00 AM	33	38	0	2	16	8	11	71	24	1	96	17	317
7:15 AM	58	37	0	13	18	13	10	119	26	0	232	31	557
7:30 AM	50	43	5	7	27	20	11	120	39	2	183	28	535
7:45 AM	38	54	1	13	38	9	21	109	38	6	189	23	539
8:00 AM	36	50	3	6	43	23	20	88	21	3	176	16	485
8:15 AM	31	54	2	8	36	18	8	88	21	4	146	16	432
8:30 AM	38	36	5	10	24	12	7	73	19	1	107	13	345
8:45 AM	32	14	3	8	35	9	13	93	14	4	102	10	337

	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	316	326	19	67	237	112	101	761	202	21	1231	154	3547
APPROACH %'s :	47.81%	49.32%	2.87%	16.11%	56.97%	26.92%	9.49%	71.52%	18.98%	1.49%	87.55%	10.95%	

PEAK HR START TIME :	715 AM												TOTAL
PEAK HR VOL :	182	184	9	39	126	65	62	436	124	11	780	98	2116
PEAK HR FACTOR :		0.957			0.799			0.915			0.845		0.950

CONTROL : 0

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 16-8168-001

Day: Thursday

TOTALS

City: Fresno

Date: 12/8/2016

PM

NS/EW Streets:	Golden State Blvd			Golden State Blvd			Manning Ave			Manning Ave			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	0	0	0	0	0	0	0	0	0	0	0	
4:00 PM	22	65	5	38	58	21	23	129	36	5	121	22	545
4:15 PM	34	47	4	14	69	37	20	112	33	2	115	12	499
4:30 PM	39	52	4	24	91	21	27	122	40	4	109	25	558
4:45 PM	24	62	2	39	106	32	38	116	33	6	113	21	592
5:00 PM	40	77	3	33	93	36	60	183	51	4	125	22	727
5:15 PM	31	52	2	33	78	25	62	169	50	4	109	19	634
5:30 PM	25	41	6	25	60	13	19	132	44	2	90	10	467
5:45 PM	17	41	2	14	39	13	11	117	55	1	87	9	406

	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	232	437	28	220	594	198	260	1080	342	28	869	140	4428
APPROACH %'s :	33.29%	62.70%	4.02%	21.74%	58.70%	19.57%	15.46%	64.21%	20.33%	2.70%	83.80%	13.50%	

PEAK HR START TIME :	430 PM												TOTAL
PEAK HR VOL :	134	243	11	129	368	114	187	590	174	18	456	87	2511
PEAK HR FACTOR :		0.808			0.863			0.809			0.929		0.863

CONTROL : 0

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 16-8168-001 **Day:** Thursday

Cars

City: Fresno **Date:** 12/8/2016

AM

NS/EW Streets:	Golden State Blvd			Golden State Blvd			Manning Ave			Manning Ave			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	0	0	0	0	0	0	0	0	0	0	0	
7:00 AM	32	38	0	2	15	6	9	67	23	1	90	17	300
7:15 AM	54	37	0	12	18	10	8	105	26	0	226	29	525
7:30 AM	47	42	5	7	27	19	9	115	39	2	177	27	516
7:45 AM	37	53	1	12	37	7	20	95	38	6	183	23	512
8:00 AM	33	48	3	6	43	17	20	74	20	3	165	16	448
8:15 AM	29	52	2	7	34	14	6	78	21	3	136	15	397
8:30 AM	36	34	5	10	23	11	7	68	18	1	96	11	320
8:45 AM	29	14	3	7	34	8	9	80	14	3	91	10	302
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	297	318	19	63	231	92	88	682	199	19	1164	148	3320
APPROACH %'s :	46.85%	50.16%	3.00%	16.32%	59.84%	23.83%	9.08%	70.38%	20.54%	1.43%	87.45%	11.12%	
PEAK HR START TIME :	715 AM												TOTAL
PEAK HR VOL :	171	180	9	37	125	53	57	389	123	11	751	95	2001
PEAK HR FACTOR :		0.957			0.814			0.873			0.840		0.953

UTURNS	NB	SB	EB	WB
7:00 AM	0	0	0	0
7:15 AM	0	0	0	0
7:30 AM	0	1	0	0
7:45 AM	0	0	1	0
8:00 AM	0	1	0	0
8:15 AM	2	1	0	0
8:30 AM	1	0	0	0
8:45 AM	0	0	2	0
	NB	SB	EB	WB
TOTAL	3	3	3	0

CONTROL : 0

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 16-8168-001 **Day:** Thursday

Cars

City: Fresno **Date:** 12/8/2016

PM

NS/EW Streets:	Golden State Blvd			Golden State Blvd			Manning Ave			Manning Ave					UTURNS		
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND							
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL	NB	SB	EB	WB
LANES:	0	0	0	0	0	0	0	0	0	0	0	0					
4:00 PM	20	63	4	38	55	17	18	118	35	5	115	22	510	0	0	0	1
4:15 PM	33	45	4	14	69	33	18	106	33	2	109	12	478	0	0	0	0
4:30 PM	38	52	4	23	91	20	22	120	40	4	102	23	539	0	0	1	0
4:45 PM	22	61	2	39	106	28	27	114	33	6	109	19	566	0	0	0	0
5:00 PM	38	75	3	32	93	33	56	171	51	4	117	22	695	0	0	0	0
5:15 PM	29	52	2	31	78	24	57	162	50	4	108	17	614	0	0	0	0
5:30 PM	25	41	6	25	59	12	18	128	43	2	84	10	453	0	0	0	0
5:45 PM	15	40	2	13	39	11	6	111	55	1	82	9	384	0	0	0	0
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL	NB	SB	EB	WB
TOTAL VOLUMES :	220	429	27	215	590	178	222	1030	340	28	826	134	4239	0	0	1	1
APPROACH %'s :	32.54%	63.46%	3.99%	21.87%	60.02%	18.11%	13.94%	64.70%	21.36%	2.83%	83.60%	13.56%					

PEAK HR START TIME :	430 PM												TOTAL
PEAK HR VOL :	127	240	11	125	368	105	162	567	174	18	436	81	2414
PEAK HR FACTOR :		0.815			0.864			0.812			0.935		0.868

CONTROL : 0

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 16-8168-001 | **Day:** Thursday

HT

City: Fresno | **Date:** 12/8/2016

AM

NS/EW Streets:	Golden State Blvd			Golden State Blvd			Manning Ave			Manning Ave			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	0	0	0	0	0	0	0	0	0	0	0	
7:00 AM	1	0	0	0	1	2	2	4	1	0	6	0	17
7:15 AM	4	0	0	1	0	3	2	14	0	0	6	2	32
7:30 AM	3	1	0	0	0	1	2	5	0	0	6	1	19
7:45 AM	1	1	0	1	1	2	1	14	0	0	6	0	27
8:00 AM	3	2	0	0	0	6	0	14	1	0	11	0	37
8:15 AM	2	2	0	1	2	4	2	10	0	1	10	1	35
8:30 AM	2	2	0	0	1	1	0	5	1	0	11	2	25
8:45 AM	3	0	0	1	1	1	4	13	0	1	11	0	35

	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	19	8	0	4	6	20	13	79	3	2	67	6	227
APPROACH %'s :	70.37%	29.63%	0.00%	13.33%	20.00%	66.67%	13.68%	83.16%	3.16%	2.67%	89.33%	8.00%	

PEAK HR START TIME :	715 AM												TOTAL
PEAK HR VOL :	11	4	0	2	1	12	5	47	1	0	29	3	115
PEAK HR FACTOR :		0.750			0.625			0.828			0.727		0.953

CONTROL : 0

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 16-8168-001 **Day:** Thursday

HT

City: Fresno **Date:** 12/8/2016

PM

NS/EW Streets:	Golden State Blvd			Golden State Blvd			Manning Ave			Manning Ave			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	0	0	0	0	0	0	0	0	0	0	0	
4:00 PM	2	2	1	0	3	4	5	11	1	0	6	0	35
4:15 PM	1	2	0	0	0	4	2	6	0	0	6	0	21
4:30 PM	1	0	0	1	0	1	5	2	0	0	7	2	19
4:45 PM	2	1	0	0	0	4	11	2	0	0	4	2	26
5:00 PM	2	2	0	1	0	3	4	12	0	0	8	0	32
5:15 PM	2	0	0	2	0	1	5	7	0	0	1	2	20
5:30 PM	0	0	0	0	1	1	1	4	1	0	6	0	14
5:45 PM	2	1	0	1	0	2	5	6	0	0	5	0	22

	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	12	8	1	5	4	20	38	50	2	0	43	6	189
APPROACH %'s :	57.14%	38.10%	4.76%	17.24%	13.79%	68.97%	42.22%	55.56%	2.22%	0.00%	87.76%	12.24%	

PEAK HR START TIME :	430 PM												TOTAL
PEAK HR VOL :	7	3	0	4	0	9	25	23	0	0	20	6	97
PEAK HR FACTOR :	0.625			0.813			0.750			0.722			0.868

CONTROL : 0

Metro Traffic Data Inc.
310 N. Irwin Street - Suite 20
Hanford, CA 93230

800-975-6938 Phone/Fax
www.metrotrafficdata.com

Turning Movement Report

Prepared For:

Peters Engineering Group
952 Pollasky Avenue
Clovis, CA 93612

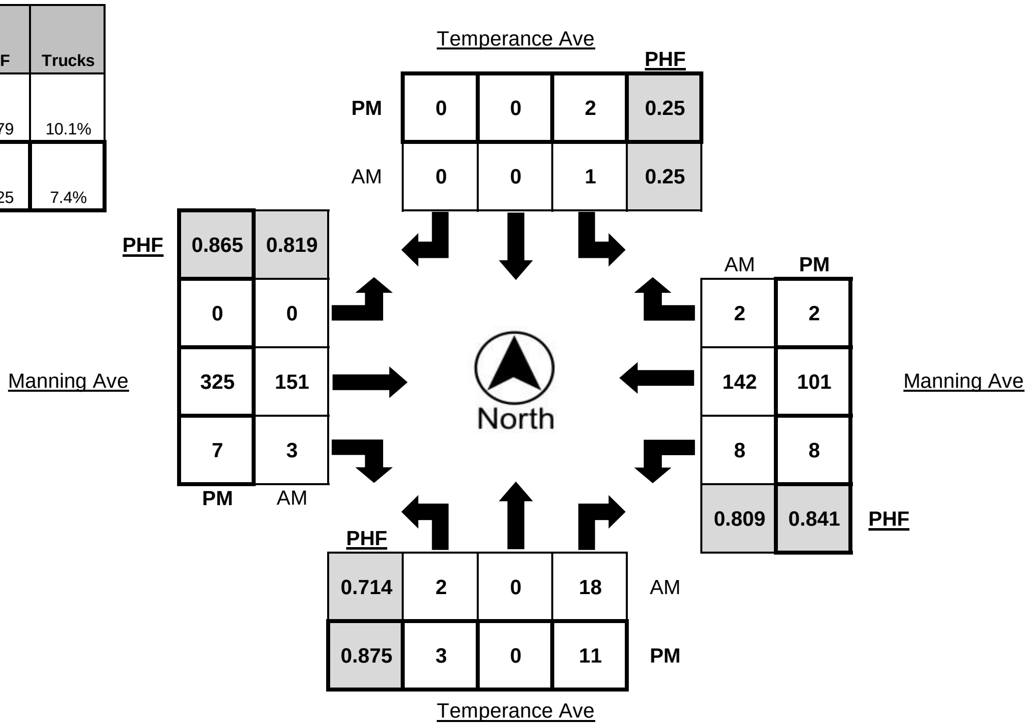
LOCATION	Manning Ave @ Temperance Ave	**LATITUDE**	36.605345°
COUNTY	Fresno	**LONGITUDE**	-119.664454°
COLLECTION DATE	Wednesday, February 6, 2019	**WEATHER**	Clear

	Northbound				Southbound				Eastbound				Westbound			
Time	Left	Thru	Right	Trucks	Left	Thru	Right	Trucks	Left	Thru	Right	Trucks	Left	Thru	Right	Trucks
7:00 AM - 7:15 AM	1	0	4	0	0	0	0	0	0	40	0	6	2	28	0	2
7:15 AM - 7:30 AM	0	0	7	1	0	0	0	0	0	38	1	1	0	33	1	5
7:30 AM - 7:45 AM	1	0	3	1	1	0	0	0	0	46	1	6	3	37	1	5
7:45 AM - 8:00 AM	0	0	4	0	0	0	0	0	0	27	1	3	3	44	0	3
8:00 AM - 8:15 AM	0	0	3	0	1	0	0	0	0	27	0	2	2	33	1	4
8:15 AM - 8:30 AM	0	0	2	0	0	0	0	0	0	26	0	6	1	31	0	3
8:30 AM - 8:45 AM	0	0	2	0	0	0	0	0	0	21	0	4	3	22	0	3
8:45 AM - 9:00 AM	0	0	2	0	0	0	0	0	0	21	1	4	3	19	0	3
TOTAL	**2**	**0**	**27**	**2**	**2**	**0**	**0**	**0**	**0**	**246**	**4**	**32**	**17**	**247**	**3**	**28**

	Northbound				Southbound				Eastbound				Westbound			
Time	Left	Thru	Right	Trucks	Left	Thru	Right	Trucks	Left	Thru	Right	Trucks	Left	Thru	Right	Trucks
4:00 PM - 4:15 PM	0	0	6	0	0	0	0	0	0	76	2	3	7	50	0	3
4:15 PM - 4:30 PM	1	0	3	0	0	0	0	0	0	51	1	4	7	35	0	3
4:30 PM - 4:45 PM	3	0	4	0	0	0	0	0	0	69	1	5	2	43	0	6
4:45 PM - 5:00 PM	0	0	3	0	0	0	0	0	0	43	0	1	2	32	0	4
5:00 PM - 5:15 PM	1	0	3	0	0	0	0	0	0	83	1	7	2	31	0	2
5:15 PM - 5:30 PM	0	0	4	0	0	0	0	0	0	65	3	6	3	29	1	2
5:30 PM - 5:45 PM	1	0	3	1	0	0	0	0	0	83	1	2	3	17	1	1
5:45 PM - 6:00 PM	1	0	1	0	2	0	0	0	0	94	2	10	0	24	0	3
TOTAL	**7**	**0**	**27**	**1**	**2**	**0**	**0**	**0**	**0**	**564**	**11**	**38**	**26**	**261**	**2**	**24**

	Northbound				Southbound				Eastbound				Westbound			
PEAK HOUR	Left	Thru	Right	Trucks	Left	Thru	Right	Trucks	Left	Thru	Right	Trucks	Left	Thru	Right	Trucks
7:00 AM - 8:00 AM	2	0	18	2	1	0	0	0	0	151	3	16	8	142	2	15
5:00 PM - 6:00 PM	3	0	11	1	2	0	0	0	0	325	7	25	8	101	2	8

	PHF	Trucks
AM	0.879	10.1%
PM	0.925	7.4%



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Turning Movement Report

Prepared For:
Peters Engineering Group
952 Pollasky Avenue
Clovis, CA 93612

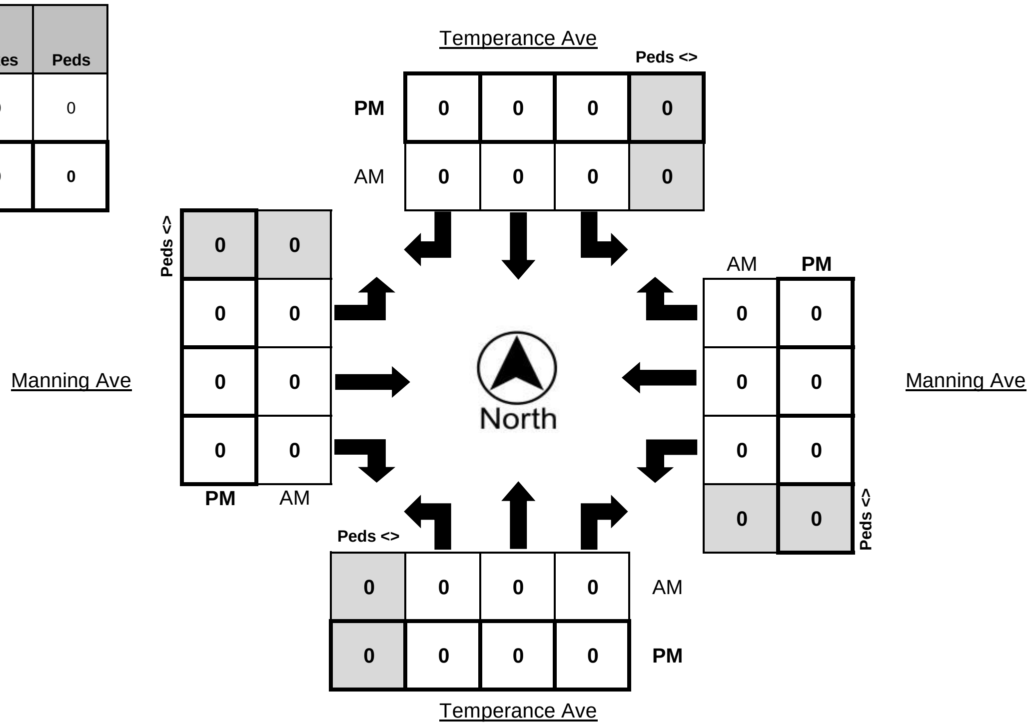
LOCATION Manning Ave @ Temperance Ave
LATITUDE 36.605345°
COUNTY Fresno
LONGITUDE -119.664454°
COLLECTION DATE Wednesday, February 6, 2019
WEATHER Clear

	Northbound Bikes			N.Leg	Southbound Bikes			S.Leg	Eastbound Bikes			E.Leg	Westbound Bikes			W.Leg
Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds
7:00 AM - 7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM - 7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM - 7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM - 8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM - 8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM - 8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM - 8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM - 9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

	Northbound Bikes			N.Leg	Southbound Bikes			S.Leg	Eastbound Bikes			E.Leg	Westbound Bikes			W.Leg
Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds
4:00 PM - 4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM - 4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM - 4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM - 5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM - 5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM - 5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM - 5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM - 6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

	Northbound Bikes			N.Leg	Southbound Bikes			S.Leg	Eastbound Bikes			E.Leg	Westbound Bikes			W.Leg
PEAK HOUR	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds
7:00 AM - 8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM - 6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

	Bikes	Peds
AM Peak Total	0	0
PM Peak Total	**0**	**0**



INTERNAL CAPTURE CALCULATIONS

MULTI-USE TRIP GENERATION AND INTERNAL CAPTURE SUMMARY

Analyst: JR
Date: 2/7/2019

Name of Development: Buford Truck Stop
Time Period: AM Peak

ITE LU Code / Size: Truck Stop

Exit to External: 109
Enter from External: 114

	Total	Internal	External
Enter	142	28	114
Exit	137	28	109
Total	279	55	224
%	100%	20%	80%

ITE LU Code / Size: Hotel

Enter from External: 27
Exit to External: 18

	Total	Internal	External
Enter	34	7	27
Exit	23	5	18
Total	57	11	46
%	100%	20%	80%

ITE LU Code / Size: Restaurants

Exit to External: 139
Enter from External: 152

	Total	Internal	External
Enter	179	27	152
Exit	169	30	139
Total	348	57	291
%	100%	16%	84%

ITE LU Code / Size: Truck Lube

Enter from External: 5
Exit to External: 2

	Total	Internal	External
Enter	6	1	5
Exit	3	1	2
Total	9	2	7
%	100%	20%	80%

Truck Stop – Hotel

5%		8%
Demand	Balanced	Demand
7	2	2
7	3	3
Demand	Balanced	Demand
5%		8%

11%
3
Demand

Truck Stop – Restaurants

18%	25	26	18%
	Demand	Demand	
	25	26	
	Balanced	Balanced	
18%	32	30	18%
	Demand	Demand	

Truck Stop – Truck Lube

5% 7 Demand
0 Balanced
7% 0 Demand
0 7% Demand

Hotel – Restaurants

3 Balanced
5% Balanced
9 Demand
7 5% Demand
0 Balanced
4 Demand
4 11% Balanced

Hotel – Truck Lube

5%	1	2	5%
	Demand	Demand	
	0	0	
	Balanced	Balanced	
5%	0	0	5%
	Demand	Demand	

Restaurants – Truck Lube

8 Demand
5%

5%		8%
Demand	Balanced	Demand
9	0	0
8	0	0
Demand	Balanced	Demand
5%		8%

Net External Trips for Multi-Use Development

	Land Use A	Land Use B	Land Use C	Land Use D	Total		ITE Totals	Captured
Enter	114	27	152	5	298		361	63
Exit	109	18	139	2	269		332	63
Total	224	46	291	7	567	INTERNAL CAPTURE		
Single-Use Trip Gen. Est.	279	57	348	9	693	18%		

MULTI-USE TRIP GENERATION AND INTERNAL CAPTURE SUMMARY

Analyst: JR
Date: 2/7/2019

Name of Development: Buford Truck Stop
Time Period: PM Peak

Truck Stop (Exit to External: 139; Enter from External: 151)

ITE LU Code	Truck Stop		
Size			
	Total	Internal	External
Enter	179	29	151
Exit	172	33	139
Total	351	61	290
%	100%	17%	83%

Hotel (Enter from External: 29; Exit to External: 28)

ITE LU Code	Hotel		
Size			
	Total	Internal	External
Enter	37	8	29
Exit	35	7	28
Total	72	15	57
%	100%	20%	80%

Restaurants (Exit to External: 107; Enter from External: 124)

ITE LU Code	Restaurants		
Size			
	Total	Internal	External
Enter	156	32	124
Exit	135	28	107
Total	291	60	231
%	100%	20%	80%

Truck Lube (Enter from External: 5; Exit to External: 6)

ITE LU Code	Truck Lube		
Size			
	Total	Internal	External
Enter	6	1	5
Exit	7	1	6
Total	13	3	10
%	100%	20%	80%

Truck Stop – Hotel

	Demand	Balanced	Demand
%	5%		10%
Trips	9	4	4

	Demand	Balanced	Demand
Trips	9	4	4
%	5%		11%

Truck Stop – Restaurants

	Demand	Balanced	Demand
Trips	31 (18%)	28	28 (18%)

	Demand	Balanced	Demand
Trips	32 (18%)	24	24 (18%)

Truck Stop – Truck Lube

5% 9 Demand
1 Balanced
10% 1 Demand
1 Demand 10%

Hotel – Restaurants

9% 3 Demand
3 Balanced
5% 8 Demand
9 Demand 5%
1 Balanced
3 Demand
3 Balanced 9%

Hotel – Truck Lube

	Demand	Balanced	Demand
Trips	2 (5%)	0	0 (5%)

	Demand	Balanced	Demand
Trips	2 (5%)	0	0 (5%)

Restaurants – Truck Lube

7 Demand 5%

	Demand	Balanced	Demand
%	5%		5%
Trips	8	0	0

	Demand	Balanced	Demand
Trips	7	0	0
%	5%		5%

Net External Trips for Multi-Use Development

	Land Use A	Land Use B	Land Use C	Land Use D	Total		ITE Totals	Captured
Enter	151	29	124	5	309		378	69
Exit	139	28	107	6	280		349	69
Total	290	57	231	10	589	INTERNAL CAPTURE		
Single-Use Trip Gen. Est.	351	72	291	13	727	19%		

MULTI-USE TRIP GENERATION AND INTERNAL CAPTURE SUMMARY

Analyst JR
Date 2/7/2019

Name of Development Buford Truck Stop
Time Period Daily

ITE LU Code / Size	Truck Stop		
	Total	Internal	External
Enter	2115	397	1718
Exit	2115	397	1718
Total	4230	795	3435
%	100%	19%	81%

Exit to External 1718
Enter from External 1718

ITE LU Code / Size	Hotel		
	Total	Internal	External
Enter	502	102	400
Exit	502	102	400
Total	1004	205	799
%	100%	20%	80%

Enter from External 400
Exit to External 400

5% Demand 106 | Balanced 50 | 10% Demand 50
106 Demand 5% | 50 Balanced | 50 Demand 10%

10% 50 Demand
5% 106 Demand
3 Balanced
50 Balanced 5%
101 Demand

17% 360 Demand
344 Balanced
17% 344 Demand

360 Demand 17%
344 Balanced
344 Demand 17%

8% 3 Demand
169 Demand 8%
3 Balanced
50 Demand
50 Balanced 10%
101 Demand 5%

5% 25 Demand
2 Balanced
5% 2 Demand

25 Demand 5%
2 Balanced
2 Demand 5%

3 Demand 8%

ITE LU Code / Size	Restaurants		
	Total	Internal	External
Enter	2025	397	1628
Exit	2025	397	1628
Total	4050	794	3256
%	100%	20%	80%

Exit to External 1628
Enter from External 1628

ITE LU Code / Size	Truck Lube		
	Total	Internal	External
Enter	38	8	30
Exit	38	8	30
Total	76	15	61
%	100%	20%	80%

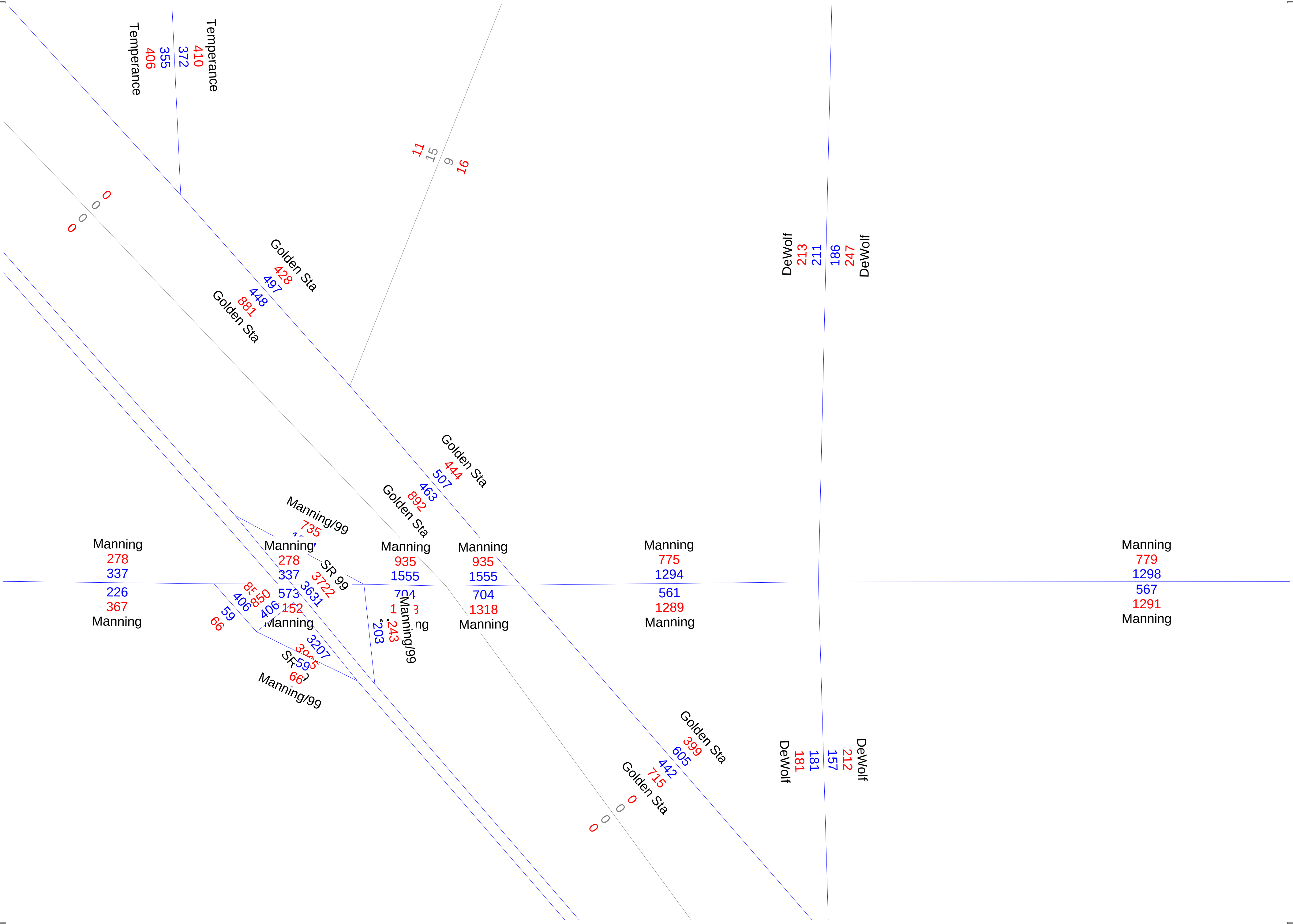
Enter from External 30
Exit to External 30

5% Demand 101 | Balanced 3 | 7% Demand 3
101 Demand 5% | 3 Balanced | 3 Demand 7%

Net External Trips for Multi-Use Development

	Land Use A	Land Use B	Land Use C	Land Use D	Total		ITE Totals	Captured
Enter	1718	400	1628	30	3776		4680	905
Exit	1718	400	1628	30	3776		4680	905
Total	3435	799	3256	61	7551	INTERNAL CAPTURE		
Single-Use Trip Gen. Est.	4230	1004	4050	76	9360	19%		

