

## **APPENDIX I – UTILITIES SERVICES FEASIBILITY ANALYSIS**



**Peters Canyon Regional Park-  
General Development Plan  
Structures  
Utility Services Feasibility Analysis**

Prepared for:  
OC Parks Planning & Design Division



Prepared by:  
Stantec Consulting Services Inc.



March 2, 2017

**PETERS CANYON REGIONAL PARK-GENERAL DEVELOPMENT PLAN  
STRUCTURES  
UTILITY SERVICES FEASIBILITY ANALYSIS**

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## **1.0 INTRODUCTION**

Peters Canyon Regional Park consists of 340 acres of mostly native habitat, providing beautiful trails for hikers, mountain bikers, and equestrians. It is located west of Jamboree Road, south of Canyon View Avenue, and east of Newport Boulevard.

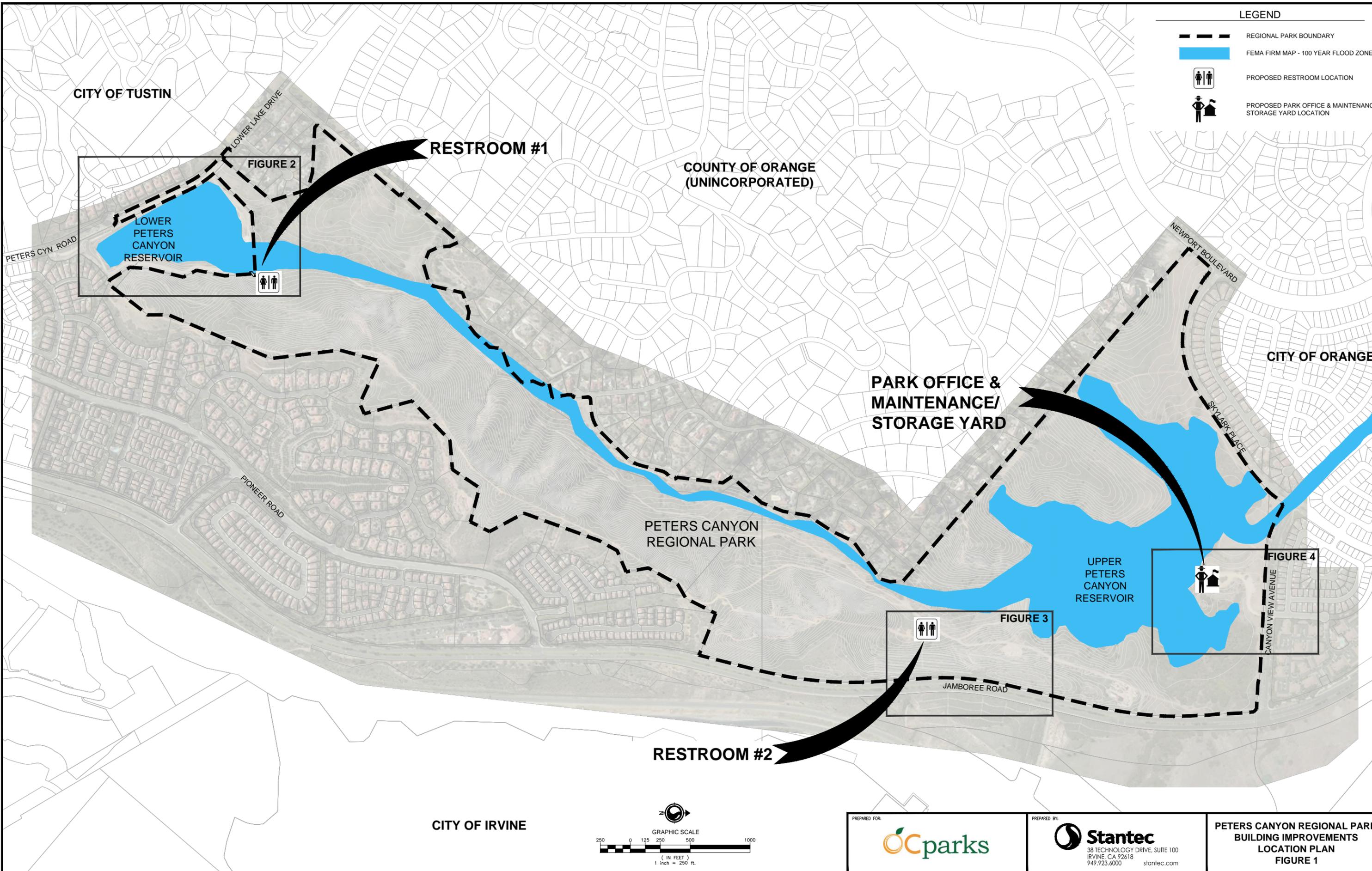
OC Parks is producing a General Development Plan (GDP) for the park and has proposed locations for two new restrooms adjacent to Peters Canyon Regional Riding & Hiking Trail and a small park office with a maintenance / storage yard in the area of the existing north parking lot. Stantec Consulting Services, Inc. (Stantec) was asked to analyze the existing utilities within, and adjacent to these proposed restrooms and park office and conduct a preliminary utility services feasibility analysis and provide probable points of connections for the building improvements.