FRESNO COUNTY TRAVEL MODEL OUTPUT



2015 Council of Fresno County Governments Travel Demand Model
AM and PM Peak Hour Traffic Volumes

cube

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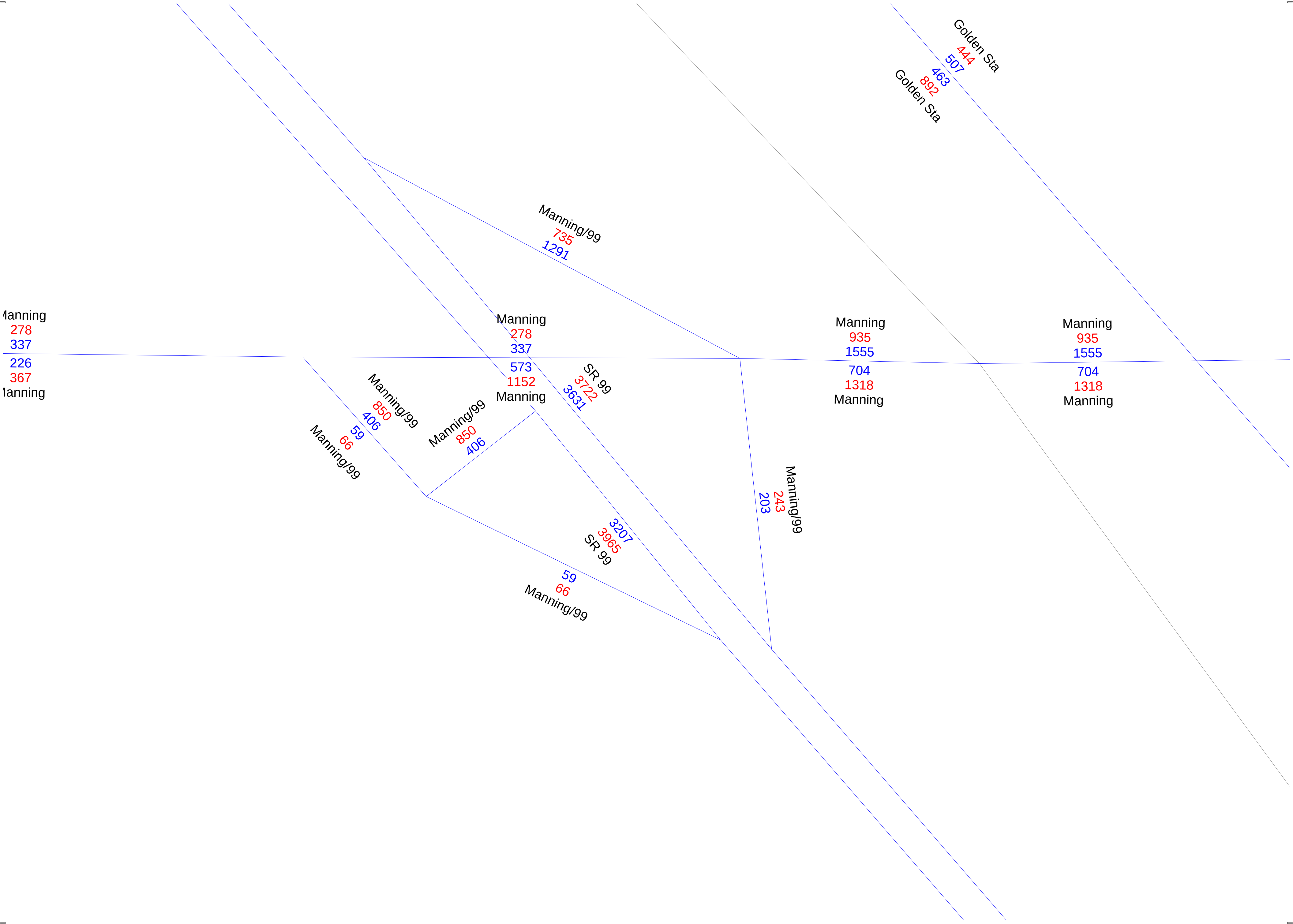
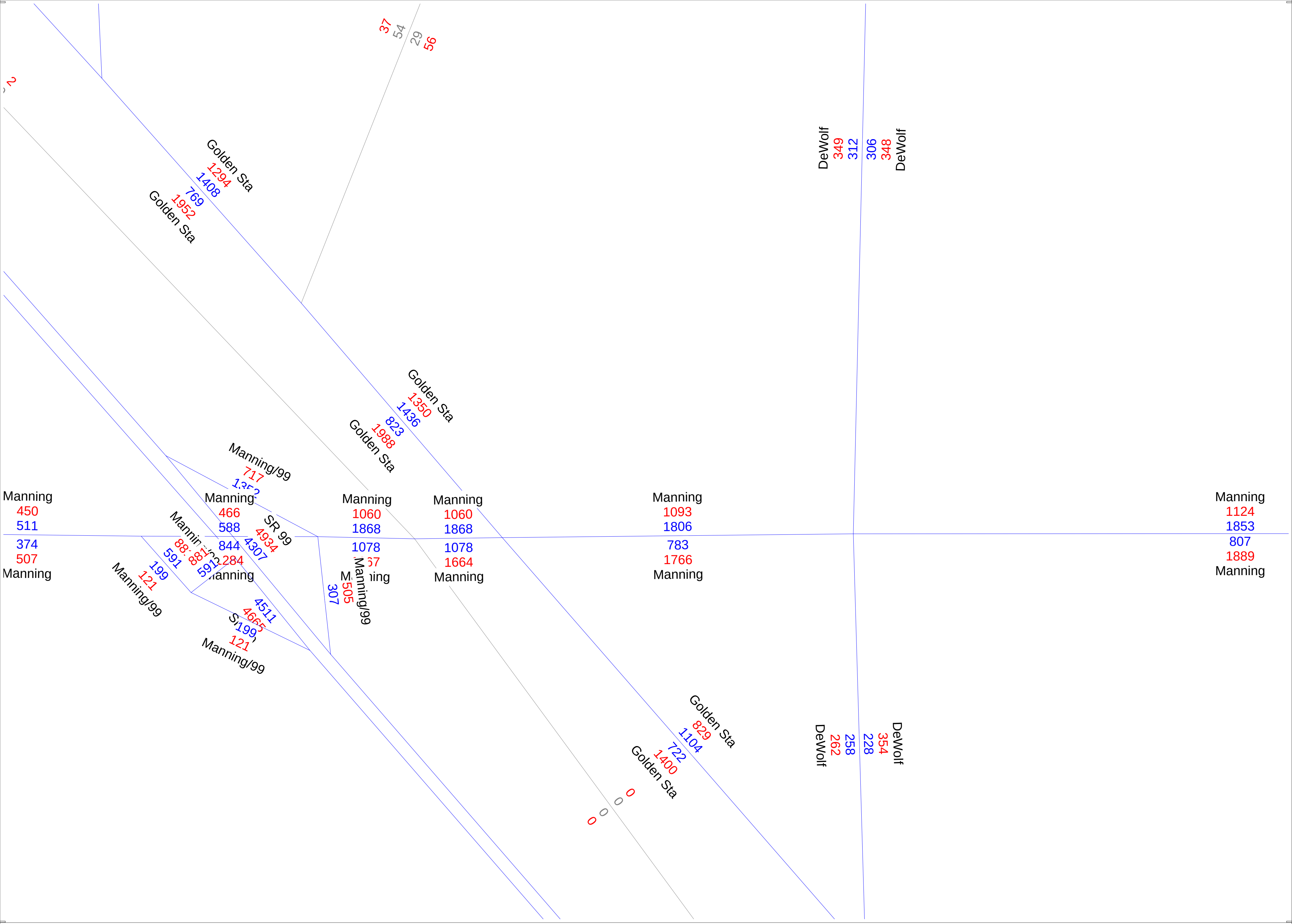


2015 Council of Fresno County Governments Travel Demand Model
AM and PM Peak Hour Traffic Volumes



2035 Council of Fresno County Governments Travel Demand Model
AM and PM Peak Hour Traffic Volumes

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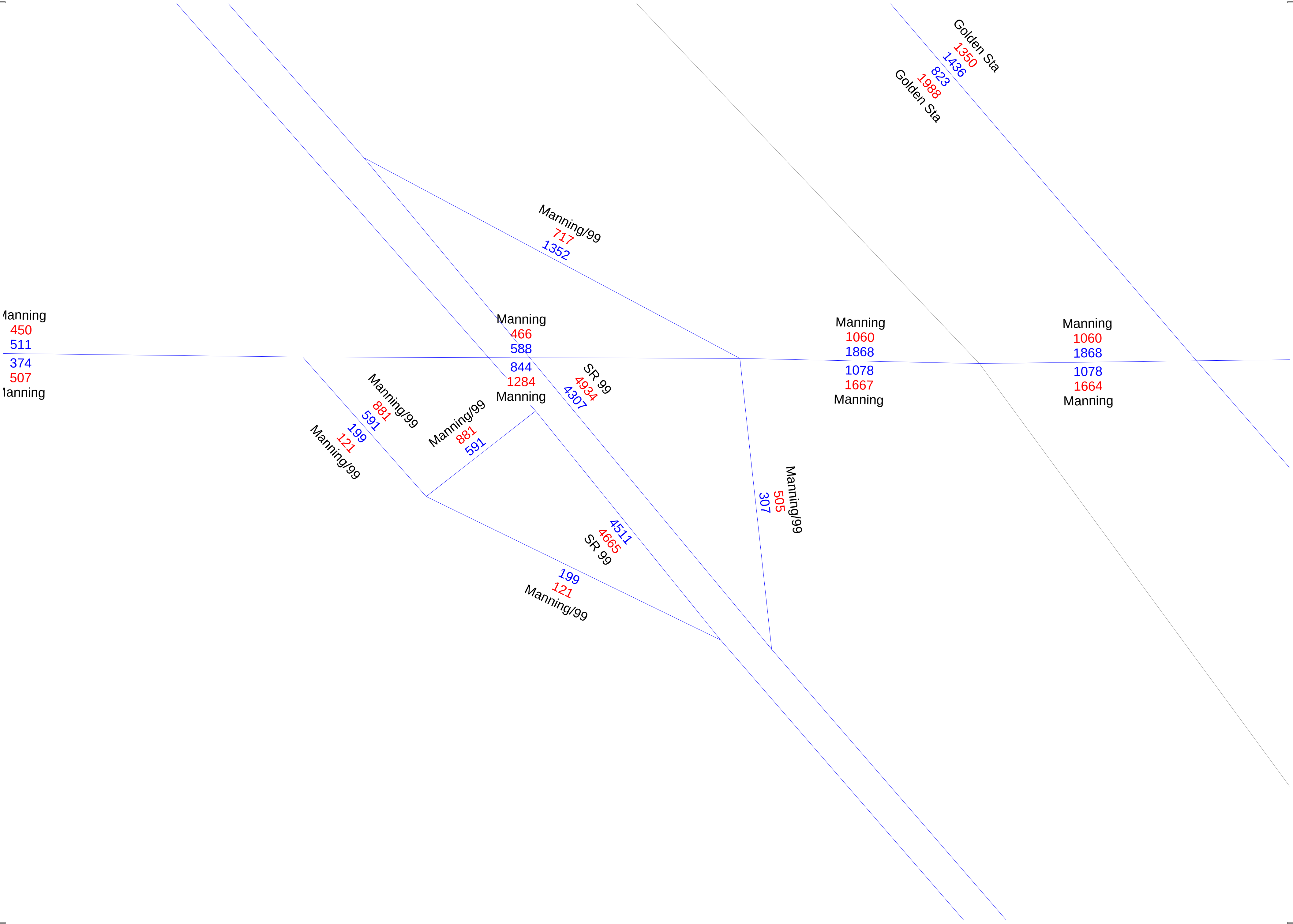


2035 Council of Fresno County Governments Travel Demand Model

AM and PM Peak Hour Traffic Volumes

cube

INTERSECTION ANALYSES

Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	1	7	7	306	229	1
Future Vol, veh/h	1	7	7	306	229	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	300	-	-	200
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	88	88	88	88	94	94
Heavy Vehicles, %	50	50	22	3	6	20
Mvmt Flow	1	8	8	348	244	1

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	434	122	245	0	-	0
Stage 1	244	-	-	-	-	-
Stage 2	190	-	-	-	-	-
Critical Hdwy	7.8	7.9	4.54	-	-	-
Critical Hdwy Stg 1	6.8	-	-	-	-	-
Critical Hdwy Stg 2	6.8	-	-	-	-	-
Follow-up Hdwy	4	3.8	2.42	-	-	-
Pot Cap-1 Maneuver	443	773	1185	-	-	-
Stage 1	648	-	-	-	-	-
Stage 2	697	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	440	773	1185	-	-	-
Mov Cap-2 Maneuver	440	-	-	-	-	-
Stage 1	643	-	-	-	-	-
Stage 2	697	-	-	-	-	-

Approach	EB		NB		SB	
HCM Control Delay, s	10.1		0.2		0	
HCM LOS	B					

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	1185	-	440	773	-	-
HCM Lane V/C Ratio	0.007	-	0.003	0.01	-	-
HCM Control Delay (s)	8.1	-	13.2	9.7	-	-
HCM Lane LOS	A	-	B	A	-	-
HCM 95th %tile Q(veh)	0	-	0	0	-	-

Intersection	
Int Delay, s/veh	2.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	111	33	95	139	5	478
Future Vol, veh/h	111	33	95	139	5	478
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	Free
Storage Length	-	-	-	-	0	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	88	88	86	86	88	88
Heavy Vehicles, %	5	21	21	6	2	6
Mvmt Flow	126	38	110	162	6	543

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	164	0	527	-
Stage 1	-	-	-	-	145	-
Stage 2	-	-	-	-	382	-
Critical Hdwy	-	-	4.31	-	6.42	-
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.389	-	3.518	-
Pot Cap-1 Maneuver	-	-	1307	-	512	0
Stage 1	-	-	-	-	882	0
Stage 2	-	-	-	-	690	0
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1307	-	465	-
Mov Cap-2 Maneuver	-	-	-	-	465	-
Stage 1	-	-	-	-	882	-
Stage 2	-	-	-	-	627	-

Approach	EB	WB	NB
HCM Control Delay, s	0	3.3	12.8
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	465	-	-	-	1307	-
HCM Lane V/C Ratio	0.012	-	-	-	0.085	-
HCM Control Delay (s)	12.8	0	-	-	8	0
HCM Lane LOS	B	A	-	-	A	A
HCM 95th %tile Q(veh)	0	-	-	-	0.3	-

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	10	575	228	828	0	0
Future Vol, veh/h	10	575	228	828	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	Yield	-	None
Storage Length	-	-	-	0	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	89	89	92	92	92	92
Heavy Vehicles, %	11	6	12	6	2	2
Mvmt Flow	11	646	248	900	0	0

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	248	0	-	0	-	248
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	4.265	-	-	-	-	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	2.3045	-	-	-	-	3.319
Pot Cap-1 Maneuver	1259	-	-	-	0	790
Stage 1	-	-	-	-	0	-
Stage 2	-	-	-	-	0	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1259	-	-	-	-	790
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	0.2	0	0
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1259	-	-	-	-
HCM Lane V/C Ratio	0.009	-	-	-	-
HCM Control Delay (s)	7.9	0.1	-	-	0
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	-

Intersection	
Int Delay, s/veh	1.5

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑			↑↑	↰	↱
Traffic Vol, veh/h	565	0	0	1025	31	98
Future Vol, veh/h	565	0	0	1025	31	98
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	Stop
Storage Length	-	-	-	-	0	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	89	89	92	92	75	75
Heavy Vehicles, %	6	6	12	12	10	22
Mvmt Flow	635	0	0	1114	41	131

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	-	-	-	1192	318
Stage 1	-	-	-	-	635	-
Stage 2	-	-	-	-	557	-
Critical Hdwy	-	-	-	-	7	7.34
Critical Hdwy Stg 1	-	-	-	-	6	-
Critical Hdwy Stg 2	-	-	-	-	6	-
Follow-up Hdwy	-	-	-	-	3.6	3.52
Pot Cap-1 Maneuver	-	0	0	-	169	622
Stage 1	-	0	0	-	469	-
Stage 2	-	0	0	-	515	-
Platoon blocked, %	-			-		
Mov Cap-1 Maneuver	-	-	-	-	169	622
Mov Cap-2 Maneuver	-	-	-	-	169	-
Stage 1	-	-	-	-	469	-
Stage 2	-	-	-	-	515	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	17.3
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	WBT
Capacity (veh/h)	169	622	-	-
HCM Lane V/C Ratio	0.245	0.21	-	-
HCM Control Delay (s)	33.1	12.3	-	-
HCM Lane LOS	D	B	-	-
HCM 95th %tile Q(veh)	0.9	0.8	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	20	559	93	56	944	18	74	3	31	15	3	9
Future Volume (veh/h)	20	559	93	56	944	18	74	3	31	15	3	9
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1267	1773	1900	1827	1797	1900	1900	1835	1900	1900	1218	1900
Adj Flow Rate, veh/h	23	643	107	63	1061	20	84	3	35	17	3	10
Adj No. of Lanes	1	2	0	1	2	0	0	1	0	0	1	0
Peak Hour Factor	0.87	0.87	0.87	0.89	0.89	0.89	0.88	0.88	0.88	0.88	0.88	0.88
Percent Heavy Veh, %	50	8	8	4	5	5	33	33	33	33	33	33
Cap, veh/h	34	1228	204	112	1578	30	295	20	61	214	39	51
Arrive On Green	0.03	0.42	0.42	0.06	0.46	0.46	0.14	0.14	0.14	0.14	0.14	0.14
Sat Flow, veh/h	1206	2893	481	1740	3428	65	921	137	426	440	272	356
Grp Volume(v), veh/h	23	374	376	63	528	553	122	0	0	30	0	0
Grp Sat Flow(s),veh/h/ln	1206	1685	1688	1740	1707	1786	1484	0	0	1068	0	0
Q Serve(g_s), s	0.7	6.2	6.2	1.3	9.1	9.1	1.9	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.7	6.2	6.2	1.3	9.1	9.1	2.8	0.0	0.0	0.9	0.0	0.0
Prop In Lane	1.00		0.28	1.00		0.04	0.69		0.29	0.57		0.33
Lane Grp Cap(c), veh/h	34	715	717	112	786	822	376	0	0	304	0	0
V/C Ratio(X)	0.67	0.52	0.52	0.56	0.67	0.67	0.32	0.00	0.00	0.10	0.00	0.00
Avail Cap(c_a), veh/h	257	901	903	371	913	955	859	0	0	629	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	18.1	8.0	8.0	17.1	7.9	7.9	14.9	0.0	0.0	14.1	0.0	0.0
Incr Delay (d2), s/veh	20.4	0.6	0.6	4.4	1.6	1.5	0.5	0.0	0.0	0.1	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	2.9	2.9	0.8	4.5	4.6	1.2	0.0	0.0	0.3	0.0	0.0
LnGrp Delay(d),s/veh	38.5	8.6	8.6	21.5	9.5	9.4	15.4	0.0	0.0	14.3	0.0	0.0
LnGrp LOS	D	A	A	C	A	A	B			B		
Approach Vol, veh/h		773			1144			122			30	
Approach Delay, s/veh		9.5			10.1			15.4			14.3	
Approach LOS		A			B			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		10.3	6.4	20.8		10.3	5.1	22.2
Change Period (Y+Rc), s		4.9	4.0	4.9		4.9	4.0	4.9
Max Green Setting (Gmax), s		18.1	8.0	20.1		18.1	8.0	20.1
Max Q Clear Time (g_c+I1), s		4.8	3.3	8.2		2.9	2.7	11.1
Green Ext Time (p_c), s		0.6	0.0	7.7		0.7	0.0	6.2

Intersection Summary		
HCM 2010 Ctrl Delay		10.3
HCM 2010 LOS		B

Lane Group	EBL	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	23	750	63	1081	122	30
v/c Ratio	0.12	0.53	0.22	0.61	0.41	0.16
Control Delay	21.4	12.3	21.2	11.6	17.6	15.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	21.4	12.3	21.2	11.6	17.6	15.6
Queue Length 50th (ft)	5	77	14	70	20	4
Queue Length 95th (ft)	23	138	47	#272	59	22
Internal Link Dist (ft)		470		581	767	71
Turn Bay Length (ft)	260		260			
Base Capacity (vph)	234	1631	338	1913	622	412
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.10	0.46	0.19	0.57	0.20	0.07

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	62	436	124	11	780	98	182	184	9	39	126	65
Future Volume (veh/h)	62	436	124	11	780	98	182	184	9	39	126	65
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1759	1712	1881	1900	1829	1900	1792	1863	1900	1810	1881	1610
Adj Flow Rate, veh/h	67	474	135	13	918	115	190	192	0	49	158	0
Adj No. of Lanes	1	2	1	1	2	0	1	2	1	1	2	1
Peak Hour Factor	0.92	0.92	0.92	0.85	0.85	0.85	0.96	0.96	0.96	0.80	0.80	0.80
Percent Heavy Veh, %	8	11	1	0	4	4	6	2	0	5	1	18
Cap, veh/h	96	1394	685	30	1204	151	235	690	315	82	375	144
Arrive On Green	0.06	0.43	0.43	0.02	0.39	0.39	0.14	0.20	0.00	0.05	0.10	0.00
Sat Flow, veh/h	1675	3252	1599	1810	3108	389	1707	3539	1615	1723	3574	1369
Grp Volume(v), veh/h	67	474	135	13	513	520	190	192	0	49	158	0
Grp Sat Flow(s),veh/h/ln	1675	1626	1599	1810	1737	1760	1707	1770	1615	1723	1787	1369
Q Serve(g_s), s	2.2	5.5	3.0	0.4	14.6	14.6	6.1	2.6	0.0	1.6	2.4	0.0
Cycle Q Clear(g_c), s	2.2	5.5	3.0	0.4	14.6	14.6	6.1	2.6	0.0	1.6	2.4	0.0
Prop In Lane	1.00		1.00	1.00		0.22	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	96	1394	685	30	673	682	235	690	315	82	375	144
V/C Ratio(X)	0.70	0.34	0.20	0.44	0.76	0.76	0.81	0.28	0.00	0.60	0.42	0.00
Avail Cap(c_a), veh/h	235	1434	705	254	766	776	300	1312	599	242	1199	459
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	26.3	10.9	10.2	27.7	15.2	15.2	23.8	19.5	0.0	26.6	23.9	0.0
Incr Delay (d2), s/veh	8.7	0.1	0.1	10.0	4.0	3.9	12.1	0.2	0.0	6.9	0.8	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.3	2.5	1.3	0.3	7.7	7.8	3.7	1.3	0.0	0.9	1.2	0.0
LnGrp Delay(d),s/veh	35.1	11.0	10.3	37.7	19.1	19.1	35.9	19.7	0.0	33.5	24.6	0.0
LnGrp LOS	D	B	B	D	B	B	D	B		C	C	
Approach Vol, veh/h		676			1046			382			207	
Approach Delay, s/veh		13.3			19.3			27.8			26.7	
Approach LOS		B			B			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	6.7	16.0	4.9	29.3	11.8	10.9	7.3	27.0
Change Period (Y+Rc), s	4.0	4.9	4.0	4.9	4.0	4.9	4.0	4.9
Max Green Setting (Gmax), s	8.0	21.1	8.0	25.1	10.0	19.1	8.0	25.1
Max Q Clear Time (g_c+I1), s	3.6	4.6	2.4	7.5	8.1	4.4	4.2	16.6
Green Ext Time (p_c), s	0.0	1.7	0.0	8.9	0.1	1.6	0.0	5.4

Intersection Summary			
HCM 2010 Ctrl Delay			19.6
HCM 2010 LOS			B

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	67	474	135	13	1033	190	192	9	49	158	81
v/c Ratio	0.35	0.32	0.17	0.07	0.79	0.69	0.21	0.02	0.26	0.34	0.27
Control Delay	33.9	12.5	3.5	30.3	23.9	43.9	24.0	0.1	32.0	28.9	4.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	33.9	12.5	3.5	30.3	23.9	43.9	24.0	0.1	32.0	28.9	4.1
Queue Length 50th (ft)	27	53	0	5	202	79	38	0	20	33	0
Queue Length 95th (ft)	64	118	32	20	266	#184	67	0	45	52	5
Internal Link Dist (ft)		581			1146		716			1578	
Turn Bay Length (ft)	220		290	270		200		80	255		175
Base Capacity (vph)	216	1551	833	233	1396	274	1211	641	222	1103	516
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.31	0.31	0.16	0.06	0.74	0.69	0.16	0.01	0.22	0.14	0.16

Intersection Summary

\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Intersection	
Int Delay, s/veh	0.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✥			✥			✥			✥	
Traffic Vol, veh/h	0	151	3	8	142	2	2	0	18	1	0	0
Future Vol, veh/h	0	151	3	8	142	2	2	0	18	1	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	82	82	82	81	81	81	88	88	88	88	88	88
Heavy Vehicles, %	10	10	10	10	10	10	10	10	10	10	10	10
Mvmt Flow	0	184	4	10	175	2	2	0	20	1	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	177	0	0	188	0	0	382	383	186	392	384	176
Stage 1	-	-	-	-	-	-	186	186	-	196	196	-
Stage 2	-	-	-	-	-	-	196	197	-	196	188	-
Critical Hdwy	4.2	-	-	4.2	-	-	7.2	6.6	6.3	7.2	6.6	6.3
Critical Hdwy Stg 1	-	-	-	-	-	-	6.2	5.6	-	6.2	5.6	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.2	5.6	-	6.2	5.6	-
Follow-up Hdwy	2.29	-	-	2.29	-	-	3.59	4.09	3.39	3.59	4.09	3.39
Pot Cap-1 Maneuver	1352	-	-	1339	-	-	562	538	836	553	537	847
Stage 1	-	-	-	-	-	-	798	731	-	788	724	-
Stage 2	-	-	-	-	-	-	788	723	-	788	730	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1352	-	-	1339	-	-	559	534	836	536	533	847
Mov Cap-2 Maneuver	-	-	-	-	-	-	559	534	-	536	533	-
Stage 1	-	-	-	-	-	-	798	731	-	788	718	-
Stage 2	-	-	-	-	-	-	782	717	-	769	730	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.4	9.6	11.7
HCM LOS			A	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	797	1352	-	-	1339	-	-	536
HCM Lane V/C Ratio	0.029	-	-	-	0.007	-	-	0.002
HCM Control Delay (s)	9.6	0	-	-	7.7	0	-	11.7
HCM Lane LOS	A	A	-	-	A	A	-	B
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0

Intersection	
Int Delay, s/veh	0.5

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	6	23	7	301	461	1
Future Vol, veh/h	6	23	7	301	461	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	300	-	-	200
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	88	88	79	79	88	88
Heavy Vehicles, %	0	10	100	6	2	100
Mvmt Flow	7	26	9	381	524	1

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	733	262	525	0	-	0
Stage 1	524	-	-	-	-	-
Stage 2	209	-	-	-	-	-
Critical Hdwy	6.8	7.1	6.1	-	-	-
Critical Hdwy Stg 1	5.8	-	-	-	-	-
Critical Hdwy Stg 2	5.8	-	-	-	-	-
Follow-up Hdwy	3.5	3.4	3.2	-	-	-
Pot Cap-1 Maneuver	360	713	578	-	-	-
Stage 1	564	-	-	-	-	-
Stage 2	812	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	354	713	578	-	-	-
Mov Cap-2 Maneuver	354	-	-	-	-	-
Stage 1	555	-	-	-	-	-
Stage 2	812	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	11.3	0.3	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	578	-	354	713	-	-
HCM Lane V/C Ratio	0.015	-	0.019	0.037	-	-
HCM Control Delay (s)	11.3	-	15.4	10.2	-	-
HCM Lane LOS	B	-	C	B	-	-
HCM 95th %tile Q(veh)	0	-	0.1	0.1	-	-

Intersection	
Int Delay, s/veh	2.7

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	123	39	114	160	20	715
Future Vol, veh/h	123	39	114	160	20	715
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	Free
Storage Length	-	-	-	-	0	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	88	88	82	82	88	88
Heavy Vehicles, %	7	8	23	10	0	3
Mvmt Flow	140	44	139	195	23	813

Major/Minor	Major1			Major2	Minor1	
Conflicting Flow All	0	0	184	0	635	-
Stage 1	-	-	-	-	162	-
Stage 2	-	-	-	-	473	-
Critical Hdwy	-	-	4.33	-	6.4	-
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.407	-	3.5	-
Pot Cap-1 Maneuver	-	-	1274	-	446	0
Stage 1	-	-	-	-	872	0
Stage 2	-	-	-	-	631	0
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1274	-	392	-
Mov Cap-2 Maneuver	-	-	-	-	392	-
Stage 1	-	-	-	-	872	-
Stage 2	-	-	-	-	554	-

Approach	EB	WB	NB
HCM Control Delay, s	0	3.4	14.7
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	392	-	-	-	1274	-
HCM Lane V/C Ratio	0.058	-	-	-	0.109	-
HCM Control Delay (s)	14.7	0	-	-	8.2	0
HCM Lane LOS	B	A	-	-	A	A
HCM 95th %tile Q(veh)	0.2	-	-	-	0.4	-

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	8	810	292	504	0	0
Future Vol, veh/h	8	810	292	504	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	Yield	-	None
Storage Length	-	-	-	0	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	91	91	87	87	92	92
Heavy Vehicles, %	13	4	14	4	2	2
Mvmt Flow	9	890	336	579	0	0

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	336	0	-	0	-	336
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	4.295	-	-	-	-	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	2.3235	-	-	-	-	3.319
Pot Cap-1 Maneuver	1154	-	-	-	0	705
Stage 1	-	-	-	-	0	-
Stage 2	-	-	-	-	0	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1154	-	-	-	-	705
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	0.2	0	0
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1154	-	-	-	-
HCM Lane V/C Ratio	0.008	-	-	-	-
HCM Control Delay (s)	8.1	0.1	-	-	0
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	-

Intersection	
Int Delay, s/veh	5.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑			↑↑	↰	↱
Traffic Vol, veh/h	810	0	0	718	78	223
Future Vol, veh/h	810	0	0	718	78	223
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	Stop
Storage Length	-	-	-	-	0	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	91	92	92	87	79	79
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	890	0	0	825	99	282

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	-	-	-	1303	445
Stage 1	-	-	-	-	890	-
Stage 2	-	-	-	-	413	-
Critical Hdwy	-	-	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	-	-	3.52	3.32
Pot Cap-1 Maneuver	-	0	0	-	152	561
Stage 1	-	0	0	-	361	-
Stage 2	-	0	0	-	636	-
Platoon blocked, %	-			-		
Mov Cap-1 Maneuver	-	-	-	-	152	561
Mov Cap-2 Maneuver	-	-	-	-	152	-
Stage 1	-	-	-	-	361	-
Stage 2	-	-	-	-	636	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	29.8
HCM LOS			D

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	WBT
Capacity (veh/h)	152	561	-	-
HCM Lane V/C Ratio	0.65	0.503	-	-
HCM Control Delay (s)	64.5	17.7	-	-
HCM Lane LOS	F	C	-	-
HCM 95th %tile Q(veh)	3.6	2.8	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	44	871	106	69	582	19	84	3	73	18	3	25
Future Volume (veh/h)	44	871	106	69	582	19	84	3	73	18	3	25
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1329	1819	1900	1881	1801	1900	1900	1867	1900	1900	1341	1900
Adj Flow Rate, veh/h	54	1075	131	78	661	22	114	4	99	20	3	28
Adj No. of Lanes	1	2	0	1	2	0	0	1	0	0	1	0
Peak Hour Factor	0.81	0.81	0.81	0.88	0.88	0.88	0.74	0.74	0.74	0.88	0.88	0.88
Percent Heavy Veh, %	43	5	5	1	5	5	67	67	67	0	0	0
Cap, veh/h	67	1401	171	120	1572	52	250	26	137	168	42	130
Arrive On Green	0.05	0.45	0.45	0.07	0.47	0.47	0.20	0.20	0.20	0.20	0.20	0.20
Sat Flow, veh/h	1265	3103	378	1792	3379	112	696	132	695	329	212	659
Grp Volume(v), veh/h	54	598	608	78	334	349	217	0	0	51	0	0
Grp Sat Flow(s),veh/h/ln	1265	1728	1752	1792	1711	1781	1524	0	0	1200	0	0
Q Serve(g_s), s	2.0	14.1	14.1	2.1	6.3	6.3	4.6	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	2.0	14.1	14.1	2.1	6.3	6.3	6.3	0.0	0.0	1.7	0.0	0.0
Prop In Lane	1.00		0.22	1.00		0.06	0.53		0.46	0.39		0.55
Lane Grp Cap(c), veh/h	67	780	791	120	796	829	413	0	0	340	0	0
V/C Ratio(X)	0.80	0.77	0.77	0.65	0.42	0.42	0.52	0.00	0.00	0.15	0.00	0.00
Avail Cap(c_a), veh/h	209	858	870	295	850	884	703	0	0	547	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	22.7	11.2	11.2	22.1	8.6	8.6	18.1	0.0	0.0	16.3	0.0	0.0
Incr Delay (d2), s/veh	19.1	3.8	3.8	5.8	0.4	0.3	1.0	0.0	0.0	0.2	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.1	7.5	7.6	1.2	3.1	3.2	2.8	0.0	0.0	0.6	0.0	0.0
LnGrp Delay(d),s/veh	41.8	15.0	15.0	27.9	9.0	9.0	19.1	0.0	0.0	16.5	0.0	0.0
LnGrp LOS	D	B	B	C	A	A	B			B		
Approach Vol, veh/h		1260			761			217			51	
Approach Delay, s/veh		16.2			10.9			19.1			16.5	
Approach LOS		B			B			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		14.5	7.3	26.8		14.5	6.6	27.5
Change Period (Y+Rc), s		4.9	4.0	4.9		4.9	4.0	4.9
Max Green Setting (Gmax), s		19.1	8.0	24.1		19.1	8.0	24.1
Max Q Clear Time (g_c+I1), s		8.3	4.1	16.1		3.7	4.0	8.3
Green Ext Time (p_c), s		1.2	0.0	5.8		1.5	0.0	9.7

Intersection Summary	
HCM 2010 Ctrl Delay	14.7
HCM 2010 LOS	B

Lane Group	EBL	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	54	1206	78	683	217	51
v/c Ratio	0.30	0.78	0.30	0.44	0.59	0.19
Control Delay	28.9	19.4	27.2	12.8	21.0	13.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	28.9	19.4	27.2	12.8	21.0	13.0
Queue Length 50th (ft)	17	181	25	84	47	7
Queue Length 95th (ft)	45	#284	64	150	77	29
Internal Link Dist (ft)		470		581	767	71
Turn Bay Length (ft)	260		260			
Base Capacity (vph)	213	1744	302	1737	610	453
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.25	0.69	0.26	0.39	0.36	0.11

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	187	590	174	18	456	87	134	243	11	129	368	114
Future Volume (veh/h)	187	590	174	18	456	87	134	243	11	129	368	114
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1681	1827	1900	1900	1818	1900	1810	1881	1900	1845	1900	1759
Adj Flow Rate, veh/h	231	728	215	19	490	94	165	300	0	150	428	0
Adj No. of Lanes	1	2	1	1	2	0	1	2	1	1	2	1
Peak Hour Factor	0.81	0.81	0.81	0.93	0.93	0.93	0.81	0.81	0.81	0.86	0.86	0.86
Percent Heavy Veh, %	13	4	0	0	4	4	5	1	0	3	0	8
Cap, veh/h	277	1390	647	40	723	138	207	710	321	191	676	280
Arrive On Green	0.17	0.40	0.40	0.02	0.25	0.25	0.12	0.20	0.00	0.11	0.19	0.00
Sat Flow, veh/h	1601	3471	1615	1810	2896	553	1723	3574	1615	1757	3610	1495
Grp Volume(v), veh/h	231	728	215	19	291	293	165	300	0	150	428	0
Grp Sat Flow(s),veh/h/ln	1601	1736	1615	1810	1728	1721	1723	1787	1615	1757	1805	1495
Q Serve(g_s), s	9.2	10.5	6.1	0.7	10.0	10.1	6.1	4.8	0.0	5.5	7.2	0.0
Cycle Q Clear(g_c), s	9.2	10.5	6.1	0.7	10.0	10.1	6.1	4.8	0.0	5.5	7.2	0.0
Prop In Lane	1.00		1.00	1.00		0.32	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	277	1390	647	40	432	430	207	710	321	191	676	280
V/C Ratio(X)	0.83	0.52	0.33	0.47	0.68	0.68	0.80	0.42	0.00	0.78	0.63	0.00
Avail Cap(c_a), veh/h	461	1584	737	219	500	498	366	1089	492	373	1100	456
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	26.4	15.0	13.7	31.9	22.3	22.4	28.2	23.1	0.0	28.6	24.7	0.0
Incr Delay (d2), s/veh	6.5	0.3	0.3	8.3	2.9	3.1	6.8	0.4	0.0	6.9	1.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.5	5.0	2.7	0.4	5.1	5.2	3.3	2.4	0.0	3.0	3.7	0.0
LnGrp Delay(d),s/veh	32.9	15.3	14.0	40.2	25.3	25.5	35.1	23.5	0.0	35.6	25.7	0.0
LnGrp LOS	C	B	B	D	C	C	D	C		D	C	
Approach Vol, veh/h		1174			603			465			578	
Approach Delay, s/veh		18.5			25.8			27.6			28.3	
Approach LOS		B			C			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	11.2	18.0	5.5	31.3	11.9	17.3	15.4	21.4
Change Period (Y+Rc), s	4.0	4.9	4.0	4.9	4.0	4.9	4.0	4.9
Max Green Setting (Gmax), s	14.0	20.1	8.0	30.1	14.0	20.1	19.0	19.1
Max Q Clear Time (g_c+I1), s	7.5	6.8	2.7	12.5	8.1	9.2	11.2	12.1
Green Ext Time (p_c), s	0.2	3.5	0.0	8.0	0.2	3.1	0.4	4.3

Intersection Summary	
HCM 2010 Ctrl Delay	23.6
HCM 2010 LOS	C

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	231	728	215	19	584	165	300	14	150	428	133
v/c Ratio	0.72	0.50	0.27	0.12	0.77	0.63	0.43	0.03	0.59	0.62	0.32
Control Delay	44.7	20.0	4.2	39.3	36.7	45.1	30.6	0.1	43.2	34.0	4.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	44.7	20.0	4.2	39.3	36.7	45.1	30.6	0.1	43.2	34.0	4.8
Queue Length 50th (ft)	111	121	0	9	142	80	72	0	73	108	0
Queue Length 95th (ft)	177	210	33	32	#236	137	102	0	134	152	23
Internal Link Dist (ft)		581			1146		698			1578	
Turn Bay Length (ft)	220		290	270		200		80	255		175
Base Capacity (vph)	402	1517	826	191	870	319	953	553	325	962	521
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.57	0.48	0.26	0.10	0.67	0.52	0.31	0.03	0.46	0.44	0.26

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Intersection	
Int Delay, s/veh	0.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	325	7	8	101	2	3	0	11	2	0	0
Future Vol, veh/h	0	325	7	8	101	2	3	0	11	2	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	87	87	87	84	84	84	88	88	88	88	88	88
Heavy Vehicles, %	7	7	7	7	7	7	7	7	7	7	7	7
Mvmt Flow	0	374	8	10	120	2	3	0	13	2	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	122	0	0	382	0	0	519	520	378	526	523	121
Stage 1	-	-	-	-	-	-	378	378	-	141	141	-
Stage 2	-	-	-	-	-	-	141	142	-	385	382	-
Critical Hdwy	4.17	-	-	4.17	-	-	7.17	6.57	6.27	7.17	6.57	6.27
Critical Hdwy Stg 1	-	-	-	-	-	-	6.17	5.57	-	6.17	5.57	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.17	5.57	-	6.17	5.57	-
Follow-up Hdwy	2.263	-	-	2.263	-	-	3.563	4.063	3.363	3.563	4.063	3.363
Pot Cap-1 Maneuver	1435	-	-	1150	-	-	460	453	658	455	452	917
Stage 1	-	-	-	-	-	-	634	606	-	850	771	-
Stage 2	-	-	-	-	-	-	850	770	-	628	604	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1435	-	-	1150	-	-	457	449	658	443	448	917
Mov Cap-2 Maneuver	-	-	-	-	-	-	457	449	-	443	448	-
Stage 1	-	-	-	-	-	-	634	606	-	850	764	-
Stage 2	-	-	-	-	-	-	842	763	-	616	604	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.6	11.2	13.2
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	601	1435	-	-	1150	-	-	443
HCM Lane V/C Ratio	0.026	-	-	-	0.008	-	-	0.005
HCM Control Delay (s)	11.2	0	-	-	8.2	0	-	13.2
HCM Lane LOS	B	A	-	-	A	A	-	B
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0

Intersection	
Int Delay, s/veh	4.9

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	8	2	12	8	2	15
Future Vol, veh/h	8	2	12	8	2	15
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	1	-	0	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	9	2	13	9	2	16

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	11	0	45	10
Stage 1	-	-	-	-	10	-
Stage 2	-	-	-	-	35	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1608	-	965	1071
Stage 1	-	-	-	-	1013	-
Stage 2	-	-	-	-	987	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1608	-	957	1071
Mov Cap-2 Maneuver	-	-	-	-	957	-
Stage 1	-	-	-	-	1013	-
Stage 2	-	-	-	-	979	-

Approach	EB	WB	NB
HCM Control Delay, s	0	4.4	8.4
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	957	1071	-	-	1608	-
HCM Lane V/C Ratio	0.002	0.015	-	-	0.008	-
HCM Control Delay (s)	8.8	8.4	-	-	7.3	-
HCM Lane LOS	A	A	-	-	A	-
HCM 95th %tile Q(veh)	0	0	-	-	0	-

Intersection	
Int Delay, s/veh	0.6

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	16	7	7	317	251	13
Future Vol, veh/h	16	7	7	317	251	13
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	300	-	-	200
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	88	88	88	88	94	94
Heavy Vehicles, %	50	50	22	3	6	20
Mvmt Flow	18	8	8	360	267	14

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	463	134	281	0	-	0
Stage 1	267	-	-	-	-	-
Stage 2	196	-	-	-	-	-
Critical Hdwy	7.8	7.9	4.54	-	-	-
Critical Hdwy Stg 1	6.8	-	-	-	-	-
Critical Hdwy Stg 2	6.8	-	-	-	-	-
Follow-up Hdwy	4	3.8	2.42	-	-	-
Pot Cap-1 Maneuver	422	757	1145	-	-	-
Stage 1	628	-	-	-	-	-
Stage 2	692	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	419	757	1145	-	-	-
Mov Cap-2 Maneuver	419	-	-	-	-	-
Stage 1	624	-	-	-	-	-
Stage 2	692	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	12.7	0.2	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	1145	-	419	757	-	-
HCM Lane V/C Ratio	0.007	-	0.043	0.011	-	-
HCM Control Delay (s)	8.2	-	14	9.8	-	-
HCM Lane LOS	A	-	B	A	-	-
HCM 95th %tile Q(veh)	0	-	0.1	0	-	-

Intersection						
Int Delay, s/veh	0.4					

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	25	0	355	224	28
Future Vol, veh/h	0	25	0	355	224	28
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	27	0	386	243	30

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	137	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.94	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.32	-	-	-	-
Pot Cap-1 Maneuver	0	886	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	886	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.2	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	-	886	-	-
HCM Lane V/C Ratio	-	0.031	-	-
HCM Control Delay (s)	-	9.2	-	-
HCM Lane LOS	-	A	-	-
HCM 95th %tile Q(veh)	-	0.1	-	-

Intersection	
Int Delay, s/veh	2.9

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	122	33	148	150	5	548
Future Vol, veh/h	122	33	148	150	5	548
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	Free
Storage Length	-	-	-	-	0	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	88	88	86	86	88	88
Heavy Vehicles, %	5	21	21	6	2	6
Mvmt Flow	139	38	172	174	6	623

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	177	0	676	-
Stage 1	-	-	-	-	158	-
Stage 2	-	-	-	-	518	-
Critical Hdwy	-	-	4.31	-	6.42	-
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.389	-	3.518	-
Pot Cap-1 Maneuver	-	-	1292	-	419	0
Stage 1	-	-	-	-	871	0
Stage 2	-	-	-	-	598	0
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1292	-	357	-
Mov Cap-2 Maneuver	-	-	-	-	357	-
Stage 1	-	-	-	-	871	-
Stage 2	-	-	-	-	510	-

Approach	EB	WB	NB
HCM Control Delay, s	0	4.1	15.2
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	357	-	-	-	1292	-
HCM Lane V/C Ratio	0.016	-	-	-	0.133	-
HCM Control Delay (s)	15.2	0	-	-	8.2	0
HCM Lane LOS	C	A	-	-	A	A
HCM 95th %tile Q(veh)	0	-	-	-	0.5	-

Intersection						
Int Delay, s/veh	0.1					

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	10	655	291	881	0	0
Future Vol, veh/h	10	655	291	881	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	Yield	-	None
Storage Length	-	-	-	0	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	89	89	92	92	92	92
Heavy Vehicles, %	11	6	12	6	2	2
Mvmt Flow	11	736	316	958	0	0

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	316	0	-	0	-	316
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	4.265	-	-	-	-	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	2.3045	-	-	-	-	3.319
Pot Cap-1 Maneuver	1187	-	-	-	0	724
Stage 1	-	-	-	-	0	-
Stage 2	-	-	-	-	0	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1187	-	-	-	-	724
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	0.2	0	0
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1187	-	-	-	-
HCM Lane V/C Ratio	0.009	-	-	-	-
HCM Control Delay (s)	8.1	0.1	-	-	0
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	-

Intersection	
Int Delay, s/veh	2.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	645	0	0	1141	31	168
Future Vol, veh/h	645	0	0	1141	31	168
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	Stop
Storage Length	-	-	-	-	0	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	89	89	92	92	75	75
Heavy Vehicles, %	6	6	12	12	10	22
Mvmt Flow	725	0	0	1240	41	224

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	-	-	-	1345	363
Stage 1	-	-	-	-	725	-
Stage 2	-	-	-	-	620	-
Critical Hdwy	-	-	-	-	7	7.34
Critical Hdwy Stg 1	-	-	-	-	6	-
Critical Hdwy Stg 2	-	-	-	-	6	-
Follow-up Hdwy	-	-	-	-	3.6	3.52
Pot Cap-1 Maneuver	-	0	0	-	133	580
Stage 1	-	0	0	-	420	-
Stage 2	-	0	0	-	477	-
Platoon blocked, %	-			-		
Mov Cap-1 Maneuver	-	-	-	-	133	580
Mov Cap-2 Maneuver	-	-	-	-	133	-
Stage 1	-	-	-	-	420	-
Stage 2	-	-	-	-	477	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	19.6
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	WBT
Capacity (veh/h)	133	580	-	-
HCM Lane V/C Ratio	0.311	0.386	-	-
HCM Control Delay (s)	43.8	15.1	-	-
HCM Lane LOS	E	C	-	-
HCM 95th %tile Q(veh)	1.2	1.8	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	180	549	93	56	940	69	74	3	31	54	3	110
Future Volume (veh/h)	180	549	93	56	940	69	74	3	31	54	3	110
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1267	1774	1900	1827	1764	1900	1900	1835	1900	1900	1136	1900
Adj Flow Rate, veh/h	207	631	107	63	1056	78	84	3	35	61	3	125
Adj No. of Lanes	1	2	0	1	2	0	0	1	0	0	1	0
Peak Hour Factor	0.87	0.87	0.87	0.89	0.89	0.89	0.88	0.88	0.88	0.88	0.88	0.88
Percent Heavy Veh, %	50	8	8	4	5	5	33	33	33	33	33	33
Cap, veh/h	233	1548	262	87	1244	92	235	21	69	118	22	144
Arrive On Green	0.19	0.54	0.54	0.05	0.39	0.39	0.22	0.22	0.22	0.22	0.22	0.22
Sat Flow, veh/h	1206	2884	488	1740	3166	234	679	95	311	235	98	650
Grp Volume(v), veh/h	207	368	370	63	559	575	122	0	0	189	0	0
Grp Sat Flow(s),veh/h/ln	1206	1685	1687	1740	1676	1723	1085	0	0	983	0	0
Q Serve(g_s), s	12.0	9.3	9.3	2.6	21.8	21.8	0.0	0.0	0.0	5.9	0.0	0.0
Cycle Q Clear(g_c), s	12.0	9.3	9.3	2.6	21.8	21.8	7.2	0.0	0.0	13.1	0.0	0.0
Prop In Lane	1.00		0.29	1.00		0.14	0.69		0.29	0.32		0.66
Lane Grp Cap(c), veh/h	233	904	905	87	659	677	325	0	0	284	0	0
V/C Ratio(X)	0.89	0.41	0.41	0.73	0.85	0.85	0.38	0.00	0.00	0.67	0.00	0.00
Avail Cap(c_a), veh/h	269	904	905	194	702	722	402	0	0	338	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	28.2	9.9	9.9	33.7	19.9	19.9	24.3	0.0	0.0	26.7	0.0	0.0
Incr Delay (d2), s/veh	25.8	0.3	0.3	11.0	9.2	9.0	0.7	0.0	0.0	3.8	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.6	4.4	4.4	1.5	11.8	12.1	2.2	0.0	0.0	3.9	0.0	0.0
LnGrp Delay(d),s/veh	54.0	10.2	10.2	44.6	29.0	28.8	25.0	0.0	0.0	30.5	0.0	0.0
LnGrp LOS	D	B	B	D	C	C	C			C		
Approach Vol, veh/h		945			1197			122			189	
Approach Delay, s/veh		19.8			29.8			25.0			30.5	
Approach LOS		B			C			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		20.8	7.6	43.5		20.8	17.9	33.1
Change Period (Y+Rc), s		4.9	4.0	4.9		4.9	4.0	4.9
Max Green Setting (Gmax), s		20.1	8.0	38.1		20.1	16.0	30.1
Max Q Clear Time (g_c+I1), s		9.2	4.6	11.3		15.1	14.0	23.8
Green Ext Time (p_c), s		1.4	0.0	13.0		0.8	0.1	4.4

Intersection Summary		
HCM 2010 Ctrl Delay		25.7
HCM 2010 LOS		C

Lane Group	EBL	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	207	738	63	1134	122	189
v/c Ratio	0.79	0.38	0.35	0.84	0.58	0.75
Control Delay	51.4	10.1	37.6	27.1	34.0	30.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	51.4	10.1	37.6	27.1	34.0	30.8
Queue Length 50th (ft)	86	90	26	221	40	29
Queue Length 95th (ft)	#209	156	67	#395	88	96
Internal Link Dist (ft)		470		581	767	71
Turn Bay Length (ft)	260		260			
Base Capacity (vph)	283	1963	204	1477	338	348
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.73	0.38	0.31	0.77	0.36	0.54

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	73	444	135	11	802	98	207	184	9	47	137	65
Future Volume (veh/h)	73	444	135	11	802	98	207	184	9	47	137	65
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1759	1712	1881	1900	1829	1900	1792	1863	1900	1810	1881	1610
Adj Flow Rate, veh/h	79	483	147	13	944	115	216	192	0	59	171	0
Adj No. of Lanes	1	2	1	1	2	0	1	2	1	1	2	1
Peak Hour Factor	0.92	0.92	0.92	0.85	0.85	0.85	0.96	0.96	0.96	0.80	0.80	0.80
Percent Heavy Veh, %	8	11	1	0	4	4	6	2	0	5	1	18
Cap, veh/h	99	1448	712	29	1254	153	263	731	334	88	370	142
Arrive On Green	0.06	0.45	0.45	0.02	0.40	0.40	0.15	0.21	0.00	0.05	0.10	0.00
Sat Flow, veh/h	1675	3252	1599	1810	3119	380	1707	3539	1615	1723	3574	1369
Grp Volume(v), veh/h	79	483	147	13	526	533	216	192	0	59	171	0
Grp Sat Flow(s),veh/h/ln	1675	1626	1599	1810	1737	1762	1707	1770	1615	1723	1787	1369
Q Serve(g_s), s	2.9	6.1	3.6	0.5	16.4	16.4	7.8	2.9	0.0	2.1	2.9	0.0
Cycle Q Clear(g_c), s	2.9	6.1	3.6	0.5	16.4	16.4	7.8	2.9	0.0	2.1	2.9	0.0
Prop In Lane	1.00		1.00	1.00		0.22	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	99	1448	712	29	698	708	263	731	334	88	370	142
V/C Ratio(X)	0.80	0.33	0.21	0.45	0.75	0.75	0.82	0.26	0.00	0.67	0.46	0.00
Avail Cap(c_a), veh/h	212	1546	760	229	826	837	377	1458	666	218	1134	434
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	29.4	11.4	10.7	30.9	16.2	16.2	25.9	21.1	0.0	29.5	26.7	0.0
Incr Delay (d2), s/veh	13.3	0.1	0.1	10.3	3.3	3.2	9.3	0.2	0.0	8.6	0.9	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.7	2.8	1.6	0.3	8.4	8.5	4.3	1.4	0.0	1.2	1.4	0.0
LnGrp Delay(d),s/veh	42.7	11.6	10.9	41.1	19.5	19.5	35.2	21.3	0.0	38.1	27.6	0.0
LnGrp LOS	D	B	B	D	B	B	D	C		D	C	
Approach Vol, veh/h		709			1072			408			230	
Approach Delay, s/veh		14.9			19.8			28.7			30.3	
Approach LOS		B			B			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	7.2	18.0	5.0	33.1	13.8	11.5	7.8	30.4
Change Period (Y+Rc), s	4.0	4.9	4.0	4.9	4.0	4.9	4.0	4.9
Max Green Setting (Gmax), s	8.0	26.1	8.0	30.1	14.0	20.1	8.0	30.1
Max Q Clear Time (g_c+I1), s	4.1	4.9	2.5	8.1	9.8	4.9	4.9	18.4
Green Ext Time (p_c), s	0.0	1.9	0.0	10.3	0.2	1.7	0.0	7.0

Intersection Summary	
HCM 2010 Ctrl Delay	20.8
HCM 2010 LOS	C

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	79	483	147	13	1059	216	192	9	59	171	81
v/c Ratio	0.46	0.31	0.17	0.08	0.81	0.70	0.20	0.02	0.35	0.39	0.26
Control Delay	43.5	13.4	2.7	35.5	26.9	44.9	25.6	0.1	39.8	34.5	2.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	43.5	13.4	2.7	35.5	26.9	44.9	25.6	0.1	39.8	34.5	2.0
Queue Length 50th (ft)	37	64	0	6	236	101	43	0	28	42	0
Queue Length 95th (ft)	82	132	28	21	302	#207	72	0	57	63	0
Internal Link Dist (ft)		581			1146		716			862	
Turn Bay Length (ft)	220		290	270		200		80	255		175
Base Capacity (vph)	188	1675	905	203	1457	335	1299	669	193	1010	507
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.42	0.29	0.16	0.06	0.73	0.64	0.15	0.01	0.31	0.17	0.16

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Intersection	
Int Delay, s/veh	0.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	162	3	8	153	2	2	0	18	1	0	0
Future Vol, veh/h	0	162	3	8	153	2	2	0	18	1	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	82	82	82	81	81	81	88	88	88	88	88	88
Heavy Vehicles, %	10	10	10	10	10	10	10	10	10	10	10	10
Mvmt Flow	0	198	4	10	189	2	2	0	20	1	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	191	0	0	202	0	0	410	411	200	420	412	190
Stage 1	-	-	-	-	-	-	200	200	-	210	210	-
Stage 2	-	-	-	-	-	-	210	211	-	210	202	-
Critical Hdwy	4.2	-	-	4.2	-	-	7.2	6.6	6.3	7.2	6.6	6.3
Critical Hdwy Stg 1	-	-	-	-	-	-	6.2	5.6	-	6.2	5.6	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.2	5.6	-	6.2	5.6	-
Follow-up Hdwy	2.29	-	-	2.29	-	-	3.59	4.09	3.39	3.59	4.09	3.39
Pot Cap-1 Maneuver	1336	-	-	1323	-	-	538	519	821	530	518	832
Stage 1	-	-	-	-	-	-	784	721	-	774	714	-
Stage 2	-	-	-	-	-	-	774	713	-	774	719	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1336	-	-	1323	-	-	535	515	821	514	514	832
Mov Cap-2 Maneuver	-	-	-	-	-	-	535	515	-	514	514	-
Stage 1	-	-	-	-	-	-	784	721	-	774	708	-
Stage 2	-	-	-	-	-	-	768	707	-	755	719	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.4	9.8	12
HCM LOS			A	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	779	1336	-	-	1323	-	-	514
HCM Lane V/C Ratio	0.029	-	-	-	0.007	-	-	0.002
HCM Control Delay (s)	9.8	0	-	-	7.7	0	-	12
HCM Lane LOS	A	A	-	-	A	A	-	B
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0

Intersection	
Int Delay, s/veh	3.9

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	29	2	13	8	2	22
Future Vol, veh/h	29	2	13	8	2	22
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	1	-	0	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	32	2	14	9	2	24

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	34	0	70	33
Stage 1	-	-	-	-	33	-
Stage 2	-	-	-	-	37	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1578	-	934	1041
Stage 1	-	-	-	-	989	-
Stage 2	-	-	-	-	985	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1578	-	926	1041
Mov Cap-2 Maneuver	-	-	-	-	926	-
Stage 1	-	-	-	-	989	-
Stage 2	-	-	-	-	976	-

Approach	EB	WB	NB
HCM Control Delay, s	0	4.5	8.5
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	926	1041	-	-	1578	-
HCM Lane V/C Ratio	0.002	0.023	-	-	0.009	-
HCM Control Delay (s)	8.9	8.5	-	-	7.3	-
HCM Lane LOS	A	A	-	-	A	-
HCM 95th %tile Q(veh)	0	0.1	-	-	0	-

Intersection	
Int Delay, s/veh	0.9

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	28	23	7	313	486	14
Future Vol, veh/h	28	23	7	313	486	14
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	300	-	-	200
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	88	88	79	79	88	88
Heavy Vehicles, %	0	10	100	6	2	100
Mvmt Flow	32	26	9	396	552	16

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	768	276	568	0	-	0
Stage 1	552	-	-	-	-	-
Stage 2	216	-	-	-	-	-
Critical Hdwy	6.8	7.1	6.1	-	-	-
Critical Hdwy Stg 1	5.8	-	-	-	-	-
Critical Hdwy Stg 2	5.8	-	-	-	-	-
Follow-up Hdwy	3.5	3.4	3.2	-	-	-
Pot Cap-1 Maneuver	342	698	547	-	-	-
Stage 1	546	-	-	-	-	-
Stage 2	805	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	337	698	547	-	-	-
Mov Cap-2 Maneuver	337	-	-	-	-	-
Stage 1	537	-	-	-	-	-
Stage 2	805	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	13.9	0.3	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	547	-	337	698	-	-
HCM Lane V/C Ratio	0.016	-	0.094	0.037	-	-
HCM Control Delay (s)	11.7	-	16.8	10.4	-	-
HCM Lane LOS	B	-	C	B	-	-
HCM 95th %tile Q(veh)	0	-	0.3	0.1	-	-

Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	28	0	529	605	31
Future Vol, veh/h	0	28	0	529	605	31
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	30	0	575	658	34

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	346	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.94	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.32	-	-	-	-
Pot Cap-1 Maneuver	0	650	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	650	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10.8	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	-	650	-	-
HCM Lane V/C Ratio	-	0.047	-	-
HCM Control Delay (s)	-	10.8	-	-
HCM Lane LOS	-	B	-	-
HCM 95th %tile Q(veh)	-	0.1	-	-

Intersection	
Int Delay, s/veh	3.5

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	136	39	175	171	20	788
Future Vol, veh/h	136	39	175	171	20	788
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	Free
Storage Length	-	-	-	-	0	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	88	88	82	82	88	88
Heavy Vehicles, %	7	8	23	10	0	3
Mvmt Flow	155	44	213	209	23	895

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	199	0	812	-
Stage 1	-	-	-	-	177	-
Stage 2	-	-	-	-	635	-
Critical Hdwy	-	-	4.33	-	6.4	-
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.407	-	3.5	-
Pot Cap-1 Maneuver	-	-	1257	-	351	0
Stage 1	-	-	-	-	859	0
Stage 2	-	-	-	-	532	0
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1257	-	284	-
Mov Cap-2 Maneuver	-	-	-	-	284	-
Stage 1	-	-	-	-	859	-
Stage 2	-	-	-	-	430	-

Approach	EB	WB	NB
HCM Control Delay, s	0	4.3	18.8
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	284	-	-	-	1257	-
HCM Lane V/C Ratio	0.08	-	-	-	0.17	-
HCM Control Delay (s)	18.8	0	-	-	8.4	0
HCM Lane LOS	C	A	-	-	A	A
HCM 95th %tile Q(veh)	0.3	-	-	-	0.6	-

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	8	896	364	565	0	0
Future Vol, veh/h	8	896	364	565	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	Yield	-	None
Storage Length	-	-	-	0	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	91	91	87	87	92	92
Heavy Vehicles, %	13	4	14	4	2	2
Mvmt Flow	9	985	418	649	0	0

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	418	0	-	0	-	418
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	4.295	-	-	-	-	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	2.3235	-	-	-	-	3.319
Pot Cap-1 Maneuver	1074	-	-	-	0	634
Stage 1	-	-	-	-	0	-
Stage 2	-	-	-	-	0	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1074	-	-	-	-	634
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	0.2	0	0
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1074	-	-	-	-
HCM Lane V/C Ratio	0.008	-	-	-	-
HCM Control Delay (s)	8.4	0.1	-	-	0
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	-