This report summarizes a preliminary review of existing site elements such as topography, below and above grade utilities, title report, flood zone designations, as well as the potential impacts or conflicts that the proposed building improvements could have on these existing elements. Recommendations for building points of connections for utilities have also been proposed.

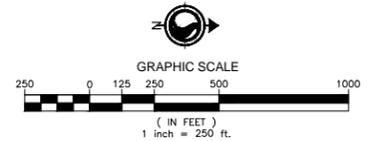
The study areas for the proposed restrooms and park office with a maintenance/storage yard can be seen in Figure 1.

LEGEND

-  REGIONAL PARK BOUNDARY
-  FEMA FIRM MAP - 100 YEAR FLOOD ZONE
-  PROPOSED RESTROOM LOCATION
-  PROPOSED PARK OFFICE & MAINTENANCE/STORAGE YARD LOCATION



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**PETERS CANYON REGIONAL PARK  
BUILDING IMPROVEMENTS  
LOCATION PLAN  
FIGURE 1**

## **2.0 RESTROOM #1**

Restroom #1 is located at the southern end of the regional park which serves as a public access point from the adjacent neighborhoods via Lower Lake Drive and Peters Canyon Road. The proposed restroom for Options #1(A) and #1(B) have been located at the intersection of multiple trails and near the existing information kiosk and vehicular access gate. The proposed restroom for Option #1(C) has been located on the north side of Lower Peters Canyon Reservoir spillway along a main trail and vehicular access road. The locations of the proposed restroom can be seen in more detail in each Figures 2(A), 2(B), and 2(C).

### **2.1 EXISTING CONDITIONS**

Stantec was unable to find existing utilities or easements of record within the proposed restroom location or surrounding area during the existing utility document research and title report review. A field review of the proposed restroom location showed no signs of above grade utility features that would conflict with the proposed improvements. The existing site of the proposed restroom is in a gentle sloping area adjacent to the existing trail. There are existing site features including a vehicular access gate, information kiosk, and portable restroom facilities that can be seen in Figure 2. Portions of Lower Peters Canyon Reservoir are located within a special flood hazard area subject to inundation by the 1% annual chance flood (100-year flood) identified by the Federal Emergency Management Agency (FEMA). The limits of the 100-year flood zone can be seen in more detail in Figure 2. Stantec recommends that the proposed restroom facilities be located outside the limits of the existing 100-year flood zone area.

### **2.2 OPTION 1(A) PROPOSED ALIGNMENTS AND POINTS OF CONNECTION**

Consistent with the existing restroom facilities located near Canyon View Avenue, the proposed restroom facility will require domestic water and sanitary sewer to service the sinks and toilets.