Intersection	
Int Delay, s/veh	8.9

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	896	0	0	851	78	296
Future Vol, veh/h	896	0	0	851	78	296
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	Stop
Storage Length	-	-	-	-	0	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	91	92	92	87	79	79
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	985	0	0	978	99	375

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	-	-	-	1474	493
Stage 1	-	-	-	-	985	-
Stage 2	-	-	-	-	489	-
Critical Hdwy	-	-	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	-	-	3.52	3.32
Pot Cap-1 Maneuver	-	0	0	-	117	522
Stage 1	-	0	0	-	322	-
Stage 2	-	0	0	-	582	-
Platoon blocked, %	-			-		
Mov Cap-1 Maneuver	-	-	-	-	117	522
Mov Cap-2 Maneuver	-	-	-	-	117	-
Stage 1	-	-	-	-	322	-
Stage 2	-	-	-	-	582	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	45.6
HCM LOS			E

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	WBT
Capacity (veh/h)	117	522	-	-
HCM Lane V/C Ratio	0.844	0.718	-	-
HCM Control Delay (s)	114.3	27.5	-	-
HCM Lane LOS	F	D	-	-
HCM 95th %tile Q(veh)	5	5.8	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	215	858	106	69	583	67	84	3	73	62	3	142
Future Volume (veh/h)	215	858	106	69	583	67	84	3	73	62	3	142
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1329	1819	1900	1881	1782	1900	1900	1867	1900	1900	1293	1900
Adj Flow Rate, veh/h	265	1059	131	78	662	76	114	4	99	70	3	161
Adj No. of Lanes	1	2	0	1	2	0	0	1	0	0	1	0
Peak Hour Factor	0.81	0.81	0.81	0.88	0.88	0.88	0.74	0.74	0.74	0.88	0.88	0.88
Percent Heavy Veh, %	43	5	5	1	5	5	67	67	67	0	0	0
Cap, veh/h	297	1371	169	112	826	95	245	35	154	145	26	196
Arrive On Green	0.23	0.44	0.44	0.06	0.27	0.27	0.25	0.25	0.25	0.25	0.25	0.25
Sat Flow, veh/h	1265	3097	383	1792	3061	351	588	139	609	247	104	776
Grp Volume(v), veh/h	265	590	600	78	366	372	217	0	0	234	0	0
Grp Sat Flow(s),veh/h/ln	1265	1728	1752	1792	1693	1720	1335	0	0	1127	0	0
Q Serve(g_s), s	11.5	16.4	16.5	2.4	11.4	11.5	0.0	0.0	0.0	2.6	0.0	0.0
Cycle Q Clear(g_c), s	11.5	16.4	16.5	2.4	11.4	11.5	8.1	0.0	0.0	10.7	0.0	0.0
Prop In Lane	1.00		0.22	1.00		0.20	0.53		0.46	0.30		0.69
Lane Grp Cap(c), veh/h	297	765	775	112	457	464	433	0	0	367	0	0
V/C Ratio(X)	0.89	0.77	0.77	0.70	0.80	0.80	0.50	0.00	0.00	0.64	0.00	0.00
Avail Cap(c_a), veh/h	312	765	775	252	539	548	549	0	0	453	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	21.0	13.4	13.4	26.1	19.3	19.3	18.7	0.0	0.0	19.8	0.0	0.0
Incr Delay (d2), s/veh	25.1	4.9	4.9	7.6	7.2	7.2	0.9	0.0	0.0	2.1	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.0	8.7	8.9	1.4	6.2	6.3	3.1	0.0	0.0	3.6	0.0	0.0
LnGrp Delay(d),s/veh	46.1	18.3	18.3	33.8	26.6	26.5	19.6	0.0	0.0	21.9	0.0	0.0
LnGrp LOS	D	B	B	C	C	C	B			C		
Approach Vol, veh/h		1455			816			217			234	
Approach Delay, s/veh		23.4			27.2			19.6			21.9	
Approach LOS		C			C			B			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		19.2	7.5	30.0		19.2	17.3	20.2
Change Period (Y+Rc), s		4.9	4.0	4.9		4.9	4.0	4.9
Max Green Setting (Gmax), s		19.1	8.0	24.1		19.1	14.0	18.1
Max Q Clear Time (g_c+I1), s		10.1	4.4	18.5		12.7	13.5	13.5
Green Ext Time (p_c), s		2.0	0.0	4.3		1.6	0.0	1.9

Intersection Summary	
HCM 2010 Ctrl Delay	24.1
HCM 2010 LOS	C

Lane Group	EBL	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	265	1190	78	739	217	234
v/c Ratio	0.84	0.71	0.35	0.76	0.71	0.70
Control Delay	50.3	18.0	29.3	25.1	27.8	19.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	50.3	18.0	29.3	25.1	27.8	19.3
Queue Length 50th (ft)	90	185	25	116	48	22
Queue Length 95th (ft)	#204	#277	64	#192	81	83
Internal Link Dist (ft)		470		581	767	71
Turn Bay Length (ft)	260		260			
Base Capacity (vph)	315	1683	255	1091	446	438
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.84	0.71	0.31	0.68	0.49	0.53

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	199	600	184	18	481	87	159	243	11	139	380	114
Future Volume (veh/h)	199	600	184	18	481	87	159	243	11	139	380	114
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1681	1827	1900	1900	1819	1900	1810	1881	1900	1845	1900	1759
Adj Flow Rate, veh/h	246	741	227	19	517	94	196	300	0	162	442	0
Adj No. of Lanes	1	2	1	1	2	0	1	2	1	1	2	1
Peak Hour Factor	0.81	0.81	0.81	0.93	0.93	0.93	0.81	0.81	0.81	0.86	0.86	0.86
Percent Heavy Veh, %	13	4	0	0	4	4	5	1	0	3	0	8
Cap, veh/h	288	1397	650	40	715	129	238	752	340	201	674	279
Arrive On Green	0.18	0.40	0.40	0.02	0.24	0.24	0.14	0.21	0.00	0.11	0.19	0.00
Sat Flow, veh/h	1601	3471	1615	1810	2924	529	1723	3574	1615	1757	3610	1495
Grp Volume(v), veh/h	246	741	227	19	305	306	196	300	0	162	442	0
Grp Sat Flow(s),veh/h/ln	1601	1736	1615	1810	1728	1725	1723	1787	1615	1757	1805	1495
Q Serve(g_s), s	10.6	11.5	6.9	0.7	11.5	11.6	7.9	5.1	0.0	6.4	8.1	0.0
Cycle Q Clear(g_c), s	10.6	11.5	6.9	0.7	11.5	11.6	7.9	5.1	0.0	6.4	8.1	0.0
Prop In Lane	1.00		1.00	1.00		0.31	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	288	1397	650	40	423	422	238	752	340	201	674	279
V/C Ratio(X)	0.85	0.53	0.35	0.48	0.72	0.73	0.82	0.40	0.00	0.81	0.66	0.00
Avail Cap(c_a), veh/h	405	1431	666	204	469	468	339	1202	543	272	1061	440
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	28.2	16.1	14.8	34.4	24.6	24.7	29.8	24.2	0.0	30.7	26.8	0.0
Incr Delay (d2), s/veh	11.8	0.4	0.3	8.6	4.8	5.0	10.4	0.3	0.0	11.9	1.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.6	5.5	3.1	0.5	6.1	6.1	4.4	2.6	0.0	3.8	4.1	0.0
LnGrp Delay(d),s/veh	40.0	16.5	15.1	43.0	29.4	29.6	40.2	24.5	0.0	42.6	27.9	0.0
LnGrp LOS	D	B	B	D	C	C	D	C		D	C	
Approach Vol, veh/h		1214			630			496			604	
Approach Delay, s/veh		21.0			29.9			30.7			31.8	
Approach LOS		C			C			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	12.1	19.9	5.6	33.5	13.8	18.2	16.8	22.3
Change Period (Y+Rc), s	4.0	4.9	4.0	4.9	4.0	4.9	4.0	4.9
Max Green Setting (Gmax), s	11.0	23.9	8.0	29.3	14.0	20.9	18.0	19.3
Max Q Clear Time (g_c+I1), s	8.4	7.1	2.7	13.5	9.9	10.1	12.6	13.6
Green Ext Time (p_c), s	0.1	3.9	0.0	7.8	0.2	3.2	0.3	3.8

Intersection Summary		
HCM 2010 Ctrl Delay		26.8
HCM 2010 LOS		C

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	246	741	227	19	611	196	300	14	162	442	133
v/c Ratio	0.77	0.51	0.28	0.13	0.80	0.72	0.38	0.03	0.71	0.63	0.31
Control Delay	49.9	20.8	4.2	39.7	39.1	50.6	28.4	0.1	54.2	34.6	4.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	49.9	20.8	4.2	39.7	39.1	50.6	28.4	0.1	54.2	34.6	4.6
Queue Length 50th (ft)	124	131	0	10	157	101	72	0	85	116	0
Queue Length 95th (ft)	#205	217	34	32	#253	#171	95	0	#174	155	23
Internal Link Dist (ft)		581			1146		698			854	
Turn Bay Length (ft)	220		290	270		200		80	255		175
Base Capacity (vph)	365	1469	814	183	845	306	1087	608	245	960	521
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.67	0.50	0.28	0.10	0.72	0.64	0.28	0.02	0.66	0.46	0.26

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Intersection	
Int Delay, s/veh	0.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	338	7	8	112	2	3	0	11	2	0	0
Future Vol, veh/h	0	338	7	8	112	2	3	0	11	2	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	87	87	87	84	84	84	88	88	88	88	88	88
Heavy Vehicles, %	7	7	7	7	7	7	7	7	7	7	7	7
Mvmt Flow	0	389	8	10	133	2	3	0	13	2	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	135	0	0	397	0	0	547	548	393	554	551	134
Stage 1	-	-	-	-	-	-	393	393	-	154	154	-
Stage 2	-	-	-	-	-	-	154	155	-	400	397	-
Critical Hdwy	4.17	-	-	4.17	-	-	7.17	6.57	6.27	7.17	6.57	6.27
Critical Hdwy Stg 1	-	-	-	-	-	-	6.17	5.57	-	6.17	5.57	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.17	5.57	-	6.17	5.57	-
Follow-up Hdwy	2.263	-	-	2.263	-	-	3.563	4.063	3.363	3.563	4.063	3.363
Pot Cap-1 Maneuver	1419	-	-	1135	-	-	440	437	645	435	435	902
Stage 1	-	-	-	-	-	-	622	597	-	837	761	-
Stage 2	-	-	-	-	-	-	837	760	-	616	595	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1419	-	-	1135	-	-	436	433	645	423	431	902
Mov Cap-2 Maneuver	-	-	-	-	-	-	436	433	-	423	431	-
Stage 1	-	-	-	-	-	-	622	597	-	837	753	-
Stage 2	-	-	-	-	-	-	829	752	-	604	595	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.5	11.3	13.6
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	585	1419	-	-	1135	-	-	423
HCM Lane V/C Ratio	0.027	-	-	-	0.008	-	-	0.005
HCM Control Delay (s)	11.3	0	-	-	8.2	0	-	13.6
HCM Lane LOS	B	A	-	-	A	A	-	B
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0

Intersection	
Int Delay, s/veh	5.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	10	22	68	10	3	16
Future Vol, veh/h	10	22	68	10	3	16
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	0	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	11	24	74	11	3	17

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	35	0	182	23
Stage 1	-	-	-	-	23	-
Stage 2	-	-	-	-	159	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1576	-	807	1054
Stage 1	-	-	-	-	1000	-
Stage 2	-	-	-	-	870	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1576	-	769	1054
Mov Cap-2 Maneuver	-	-	-	-	769	-
Stage 1	-	-	-	-	1000	-
Stage 2	-	-	-	-	829	-

Approach	EB	WB	NB
HCM Control Delay, s	0	6.4	8.7
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	996	-	-	1576	-
HCM Lane V/C Ratio	0.021	-	-	0.047	-
HCM Control Delay (s)	8.7	-	-	7.4	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0.1	-

Intersection	
Int Delay, s/veh	1.8

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	24	2	12	76	2	15
Future Vol, veh/h	24	2	12	76	2	15
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	1	-	0	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	26	2	13	83	2	16

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	28	0	136	27
Stage 1	-	-	-	-	27	-
Stage 2	-	-	-	-	109	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1585	-	857	1048
Stage 1	-	-	-	-	996	-
Stage 2	-	-	-	-	916	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1585	-	850	1048
Mov Cap-2 Maneuver	-	-	-	-	814	-
Stage 1	-	-	-	-	996	-
Stage 2	-	-	-	-	909	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1	8.6
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	814	1048	-	-	1585	-
HCM Lane V/C Ratio	0.003	0.016	-	-	0.008	-
HCM Control Delay (s)	9.4	8.5	-	-	7.3	-
HCM Lane LOS	A	A	-	-	A	-
HCM 95th %tile Q(veh)	0	0	-	-	0	-

Intersection	
Int Delay, s/veh	1.5

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	21	18	61	323	258	27
Future Vol, veh/h	21	18	61	323	258	27
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	300	-	-	200
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	88	88	88	88	94	94
Heavy Vehicles, %	50	50	22	3	6	20
Mvmt Flow	24	20	69	367	274	29

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	596	137	303	0	-	0
Stage 1	274	-	-	-	-	-
Stage 2	322	-	-	-	-	-
Critical Hdwy	7.8	7.9	4.54	-	-	-
Critical Hdwy Stg 1	6.8	-	-	-	-	-
Critical Hdwy Stg 2	6.8	-	-	-	-	-
Follow-up Hdwy	4	3.8	2.42	-	-	-
Pot Cap-1 Maneuver	338	753	1122	-	-	-
Stage 1	622	-	-	-	-	-
Stage 2	583	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	317	753	1122	-	-	-
Mov Cap-2 Maneuver	317	-	-	-	-	-
Stage 1	584	-	-	-	-	-
Stage 2	583	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	13.9	1.3	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	1122	-	317	753	-	-
HCM Lane V/C Ratio	0.062	-	0.075	0.027	-	-
HCM Control Delay (s)	8.4	-	17.3	9.9	-	-
HCM Lane LOS	A	-	C	A	-	-
HCM 95th %tile Q(veh)	0.2	-	0.2	0.1	-	-

Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	25	0	415	242	28
Future Vol, veh/h	0	25	0	415	242	28
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	27	0	451	263	30

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	147	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.94	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.32	-	-	-	-
Pot Cap-1 Maneuver	0	873	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	873	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.3	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	-	873	-	-
HCM Lane V/C Ratio	-	0.031	-	-
HCM Control Delay (s)	-	9.3	-	-
HCM Lane LOS	-	A	-	-
HCM 95th %tile Q(veh)	-	0.1	-	-

Intersection	
Int Delay, s/veh	2.9

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	127	33	154	152	5	592
Future Vol, veh/h	127	33	154	152	5	592
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	Free
Storage Length	-	-	-	-	0	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	88	88	86	86	88	88
Heavy Vehicles, %	5	21	21	6	2	6
Mvmt Flow	144	38	179	177	6	673

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	182	0	698	-
Stage 1	-	-	-	-	163	-
Stage 2	-	-	-	-	535	-
Critical Hdwy	-	-	4.31	-	6.42	-
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.389	-	3.518	-
Pot Cap-1 Maneuver	-	-	1287	-	407	0
Stage 1	-	-	-	-	866	0
Stage 2	-	-	-	-	587	0
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1287	-	344	-
Mov Cap-2 Maneuver	-	-	-	-	344	-
Stage 1	-	-	-	-	866	-
Stage 2	-	-	-	-	497	-

Approach	EB	WB	NB
HCM Control Delay, s	0	4.2	15.6
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	344	-	-	-	1287	-
HCM Lane V/C Ratio	0.017	-	-	-	0.139	-
HCM Control Delay (s)	15.6	0	-	-	8.2	0
HCM Lane LOS	C	A	-	-	A	A
HCM 95th %tile Q(veh)	0.1	-	-	-	0.5	-

Intersection						
Int Delay, s/veh	0.1					

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	10	704	305	902	0	0
Future Vol, veh/h	10	704	305	902	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	Yield	-	None
Storage Length	-	-	-	0	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	89	89	92	92	92	92
Heavy Vehicles, %	11	6	12	6	2	2
Mvmt Flow	11	791	332	980	0	0

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	332	0	-	0	-	332
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	4.265	-	-	-	-	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	2.3045	-	-	-	-	3.319
Pot Cap-1 Maneuver	1170	-	-	-	0	709
Stage 1	-	-	-	-	0	-
Stage 2	-	-	-	-	0	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1170	-	-	-	-	709
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	0.2	0	0
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1170	-	-	-	-
HCM Lane V/C Ratio	0.01	-	-	-	-
HCM Control Delay (s)	8.1	0.1	-	-	0
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	-

Intersection	
Int Delay, s/veh	2.7

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑			↑↑	↰	↱
Traffic Vol, veh/h	694	0	0	1170	31	189
Future Vol, veh/h	694	0	0	1170	31	189
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	Stop
Storage Length	-	-	-	-	0	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	89	89	92	92	75	75
Heavy Vehicles, %	6	6	12	12	10	22
Mvmt Flow	780	0	0	1272	41	252

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	-	-	-	1416	390
Stage 1	-	-	-	-	780	-
Stage 2	-	-	-	-	636	-
Critical Hdwy	-	-	-	-	7	7.34
Critical Hdwy Stg 1	-	-	-	-	6	-
Critical Hdwy Stg 2	-	-	-	-	6	-
Follow-up Hdwy	-	-	-	-	3.6	3.52
Pot Cap-1 Maneuver	-	0	0	-	119	555
Stage 1	-	0	0	-	392	-
Stage 2	-	0	0	-	468	-
Platoon blocked, %	-			-		
Mov Cap-1 Maneuver	-	-	-	-	119	555
Mov Cap-2 Maneuver	-	-	-	-	119	-
Stage 1	-	-	-	-	392	-
Stage 2	-	-	-	-	468	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	21.6
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	WBT
Capacity (veh/h)	119	555	-	-
HCM Lane V/C Ratio	0.347	0.454	-	-
HCM Control Delay (s)	50.6	16.8	-	-
HCM Lane LOS	F	C	-	-
HCM 95th %tile Q(veh)	1.4	2.3	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	180	618	94	57	968	69	75	3	32	54	3	110
Future Volume (veh/h)	180	618	94	57	968	69	75	3	32	54	3	110
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1267	1772	1900	1827	1766	1900	1900	1835	1900	1900	1136	1900
Adj Flow Rate, veh/h	207	710	108	64	1088	78	85	3	36	61	3	125
Adj No. of Lanes	1	2	0	1	2	0	0	1	0	0	1	0
Peak Hour Factor	0.87	0.87	0.87	0.89	0.89	0.89	0.88	0.88	0.88	0.88	0.88	0.88
Percent Heavy Veh, %	50	8	8	4	5	5	33	33	33	33	33	33
Cap, veh/h	233	1577	240	87	1253	90	233	21	70	118	22	144
Arrive On Green	0.19	0.54	0.54	0.05	0.39	0.39	0.22	0.22	0.22	0.22	0.22	0.22
Sat Flow, veh/h	1206	2932	446	1740	3175	228	676	95	315	236	98	652
Grp Volume(v), veh/h	207	408	410	64	574	592	124	0	0	189	0	0
Grp Sat Flow(s),veh/h/ln	1206	1684	1694	1740	1677	1725	1086	0	0	985	0	0
Q Serve(g_s), s	12.1	10.7	10.7	2.6	22.8	22.8	0.0	0.0	0.0	5.8	0.0	0.0
Cycle Q Clear(g_c), s	12.1	10.7	10.7	2.6	22.8	22.8	7.3	0.0	0.0	13.1	0.0	0.0
Prop In Lane	1.00		0.26	1.00		0.13	0.69		0.29	0.32		0.66
Lane Grp Cap(c), veh/h	233	906	911	87	662	681	324	0	0	284	0	0
V/C Ratio(X)	0.89	0.45	0.45	0.73	0.87	0.87	0.38	0.00	0.00	0.67	0.00	0.00
Avail Cap(c_a), veh/h	267	906	911	193	699	719	400	0	0	336	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	28.4	10.2	10.2	33.8	20.1	20.1	24.5	0.0	0.0	26.8	0.0	0.0
Incr Delay (d2), s/veh	26.1	0.4	0.3	11.3	10.9	10.7	0.7	0.0	0.0	3.9	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.7	5.0	5.0	1.5	12.5	12.9	2.2	0.0	0.0	3.9	0.0	0.0
LnGrp Delay(d),s/veh	54.4	10.5	10.5	45.1	31.0	30.8	25.3	0.0	0.0	30.7	0.0	0.0
LnGrp LOS	D	B	B	D	C	C	C			C		
Approach Vol, veh/h		1025			1230			124			189	
Approach Delay, s/veh		19.4			31.6			25.3			30.7	
Approach LOS		B			C			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		20.9	7.6	43.7		20.9	18.0	33.4
Change Period (Y+Rc), s		4.9	4.0	4.9		4.9	4.0	4.9
Max Green Setting (Gmax), s		20.1	8.0	38.1		20.1	16.0	30.1
Max Q Clear Time (g_c+I1), s		9.3	4.6	12.7		15.1	14.1	24.8
Green Ext Time (p_c), s		1.4	0.0	13.6		0.8	0.1	3.7

Intersection Summary		
HCM 2010 Ctrl Delay		26.4
HCM 2010 LOS		C

Lane Group	EBL	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	207	818	64	1166	124	189
v/c Ratio	0.79	0.42	0.36	0.86	0.60	0.75
Control Delay	52.3	10.6	37.9	27.9	34.3	31.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	52.3	10.6	37.9	27.9	34.3	31.0
Queue Length 50th (ft)	86	104	27	231	41	29
Queue Length 95th (ft)	#209	178	67	#414	89	96
Internal Link Dist (ft)		470		581	767	71
Turn Bay Length (ft)	260		260			
Base Capacity (vph)	280	1956	202	1459	335	345
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.74	0.42	0.32	0.80	0.37	0.55

Intersection Summary

\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	113	472	136	13	821	112	209	191	13	54	139	74
Future Volume (veh/h)	113	472	136	13	821	112	209	191	13	54	139	74
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1759	1712	1881	1900	1829	1900	1792	1863	1900	1810	1881	1610
Adj Flow Rate, veh/h	123	513	148	15	966	132	218	199	0	68	174	0
Adj No. of Lanes	1	2	1	1	2	0	2	2	1	1	2	1
Peak Hour Factor	0.92	0.92	0.92	0.85	0.85	0.85	0.96	0.96	0.96	0.80	0.80	0.80
Percent Heavy Veh, %	8	11	1	0	4	4	6	2	0	5	1	18
Cap, veh/h	155	1639	806	33	1321	180	315	515	235	94	376	144
Arrive On Green	0.09	0.50	0.50	0.02	0.43	0.43	0.09	0.15	0.00	0.05	0.11	0.00
Sat Flow, veh/h	1675	3252	1599	1810	3073	420	3312	3539	1615	1723	3574	1369
Grp Volume(v), veh/h	123	513	148	15	546	552	218	199	0	68	174	0
Grp Sat Flow(s),veh/h/ln	1675	1626	1599	1810	1738	1755	1656	1770	1615	1723	1787	1369
Q Serve(g_s), s	4.6	6.0	3.2	0.5	16.8	16.8	4.1	3.3	0.0	2.5	2.9	0.0
Cycle Q Clear(g_c), s	4.6	6.0	3.2	0.5	16.8	16.8	4.1	3.3	0.0	2.5	2.9	0.0
Prop In Lane	1.00		1.00	1.00		0.24	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	155	1639	806	33	747	754	315	515	235	94	376	144
V/C Ratio(X)	0.79	0.31	0.18	0.45	0.73	0.73	0.69	0.39	0.00	0.72	0.46	0.00
Avail Cap(c_a), veh/h	235	1781	875	226	924	933	413	1165	532	215	1176	450
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	28.5	9.4	8.7	31.2	15.2	15.2	28.1	24.8	0.0	29.8	27.0	0.0
Incr Delay (d2), s/veh	10.2	0.1	0.1	9.4	2.3	2.3	3.3	0.5	0.0	9.9	0.9	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.6	2.7	1.5	0.3	8.4	8.5	2.0	1.6	0.0	1.4	1.5	0.0
LnGrp Delay(d),s/veh	38.7	9.5	8.8	40.5	17.5	17.5	31.4	25.3	0.0	39.7	27.9	0.0
LnGrp LOS	D	A	A	D	B	B	C	C		D	C	
Approach Vol, veh/h		784			1113			417			242	
Approach Delay, s/veh		13.9			17.8			28.5			31.2	
Approach LOS		B			B			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	7.5	14.2	5.2	37.2	10.1	11.6	9.9	32.5
Change Period (Y+Rc), s	4.0	4.9	4.0	4.9	4.0	4.9	4.0	4.9
Max Green Setting (Gmax), s	8.0	21.1	8.0	35.1	8.0	21.1	9.0	34.1
Max Q Clear Time (g_c+I1), s	4.5	5.3	2.5	8.0	6.1	4.9	6.6	18.8
Green Ext Time (p_c), s	0.0	1.8	0.0	12.0	0.1	1.8	0.1	8.8

Intersection Summary	
HCM 2010 Ctrl Delay	19.6
HCM 2010 LOS	B

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	123	513	148	15	1098	218	199	14	68	174	93
v/c Ratio	0.62	0.29	0.16	0.10	0.80	0.61	0.33	0.04	0.40	0.38	0.33
Control Delay	48.9	10.5	2.8	35.3	24.2	41.3	31.7	0.2	40.7	33.1	7.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	48.9	10.5	2.8	35.3	24.2	41.3	31.7	0.2	40.7	33.1	7.4
Queue Length 50th (ft)	57	56	0	7	223	52	46	0	31	40	0
Queue Length 95th (ft)	#137	125	31	23	288	#99	80	0	63	63	18
Internal Link Dist (ft)		581			1146		716			862	
Turn Bay Length (ft)	220		290	270		200		80	255		175
Base Capacity (vph)	206	1800	951	198	1607	362	1025	552	188	1035	481
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.60	0.28	0.16	0.08	0.68	0.60	0.19	0.03	0.36	0.17	0.19

Intersection Summary

\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Intersection	
Int Delay, s/veh	0.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	167	3	8	155	2	2	0	18	1	0	0
Future Vol, veh/h	0	167	3	8	155	2	2	0	18	1	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	82	82	82	81	81	81	88	88	88	88	88	88
Heavy Vehicles, %	10	10	10	10	10	10	10	10	10	10	10	10
Mvmt Flow	0	204	4	10	191	2	2	0	20	1	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	193	0	0	208	0	0	418	419	206	428	420	192
Stage 1	-	-	-	-	-	-	206	206	-	212	212	-
Stage 2	-	-	-	-	-	-	212	213	-	216	208	-
Critical Hdwy	4.2	-	-	4.2	-	-	7.2	6.6	6.3	7.2	6.6	6.3
Critical Hdwy Stg 1	-	-	-	-	-	-	6.2	5.6	-	6.2	5.6	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.2	5.6	-	6.2	5.6	-
Follow-up Hdwy	2.29	-	-	2.29	-	-	3.59	4.09	3.39	3.59	4.09	3.39
Pot Cap-1 Maneuver	1334	-	-	1317	-	-	532	513	815	523	512	830
Stage 1	-	-	-	-	-	-	778	717	-	772	712	-
Stage 2	-	-	-	-	-	-	772	711	-	768	715	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1334	-	-	1317	-	-	528	508	815	506	507	830
Mov Cap-2 Maneuver	-	-	-	-	-	-	528	508	-	506	507	-
Stage 1	-	-	-	-	-	-	778	717	-	772	706	-
Stage 2	-	-	-	-	-	-	765	705	-	749	715	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.4	9.8	12.1
HCM LOS			A	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	773	1334	-	-	1317	-	-	506
HCM Lane V/C Ratio	0.029	-	-	-	0.007	-	-	0.002
HCM Control Delay (s)	9.8	0	-	-	7.8	0	-	12.1
HCM Lane LOS	A	A	-	-	A	A	-	B
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0

Intersection						
Int Delay, s/veh	6					

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	31	5	19	10	15	74
Future Vol, veh/h	31	5	19	10	15	74
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	0	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	34	5	21	11	16	80

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	39	0	90	37
Stage 1	-	-	-	-	37	-
Stage 2	-	-	-	-	53	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1571	-	910	1035
Stage 1	-	-	-	-	985	-
Stage 2	-	-	-	-	970	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1571	-	898	1035
Mov Cap-2 Maneuver	-	-	-	-	898	-
Stage 1	-	-	-	-	985	-
Stage 2	-	-	-	-	957	-

Approach	EB	WB	NB
HCM Control Delay, s	0	4.8	8.9
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	1009	-	-	1571	-
HCM Lane V/C Ratio	0.096	-	-	0.013	-
HCM Control Delay (s)	8.9	-	-	7.3	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	0.3	-	-	0	-

Intersection	
Int Delay, s/veh	1.8

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	103	2	13	27	2	22
Future Vol, veh/h	103	2	13	27	2	22
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	1	-	0	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	112	2	14	29	2	24

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	114	0	170	113
Stage 1	-	-	-	-	113	-
Stage 2	-	-	-	-	57	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1475	-	820	940
Stage 1	-	-	-	-	912	-
Stage 2	-	-	-	-	966	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1475	-	813	940
Mov Cap-2 Maneuver	-	-	-	-	796	-
Stage 1	-	-	-	-	912	-
Stage 2	-	-	-	-	957	-

Approach	EB	WB	NB
HCM Control Delay, s	0	2.4	9
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	796	940	-	-	1475	-
HCM Lane V/C Ratio	0.003	0.025	-	-	0.01	-
HCM Control Delay (s)	9.5	8.9	-	-	7.5	-
HCM Lane LOS	A	A	-	-	A	-
HCM 95th %tile Q(veh)	0	0.1	-	-	0	-

Intersection	
Int Delay, s/veh	2.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	49	76	22	324	495	18
Future Vol, veh/h	49	76	22	324	495	18
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	300	-	-	200
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	88	88	79	79	88	88
Heavy Vehicles, %	0	10	100	6	2	100
Mvmt Flow	56	86	28	410	563	20

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	824	282	583	0	-	0
Stage 1	563	-	-	-	-	-
Stage 2	261	-	-	-	-	-
Critical Hdwy	6.8	7.1	6.1	-	-	-
Critical Hdwy Stg 1	5.8	-	-	-	-	-
Critical Hdwy Stg 2	5.8	-	-	-	-	-
Follow-up Hdwy	3.5	3.4	3.2	-	-	-
Pot Cap-1 Maneuver	315	692	537	-	-	-
Stage 1	539	-	-	-	-	-
Stage 2	765	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	299	692	537	-	-	-
Mov Cap-2 Maneuver	299	-	-	-	-	-
Stage 1	511	-	-	-	-	-
Stage 2	765	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	14.4	0.8	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	537	-	299	692	-	-
HCM Lane V/C Ratio	0.052	-	0.186	0.125	-	-
HCM Control Delay (s)	12.1	-	19.8	10.9	-	-
HCM Lane LOS	B	-	C	B	-	-
HCM 95th %tile Q(veh)	0.2	-	0.7	0.4	-	-

Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	28	0	555	667	31
Future Vol, veh/h	0	28	0	555	667	31
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	30	0	603	725	34

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	380	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.94	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.32	-	-	-	-
Pot Cap-1 Maneuver	0	618	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	618	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	11.1	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	-	618	-	-
HCM Lane V/C Ratio	-	0.049	-	-
HCM Control Delay (s)	-	11.1	-	-
HCM Lane LOS	-	B	-	-
HCM 95th %tile Q(veh)	-	0.2	-	-

Intersection	
Int Delay, s/veh	3.7

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	139	39	196	177	20	807
Future Vol, veh/h	139	39	196	177	20	807
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	Free
Storage Length	-	-	-	-	0	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	88	88	82	82	88	88
Heavy Vehicles, %	7	8	23	10	0	3
Mvmt Flow	158	44	239	216	23	917

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	202	0	874	-
Stage 1	-	-	-	-	180	-
Stage 2	-	-	-	-	694	-
Critical Hdwy	-	-	4.33	-	6.4	-
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.407	-	3.5	-
Pot Cap-1 Maneuver	-	-	1254	-	323	0
Stage 1	-	-	-	-	856	0
Stage 2	-	-	-	-	499	0
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1254	-	253	-
Mov Cap-2 Maneuver	-	-	-	-	253	-
Stage 1	-	-	-	-	856	-
Stage 2	-	-	-	-	391	-

Approach	EB	WB	NB
HCM Control Delay, s	0	4.5	20.6
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	253	-	-	-	1254	-
HCM Lane V/C Ratio	0.09	-	-	-	0.191	-
HCM Control Delay (s)	20.6	0	-	-	8.5	0
HCM Lane LOS	C	A	-	-	A	A
HCM 95th %tile Q(veh)	0.3	-	-	-	0.7	-

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	8	918	391	611	0	0
Future Vol, veh/h	8	918	391	611	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	Yield	-	None
Storage Length	-	-	-	0	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	91	91	87	87	92	92
Heavy Vehicles, %	13	4	14	4	2	2
Mvmt Flow	9	1009	449	702	0	0

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	449	0	-	0	-	449
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	4.295	-	-	-	-	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	2.3235	-	-	-	-	3.319
Pot Cap-1 Maneuver	1045	-	-	-	0	609
Stage 1	-	-	-	-	0	-
Stage 2	-	-	-	-	0	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1045	-	-	-	-	609
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	0.2	0	0
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1045	-	-	-	-
HCM Lane V/C Ratio	0.008	-	-	-	-
HCM Control Delay (s)	8.5	0.1	-	-	0
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	-

Intersection	
Int Delay, s/veh	10.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑			↑↑	↰	↱
Traffic Vol, veh/h	918	0	0	923	78	305
Future Vol, veh/h	918	0	0	923	78	305
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	Stop
Storage Length	-	-	-	-	0	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	91	92	92	87	79	79
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1009	0	0	1061	99	386

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	-	-	-	1540	505
Stage 1	-	-	-	-	1009	-
Stage 2	-	-	-	-	531	-
Critical Hdwy	-	-	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	-	-	3.52	3.32
Pot Cap-1 Maneuver	-	0	0	-	106	512
Stage 1	-	0	0	-	313	-
Stage 2	-	0	0	-	554	-
Platoon blocked, %	-			-		
Mov Cap-1 Maneuver	-	-	-	-	106	512
Mov Cap-2 Maneuver	-	-	-	-	106	-
Stage 1	-	-	-	-	313	-
Stage 2	-	-	-	-	554	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	53.6
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	WBT
Capacity (veh/h)	106	512	-	-
HCM Lane V/C Ratio	0.931	0.754	-	-
HCM Control Delay (s)	143.8	30.5	-	-
HCM Lane LOS	F	D	-	-
HCM 95th %tile Q(veh)	5.6	6.5	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	215	888	107	70	654	67	85	3	74	62	3	142
Future Volume (veh/h)	215	888	107	70	654	67	85	3	74	62	3	142
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1329	1819	1900	1881	1784	1900	1900	1867	1900	1900	1293	1900
Adj Flow Rate, veh/h	265	1096	132	80	743	76	115	4	100	70	3	161
Adj No. of Lanes	1	2	0	1	2	0	0	1	0	0	1	0
Peak Hour Factor	0.81	0.81	0.81	0.88	0.88	0.88	0.74	0.74	0.74	0.88	0.88	0.88
Percent Heavy Veh, %	43	5	5	1	5	5	67	67	67	0	0	0
Cap, veh/h	296	1397	168	112	863	88	240	34	151	142	26	194
Arrive On Green	0.23	0.45	0.45	0.06	0.28	0.28	0.25	0.25	0.25	0.25	0.25	0.25
Sat Flow, veh/h	1265	3107	374	1792	3106	318	582	136	603	247	103	773
Grp Volume(v), veh/h	265	609	619	80	405	414	219	0	0	234	0	0
Grp Sat Flow(s),veh/h/ln	1265	1728	1753	1792	1695	1728	1321	0	0	1124	0	0
Q Serve(g_s), s	11.8	17.4	17.5	2.6	13.2	13.2	0.0	0.0	0.0	2.5	0.0	0.0
Cycle Q Clear(g_c), s	11.8	17.4	17.5	2.6	13.2	13.2	8.6	0.0	0.0	11.1	0.0	0.0
Prop In Lane	1.00		0.21	1.00		0.18	0.53		0.46	0.30		0.69
Lane Grp Cap(c), veh/h	296	777	788	112	471	480	426	0	0	363	0	0
V/C Ratio(X)	0.89	0.78	0.79	0.72	0.86	0.86	0.51	0.00	0.00	0.65	0.00	0.00
Avail Cap(c_a), veh/h	304	777	788	246	527	537	532	0	0	442	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	21.6	13.6	13.6	26.8	20.0	20.0	19.3	0.0	0.0	20.4	0.0	0.0
Incr Delay (d2), s/veh	26.3	5.3	5.3	8.3	12.6	12.5	1.0	0.0	0.0	2.3	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.3	9.4	9.6	1.5	7.8	8.0	3.3	0.0	0.0	3.7	0.0	0.0
LnGrp Delay(d),s/veh	47.9	18.9	18.9	35.1	32.6	32.4	20.3	0.0	0.0	22.7	0.0	0.0
LnGrp LOS	D	B	B	D	C	C	C			C		
Approach Vol, veh/h		1493			899			219			234	
Approach Delay, s/veh		24.0			32.7			20.3			22.7	
Approach LOS		C			C			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		19.5	7.6	31.1		19.5	17.6	21.1
Change Period (Y+Rc), s		4.9	4.0	4.9		4.9	4.0	4.9
Max Green Setting (Gmax), s		19.1	8.0	24.1		19.1	14.0	18.1
Max Q Clear Time (g_c+I1), s		10.6	4.6	19.5		13.1	13.8	15.2
Green Ext Time (p_c), s		2.0	0.0	3.8		1.5	0.0	0.9

Intersection Summary		
HCM 2010 Ctrl Delay		26.4
HCM 2010 LOS		C

Lane Group	EBL	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	265	1228	80	819	219	234
v/c Ratio	0.86	0.72	0.36	0.81	0.72	0.70
Control Delay	52.7	18.7	29.8	27.8	28.7	19.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	52.7	18.7	29.8	27.8	28.7	19.5
Queue Length 50th (ft)	90	196	26	134	49	22
Queue Length 95th (ft)	#204	#312	65	#247	82	83
Internal Link Dist (ft)		470		581	767	71
Turn Bay Length (ft)	260		260			
Base Capacity (vph)	309	1701	250	1071	436	432
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.86	0.72	0.32	0.76	0.50	0.54

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	211	617	186	23	513	97	160	247	13	153	389	153
Future Volume (veh/h)	211	617	186	23	513	97	160	247	13	153	389	153
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1681	1827	1900	1900	1819	1900	1810	1881	1900	1845	1900	1759
Adj Flow Rate, veh/h	260	762	230	25	552	104	198	305	0	178	452	0
Adj No. of Lanes	1	2	1	1	2	0	2	2	1	1	2	1
Peak Hour Factor	0.81	0.81	0.81	0.93	0.93	0.93	0.81	0.81	0.81	0.86	0.86	0.86
Percent Heavy Veh, %	13	4	0	0	4	4	5	1	0	3	0	8
Cap, veh/h	305	1487	692	50	772	145	293	573	259	220	715	296
Arrive On Green	0.19	0.43	0.43	0.03	0.27	0.27	0.09	0.16	0.00	0.13	0.20	0.00
Sat Flow, veh/h	1601	3471	1615	1810	2905	545	3343	3574	1615	1757	3610	1495
Grp Volume(v), veh/h	260	762	230	25	328	328	198	305	0	178	452	0
Grp Sat Flow(s),veh/h/ln	1601	1736	1615	1810	1728	1722	1672	1787	1615	1757	1805	1495
Q Serve(g_s), s	10.8	11.1	6.5	0.9	11.8	11.9	4.0	5.4	0.0	6.8	7.9	0.0
Cycle Q Clear(g_c), s	10.8	11.1	6.5	0.9	11.8	11.9	4.0	5.4	0.0	6.8	7.9	0.0
Prop In Lane	1.00		1.00	1.00		0.32	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	305	1487	692	50	459	458	293	573	259	220	715	296
V/C Ratio(X)	0.85	0.51	0.33	0.50	0.71	0.72	0.68	0.53	0.00	0.81	0.63	0.00
Avail Cap(c_a), veh/h	442	1587	739	210	514	513	485	1074	485	306	1190	493
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	27.0	14.4	13.1	33.0	22.9	22.9	30.5	26.5	0.0	29.3	25.3	0.0
Incr Delay (d2), s/veh	10.6	0.3	0.3	7.6	4.1	4.2	2.7	0.8	0.0	10.6	0.9	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.7	5.3	3.0	0.6	6.2	6.2	1.9	2.7	0.0	3.9	4.0	0.0
LnGrp Delay(d),s/veh	37.5	14.7	13.4	40.6	27.0	27.2	33.2	27.3	0.0	39.9	26.3	0.0
LnGrp LOS	D	B	B	D	C	C	C	C		D	C	
Approach Vol, veh/h		1252			681			503			630	
Approach Delay, s/veh		19.2			27.6			29.6			30.1	
Approach LOS		B			C			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	12.6	15.9	5.9	34.4	10.0	18.5	17.1	23.2
Change Period (Y+Rc), s	4.0	4.9	4.0	4.9	4.0	4.9	4.0	4.9
Max Green Setting (Gmax), s	12.0	20.7	8.0	31.5	10.0	22.7	19.0	20.5
Max Q Clear Time (g_c+I1), s	8.8	7.4	2.9	13.1	6.0	9.9	12.8	13.9
Green Ext Time (p_c), s	0.1	3.6	0.0	8.9	0.2	3.6	0.4	4.4

Intersection Summary	
HCM 2010 Ctrl Delay	25.0
HCM 2010 LOS	C

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	260	762	230	25	656	198	305	16	178	452	178
v/c Ratio	0.77	0.49	0.27	0.16	0.80	0.51	0.49	0.04	0.70	0.62	0.40
Control Delay	47.5	18.7	3.8	39.4	36.9	39.8	32.9	0.2	51.2	33.3	7.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	47.5	18.7	3.8	39.4	36.9	39.8	32.9	0.2	51.2	33.3	7.6
Queue Length 50th (ft)	127	122	0	13	164	51	77	0	90	115	0
Queue Length 95th (ft)	#203	213	32	38	#267	79	102	0	#184	154	43
Internal Link Dist (ft)		581			1146		698			854	
Turn Bay Length (ft)	220		290	270		200		80	255		175
Base Capacity (vph)	393	1589	864	187	912	432	959	556	272	1062	565
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.66	0.48	0.27	0.13	0.72	0.46	0.32	0.03	0.65	0.43	0.32

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Intersection	
Int Delay, s/veh	0.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	341	7	8	118	2	3	0	11	2	0	0
Future Vol, veh/h	0	341	7	8	118	2	3	0	11	2	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	87	87	87	84	84	84	88	88	88	88	88	88
Heavy Vehicles, %	7	7	7	7	7	7	7	7	7	7	7	7
Mvmt Flow	0	392	8	10	140	2	3	0	13	2	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	142	0	0	400	0	0	557	558	396	564	561	141
Stage 1	-	-	-	-	-	-	396	396	-	161	161	-
Stage 2	-	-	-	-	-	-	161	162	-	403	400	-
Critical Hdwy	4.17	-	-	4.17	-	-	7.17	6.57	6.27	7.17	6.57	6.27
Critical Hdwy Stg 1	-	-	-	-	-	-	6.17	5.57	-	6.17	5.57	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.17	5.57	-	6.17	5.57	-
Follow-up Hdwy	2.263	-	-	2.263	-	-	3.563	4.063	3.363	3.563	4.063	3.363
Pot Cap-1 Maneuver	1411	-	-	1132	-	-	433	431	643	429	430	894
Stage 1	-	-	-	-	-	-	620	595	-	829	755	-
Stage 2	-	-	-	-	-	-	829	755	-	614	593	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1411	-	-	1132	-	-	430	427	643	417	426	894
Mov Cap-2 Maneuver	-	-	-	-	-	-	430	427	-	417	426	-
Stage 1	-	-	-	-	-	-	620	595	-	829	747	-
Stage 2	-	-	-	-	-	-	821	747	-	602	593	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.5	11.4	13.7
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	581	1411	-	-	1132	-	-	417
HCM Lane V/C Ratio	0.027	-	-	-	0.008	-	-	0.005
HCM Control Delay (s)	11.4	0	-	-	8.2	0	-	13.7
HCM Lane LOS	B	A	-	-	A	A	-	B
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0

Intersection	
Int Delay, s/veh	4.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	32	22	68	17	3	16
Future Vol, veh/h	32	22	68	17	3	16
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	0	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	35	24	74	18	3	17

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	59	0	213	47
Stage 1	-	-	-	-	47	-
Stage 2	-	-	-	-	166	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1545	-	775	1022
Stage 1	-	-	-	-	975	-
Stage 2	-	-	-	-	863	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1545	-	738	1022
Mov Cap-2 Maneuver	-	-	-	-	738	-
Stage 1	-	-	-	-	975	-
Stage 2	-	-	-	-	822	-

Approach	EB	WB	NB
HCM Control Delay, s	0	6	8.8
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	963	-	-	1545	-
HCM Lane V/C Ratio	0.021	-	-	0.048	-
HCM Control Delay (s)	8.8	-	-	7.4	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0.2	-

Intersection	
Int Delay, s/veh	1.5

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	46	2	12	83	2	15
Future Vol, veh/h	46	2	12	83	2	15
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	1	-	0	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	50	2	13	90	2	16

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	52	0	167	51
Stage 1	-	-	-	-	51	-
Stage 2	-	-	-	-	116	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1554	-	823	1017
Stage 1	-	-	-	-	971	-
Stage 2	-	-	-	-	909	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1554	-	816	1017
Mov Cap-2 Maneuver	-	-	-	-	795	-
Stage 1	-	-	-	-	971	-
Stage 2	-	-	-	-	902	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.9	8.7
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	795	1017	-	-	1554	-
HCM Lane V/C Ratio	0.003	0.016	-	-	0.008	-
HCM Control Delay (s)	9.5	8.6	-	-	7.3	-
HCM Lane LOS	A	A	-	-	A	-
HCM 95th %tile Q(veh)	0	0	-	-	0	-

Intersection	
Int Delay, s/veh	1.8

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	33	28	63	597	602	32
Future Vol, veh/h	33	28	63	597	602	32
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	300	-	-	200
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	50	50	22	3	6	20
Mvmt Flow	36	30	68	649	654	35

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1115	327	689	0	-	0
Stage 1	654	-	-	-	-	-
Stage 2	461	-	-	-	-	-
Critical Hdwy	7.8	7.9	4.54	-	-	-
Critical Hdwy Stg 1	6.8	-	-	-	-	-
Critical Hdwy Stg 2	6.8	-	-	-	-	-
Follow-up Hdwy	4	3.8	2.42	-	-	-
Pot Cap-1 Maneuver	140	547	780	-	-	-
Stage 1	368	-	-	-	-	-
Stage 2	481	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	128	547	780	-	-	-
Mov Cap-2 Maneuver	128	-	-	-	-	-
Stage 1	336	-	-	-	-	-
Stage 2	481	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	29.1	1	0
HCM LOS	D		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	780	-	128	547	-	-
HCM Lane V/C Ratio	0.088	-	0.28	0.056	-	-
HCM Control Delay (s)	10.1	-	43.7	12	-	-
HCM Lane LOS	B	-	E	B	-	-
HCM 95th %tile Q(veh)	0.3	-	1.1	0.2	-	-

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	25	0	1333	607	28
Future Vol, veh/h	0	25	0	1333	607	28
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	27	0	1449	660	30

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	345	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.94	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.32	-	-	-	-
Pot Cap-1 Maneuver	0	651	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	651	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10.8	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	-	651	-	-
HCM Lane V/C Ratio	-	0.042	-	-
HCM Control Delay (s)	-	10.8	-	-
HCM Lane LOS	-	B	-	-
HCM 95th %tile Q(veh)	-	0.1	-	-

Intersection	
Int Delay, s/veh	2.9

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	224	91	240	326	12	751
Future Vol, veh/h	224	91	240	326	12	751
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	Free
Storage Length	-	-	-	-	0	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	5	21	21	6	2	6
Mvmt Flow	243	99	261	354	13	816

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	342	0	1169	-
Stage 1	-	-	-	-	293	-
Stage 2	-	-	-	-	876	-
Critical Hdwy	-	-	4.31	-	6.42	-
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.389	-	3.518	-
Pot Cap-1 Maneuver	-	-	1118	-	213	0
Stage 1	-	-	-	-	757	0
Stage 2	-	-	-	-	407	0
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1118	-	151	-
Mov Cap-2 Maneuver	-	-	-	-	151	-
Stage 1	-	-	-	-	757	-
Stage 2	-	-	-	-	289	-

Approach	EB	WB	NB
HCM Control Delay, s	0	3.9	31.1
HCM LOS			D

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	151	-	-	-	1118	-
HCM Lane V/C Ratio	0.086	-	-	-	0.233	-
HCM Control Delay (s)	31.1	0	-	-	9.2	0
HCM Lane LOS	D	A	-	-	A	A
HCM 95th %tile Q(veh)	0.3	-	-	-	0.9	-

Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	19	951	565	968	0	0
Future Vol, veh/h	19	951	565	968	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	Yield	-	None
Storage Length	-	-	-	0	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	11	6	12	6	2	2
Mvmt Flow	21	1034	614	1052	0	0

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	614	0	-	0	-	614
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	4.265	-	-	-	-	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	2.3045	-	-	-	-	3.319
Pot Cap-1 Maneuver	913	-	-	-	0	491
Stage 1	-	-	-	-	0	-
Stage 2	-	-	-	-	0	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	913	-	-	-	-	491
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	0.4	0	0
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	913	-	-	-	-
HCM Lane V/C Ratio	0.023	-	-	-	-
HCM Control Delay (s)	9	0.2	-	-	0
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0.1	-	-	-	-

Intersection	
Int Delay, s/veh	6.5

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑			↑↑	↰	↱
Traffic Vol, veh/h	951	0	0	1480	53	262
Future Vol, veh/h	951	0	0	1480	53	262
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	Stop
Storage Length	-	-	-	-	0	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	6	6	12	12	10	22
Mvmt Flow	1034	0	0	1609	58	285

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	-	-	-	1839	517
Stage 1	-	-	-	-	1034	-
Stage 2	-	-	-	-	805	-
Critical Hdwy	-	-	-	-	7	7.34
Critical Hdwy Stg 1	-	-	-	-	6	-
Critical Hdwy Stg 2	-	-	-	-	6	-
Follow-up Hdwy	-	-	-	-	3.6	3.52
Pot Cap-1 Maneuver	-	0	0	-	61	454
Stage 1	-	0	0	-	286	-
Stage 2	-	0	0	-	381	-
Platoon blocked, %	-			-		
Mov Cap-1 Maneuver	-	-	-	-	61	454
Mov Cap-2 Maneuver	-	-	-	-	61	-
Stage 1	-	-	-	-	286	-
Stage 2	-	-	-	-	381	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	56.5
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	WBT
Capacity (veh/h)	61	454	-	-
HCM Lane V/C Ratio	0.944	0.627	-	-
HCM Control Delay (s)	210.4	25.4	-	-
HCM Lane LOS	F	D	-	-
HCM 95th %tile Q(veh)	4.4	4.2	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	187	890	127	69	1265	78	91	4	38	57	4	112
Future Volume (veh/h)	187	890	127	69	1265	78	91	4	38	57	4	112
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1267	1772	1900	1827	1771	1900	1900	1833	1900	1900	1139	1900
Adj Flow Rate, veh/h	203	967	138	75	1375	85	99	4	41	62	4	122
Adj No. of Lanes	1	2	0	1	2	0	0	1	0	0	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	50	8	8	4	5	5	33	33	33	33	33	33
Cap, veh/h	221	1704	243	96	1443	89	203	18	61	108	20	135
Arrive On Green	0.18	0.58	0.58	0.06	0.45	0.45	0.21	0.21	0.21	0.21	0.21	0.21
Sat Flow, veh/h	1206	2958	422	1740	3220	199	634	87	287	253	93	640
Grp Volume(v), veh/h	203	550	555	75	717	743	144	0	0	188	0	0
Grp Sat Flow(s),veh/h/ln	1206	1683	1697	1740	1683	1736	1008	0	0	986	0	0
Q Serve(g_s), s	14.5	18.0	18.0	3.7	35.8	36.1	0.0	0.0	0.0	4.1	0.0	0.0
Cycle Q Clear(g_c), s	14.5	18.0	18.0	3.7	35.8	36.1	12.0	0.0	0.0	16.0	0.0	0.0
Prop In Lane	1.00		0.25	1.00		0.11	0.69		0.28	0.33		0.65
Lane Grp Cap(c), veh/h	221	969	977	96	754	778	282	0	0	263	0	0
V/C Ratio(X)	0.92	0.57	0.57	0.78	0.95	0.96	0.51	0.00	0.00	0.71	0.00	0.00
Avail Cap(c_a), veh/h	221	969	977	179	771	796	307	0	0	280	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	35.1	11.7	11.7	40.8	23.2	23.3	31.6	0.0	0.0	33.4	0.0	0.0
Incr Delay (d2), s/veh	39.2	0.8	0.8	12.8	21.0	21.4	1.4	0.0	0.0	7.8	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	7.2	8.5	8.5	2.1	20.9	21.8	3.3	0.0	0.0	5.0	0.0	0.0
LnGrp Delay(d),s/veh	74.3	12.5	12.5	53.6	44.2	44.7	33.0	0.0	0.0	41.2	0.0	0.0
LnGrp LOS	E	B	B	D	D	D	C			D		
Approach Vol, veh/h		1308			1535			144			188	
Approach Delay, s/veh		22.1			44.9			33.0			41.2	
Approach LOS		C			D			C			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		23.4	8.8	55.3		23.4	20.0	44.1
Change Period (Y+Rc), s		4.9	4.0	4.9		4.9	4.0	4.9
Max Green Setting (Gmax), s		20.1	9.0	47.1		20.1	16.0	40.1
Max Q Clear Time (g_c+I1), s		14.0	5.7	20.0		18.0	16.5	38.1
Green Ext Time (p_c), s		1.1	0.0	19.1		0.4	0.0	1.1

Intersection Summary	
HCM 2010 Ctrl Delay	34.7
HCM 2010 LOS	C

Lane Group	EBL	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	203	1105	75	1460	144	188
v/c Ratio	0.89	0.56	0.46	0.93	0.73	0.81
Control Delay	74.1	13.4	47.0	33.6	48.9	43.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	74.1	13.4	47.0	33.6	48.9	43.8
Queue Length 50th (ft)	108	192	39	373	62	47
Queue Length 95th (ft)	#250	284	85	#583	127	#148
Internal Link Dist (ft)		470		581	767	71
Turn Bay Length (ft)	260		260			
Base Capacity (vph)	228	1969	185	1596	266	284
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.89	0.56	0.41	0.91	0.54	0.66

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	244	633	192	20	1034	410	233	679	16	117	368	147
Future Volume (veh/h)	244	633	192	20	1034	410	233	679	16	117	368	147
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1759	1712	1881	1900	1832	1900	1792	1863	1900	1810	1881	1610
Adj Flow Rate, veh/h	265	688	209	22	1124	446	253	738	0	127	400	0
Adj No. of Lanes	1	2	1	1	2	0	2	2	1	1	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	8	11	1	0	4	4	6	2	0	5	1	18
Cap, veh/h	245	1789	880	38	1043	404	303	786	359	120	715	274
Arrive On Green	0.15	0.55	0.55	0.02	0.42	0.42	0.09	0.22	0.00	0.07	0.20	0.00
Sat Flow, veh/h	1675	3252	1599	1810	2454	950	3312	3539	1615	1723	3574	1369
Grp Volume(v), veh/h	265	688	209	22	789	781	253	738	0	127	400	0
Grp Sat Flow(s),veh/h/ln	1675	1626	1599	1810	1740	1664	1656	1770	1615	1723	1787	1369
Q Serve(g_s), s	19.0	15.7	8.8	1.6	55.1	55.1	9.7	26.6	0.0	9.0	13.1	0.0
Cycle Q Clear(g_c), s	19.0	15.7	8.8	1.6	55.1	55.1	9.7	26.6	0.0	9.0	13.1	0.0
Prop In Lane	1.00		1.00	1.00		0.57	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	245	1789	880	38	739	707	303	786	359	120	715	274
V/C Ratio(X)	1.08	0.38	0.24	0.58	1.07	1.11	0.84	0.94	0.00	1.06	0.56	0.00
Avail Cap(c_a), veh/h	245	1789	880	112	739	707	332	794	362	120	715	274
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	55.4	16.6	15.1	62.9	37.3	37.3	58.0	49.6	0.0	60.4	46.7	0.0
Incr Delay (d2), s/veh	80.3	0.1	0.1	13.0	52.4	66.3	15.7	18.6	0.0	99.9	1.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0
%ile BackOfQ(50%),veh/ln	14.2	7.0	3.9	0.9	37.1	38.2	5.1	15.1	0.0	7.6	6.5	0.0
LnGrp Delay(d),s/veh	135.6	16.8	15.2	75.9	89.7	103.7	73.6	68.2	0.0	160.5	47.7	0.0
LnGrp LOS	F	B	B	E	F	F	E	E		F	D	
Approach Vol, veh/h		1162			1592			991			527	
Approach Delay, s/veh		43.6			96.4			69.6			74.9	
Approach LOS		D			F			E			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	13.0	33.7	6.7	76.3	15.9	30.9	23.0	60.0
Change Period (Y+Rc), s	4.0	4.9	4.0	4.9	4.0	4.9	4.0	4.9
Max Green Setting (Gmax), s	9.0	29.1	8.0	66.1	13.0	25.1	19.0	55.1
Max Q Clear Time (g_c+I1), s	11.0	28.6	3.6	17.7	11.7	15.1	21.0	57.1
Green Ext Time (p_c), s	0.0	0.2	0.0	26.6	0.1	4.7	0.0	0.0

Intersection Summary	
HCM 2010 Ctrl Delay	73.2
HCM 2010 LOS	E

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	265	688	209	22	1570	253	738	17	127	400	160
v/c Ratio	1.08	0.39	0.22	0.23	1.08	0.79	0.94	0.04	1.07	0.58	0.41
Control Delay	132.5	18.4	2.7	64.4	84.6	74.6	70.7	0.2	156.8	51.5	9.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	132.5	18.4	2.7	64.4	84.6	74.6	70.7	0.2	156.8	51.5	9.9
Queue Length 50th (ft)	~250	181	0	18	~767	108	323	0	~118	162	0
Queue Length 95th (ft)	#425	233	39	47	#910	#168	#442	0	#251	217	60
Internal Link Dist (ft)		581			1146		716			862	
Turn Bay Length (ft)	220		290	270		200		80	255		175
Base Capacity (vph)	245	1785	972	111	1449	331	795	453	119	692	394
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.08	0.39	0.22	0.20	1.08	0.76	0.93	0.04	1.07	0.58	0.41

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Intersection	
Int Delay, s/veh	0.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	291	4	10	326	2	2	0	22	1	0	0
Future Vol, veh/h	0	291	4	10	326	2	2	0	22	1	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	10	10	10	10	10	10	10	10	10	10	10	10
Mvmt Flow	0	316	4	11	354	2	2	0	24	1	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	356	0	0	320	0	0	695	696	318	707	697	355
Stage 1	-	-	-	-	-	-	318	318	-	377	377	-
Stage 2	-	-	-	-	-	-	377	378	-	330	320	-
Critical Hdwy	4.2	-	-	4.2	-	-	7.2	6.6	6.3	7.2	6.6	6.3
Critical Hdwy Stg 1	-	-	-	-	-	-	6.2	5.6	-	6.2	5.6	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.2	5.6	-	6.2	5.6	-
Follow-up Hdwy	2.29	-	-	2.29	-	-	3.59	4.09	3.39	3.59	4.09	3.39
Pot Cap-1 Maneuver	1160	-	-	1196	-	-	346	356	704	340	355	671
Stage 1	-	-	-	-	-	-	677	639	-	629	602	-
Stage 2	-	-	-	-	-	-	629	601	-	667	638	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1160	-	-	1196	-	-	343	352	704	326	351	671
Mov Cap-2 Maneuver	-	-	-	-	-	-	343	352	-	326	351	-
Stage 1	-	-	-	-	-	-	677	639	-	629	595	-
Stage 2	-	-	-	-	-	-	622	594	-	644	638	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.2	10.8	16.1
HCM LOS			B	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	647	1160	-	-	1196	-	-	326
HCM Lane V/C Ratio	0.04	-	-	-	0.009	-	-	0.003
HCM Control Delay (s)	10.8	0	-	-	8	0	-	16.1
HCM Lane LOS	B	A	-	-	A	A	-	C
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0

Intersection	
Int Delay, s/veh	4.9

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	58	5	19	25	15	74
Future Vol, veh/h	58	5	19	25	15	74
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	0	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	63	5	21	27	16	80

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	68	0	135	66
Stage 1	-	-	-	-	66	-
Stage 2	-	-	-	-	69	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1533	-	859	998
Stage 1	-	-	-	-	957	-
Stage 2	-	-	-	-	954	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1533	-	847	998
Mov Cap-2 Maneuver	-	-	-	-	847	-
Stage 1	-	-	-	-	957	-
Stage 2	-	-	-	-	941	-

Approach	EB	WB	NB
HCM Control Delay, s	0	3.2	9.1
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	969	-	-	1533	-
HCM Lane V/C Ratio	0.1	-	-	0.013	-
HCM Control Delay (s)	9.1	-	-	7.4	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	0.3	-	-	0	-

Intersection	
Int Delay, s/veh	1.5

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	130	2	13	42	2	22
Future Vol, veh/h	130	2	13	42	2	22
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	1	-	0	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	141	2	14	46	2	24

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	143	0	216	142
Stage 1	-	-	-	-	142	-
Stage 2	-	-	-	-	74	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1440	-	772	906
Stage 1	-	-	-	-	885	-
Stage 2	-	-	-	-	949	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1440	-	764	906
Mov Cap-2 Maneuver	-	-	-	-	763	-
Stage 1	-	-	-	-	885	-
Stage 2	-	-	-	-	940	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1.8	9.2
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	763	906	-	-	1440	-
HCM Lane V/C Ratio	0.003	0.026	-	-	0.01	-
HCM Control Delay (s)	9.7	9.1	-	-	7.5	-
HCM Lane LOS	A	A	-	-	A	-
HCM 95th %tile Q(veh)	0	0.1	-	-	0	-

Intersection	
Int Delay, s/veh	110.8

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	63	89	32	1444	1707	23
Future Vol, veh/h	63	89	32	1444	1707	23
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	300	-	-	200
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	88	88	79	79	88	88
Heavy Vehicles, %	0	10	100	6	2	100
Mvmt Flow	72	101	41	1828	1940	26

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	2936	970	1966	0	-	0
Stage 1	1940	-	-	-	-	-
Stage 2	996	-	-	-	-	-
Critical Hdwy	6.8	7.1	6.1	-	-	-
Critical Hdwy Stg 1	5.8	-	-	-	-	-
Critical Hdwy Stg 2	5.8	-	-	-	-	-
Follow-up Hdwy	3.5	3.4	3.2	-	-	-
Pot Cap-1 Maneuver	~ 12	239	85	-	-	-
Stage 1	100	-	-	-	-	-
Stage 2	323	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	~ 6	239	85	-	-	-
Mov Cap-2 Maneuver	~ 6	-	-	-	-	-
Stage 1	~ 52	-	-	-	-	-
Stage 2	323	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay,	$ 2550.2	1.8	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	85	-	6	239	-	-
HCM Lane V/C Ratio	0.477	-	11.932	0.423	-	-
HCM Control Delay (s)	81.1		$ 6109.6	30.7	-	-
HCM Lane LOS	F	-	F	D	-	-
HCM 95th %tile Q(veh)	2	-	10.7	2	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	28	0	1484	1758	31
Future Vol, veh/h	0	28	0	1484	1758	31
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	30	0	1613	1911	34

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	973	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.94	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.32	-	-	-	-
Pot Cap-1 Maneuver	0	252	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	252	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB		NB		SB	
HCM Control Delay, s	21.2		0		0	
HCM LOS	C					

Minor Lane/Major Mvmt	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	-	252	-	-
HCM Lane V/C Ratio	-	0.121	-	-
HCM Control Delay (s)	-	21.2	-	-
HCM Lane LOS	-	C	-	-
HCM 95th %tile Q(veh)	-	0.4	-	-

Intersection	
Int Delay, s/veh	4.7

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	250	92	241	338	38	870
Future Vol, veh/h	250	92	241	338	38	870
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	Free
Storage Length	-	-	-	-	0	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	88	88	82	82	88	88
Heavy Vehicles, %	7	8	23	10	0	3
Mvmt Flow	284	105	294	412	43	989

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	389	0	1337	-
Stage 1	-	-	-	-	337	-
Stage 2	-	-	-	-	1000	-
Critical Hdwy	-	-	4.33	-	6.4	-
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.407	-	3.5	-
Pot Cap-1 Maneuver	-	-	1064	-	171	0
Stage 1	-	-	-	-	728	0
Stage 2	-	-	-	-	359	0
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1064	-	110	-
Mov Cap-2 Maneuver	-	-	-	-	110	-
Stage 1	-	-	-	-	728	-
Stage 2	-	-	-	-	230	-

Approach	EB	WB	NB
HCM Control Delay, s	0	4	57.5
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	110	-	-	-	1064	-
HCM Lane V/C Ratio	0.393	-	-	-	0.276	-
HCM Control Delay (s)	57.5	0	-	-	9.7	0
HCM Lane LOS	F	A	-	-	A	A
HCM 95th %tile Q(veh)	1.6	-	-	-	1.1	-

Intersection						
Int Delay, s/veh	0.1					

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	15	1092	572	698	0	0
Future Vol, veh/h	15	1092	572	698	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	Yield	-	None
Storage Length	-	-	-	0	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	91	91	87	87	92	92
Heavy Vehicles, %	13	4	14	4	2	2
Mvmt Flow	16	1200	657	802	0	0

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	657	0	-	0	-	657
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	4.295	-	-	-	-	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	2.3235	-	-	-	-	3.319
Pot Cap-1 Maneuver	868	-	-	-	0	464
Stage 1	-	-	-	-	0	-
Stage 2	-	-	-	-	0	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	868	-	-	-	-	464
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	0.3	0	0
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	868	-	-	-	-
HCM Lane V/C Ratio	0.019	-	-	-	-
HCM Control Delay (s)	9.2	0.2	-	-	0
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0.1	-	-	-	-

Intersection	
Int Delay, s/veh	93.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑			↑↑	↰	↱
Traffic Vol, veh/h	1092	0	0	1137	133	520
Future Vol, veh/h	1092	0	0	1137	133	520
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	Stop
Storage Length	-	-	-	-	0	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	91	92	92	87	79	79
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1200	0	0	1307	168	658

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	-	-	-	1854	600
Stage 1	-	-	-	-	1200	-
Stage 2	-	-	-	-	654	-
Critical Hdwy	-	-	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	-	-	3.52	3.32
Pot Cap-1 Maneuver	-	0	0	-	~ 65	~ 444
Stage 1	-	0	0	-	248	-
Stage 2	-	0	0	-	479	-
Platoon blocked, %	-			-		
Mov Cap-1 Maneuver	-	-	-	-	~ 65	~ 444
Mov Cap-2 Maneuver	-	-	-	-	~ 65	-
Stage 1	-	-	-	-	248	-
Stage 2	-	-	-	-	479	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	$ 375.9
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	WBT
Capacity (veh/h)	65	444	-	-
HCM Lane V/C Ratio	2.59	1.482	-	-
HCM Control Delay (s)	$ 857	252.8	-	-
HCM Lane LOS	F	F	-	-
HCM 95th %tile Q(veh)	16.7	34	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	231	1220	145	85	846	71	120	4	89	66	4	155
Future Volume (veh/h)	231	1220	145	85	846	71	120	4	89	66	4	155
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1329	1819	1900	1881	1788	1900	1900	1868	1900	1900	1295	1900
Adj Flow Rate, veh/h	285	1506	179	97	961	81	162	5	120	75	5	176
Adj No. of Lanes	1	2	0	1	2	0	0	1	0	0	1	0
Peak Hour Factor	0.81	0.81	0.81	0.88	0.88	0.88	0.74	0.74	0.74	0.88	0.88	0.88
Percent Heavy Veh, %	43	5	5	1	5	5	67	67	67	0	0	0
Cap, veh/h	300	1610	189	124	1108	93	197	15	107	117	22	192
Arrive On Green	0.24	0.52	0.52	0.07	0.35	0.35	0.26	0.26	0.26	0.26	0.26	0.26
Sat Flow, veh/h	1265	3115	366	1792	3173	267	517	57	413	251	87	743
Grp Volume(v), veh/h	285	828	857	97	515	527	287	0	0	256	0	0
Grp Sat Flow(s),veh/h/ln	1265	1728	1754	1792	1699	1741	988	0	0	1081	0	0
Q Serve(g_s), s	19.7	39.4	40.9	4.7	25.1	25.1	2.5	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	19.7	39.4	40.9	4.7	25.1	25.1	22.9	0.0	0.0	20.4	0.0	0.0
Prop In Lane	1.00		0.21	1.00		0.15	0.56		0.42	0.29		0.69
Lane Grp Cap(c), veh/h	300	893	907	124	593	608	319	0	0	332	0	0
V/C Ratio(X)	0.95	0.93	0.95	0.78	0.87	0.87	0.90	0.00	0.00	0.77	0.00	0.00
Avail Cap(c_a), veh/h	300	893	907	162	619	634	319	0	0	332	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	33.3	19.9	20.2	40.6	26.9	26.9	34.3	0.0	0.0	31.8	0.0	0.0
Incr Delay (d2), s/veh	38.8	15.5	18.1	16.7	12.2	11.9	26.9	0.0	0.0	10.7	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	10.1	22.5	24.1	2.9	13.7	14.0	9.3	0.0	0.0	7.0	0.0	0.0
LnGrp Delay(d),s/veh	72.2	35.3	38.3	57.3	39.1	38.8	61.2	0.0	0.0	42.5	0.0	0.0
LnGrp LOS	E	D	D	E	D	D	E			D		
Approach Vol, veh/h		1970			1139			287			256	
Approach Delay, s/veh		41.9			40.5			61.2			42.5	
Approach LOS		D			D			E			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		27.8	10.1	50.7		27.8	25.0	35.8
Change Period (Y+Rc), s		4.9	4.0	4.9		4.9	4.0	4.9
Max Green Setting (Gmax), s		22.9	8.0	45.3		22.9	21.0	32.3
Max Q Clear Time (g_c+I1), s		24.9	6.7	42.9		22.4	21.7	27.1
Green Ext Time (p_c), s		0.0	0.0	2.3		0.2	0.0	3.9

Intersection Summary	
HCM 2010 Ctrl Delay	43.1
HCM 2010 LOS	D

Lane Group	EBL	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	285	1685	97	1042	287	256
v/c Ratio	0.95	0.94	0.63	0.88	0.95	0.77
Control Delay	77.2	32.1	58.5	36.9	71.9	33.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	77.2	32.1	58.5	36.9	71.9	33.5
Queue Length 50th (ft)	161	466	54	282	142	73
Queue Length 95th (ft)	#270	480	#114	#356	#214	#190
Internal Link Dist (ft)		470		581	767	71
Turn Bay Length (ft)	260		260			
Base Capacity (vph)	300	1800	161	1234	305	337
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.95	0.94	0.60	0.84	0.94	0.76

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	420	756	274	37	567	354	228	710	20	490	1087	209
Future Volume (veh/h)	420	756	274	37	567	354	228	710	20	490	1087	209
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1681	1827	1900	1900	1807	1900	1810	1881	1900	1845	1900	1759
Adj Flow Rate, veh/h	519	933	338	40	610	381	281	877	0	570	1264	0
Adj No. of Lanes	1	2	1	1	2	0	2	2	1	1	2	1
Peak Hour Factor	0.81	0.81	0.81	0.93	0.93	0.93	0.81	0.81	0.81	0.86	0.86	0.86
Percent Heavy Veh, %	13	4	0	0	4	4	5	1	0	3	0	8
Cap, veh/h	355	1415	659	52	437	273	263	768	347	389	1292	535
Arrive On Green	0.22	0.41	0.41	0.03	0.22	0.22	0.08	0.22	0.00	0.22	0.36	0.00
Sat Flow, veh/h	1601	3471	1615	1810	2031	1269	3343	3574	1615	1757	3610	1495
Grp Volume(v), veh/h	519	933	338	40	516	475	281	877	0	570	1264	0
Grp Sat Flow(s),veh/h/ln	1601	1736	1615	1810	1717	1583	1672	1787	1615	1757	1805	1495
Q Serve(g_s), s	31.0	30.5	21.9	3.1	30.1	30.1	11.0	30.1	0.0	31.0	48.4	0.0
Cycle Q Clear(g_c), s	31.0	30.5	21.9	3.1	30.1	30.1	11.0	30.1	0.0	31.0	48.4	0.0
Prop In Lane	1.00		1.00	1.00		0.80	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	355	1415	659	52	369	340	263	768	347	389	1292	535
V/C Ratio(X)	1.46	0.66	0.51	0.77	1.40	1.40	1.07	1.14	0.00	1.47	0.98	0.00
Avail Cap(c_a), veh/h	355	1415	659	103	369	340	263	768	347	389	1292	535
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	54.5	33.6	31.0	67.5	55.0	55.0	64.5	55.0	0.0	54.5	44.4	0.0
Incr Delay (d2), s/veh	223.6	1.1	0.7	21.0	194.4	195.6	75.2	78.8	0.0	223.0	20.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	35.7	14.9	9.9	1.8	34.2	31.6	7.8	23.2	0.0	39.1	27.6	0.0
LnGrp Delay(d),s/veh	278.1	34.7	31.7	88.6	249.3	250.6	139.7	133.8	0.0	277.5	64.4	0.0
LnGrp LOS	F	C	C	F	F	F	F	F		F	E	
Approach Vol, veh/h		1790			1031			1158			1834	
Approach Delay, s/veh		104.7			243.7			135.2			130.6	
Approach LOS		F			F			F			F	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	35.0	35.0	8.0	62.0	15.0	55.0	35.0	35.0
Change Period (Y+Rc), s	4.0	4.9	4.0	4.9	4.0	4.9	4.0	4.9
Max Green Setting (Gmax), s	31.0	30.1	8.0	53.1	11.0	50.1	31.0	30.1
Max Q Clear Time (g_c+I1), s	33.0	32.1	5.1	32.5	13.0	50.4	33.0	32.1
Green Ext Time (p_c), s	0.0	0.0	0.0	13.4	0.0	0.0	0.0	0.0

Intersection Summary	
HCM 2010 Ctrl Delay	143.6
HCM 2010 LOS	F

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	519	933	338	40	991	281	877	25	570	1264	243
v/c Ratio	1.47	0.68	0.43	0.43	1.30	1.07	1.14	0.05	1.47	0.98	0.40
Control Delay	264.8	38.4	10.5	77.8	182.0	135.4	127.6	0.2	264.6	64.8	19.0
Queue Delay	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	264.8	38.7	10.5	77.8	182.0	135.4	127.6	0.2	264.6	64.8	19.0
Queue Length 50th (ft)	~647	377	55	36	~572	~145	~490	0	~711	596	82
Queue Length 95th (ft)	#751	393	101	77	#712	#204	#523	0	#883	#692	145
Internal Link Dist (ft)		581			1146		698			854	
Turn Bay Length (ft)	220		290	270		200		80	255		175
Base Capacity (vph)	353	1380	789	103	765	262	768	456	387	1291	610
Starvation Cap Reductn	0	95	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.47	0.73	0.43	0.39	1.30	1.07	1.14	0.05	1.47	0.98	0.40

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Intersection	
Int Delay, s/veh	0.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	418	9	10	364	2	4	0	14	2	0	0
Future Vol, veh/h	0	418	9	10	364	2	4	0	14	2	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	87	87	87	84	84	84	88	88	88	88	88	88
Heavy Vehicles, %	7	7	7	7	7	7	7	7	7	7	7	7
Mvmt Flow	0	480	10	12	433	2	5	0	16	2	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	435	0	0	490	0	0	943	944	485	951	948	434
Stage 1	-	-	-	-	-	-	485	485	-	458	458	-
Stage 2	-	-	-	-	-	-	458	459	-	493	490	-
Critical Hdwy	4.17	-	-	4.17	-	-	7.17	6.57	6.27	7.17	6.57	6.27
Critical Hdwy Stg 1	-	-	-	-	-	-	6.17	5.57	-	6.17	5.57	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.17	5.57	-	6.17	5.57	-
Follow-up Hdwy	2.263	-	-	2.263	-	-	3.563	4.063	3.363	3.563	4.063	3.363
Pot Cap-1 Maneuver	1099	-	-	1048	-	-	238	257	572	235	256	611
Stage 1	-	-	-	-	-	-	554	543	-	573	559	-
Stage 2	-	-	-	-	-	-	573	558	-	549	540	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1099	-	-	1048	-	-	235	253	572	226	252	611
Mov Cap-2 Maneuver	-	-	-	-	-	-	235	253	-	226	252	-
Stage 1	-	-	-	-	-	-	554	543	-	573	551	-
Stage 2	-	-	-	-	-	-	564	550	-	534	540	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.2	13.7	21.1
HCM LOS			B	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	434	1099	-	-	1048	-	-	226
HCM Lane V/C Ratio	0.047	-	-	-	0.011	-	-	0.01
HCM Control Delay (s)	13.7	0	-	-	8.5	0	-	21.1
HCM Lane LOS	B	A	-	-	A	A	-	C
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0

MITIGATED INTERSECTION ANALYSES

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	645	0	0	1141	31	168
Future Volume (veh/h)	645	0	0	1141	31	168
Number	4	14	3	8	5	12
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1792	0	0	1696	1727	1557
Adj Flow Rate, veh/h	725	0	0	1240	41	0
Adj No. of Lanes	2	0	0	2	1	1
Peak Hour Factor	0.89	0.89	0.92	0.92	0.75	0.75
Percent Heavy Veh, %	6	0	0	12	10	22
Cap, veh/h	2298	0	0	2175	181	145
Arrive On Green	0.67	0.00	0.00	0.67	0.11	0.00
Sat Flow, veh/h	3585	0	0	3393	1645	1324
Grp Volume(v), veh/h	725	0	0	1240	41	0
Grp Sat Flow(s),veh/h/ln	1703	0	0	1612	1645	1324
Q Serve(g_s), s	4.0	0.0	0.0	9.3	1.0	0.0
Cycle Q Clear(g_c), s	4.0	0.0	0.0	9.3	1.0	0.0
Prop In Lane		0.00	0.00		1.00	1.00
Lane Grp Cap(c), veh/h	2298	0	0	2175	181	145
V/C Ratio(X)	0.32	0.00	0.00	0.57	0.23	0.00
Avail Cap(c_a), veh/h	4124	0	0	3903	907	730
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	3.1	0.0	0.0	3.9	18.5	0.0
Incr Delay (d2), s/veh	0.1	0.0	0.0	0.2	0.6	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.8	0.0	0.0	4.0	0.5	0.0
LnGrp Delay(d),s/veh	3.1	0.0	0.0	4.1	19.1	0.0
LnGrp LOS	A			A	B	
Approach Vol, veh/h	725			1240	41	
Approach Delay, s/veh	3.1			4.1	19.1	
Approach LOS	A			A	B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4				8
Phs Duration (G+Y+Rc), s		9.9		35.6				35.6
Change Period (Y+Rc), s		4.9		4.9				4.9
Max Green Setting (Gmax), s		25.1		55.1				55.1
Max Q Clear Time (g_c+I1), s		3.0		6.0				11.3
Green Ext Time (p_c), s		0.1		20.3				19.4

Intersection Summary		
HCM 2010 Ctrl Delay		4.1
HCM 2010 LOS		A

Lane Group	EBT	WBT	NBL	NBR
Lane Group Flow (vph)	725	1240	41	224
v/c Ratio	0.37	0.67	0.14	0.53
Control Delay	5.4	8.3	17.9	8.6
Queue Delay	0.0	0.1	0.0	0.0
Total Delay	5.4	8.4	17.9	8.6
Queue Length 50th (ft)	35	76	8	0
Queue Length 95th (ft)	80	175	28	27
Internal Link Dist (ft)	360	470	396	
Turn Bay Length (ft)				
Base Capacity (vph)	3356	3175	1033	916
Starvation Cap Reductn	0	725	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.22	0.51	0.04	0.24

Intersection Summary

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	896	0	0	851	78	296
Future Volume (veh/h)	896	0	0	851	78	296
Number	4	14	3	8	5	12
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	0	0	1863	1863	1863
Adj Flow Rate, veh/h	985	0	0	978	99	0
Adj No. of Lanes	2	0	0	2	1	1
Peak Hour Factor	0.91	0.92	0.92	0.87	0.79	0.79
Percent Heavy Veh, %	2	0	0	2	2	2
Cap, veh/h	2208	0	0	2208	226	201
Arrive On Green	0.62	0.00	0.00	0.62	0.13	0.00
Sat Flow, veh/h	3725	0	0	3725	1774	1583
Grp Volume(v), veh/h	985	0	0	978	99	0
Grp Sat Flow(s),veh/h/ln	1770	0	0	1770	1774	1583
Q Serve(g_s), s	5.7	0.0	0.0	5.7	2.0	0.0
Cycle Q Clear(g_c), s	5.7	0.0	0.0	5.7	2.0	0.0
Prop In Lane		0.00	0.00		1.00	1.00
Lane Grp Cap(c), veh/h	2208	0	0	2208	226	201
V/C Ratio(X)	0.45	0.00	0.00	0.44	0.44	0.00
Avail Cap(c_a), veh/h	3698	0	0	3698	1763	1574
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	3.9	0.0	0.0	3.8	15.9	0.0
Incr Delay (d2), s/veh	0.1	0.0	0.0	0.1	1.3	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.8	0.0	0.0	2.8	1.1	0.0
LnGrp Delay(d),s/veh	4.0	0.0	0.0	4.0	17.2	0.0
LnGrp LOS	A			A	B	
Approach Vol, veh/h	985			978	99	
Approach Delay, s/veh	4.0			4.0	17.2	
Approach LOS	A			A	B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4				8
Phs Duration (G+Y+Rc), s		9.9		29.4				29.4
Change Period (Y+Rc), s		4.9		4.9				4.9
Max Green Setting (Gmax), s		39.1		41.1				41.1
Max Q Clear Time (g_c+I1), s		4.0		7.7				7.7
Green Ext Time (p_c), s		0.3		16.8				16.8

Intersection Summary			
HCM 2010 Ctrl Delay			4.6
HCM 2010 LOS			A

Lane Group	EBT	WBT	NBL	NBR
Lane Group Flow (vph)	985	978	99	375
v/c Ratio	0.64	0.63	0.16	0.64
Control Delay	13.4	13.4	12.9	17.5
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	13.4	13.4	12.9	17.5
Queue Length 50th (ft)	98	97	18	67
Queue Length 95th (ft)	221	208	48	149
Internal Link Dist (ft)	360	470	396	
Turn Bay Length (ft)				
Base Capacity (vph)	2984	2984	1452	1310
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.33	0.33	0.07	0.29

Intersection Summary

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	911	0	0	1419	43	226
Future Volume (veh/h)	911	0	0	1419	43	226
Number	4	14	3	8	5	12
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1792	0	0	1696	1727	1557
Adj Flow Rate, veh/h	990	0	0	1542	47	0
Adj No. of Lanes	2	0	0	2	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	6	0	0	12	10	22
Cap, veh/h	2510	0	0	2375	146	118
Arrive On Green	0.74	0.00	0.00	0.74	0.09	0.00
Sat Flow, veh/h	3585	0	0	3393	1645	1324
Grp Volume(v), veh/h	990	0	0	1542	47	0
Grp Sat Flow(s),veh/h/ln	1703	0	0	1612	1645	1324
Q Serve(g_s), s	6.1	0.0	0.0	13.6	1.5	0.0
Cycle Q Clear(g_c), s	6.1	0.0	0.0	13.6	1.5	0.0
Prop In Lane		0.00	0.00		1.00	1.00
Lane Grp Cap(c), veh/h	2510	0	0	2375	146	118
V/C Ratio(X)	0.39	0.00	0.00	0.65	0.32	0.00
Avail Cap(c_a), veh/h	3275	0	0	3099	763	614
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	2.7	0.0	0.0	3.7	24.0	0.0
Incr Delay (d2), s/veh	0.1	0.0	0.0	0.3	1.3	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.8	0.0	0.0	5.9	0.7	0.0
LnGrp Delay(d),s/veh	2.8	0.0	0.0	4.0	25.3	0.0
LnGrp LOS	A			A	C	
Approach Vol, veh/h	990			1542	47	
Approach Delay, s/veh	2.8			4.0	25.3	
Approach LOS	A			A	C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4				8
Phs Duration (G+Y+Rc), s		9.9		46.4				46.4
Change Period (Y+Rc), s		4.9		4.9				4.9
Max Green Setting (Gmax), s		26.1		54.1				54.1
Max Q Clear Time (g_c+I1), s		3.5		8.1				15.6
Green Ext Time (p_c), s		0.1		29.0				25.9

Intersection Summary	
HCM 2010 Ctrl Delay	4.0
HCM 2010 LOS	A

Lane Group	EBT	WBT	NBL	NBR
Lane Group Flow (vph)	990	1542	47	246
v/c Ratio	0.47	0.78	0.14	0.66
Control Delay	7.5	12.5	23.3	22.0
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	7.5	12.5	23.3	22.0
Queue Length 50th (ft)	82	175	14	38
Queue Length 95th (ft)	178	378	47	131
Internal Link Dist (ft)	360	470	396	
Turn Bay Length (ft)				
Base Capacity (vph)	2923	2766	779	693
Starvation Cap Reductn	0	72	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.34	0.57	0.06	0.35

Intersection Summary

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	1062	0	0	1098	108	390
Future Volume (veh/h)	1062	0	0	1098	108	390
Number	4	14	3	8	5	12
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	0	0	1863	1863	1863
Adj Flow Rate, veh/h	1167	0	0	1262	137	0
Adj No. of Lanes	2	0	0	2	1	1
Peak Hour Factor	0.91	0.92	0.92	0.87	0.79	0.79
Percent Heavy Veh, %	2	0	0	2	2	2
Cap, veh/h	2318	0	0	2318	224	200
Arrive On Green	0.66	0.00	0.00	0.66	0.13	0.00
Sat Flow, veh/h	3725	0	0	3725	1774	1583
Grp Volume(v), veh/h	1167	0	0	1262	137	0
Grp Sat Flow(s),veh/h/ln	1770	0	0	1770	1774	1583
Q Serve(g_s), s	7.6	0.0	0.0	8.6	3.3	0.0
Cycle Q Clear(g_c), s	7.6	0.0	0.0	8.6	3.3	0.0
Prop In Lane		0.00	0.00		1.00	1.00
Lane Grp Cap(c), veh/h	2318	0	0	2318	224	200
V/C Ratio(X)	0.50	0.00	0.00	0.54	0.61	0.00
Avail Cap(c_a), veh/h	2928	0	0	2928	1705	1522
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	4.0	0.0	0.0	4.1	18.5	0.0
Incr Delay (d2), s/veh	0.2	0.0	0.0	0.2	2.7	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.6	0.0	0.0	4.1	1.8	0.0
LnGrp Delay(d),s/veh	4.1	0.0	0.0	4.3	21.2	0.0
LnGrp LOS	A			A	C	
Approach Vol, veh/h	1167			1262	137	
Approach Delay, s/veh	4.1			4.3	21.2	
Approach LOS	A			A	C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4				8
Phs Duration (G+Y+Rc), s		10.6		34.3				34.3
Change Period (Y+Rc), s		4.9		4.9				4.9
Max Green Setting (Gmax), s		43.1		37.1				37.1
Max Q Clear Time (g_c+I1), s		5.3		9.6				10.6
Green Ext Time (p_c), s		0.4		19.3				18.8

Intersection Summary	
HCM 2010 Ctrl Delay	5.2
HCM 2010 LOS	A

Lane Group	EBT	WBT	NBL	NBR
Lane Group Flow (vph)	1167	1262	137	494
v/c Ratio	0.73	0.79	0.20	0.77
Control Delay	19.8	21.8	14.8	26.6
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	19.8	21.8	14.8	26.6
Queue Length 50th (ft)	195	219	38	174
Queue Length 95th (ft)	374	396	66	244
Internal Link Dist (ft)	360	470	396	
Turn Bay Length (ft)				
Base Capacity (vph)	2028	2028	1178	1061
Starvation Cap Reductn	0	3	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.58	0.62	0.12	0.47

Intersection Summary

Intersection	
Intersection Delay, s/veh	3.4
Intersection LOS	A

Approach	EB	WB	NB	SB
Entry Lanes	2	1	1	0
Conflicting Circle Lanes	2	2	2	2
Adj Approach Flow, veh/h	747	1274	265	0
Demand Flow Rate, veh/h	791	1331	318	0
Vehicles Circulating, veh/h	0	56	791	399
Vehicles Exiting, veh/h	399	780	0	11
Follow-Up Headway, s	3.186	3.186	3.186	3.186
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	7.0	1.8	1.1	0.0
Approach LOS	A	A	A	-

Lane	Left	Right	Left	Bypass	Left	Bypass
Designated Moves	LT	TR	T	R	L	R
Assumed Moves	LT	TR	T	R	L	R
RT Channelized				Free		Free
Lane Util	0.470	0.530	1.000		1.000	
Critical Headway, s	4.293	4.113	4.113		4.113	
Entry Flow, veh/h	372	419	354	977	45	273
Cap Entry Lane, veh/h	1130	1130	1087	1938	650	2318
Entry HV Adj Factor	0.944	0.945	0.893	0.980	0.911	0.820
Flow Entry, veh/h	351	396	316	958	41	224
Cap Entry, veh/h	1066	1067	970	1900	592	1900
V/C Ratio	0.329	0.371	0.326	0.504	0.069	0.118
Control Delay, s/veh	6.7	7.2	7.1	0.0	6.9	0.0
LOS	A	A	A	A	A	A
95th %tile Queue, veh	1	2	1	3	0	0

Intersection	
Intersection Delay, s/veh	4.9
Intersection LOS	A

Approach	EB	WB	NB	SB
Entry Lanes	2	1	1	0
Conflicting Circle Lanes	2	2	2	2
Adj Approach Flow, veh/h	994	1032	474	0
Demand Flow Rate, veh/h	1014	1052	483	0
Vehicles Circulating, veh/h	0	110	1014	527
Vehicles Exiting, veh/h	527	1005	0	9
Follow-Up Headway, s	3.186	3.186	3.186	3.186
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	8.1	3.2	1.9	0.0
Approach LOS	A	A	A	-

Lane	Left	Right	Left	Bypass	Left	Bypass
Designated Moves	LT	TR	T	R	L	R
Assumed Moves	LT	TR	T	R	L	R
RT Channelized				Free		Free
Lane Util	0.470	0.530	1.000		1.000	
Critical Headway, s	4.293	4.113	4.113		4.113	
Entry Flow, veh/h	477	537	426	626	101	382
Cap Entry Lane, veh/h	1130	1130	1046	1938	556	1938
Entry HV Adj Factor	0.980	0.981	0.980	0.980	0.980	0.980
Flow Entry, veh/h	467	527	418	614	99	375
Cap Entry, veh/h	1107	1109	1026	1900	545	1900
V/C Ratio	0.422	0.475	0.407	0.323	0.182	0.197
Control Delay, s/veh	7.7	8.5	7.9	0.0	9.0	0.0
LOS	A	A	A	A	A	A
95th %tile Queue, veh	2	3	2	1	1	1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑			↑↑	↰	↱
Traffic Volume (veh/h)	694	0	0	1170	31	189
Future Volume (veh/h)	694	0	0	1170	31	189
Number	4	14	3	8	5	12
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1792	0	0	1696	1727	1557
Adj Flow Rate, veh/h	780	0	0	1272	41	0
Adj No. of Lanes	2	0	0	2	1	1
Peak Hour Factor	0.89	0.89	0.92	0.92	0.75	0.75
Percent Heavy Veh, %	6	0	0	12	10	22
Cap, veh/h	2326	0	0	2202	176	142
Arrive On Green	0.68	0.00	0.00	0.68	0.11	0.00
Sat Flow, veh/h	3585	0	0	3393	1645	1324
Grp Volume(v), veh/h	780	0	0	1272	41	0
Grp Sat Flow(s),veh/h/ln	1703	0	0	1612	1645	1324
Q Serve(g_s), s	4.4	0.0	0.0	9.6	1.1	0.0
Cycle Q Clear(g_c), s	4.4	0.0	0.0	9.6	1.1	0.0
Prop In Lane		0.00	0.00		1.00	1.00
Lane Grp Cap(c), veh/h	2326	0	0	2202	176	142
V/C Ratio(X)	0.34	0.00	0.00	0.58	0.23	0.00
Avail Cap(c_a), veh/h	3872	0	0	3665	955	768
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	3.0	0.0	0.0	3.9	19.1	0.0
Incr Delay (d2), s/veh	0.1	0.0	0.0	0.2	0.7	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.1	0.0	0.0	4.1	0.5	0.0
LnGrp Delay(d),s/veh	3.1	0.0	0.0	4.1	19.8	0.0
LnGrp LOS	A			A	B	
Approach Vol, veh/h	780			1272	41	
Approach Delay, s/veh	3.1			4.1	19.8	
Approach LOS	A			A	B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4				8
Phs Duration (G+Y+Rc), s		9.9		36.8				36.8
Change Period (Y+Rc), s		4.9		4.9				4.9
Max Green Setting (Gmax), s		27.1		53.1				53.1
Max Q Clear Time (g_c+I1), s		3.1		6.4				11.6
Green Ext Time (p_c), s		0.1		21.3				20.3

Intersection Summary		
HCM 2010 Ctrl Delay		4.1
HCM 2010 LOS		A

Lane Group	EBT	WBT	NBL	NBR
Lane Group Flow (vph)	780	1272	41	252
v/c Ratio	0.40	0.69	0.12	0.60
Control Delay	6.4	9.7	18.5	12.8
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	6.4	9.7	18.5	12.8
Queue Length 50th (ft)	44	91	8	12
Queue Length 95th (ft)	111	230	30	49
Internal Link Dist (ft)	360	470	396	
Turn Bay Length (ft)				
Base Capacity (vph)	3240	3066	1041	910
Starvation Cap Reductn	0	17	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.24	0.42	0.04	0.28

Intersection Summary

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑			↑↑	↰	↱
Traffic Volume (veh/h)	918	0	0	923	78	305
Future Volume (veh/h)	918	0	0	923	78	305
Number	4	14	3	8	5	12
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	0	0	1863	1863	1863
Adj Flow Rate, veh/h	1009	0	0	1061	99	0
Adj No. of Lanes	2	0	0	2	1	1
Peak Hour Factor	0.91	0.92	0.92	0.87	0.79	0.79
Percent Heavy Veh, %	2	0	0	2	2	2
Cap, veh/h	2271	0	0	2271	215	192
Arrive On Green	0.64	0.00	0.00	0.64	0.12	0.00
Sat Flow, veh/h	3725	0	0	3725	1774	1583
Grp Volume(v), veh/h	1009	0	0	1061	99	0
Grp Sat Flow(s),veh/h/ln	1770	0	0	1770	1774	1583
Q Serve(g_s), s	5.9	0.0	0.0	6.3	2.1	0.0
Cycle Q Clear(g_c), s	5.9	0.0	0.0	6.3	2.1	0.0
Prop In Lane		0.00	0.00		1.00	1.00
Lane Grp Cap(c), veh/h	2271	0	0	2271	215	192
V/C Ratio(X)	0.44	0.00	0.00	0.47	0.46	0.00
Avail Cap(c_a), veh/h	3607	0	0	3607	1636	1460
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	3.7	0.0	0.0	3.8	16.9	0.0
Incr Delay (d2), s/veh	0.1	0.0	0.0	0.2	1.5	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.8	0.0	0.0	3.0	1.1	0.0
LnGrp Delay(d),s/veh	3.8	0.0	0.0	3.9	18.4	0.0
LnGrp LOS	A			A	B	
Approach Vol, veh/h	1009			1061	99	
Approach Delay, s/veh	3.8			3.9	18.4	
Approach LOS	A			A	B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4				8
Phs Duration (G+Y+Rc), s		9.9		31.4				31.4
Change Period (Y+Rc), s		4.9		4.9				4.9
Max Green Setting (Gmax), s		38.1		42.1				42.1
Max Q Clear Time (g_c+I1), s		4.1		7.9				8.3
Green Ext Time (p_c), s		0.3		18.3				18.2

Intersection Summary		
HCM 2010 Ctrl Delay		4.6
HCM 2010 LOS		A

Lane Group	EBT	WBT	NBL	NBR
Lane Group Flow (vph)	1009	1061	99	386
v/c Ratio	0.63	0.66	0.16	0.66
Control Delay	13.5	14.1	13.9	19.2
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	13.5	14.1	13.9	19.2
Queue Length 50th (ft)	106	114	19	75
Queue Length 95th (ft)	240	243	52	165
Internal Link Dist (ft)	360	470	396	
Turn Bay Length (ft)				
Base Capacity (vph)	2907	2907	1349	1221
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.35	0.36	0.07	0.32

Intersection Summary

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	911	0	0	1419	43	226
Future Volume (veh/h)	911	0	0	1419	43	226
Number	4	14	3	8	5	12
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1792	0	0	1696	1727	1557
Adj Flow Rate, veh/h	990	0	0	1542	47	0
Adj No. of Lanes	2	0	0	2	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	6	0	0	12	10	22
Cap, veh/h	2510	0	0	2375	146	118
Arrive On Green	0.74	0.00	0.00	0.74	0.09	0.00
Sat Flow, veh/h	3585	0	0	3393	1645	1324
Grp Volume(v), veh/h	990	0	0	1542	47	0
Grp Sat Flow(s),veh/h/ln	1703	0	0	1612	1645	1324
Q Serve(g_s), s	6.1	0.0	0.0	13.6	1.5	0.0
Cycle Q Clear(g_c), s	6.1	0.0	0.0	13.6	1.5	0.0
Prop In Lane		0.00	0.00		1.00	1.00
Lane Grp Cap(c), veh/h	2510	0	0	2375	146	118
V/C Ratio(X)	0.39	0.00	0.00	0.65	0.32	0.00
Avail Cap(c_a), veh/h	3275	0	0	3099	763	614
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	2.7	0.0	0.0	3.7	24.0	0.0
Incr Delay (d2), s/veh	0.1	0.0	0.0	0.3	1.3	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.8	0.0	0.0	5.9	0.7	0.0
LnGrp Delay(d),s/veh	2.8	0.0	0.0	4.0	25.3	0.0
LnGrp LOS	A			A	C	
Approach Vol, veh/h	990			1542	47	
Approach Delay, s/veh	2.8			4.0	25.3	
Approach LOS	A			A	C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4				8
Phs Duration (G+Y+Rc), s		9.9		46.4				46.4
Change Period (Y+Rc), s		4.9		4.9				4.9
Max Green Setting (Gmax), s		26.1		54.1				54.1
Max Q Clear Time (g_c+I1), s		3.5		8.1				15.6
Green Ext Time (p_c), s		0.1		29.0				25.9

Intersection Summary	
HCM 2010 Ctrl Delay	4.0
HCM 2010 LOS	A

Lane Group	EBT	WBT	NBL	NBR
Lane Group Flow (vph)	990	1542	47	246
v/c Ratio	0.47	0.78	0.14	0.66
Control Delay	7.5	12.5	23.3	22.0
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	7.5	12.5	23.3	22.0
Queue Length 50th (ft)	82	175	14	38
Queue Length 95th (ft)	178	378	47	131
Internal Link Dist (ft)	360	470	396	
Turn Bay Length (ft)				
Base Capacity (vph)	2923	2766	779	693
Starvation Cap Reductn	0	72	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.34	0.57	0.06	0.35

Intersection Summary

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑			↑↑	↰	↱
Traffic Volume (veh/h)	1062	0	0	1098	108	390
Future Volume (veh/h)	1062	0	0	1098	108	390
Number	4	14	3	8	5	12
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	0	0	1863	1863	1863
Adj Flow Rate, veh/h	1167	0	0	1262	137	0
Adj No. of Lanes	2	0	0	2	1	1
Peak Hour Factor	0.91	0.92	0.92	0.87	0.79	0.79
Percent Heavy Veh, %	2	0	0	2	2	2
Cap, veh/h	2318	0	0	2318	224	200
Arrive On Green	0.66	0.00	0.00	0.66	0.13	0.00
Sat Flow, veh/h	3725	0	0	3725	1774	1583
Grp Volume(v), veh/h	1167	0	0	1262	137	0
Grp Sat Flow(s),veh/h/ln	1770	0	0	1770	1774	1583
Q Serve(g_s), s	7.6	0.0	0.0	8.6	3.3	0.0
Cycle Q Clear(g_c), s	7.6	0.0	0.0	8.6	3.3	0.0
Prop In Lane		0.00	0.00		1.00	1.00
Lane Grp Cap(c), veh/h	2318	0	0	2318	224	200
V/C Ratio(X)	0.50	0.00	0.00	0.54	0.61	0.00
Avail Cap(c_a), veh/h	2928	0	0	2928	1705	1522
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	4.0	0.0	0.0	4.1	18.5	0.0
Incr Delay (d2), s/veh	0.2	0.0	0.0	0.2	2.7	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.6	0.0	0.0	4.1	1.8	0.0
LnGrp Delay(d),s/veh	4.1	0.0	0.0	4.3	21.2	0.0
LnGrp LOS	A			A	C	
Approach Vol, veh/h	1167			1262	137	
Approach Delay, s/veh	4.1			4.3	21.2	
Approach LOS	A			A	C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4				8
Phs Duration (G+Y+Rc), s		10.6		34.3				34.3
Change Period (Y+Rc), s		4.9		4.9				4.9
Max Green Setting (Gmax), s		43.1		37.1				37.1
Max Q Clear Time (g_c+I1), s		5.3		9.6				10.6
Green Ext Time (p_c), s		0.4		19.3				18.8

Intersection Summary	
HCM 2010 Ctrl Delay	5.2
HCM 2010 LOS	A

Lane Group	EBT	WBT	NBL	NBR
Lane Group Flow (vph)	1167	1262	137	494
v/c Ratio	0.73	0.79	0.20	0.77
Control Delay	19.8	21.8	14.8	26.6
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	19.8	21.8	14.8	26.6
Queue Length 50th (ft)	195	219	38	174
Queue Length 95th (ft)	374	396	66	244
Internal Link Dist (ft)	360	470	396	
Turn Bay Length (ft)				
Base Capacity (vph)	2028	2028	1178	1061
Starvation Cap Reductn	0	3	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.58	0.62	0.12	0.47

Intersection Summary

Intersection	
Intersection Delay, s/veh	6.2
Intersection LOS	A

Approach	EB	WB	NB	SB
Entry Lanes	2	1	1	0
Conflicting Circle Lanes	2	2	2	2
Adj Approach Flow, veh/h	791	1312	293	0
Demand Flow Rate, veh/h	838	1372	352	0
Vehicles Circulating, veh/h	0	56	838	417
Vehicles Exiting, veh/h	417	827	0	11
Follow-Up Headway, s	3.186	3.186	3.186	3.186
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	7.2	1.9	23.0	0.0
Approach LOS	A	A	C	-

Lane	Left	Right	Left	Bypass	Left	Bypass	Bypass
Designated Moves	LT	TR	T	R	L	R	R
Assumed Moves	LT	TR	T	R	L	R	R
RT Channelized				Free		Yield	Free
Lane Util	0.470	0.530	1.000		1.000		
Critical Headway, s	4.293	4.113	4.113		4.113		
Entry Flow, veh/h	394	444	372	1000	45	307	0
Cap Entry Lane, veh/h	1130	1130	1087	1938	628	494	0
Entry HV Adj Factor	0.944	0.944	0.893	0.980	0.911	0.820	0.980
Flow Entry, veh/h	372	419	332	980	41	252	0
Cap Entry, veh/h	1066	1067	970	1900	573	405	0
V/C Ratio	0.349	0.393	0.342	0.516	0.072	0.622	0.000
Control Delay, s/veh	6.9	7.5	7.3	0.0	7.1	25.5	0.0
LOS	A	A	A	A	A	D	-
95th %tile Queue, veh	2	2	2	3	0	4	0

Intersection	
Intersection Delay, s/veh	5.0
Intersection LOS	A

Approach	EB	WB	NB	SB
Entry Lanes	2	1	1	0
Conflicting Circle Lanes	2	2	2	2
Adj Approach Flow, veh/h	1018	1113	485	0
Demand Flow Rate, veh/h	1038	1135	495	0
Vehicles Circulating, veh/h	0	110	1038	559
Vehicles Exiting, veh/h	559	1029	0	9
Follow-Up Headway, s	3.186	3.186	3.186	3.186
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	8.3	3.4	1.9	0.0
Approach LOS	A	A	A	-

Lane	Left	Right	Left	Bypass	Left	Bypass
Designated Moves	LT	TR	T	R	L	R
Assumed Moves	LT	TR	T	R	L	R
RT Channelized				Free		Free
Lane Util	0.470	0.530	1.000		1.000	
Critical Headway, s	4.293	4.113	4.113		4.113	
Entry Flow, veh/h	488	550	458	677	101	394
Cap Entry Lane, veh/h	1130	1130	1046	1938	546	1938
Entry HV Adj Factor	0.980	0.981	0.980	0.980	0.980	0.980
Flow Entry, veh/h	478	539	449	664	99	386
Cap Entry, veh/h	1108	1108	1026	1900	536	1900
V/C Ratio	0.432	0.487	0.438	0.349	0.185	0.203
Control Delay, s/veh	7.9	8.7	8.4	0.0	9.2	0.0
LOS	A	A	A	A	A	A
95th %tile Queue, veh	2	3	2	2	1	1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	33	28	63	597	602	32
Future Volume (veh/h)	33	28	63	597	602	32
Number	7	14	5	2	6	16
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1267	1267	1557	1845	1792	1583
Adj Flow Rate, veh/h	36	30	68	649	654	35
Adj No. of Lanes	1	1	1	2	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	50	50	22	3	6	20
Cap, veh/h	84	75	106	2159	1419	561
Arrive On Green	0.07	0.07	0.07	0.62	0.42	0.42
Sat Flow, veh/h	1206	1077	1483	3597	3495	1346
Grp Volume(v), veh/h	36	30	68	649	654	35
Grp Sat Flow(s),veh/h/ln	1206	1077	1483	1752	1703	1346
Q Serve(g_s), s	0.9	0.8	1.4	2.7	4.3	0.5
Cycle Q Clear(g_c), s	0.9	0.8	1.4	2.7	4.3	0.5
Prop In Lane	1.00	1.00	1.00			1.00
Lane Grp Cap(c), veh/h	84	75	106	2159	1419	561
V/C Ratio(X)	0.43	0.40	0.64	0.30	0.46	0.06
Avail Cap(c_a), veh/h	700	625	380	3605	2194	867
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	13.9	13.9	14.1	2.8	6.6	5.5
Incr Delay (d2), s/veh	3.4	3.4	6.4	0.1	0.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	0.6	0.8	1.3	2.0	0.2
LnGrp Delay(d),s/veh	17.3	17.3	20.5	2.9	6.8	5.5
LnGrp LOS	B	B	C	A	A	A
Approach Vol, veh/h	66			717	689	
Approach Delay, s/veh	17.3			4.6	6.7	
Approach LOS	B			A	A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6		
Phs Duration (G+Y+Rc), s		24.1		7.1	6.2	17.9		
Change Period (Y+Rc), s		4.9		4.9	4.0	4.9		
Max Green Setting (Gmax), s		32.1		18.1	8.0	20.1		
Max Q Clear Time (g_c+I1), s		4.7		2.9	3.4	6.3		
Green Ext Time (p_c), s		9.2		0.1	0.0	6.7		

Intersection Summary		
HCM 2010 Ctrl Delay		6.2
HCM 2010 LOS		A

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	36	30	68	649	654	35
v/c Ratio	0.16	0.13	0.25	0.24	0.31	0.04
Control Delay	19.0	9.6	19.8	3.4	9.2	4.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	19.0	9.6	19.8	3.4	9.2	4.5
Queue Length 50th (ft)	8	0	16	31	65	0
Queue Length 95th (ft)	29	17	48	57	113	13
Internal Link Dist (ft)	234			636	886	
Turn Bay Length (ft)			300			200
Base Capacity (vph)	601	554	327	2829	2231	893
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.06	0.05	0.21	0.23	0.29	0.04

Intersection Summary

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	224	91	240	326	12	751
Future Volume (veh/h)	224	91	240	326	12	751
Number	4	14	3	8	5	12
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1733	1900	1570	1792	1863	1792
Adj Flow Rate, veh/h	243	99	261	354	13	0
Adj No. of Lanes	1	0	1	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	5	5	21	6	2	6
Cap, veh/h	360	147	323	1120	225	193
Arrive On Green	0.31	0.31	0.22	0.62	0.13	0.00
Sat Flow, veh/h	1172	477	1495	1792	1774	1524
Grp Volume(v), veh/h	0	342	261	354	13	0
Grp Sat Flow(s),veh/h/ln	0	1649	1495	1792	1774	1524
Q Serve(g_s), s	0.0	7.2	6.5	3.6	0.3	0.0
Cycle Q Clear(g_c), s	0.0	7.2	6.5	3.6	0.3	0.0
Prop In Lane		0.29	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	0	507	323	1120	225	193
V/C Ratio(X)	0.00	0.67	0.81	0.32	0.06	0.00
Avail Cap(c_a), veh/h	0	882	682	1958	1668	1432
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	0.0	11.9	14.7	3.5	15.2	0.0
Incr Delay (d2), s/veh	0.0	1.6	4.8	0.2	0.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	3.5	3.1	1.8	0.1	0.0
LnGrp Delay(d),s/veh	0.0	13.5	19.5	3.6	15.3	0.0
LnGrp LOS		B	B	A	B	
Approach Vol, veh/h	342			615	13	
Approach Delay, s/veh	13.5			10.3	15.3	
Approach LOS	B			B	B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4				8
Phs Duration (G+Y+Rc), s		9.9	12.5	17.0				29.6
Change Period (Y+Rc), s		4.9	4.0	4.9				4.9
Max Green Setting (Gmax), s		37.1	18.0	21.1				43.1
Max Q Clear Time (g_c+I1), s		2.3	8.5	9.2				5.6
Green Ext Time (p_c), s		0.0	0.5	3.0				4.1

Intersection Summary		
HCM 2010 Ctrl Delay		11.5
HCM 2010 LOS		B

Lane Group	EBT	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	342	261	354	13	816
v/c Ratio	0.76	0.73	0.35	0.03	0.91
Control Delay	37.7	42.4	11.9	16.8	20.0
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	37.7	42.4	11.9	16.8	20.0
Queue Length 50th (ft)	128	107	74	4	58
Queue Length 95th (ft)	#324	#283	194	15	252
Internal Link Dist (ft)	312		976	231	
Turn Bay Length (ft)					
Base Capacity (vph)	557	415	1195	1016	1154
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.61	0.63	0.30	0.01	0.71

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	19	951	0	0	565	968	53	0	262	0	0	0
Future Volume (veh/h)	19	951	0	0	565	968	53	0	262	0	0	0
Number	7	4	14	3	8	18	5	2	12			
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Adj Sat Flow, veh/h/ln	1863	1792	0	0	1696	1863	1727	0	1557			
Adj Flow Rate, veh/h	21	1034	0	0	614	1052	58	0	285			
Adj No. of Lanes	1	2	0	0	1	1	1	0	1			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92			
Percent Heavy Veh, %	2	6	0	0	12	2	10	0	22			
Cap, veh/h	38	2320	0	0	1059	988	381	0	306			
Arrive On Green	0.02	0.68	0.00	0.00	0.62	0.62	0.23	0.00	0.23			
Sat Flow, veh/h	1774	3495	0	0	1696	1583	1645	0	1324			
Grp Volume(v), veh/h	21	1034	0	0	614	1052	58	0	285			
Grp Sat Flow(s),veh/h/ln	1774	1703	0	0	1696	1583	1645	0	1324			
Q Serve(g_s), s	1.3	15.6	0.0	0.0	23.9	70.1	3.2	0.0	23.7			
Cycle Q Clear(g_c), s	1.3	15.6	0.0	0.0	23.9	70.1	3.2	0.0	23.7			
Prop In Lane	1.00		0.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	38	2320	0	0	1059	988	381	0	306			
V/C Ratio(X)	0.55	0.45	0.00	0.00	0.58	1.06	0.15	0.00	0.93			
Avail Cap(c_a), veh/h	126	2490	0	0	1059	988	412	0	331			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	1.00	1.00	0.00	0.00	1.00	1.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	54.4	8.2	0.0	0.0	12.4	21.1	34.4	0.0	42.3			
Incr Delay (d2), s/veh	12.0	0.1	0.0	0.0	0.8	47.4	0.2	0.0	30.9			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	0.8	7.2	0.0	0.0	11.3	43.2	1.5	0.0	11.3			
LnGrp Delay(d),s/veh	66.4	8.3	0.0	0.0	13.2	68.5	34.6	0.0	73.1			
LnGrp LOS	E	A			B	F	C		E			
Approach Vol, veh/h		1055			1666			343				
Approach Delay, s/veh		9.5			48.1			66.6				
Approach LOS		A			D			E				

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4			7	8
Phs Duration (G+Y+Rc), s		30.9		81.4			6.4	75.0
Change Period (Y+Rc), s		4.9		4.9			4.0	4.9
Max Green Setting (Gmax), s		28.1		82.1			8.0	70.1
Max Q Clear Time (g_c+I1), s		25.7		17.6			3.3	72.1
Green Ext Time (p_c), s		0.3		31.3			0.0	0.0

Intersection Summary	
HCM 2010 Ctrl Delay	36.9
HCM 2010 LOS	D

Lane Group	EBL	EBT	WBT	WBR	NBL	NBR
Lane Group Flow (vph)	21	1034	614	1052	58	285
v/c Ratio	0.11	0.50	0.64	0.85	0.16	0.71
Control Delay	45.2	8.0	15.4	11.5	30.5	26.3
Queue Delay	0.0	0.0	0.0	1.2	0.0	0.0
Total Delay	45.2	8.0	15.4	12.7	30.5	26.3
Queue Length 50th (ft)	6	90	111	35	15	37
Queue Length 95th (ft)	43	214	413	391	73	198
Internal Link Dist (ft)		976	604			
Turn Bay Length (ft)	100					
Base Capacity (vph)	255	3077	1457	1473	880	779
Starvation Cap Reductn	0	0	48	215	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.08	0.34	0.44	0.84	0.07	0.37

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	244	633	192	20	1034	410	233	679	16	117	368	147
Future Volume (veh/h)	244	633	192	20	1034	410	233	679	16	117	368	147
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1759	1712	1881	1900	1827	1845	1792	1863	1900	1810	1881	1610
Adj Flow Rate, veh/h	265	688	209	22	1124	446	253	738	0	127	400	0
Adj No. of Lanes	2	2	1	2	2	1	2	2	1	2	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	8	11	1	0	4	3	6	2	0	5	1	18
Cap, veh/h	318	1426	701	84	1265	572	330	922	421	198	786	301
Arrive On Green	0.10	0.44	0.44	0.02	0.36	0.36	0.10	0.26	0.00	0.06	0.22	0.00
Sat Flow, veh/h	3250	3252	1599	3510	3471	1568	3312	3539	1615	3343	3574	1369
Grp Volume(v), veh/h	265	688	209	22	1124	446	253	738	0	127	400	0
Grp Sat Flow(s),veh/h/ln	1625	1626	1599	1755	1736	1568	1656	1770	1615	1672	1787	1369
Q Serve(g_s), s	6.5	12.3	6.9	0.5	24.9	20.6	6.1	15.9	0.0	3.0	8.0	0.0
Cycle Q Clear(g_c), s	6.5	12.3	6.9	0.5	24.9	20.6	6.1	15.9	0.0	3.0	8.0	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	318	1426	701	84	1265	572	330	922	421	198	786	301
V/C Ratio(X)	0.83	0.48	0.30	0.26	0.89	0.78	0.77	0.80	0.00	0.64	0.51	0.00
Avail Cap(c_a), veh/h	318	1426	701	344	1364	616	365	1044	477	327	1011	387
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	36.2	16.3	14.8	39.1	24.4	23.0	35.8	28.2	0.0	37.6	28.0	0.0
Incr Delay (d2), s/veh	16.9	0.3	0.2	1.6	7.2	6.0	8.6	4.1	0.0	3.5	0.5	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.7	5.5	3.1	0.3	13.1	9.9	3.2	8.3	0.0	1.5	4.0	0.0
LnGrp Delay(d),s/veh	53.1	16.6	15.0	40.8	31.5	29.0	44.5	32.3	0.0	41.0	28.5	0.0
LnGrp LOS	D	B	B	D	C	C	D	C		D	C	
Approach Vol, veh/h		1162			1592			991			527	
Approach Delay, s/veh		24.6			31.0			35.4			31.5	
Approach LOS		C			C			D			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	8.8	26.2	6.0	40.7	12.1	22.9	12.0	34.7
Change Period (Y+Rc), s	4.0	4.9	4.0	4.9	4.0	4.9	4.0	4.9
Max Green Setting (Gmax), s	8.0	24.1	8.0	32.1	9.0	23.1	8.0	32.1
Max Q Clear Time (g_c+I1), s	5.0	17.9	2.5	14.3	8.1	10.0	8.5	26.9
Green Ext Time (p_c), s	0.1	3.4	0.0	12.8	0.1	5.6	0.0	2.9

Intersection Summary	
HCM 2010 Ctrl Delay	30.3
HCM 2010 LOS	C

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	265	688	209	22	1124	446	253	738	17	127	400	160
v/c Ratio	0.89	0.47	0.25	0.09	0.90	0.62	0.74	0.82	0.03	0.44	0.47	0.36
Control Delay	71.3	19.5	3.8	39.9	37.9	14.6	53.4	39.3	0.1	43.6	30.4	7.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	71.3	19.5	3.8	39.9	37.9	14.6	53.4	39.3	0.1	43.6	30.4	7.1
Queue Length 50th (ft)	78	127	0	6	315	89	73	204	0	36	100	0
Queue Length 95th (ft)	#152	218	43	18	#444	192	#129	272	0	63	143	47
Internal Link Dist (ft)		581			1146			716			862	
Turn Bay Length (ft)	220		290	270		225	200		80	255		175
Base Capacity (vph)	299	1469	837	323	1286	733	343	984	536	308	953	482
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.89	0.47	0.25	0.07	0.87	0.61	0.74	0.75	0.03	0.41	0.42	0.33

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	63	89	32	1444	1707	23
Future Volume (veh/h)	63	89	32	1444	1707	23
Number	7	14	5	2	6	16
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1727	950	1792	1863	950
Adj Flow Rate, veh/h	68	97	35	1570	1855	25
Adj No. of Lanes	1	1	1	2	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	0	10	100	6	2	100
Cap, veh/h	168	136	32	2628	2412	550
Arrive On Green	0.09	0.09	0.03	0.77	0.68	0.68
Sat Flow, veh/h	1810	1468	905	3495	3632	807
Grp Volume(v), veh/h	68	97	35	1570	1855	25
Grp Sat Flow(s),veh/h/ln	1810	1468	905	1703	1770	807
Q Serve(g_s), s	2.6	4.6	2.5	14.1	25.4	0.7
Cycle Q Clear(g_c), s	2.6	4.6	2.5	14.1	25.4	0.7
Prop In Lane	1.00	1.00	1.00			1.00
Lane Grp Cap(c), veh/h	168	136	32	2628	2412	550
V/C Ratio(X)	0.40	0.71	1.11	0.60	0.77	0.05
Avail Cap(c_a), veh/h	450	365	100	2925	2453	560
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	31.0	31.9	34.9	3.5	7.7	3.8
Incr Delay (d2), s/veh	1.6	6.7	106.5	0.3	1.5	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	5.4	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.4	4.0	1.6	6.4	12.6	0.2
LnGrp Delay(d),s/veh	32.5	38.6	146.8	3.8	9.2	3.8
LnGrp LOS	C	D	F	A	A	A
Approach Vol, veh/h	165			1605	1880	
Approach Delay, s/veh	36.1			6.9	9.2	
Approach LOS	D			A	A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6		
Phs Duration (G+Y+Rc), s		60.8		11.6	6.5	54.3		
Change Period (Y+Rc), s		4.9		4.9	4.0	4.9		
Max Green Setting (Gmax), s		62.2		18.0	8.0	50.2		
Max Q Clear Time (g_c+I1), s		16.1		6.6	4.5	27.4		
Green Ext Time (p_c), s		39.8		0.3	0.0	21.1		

Intersection Summary		
HCM 2010 Ctrl Delay		9.4
HCM 2010 LOS		A

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	68	97	35	1570	1855	25
v/c Ratio	0.31	0.37	0.37	0.57	0.73	0.04
Control Delay	36.6	12.3	46.3	4.9	12.7	3.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	36.6	12.3	46.3	4.9	12.7	3.6
Queue Length 50th (ft)	32	0	17	130	345	1
Queue Length 95th (ft)	70	42	#51	213	509	10
Internal Link Dist (ft)	234			644	886	
Turn Bay Length (ft)			300			200
Base Capacity (vph)	490	469	108	2878	2550	588
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.14	0.21	0.32	0.55	0.73	0.04

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	250	92	241	338	38	870
Future Volume (veh/h)	250	92	241	338	38	870
Number	4	14	3	8	5	12
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1771	1900	1545	1727	1900	1845
Adj Flow Rate, veh/h	272	100	262	367	41	0
Adj No. of Lanes	1	0	1	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	7	7	23	10	0	3
Cap, veh/h	407	150	325	1115	217	188
Arrive On Green	0.33	0.33	0.22	0.65	0.12	0.00
Sat Flow, veh/h	1236	455	1471	1727	1810	1568
Grp Volume(v), veh/h	0	372	262	367	41	0
Grp Sat Flow(s),veh/h/ln	0	1691	1471	1727	1810	1568
Q Serve(g_s), s	0.0	7.9	7.1	4.0	0.9	0.0
Cycle Q Clear(g_c), s	0.0	7.9	7.1	4.0	0.9	0.0
Prop In Lane		0.27	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	0	556	325	1115	217	188
V/C Ratio(X)	0.00	0.67	0.81	0.33	0.19	0.00
Avail Cap(c_a), veh/h	0	1138	845	2320	2344	2031
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	0.0	12.0	15.4	3.3	16.6	0.0
Incr Delay (d2), s/veh	0.0	1.4	4.7	0.2	0.4	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	3.8	3.3	1.9	0.4	0.0
LnGrp Delay(d),s/veh	0.0	13.4	20.2	3.5	17.0	0.0
LnGrp LOS		B	C	A	B	
Approach Vol, veh/h	372			629	41	
Approach Delay, s/veh	13.4			10.4	17.0	
Approach LOS	B			B	B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4				8
Phs Duration (G+Y+Rc), s		9.9	13.2	18.6				31.9
Change Period (Y+Rc), s		4.9	4.0	4.9				4.9
Max Green Setting (Gmax), s		54.1	24.0	28.1				56.1
Max Q Clear Time (g_c+I1), s		2.9	9.1	9.9				6.0
Green Ext Time (p_c), s		0.1	0.6	3.8				4.5

Intersection Summary		
HCM 2010 Ctrl Delay		11.8
HCM 2010 LOS		B

Lane Group	EBT	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	372	262	367	41	946
v/c Ratio	0.86	0.83	0.42	0.06	0.95
Control Delay	57.9	64.0	20.2	19.2	28.9
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	57.9	64.0	20.2	19.2	28.9
Queue Length 50th (ft)	253	186	167	18	265
Queue Length 95th (ft)	#454	#355	272	39	#638
Internal Link Dist (ft)	312		1110	231	
Turn Bay Length (ft)					
Base Capacity (vph)	507	365	1004	1012	1156
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.73	0.72	0.37	0.04	0.82

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	15	1092	0	0	572	698	133	0	520	0	0	0
Future Volume (veh/h)	15	1092	0	0	572	698	133	0	520	0	0	0
Number	7	4	14	3	8	18	5	2	12			
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Adj Sat Flow, veh/h/ln	1863	1863	0	0	1863	1863	1863	0	1863			
Adj Flow Rate, veh/h	16	1187	0	0	622	759	145	0	565			
Adj No. of Lanes	1	2	0	0	1	1	1	0	1			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92			
Percent Heavy Veh, %	2	2	0	0	2	2	2	0	2			
Cap, veh/h	32	1821	0	0	847	720	681	0	607			
Arrive On Green	0.02	0.51	0.00	0.00	0.45	0.45	0.38	0.00	0.38			
Sat Flow, veh/h	1774	3632	0	0	1863	1583	1774	0	1583			
Grp Volume(v), veh/h	16	1187	0	0	622	759	145	0	565			
Grp Sat Flow(s),veh/h/ln	1774	1770	0	0	1863	1583	1774	0	1583			
Q Serve(g_s), s	0.9	23.6	0.0	0.0	26.3	43.7	5.3	0.0	32.9			
Cycle Q Clear(g_c), s	0.9	23.6	0.0	0.0	26.3	43.7	5.3	0.0	32.9			
Prop In Lane	1.00		0.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	32	1821	0	0	847	720	681	0	607			
V/C Ratio(X)	0.50	0.65	0.00	0.00	0.73	1.05	0.21	0.00	0.93			
Avail Cap(c_a), veh/h	148	2051	0	0	847	720	821	0	733			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	1.00	1.00	0.00	0.00	1.00	1.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	46.8	17.0	0.0	0.0	21.5	26.2	19.9	0.0	28.4			
Incr Delay (d2), s/veh	11.5	0.6	0.0	0.0	3.3	48.7	0.2	0.0	16.6			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	0.5	11.5	0.0	0.0	14.3	28.7	2.6	0.0	17.1			
LnGrp Delay(d),s/veh	58.2	17.7	0.0	0.0	24.8	74.9	20.0	0.0	44.9			
LnGrp LOS	E	B			C	F	C		D			
Approach Vol, veh/h		1203			1381			710				
Approach Delay, s/veh		18.2			52.4			39.9				
Approach LOS		B			D			D				

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4			7	8
Phs Duration (G+Y+Rc), s		41.8		54.3			5.7	48.6
Change Period (Y+Rc), s		4.9		4.9			4.0	4.9
Max Green Setting (Gmax), s		44.5		55.7			8.0	43.7
Max Q Clear Time (g_c+I1), s		34.9		25.6			2.9	45.7
Green Ext Time (p_c), s		2.0		19.3			0.0	0.0

Intersection Summary		
HCM 2010 Ctrl Delay		37.2
HCM 2010 LOS		D

Lane Group	EBL	EBT	WBT	WBR	NBL	NBR
Lane Group Flow (vph)	16	1187	622	759	145	565
v/c Ratio	0.11	0.71	0.78	0.69	0.20	0.84
Control Delay	47.9	21.0	31.7	6.2	19.7	35.0
Queue Delay	0.0	0.0	0.2	0.0	0.0	0.0
Total Delay	47.9	21.0	31.9	6.2	19.7	35.0
Queue Length 50th (ft)	8	260	258	9	48	236
Queue Length 95th (ft)	34	390	#591	114	110	#522
Internal Link Dist (ft)		1110	470			
Turn Bay Length (ft)	150					
Base Capacity (vph)	181	2457	1046	1208	1012	930
Starvation Cap Reductn	0	0	79	5	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.09	0.48	0.64	0.63	0.14	0.61

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	420	756	274	37	567	354	228	710	20	490	1087	209
Future Volume (veh/h)	420	756	274	37	567	354	228	710	20	490	1087	209
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1681	1827	1900	1900	1827	1776	1810	1881	1900	1845	1900	1759
Adj Flow Rate, veh/h	457	822	298	40	616	385	248	772	0	533	1182	0
Adj No. of Lanes	2	2	1	2	2	1	2	2	1	2	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	13	4	0	0	4	7	5	1	0	3	0	8
Cap, veh/h	512	1219	567	110	755	328	303	1035	468	595	1349	559
Arrive On Green	0.16	0.35	0.35	0.03	0.22	0.22	0.09	0.29	0.00	0.17	0.37	0.00
Sat Flow, veh/h	3107	3471	1615	3510	3471	1509	3343	3574	1615	3408	3610	1495
Grp Volume(v), veh/h	457	822	298	40	616	385	248	772	0	533	1182	0
Grp Sat Flow(s),veh/h/ln	1553	1736	1615	1755	1736	1509	1672	1787	1615	1704	1805	1495
Q Serve(g_s), s	16.7	23.3	17.0	1.3	19.6	25.2	8.4	22.7	0.0	17.7	35.3	0.0
Cycle Q Clear(g_c), s	16.7	23.3	17.0	1.3	19.6	25.2	8.4	22.7	0.0	17.7	35.3	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	512	1219	567	110	755	328	303	1035	468	595	1349	559
V/C Ratio(X)	0.89	0.67	0.53	0.36	0.82	1.17	0.82	0.75	0.00	0.90	0.88	0.00
Avail Cap(c_a), veh/h	563	1219	567	242	755	328	317	1049	474	647	1402	581
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	47.4	32.0	29.9	55.0	43.1	45.3	51.8	37.3	0.0	46.8	33.8	0.0
Incr Delay (d2), s/veh	15.5	1.5	0.9	2.0	7.0	105.4	15.0	2.9	0.0	14.4	6.4	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.3	11.4	7.7	0.7	10.1	20.1	4.5	11.6	0.0	9.6	18.8	0.0
LnGrp Delay(d),s/veh	62.9	33.5	30.8	57.0	50.1	150.7	66.8	40.2	0.0	61.2	40.2	0.0
LnGrp LOS	E	C	C	E	D	F	E	D		E	D	
Approach Vol, veh/h		1577			1041			1020			1715	
Approach Delay, s/veh		41.5			87.6			46.7			46.7	
Approach LOS		D			F			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	24.2	38.5	7.6	45.6	14.5	48.2	23.1	30.1
Change Period (Y+Rc), s	4.0	4.9	4.0	4.9	4.0	4.9	4.0	4.9
Max Green Setting (Gmax), s	22.0	34.0	8.0	38.2	11.0	45.0	21.0	25.2
Max Q Clear Time (g_c+I1), s	19.7	24.7	3.3	25.3	10.4	37.3	18.7	27.2
Green Ext Time (p_c), s	0.5	7.0	0.0	8.6	0.0	5.9	0.4	0.0

Intersection Summary		
HCM 2010 Ctrl Delay		53.1
HCM 2010 LOS		D

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	457	822	298	40	616	385	248	772	22	533	1182	227
v/c Ratio	0.85	0.69	0.41	0.20	0.85	0.69	0.79	0.77	0.04	0.86	0.89	0.35
Control Delay	63.1	37.7	6.5	55.8	57.0	17.2	70.9	44.4	0.1	61.6	43.8	12.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	63.1	37.7	6.5	55.8	57.0	17.2	70.9	44.4	0.1	61.6	43.8	12.1
Queue Length 50th (ft)	178	294	11	15	243	51	98	287	0	208	443	44
Queue Length 95th (ft)	#260	374	78	34	#332	167	#164	362	0	#295	539	107
Internal Link Dist (ft)		581			1146			698			854	
Turn Bay Length (ft)	220		290	270		225	200		80	255		175
Base Capacity (vph)	568	1187	734	244	763	570	320	1061	594	653	1418	672
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.80	0.69	0.41	0.16	0.81	0.68	0.78	0.73	0.04	0.82	0.83	0.34

Intersection Summary

Description: 1

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Intersection	
Intersection Delay, s/veh	6.4
Intersection LOS	A

Approach	EB	WB	NB
Entry Lanes	1	1	1
Conflicting Circle Lanes	1	1	1
Adj Approach Flow, veh/h	342	615	829
Demand Flow Rate, veh/h	375	691	878
Vehicles Circulating, veh/h	316	13	255
Vehicles Exiting, veh/h	388	255	436
Follow-Up Headway, s	3.186	3.186	3.186
Ped Vol Crossing Leg, #/h	0	0	0
Ped Cap Adj	1.000	1.000	1.000
Approach Delay, s/veh	11.0	12.4	0.1
Approach LOS	B	B	A

Lane	Left	Left	Left	Bypass
Designated Moves	TR	LT	L	R
Assumed Moves	TR	LT	L	R
RT Channelized				Free
Lane Util	1.000	1.000	1.000	
Critical Headway, s	5.193	5.193	5.193	
Entry Flow, veh/h	375	691	13	865
Cap Entry Lane, veh/h	824	1115	876	2014
Entry HV Adj Factor	0.912	0.890	1.000	0.943
Flow Entry, veh/h	342	615	13	816
Cap Entry, veh/h	751	992	876	1900
V/C Ratio	0.455	0.620	0.015	0.429
Control Delay, s/veh	11.0	12.4	4.2	0.0
LOS	B	B	A	A
95th %tile Queue, veh	2	4	0	2

Intersection	
Intersection Delay, s/veh	8.6
Intersection LOS	A

Approach	EB	WB	NB	SB
Entry Lanes	2	2	1	0
Conflicting Circle Lanes	2	2	2	2
Adj Approach Flow, veh/h	1055	1666	343	0
Demand Flow Rate, veh/h	1117	1761	412	0
Vehicles Circulating, veh/h	0	85	1117	752
Vehicles Exiting, veh/h	752	1096	0	21
Follow-Up Headway, s	3.186	3.186	3.186	3.186
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	9.1	5.1	23.7	0.0
Approach LOS	A	A	C	-

Lane	Left	Right	Left	Bypass	Left	Bypass	Bypass
Designated Moves	LT	TR	T	R	L	R	R
Assumed Moves	LT	TR	T	R	L	R	R
RT Channelized				Free		Yield	Free
Lane Util	0.470	0.530	1.000		1.000		
Critical Headway, s	4.293	4.113	4.293		4.113		
Entry Flow, veh/h	525	592	688	1073	64	348	0
Cap Entry Lane, veh/h	1130	1130	1060	1938	517	525	0
Entry HV Adj Factor	0.944	0.944	0.893	0.980	0.906	0.820	0.980
Flow Entry, veh/h	496	559	614	1052	58	285	0
Cap Entry, veh/h	1067	1067	947	1900	469	430	0
V/C Ratio	0.465	0.524	0.649	0.554	0.124	0.663	0.000
Control Delay, s/veh	8.6	9.6	13.8	0.0	9.4	26.7	0.0
LOS	A	A	B	A	A	D	-
95th %tile Queue, veh	3	3	5	4	0	5	0

Intersection	
Intersection Delay, s/veh	6.9
Intersection LOS	A

Approach	EB	WB	NB
Entry Lanes	1	1	1
Conflicting Circle Lanes	1	1	1
Adj Approach Flow, veh/h	372	629	987
Demand Flow Rate, veh/h	399	726	1015
Vehicles Circulating, veh/h	322	41	291
Vehicles Exiting, veh/h	445	291	430
Follow-Up Headway, s	3.186	3.186	3.186
Ped Vol Crossing Leg, #/h	0	0	0
Ped Cap Adj	1.000	1.000	1.000
Approach Delay, s/veh	11.5	14.6	0.2
Approach LOS	B	B	A

Lane	Left	Left	Left	Bypass
Designated Moves	TR	LT	L	R
Assumed Moves	TR	LT	L	R
RT Channelized				Free
Lane Util	1.000	1.000	1.000	
Critical Headway, s	5.193	5.193	5.193	
Entry Flow, veh/h	399	726	41	974
Cap Entry Lane, veh/h	819	1085	845	1957
Entry HV Adj Factor	0.932	0.867	1.000	0.971
Flow Entry, veh/h	372	629	41	946
Cap Entry, veh/h	763	940	845	1900
V/C Ratio	0.487	0.669	0.049	0.498
Control Delay, s/veh	11.5	14.6	4.7	0.0
LOS	B	B	A	A
95th %tile Queue, veh	3	5	0	3

Intersection	
Intersection Delay, s/veh	6.6
Intersection LOS	A

Approach	EB	WB	NB	SB
Entry Lanes	2	2	1	0
Conflicting Circle Lanes	2	2	2	2
Adj Approach Flow, veh/h	1203	1379	710	0
Demand Flow Rate, veh/h	1227	1406	724	0
Vehicles Circulating, veh/h	0	164	1227	782
Vehicles Exiting, veh/h	782	1211	0	16
Follow-Up Headway, s	3.186	3.186	3.186	3.186
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	9.8	5.9	2.6	0.0
Approach LOS	A	A	A	-

Lane	Left	Right	Left	Bypass	Left	Bypass
Designated Moves	LT	TR	T	R	L	R
Assumed Moves	LT	TR	T	R	L	R
RT Channelized				Free		Free
Lane Util	0.470	0.530	1.000		1.000	
Critical Headway, s	4.293	4.113	4.293		4.113	
Entry Flow, veh/h	577	650	634	772	148	576
Cap Entry Lane, veh/h	1130	1130	999	1938	479	1938
Entry HV Adj Factor	0.980	0.981	0.980	0.980	0.980	0.980
Flow Entry, veh/h	566	638	622	757	145	565
Cap Entry, veh/h	1107	1109	980	1900	469	1900
V/C Ratio	0.511	0.575	0.635	0.398	0.309	0.297
Control Delay, s/veh	9.1	10.4	13.0	0.0	12.6	0.0
LOS	A	B	B	A	B	A
95th %tile Queue, veh	3	4	5	2	1	1

Appendix I

NRCS Soils Report

United States Department of Agriculture

NRCS

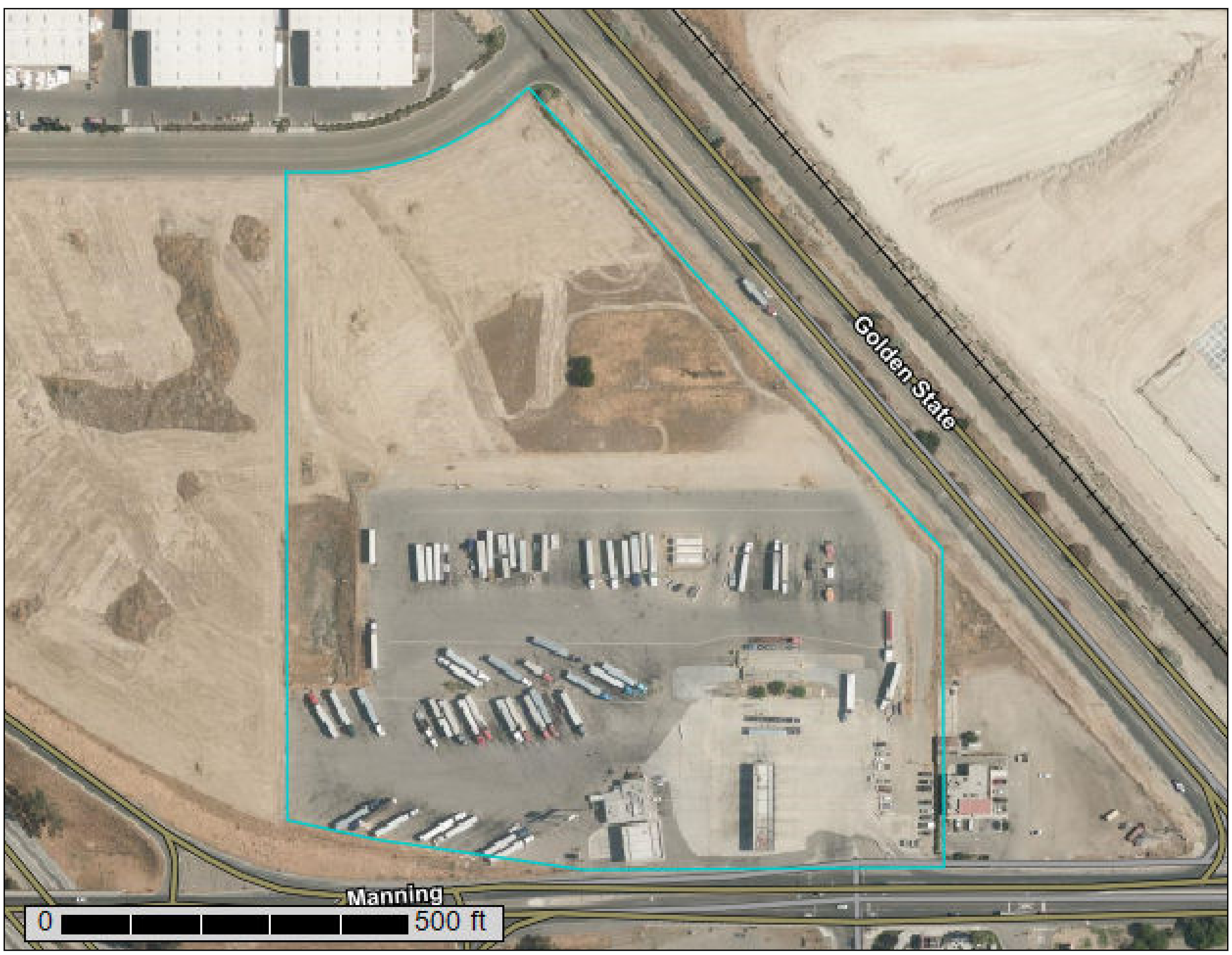
Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for

Eastern Fresno Area, California

Buford Oil CUP



June 10, 2019

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

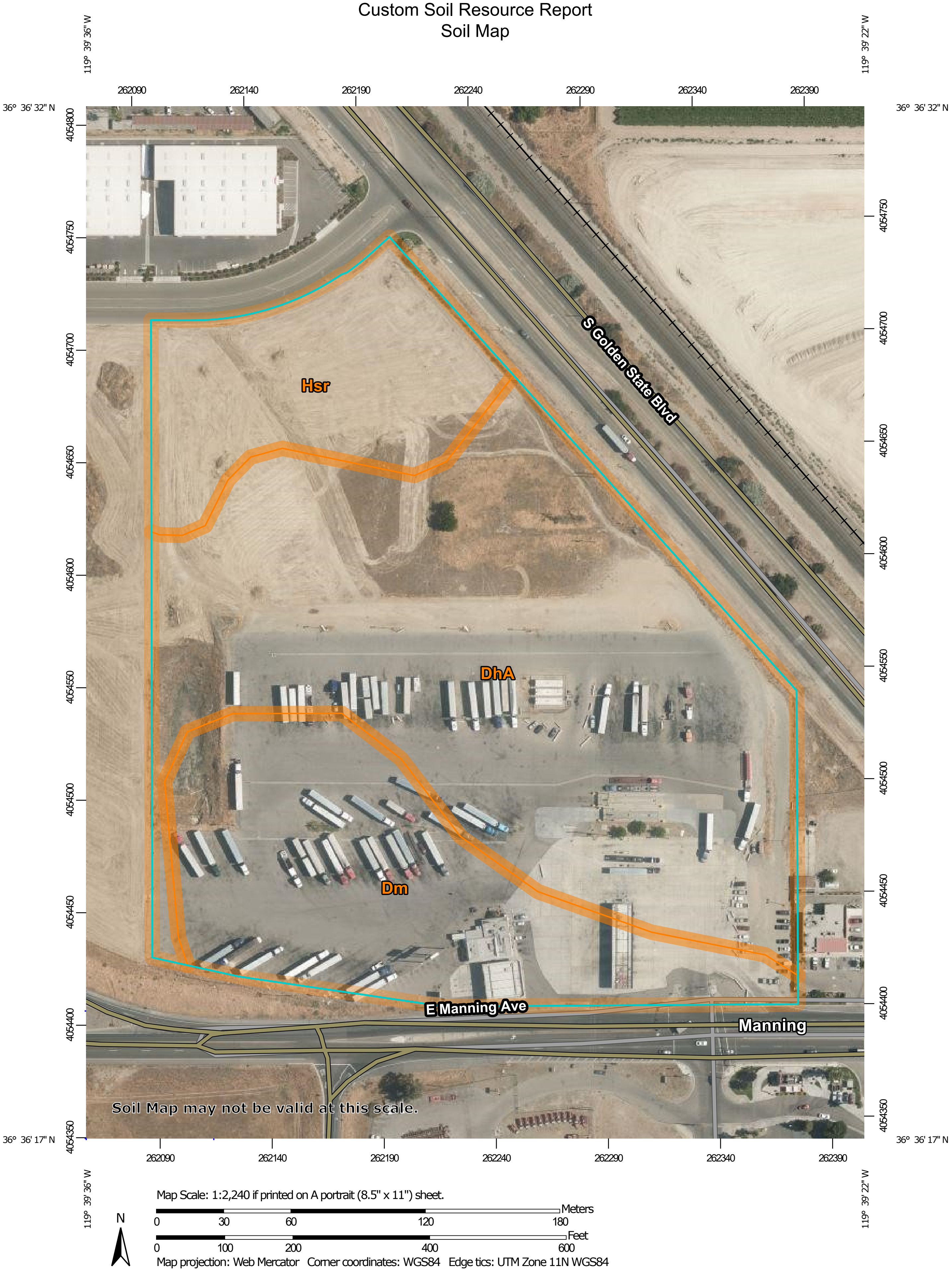
Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Soil Map


119° 39' 36" W
119° 39' 22" W
36° 36' 32" N
36° 36' 17" N
262090
262140
262190
262240
262290
262340
262390
4054800
4054750
4054700
4054650
4054600
4054550
4054500
4054450
4054400
4054350
Hsr
DhA
Dm
S Golden State Blvd
E Manning Ave
Manning
Soil Map may not be valid at this scale.
Map Scale: 1:2,240 if printed on A portrait (8.5" x 11") sheet.
Meters
0 30 60 120 180
Feet
0 100 200 400 600
N
Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 11N WGS84

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Map Unit Polygons

Soil Map Unit Lines

Soil Map Unit Points

Special Point Features

Blowout

Borrow Pit

Clay Spot

Closed Depression

Gravel Pit

Gravelly Spot

Landfill

Lava Flow

Marsh or swamp

Mine or Quarry

Miscellaneous Water

Perennial Water

Rock Outcrop

Saline Spot

Sandy Spot

Severely Eroded Spot

Sinkhole

Slide or Slip

Sodic Spot

Spoil Area

Stony Spot

Very Stony Spot

Wet Spot

Other

Special Line Features

Water Features

Streams and Canals

Transportation

Rails

Interstate Highways

US Routes

Major Roads

Local Roads

Background

Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Eastern Fresno Area, California
Survey Area Data: Version 11, Sep 12, 2018

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jun 1, 2018—Jul 1, 2018

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
DhA	Delhi loamy sand, 0 to 3 percent slopes, MLRA 17	10.9	57.8%
Dm	Dello loamy sand	5.0	26.5%
Hsr	Hesperia fine sandy loam	3.0	15.7%
Totals for Area of Interest		**18.8**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Eastern Fresno Area, California

DhA—Delhi loamy sand, 0 to 3 percent slopes, MLRA 17

Map Unit Setting

National map unit symbol: 2ss8r
Elevation: 30 to 430 feet
Mean annual precipitation: 9 to 16 inches
Mean annual air temperature: 59 to 64 degrees F
Frost-free period: 225 to 310 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

Delhi and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Delhi

Setting

Landform: Dunes on fan remnants
Landform position (two-dimensional): Shoulder, toeslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Eolian deposits derived from sandy alluvium derived from granite

Typical profile

A - 0 to 7 inches: loamy sand
C1 - 7 to 25 inches: loamy sand
C2 - 25 to 60 inches: loamy sand

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Somewhat excessively drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): High to very high (5.95 to 19.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline (0.0 to 1.0 mmhos/cm)
Available water storage in profile: Low (about 4.2 inches)

Interpretive groups

Land capability classification (irrigated): 3s
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: A
Hydric soil rating: No

Minor Components

Hanford

Percent of map unit: 6 percent
Landform: Depressions on fan remnants

Hydric soil rating: No

Dello

Percent of map unit: 6 percent
Landform: Depressions on fan remnants
Hydric soil rating: Yes

Hilmar

Percent of map unit: 1 percent
Hydric soil rating: No

Dinuba

Percent of map unit: 1 percent
Hydric soil rating: No

Grangeville

Percent of map unit: 1 percent
Hydric soil rating: No

Dm—Dello loamy sand

Map Unit Setting

National map unit symbol: hl3k
Elevation: 160 to 400 feet
Mean annual precipitation: 8 to 12 inches
Mean annual air temperature: 61 to 63 degrees F
Frost-free period: 225 to 250 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Dello and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Dello

Setting

Landform: Depressions on flood plains, depressions on alluvial fans
Landform position (two-dimensional): Toeslope, footslope
Landform position (three-dimensional): Base slope, rise
Down-slope shape: Concave, linear
Across-slope shape: Concave, linear
Parent material: Alluvium derived from granite

Typical profile

Ap - 0 to 8 inches: loamy sand
Cg1 - 8 to 36 inches: loamy sand
Cg2 - 36 to 60 inches: sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches

Natural drainage class: Somewhat poorly drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): High to very high (5.95 to 19.98 in/hr)
Depth to water table: About 36 to 60 inches
Frequency of flooding: Rare
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water storage in profile: Low (about 4.1 inches)

Interpretive groups

Land capability classification (irrigated): 3w
Land capability classification (nonirrigated): 4w
Hydrologic Soil Group: A
Hydric soil rating: Yes

Minor Components

Unnamed

Percent of map unit: 13 percent
Landform: Depressions on flood plains
Hydric soil rating: Yes

Unnamed, hummock

Percent of map unit: 2 percent
Landform: Hummocks on alluvial fans, levees on flood plains
Hydric soil rating: No

Hsr—Hesperia fine sandy loam

Map Unit Setting

National map unit symbol: hl63
Elevation: 200 to 400 feet
Mean annual precipitation: 8 to 10 inches
Mean annual air temperature: 61 to 63 degrees F
Frost-free period: 225 to 250 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

Hesperia and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Hesperia

Setting

Landform: — error in exists on —
Landform position (two-dimensional): Footslope, toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Linear

Across-slope shape: Linear
Parent material: Alluvium derived from granite

Typical profile

Ap - 0 to 11 inches: fine sandy loam
C - 11 to 32 inches: fine sandy loam
Ck - 32 to 60 inches: fine sandy loam
2Ck - 60 to 65 inches: silt

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: Rare
Frequency of ponding: None
Calcium carbonate, maximum in profile: 5 percent
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water storage in profile: Moderate (about 7.8 inches)

Interpretive groups

Land capability classification (irrigated): 1
Land capability classification (nonirrigated): 4c
Hydrologic Soil Group: A
Hydric soil rating: No

Minor Components

Unnamed, loam surface

Percent of map unit: 10 percent
Landform: Alluvial fans
Hydric soil rating: No

Unnamed

Percent of map unit: 5 percent
Landform: Alluvial fans
Hydric soil rating: No

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