Consistent with the existing restroom facilities located near Canyon View Avenue a 2" domestic water service was assumed for the proposed restroom facilities. A point of connection to the existing 10" domestic water conveyance system has been identified as a probable point of connection in adjacent Peters Canyon Road (Figure 2(A)). This conveyance system is serviced by Irvine Ranch Water District (IRWD) utility agency. IRWD has provided a conditional will-serve letter included in Appendix A for tapping into the 10" domestic water system to service the proposed restroom facilities.

Due to the proposed alignment of the domestic water service crossing the existing Lower Peters Canyon Reservoir improvements, field topographic survey would be required to accurately place the alignment with the least amount of impacts to the existing improvements.

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Consistent with the existing restroom facilities located near Canyon View Avenue a 4" sanitary sewer service was assumed for the proposed restroom facilities. A point of connection to the existing 24" sanitary sewer conveyance system has been identified as a probable point of connection within the adjacent creek (Figure 2(A)). This conveyance system is serviced by Irvine Ranch Water District (IRWD) utility agency. IRWD has provided a conditional will-serve letter included in Appendix A for tapping into the 24" sanitary sewer system to service the proposed restroom facilities.

Due to the proposed alignment of the sanitary sewer service crossing through existing 100-year flood zone and riparian habitat, permits will be required for work within this jurisdictional area. The permits required to trench within these areas would be:

- 401 Water Quality Certification through the Regional Water Quality Control Board
- 404 Permit through the US Army Corps of Engineers
- 1602 Streambed Alteration Agreement through the California Fish & Wildlife Department

Mitigating the disturbed vegetation by replanting would also be required. The duration of monitoring is expected to be 5 years. A field topographic survey would be required to accurately place the alignment with the least amount of impacts to the existing vegetation.

## 2.3 OPTION 1(B) PROPOSED ALIGNMENTS AND POINTS OF CONNECTION

Consistent with the existing restroom facilities located near Canyon View Avenue, the proposed restroom facility will require domestic water and sanitary sewer to service the sinks and toilets.

Consistent with the existing restroom facilities located near Canyon View Avenue a 2" domestic water service was assumed for the proposed restroom facilities. A point of connection to the existing 10" domestic water conveyance system has been identified as a probable point of connection in adjacent Peters Canyon Road (Figure 2(B)). This conveyance system is serviced by Irvine Ranch Water District (IRWD) utility agency. IRWD has provided a conditional will-serve letter included in Appendix A for tapping into the 10" domestic water system to service the proposed restroom facilities.

Due to the proposed alignment of the domestic water service crossing the existing Lower Peters Canyon Reservoir improvements, field topographic survey would be required to accurately place the alignment with the least amount of impacts to the existing improvements.

Consistent with the existing restroom facilities located near Canyon View Avenue a 4" sanitary sewer service was assumed for the proposed restroom facilities. A point of connection to the existing 24" sanitary sewer conveyance system has been identified as a probable point of connection within the adjacent creek (Figure 2(B)). This conveyance system is serviced by Irvine Ranch Water District (IRWD) utility agency. IRWD has provided a conditional will-serve letter included in Appendix A for tapping into the 24" sanitary sewer system to service the proposed restroom facilities.

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Due to the proposed alignment of the sanitary sewer service being installed with the jack and bore construction method, the existing sensitive habitat will be protected in place which significantly minimizes, if not negates, the need for regulatory permits and/or sensitive habitat mitigation for construction work within this jurisdictional area.

A field topographic survey would be required to accurately place the jack and bore sending and receiving pits with the least amount of impacts to the existing vegetation.

## **2.4 OPTION 1 (C) PROPOSED ALIGNMENTS AND POINTS OF CONNECTION**

Consistent with the existing restroom facilities located near Canyon View Avenue, the proposed restroom facility will require domestic water and sanitary sewer to service the sinks and toilets.

Consistent with the existing restroom facilities located near Canyon View Avenue a 2" domestic water service was assumed for the proposed restroom facilities. A point of connection to the existing 10" domestic water conveyance system has been identified as a probable point of connection in adjacent Peters Canyon Road (Figure 2(C)). This conveyance system is serviced by Irvine Ranch Water District (IRWD) utility agency. IRWD has provided a conditional will-serve letter included in Appendix A for tapping into the 10" domestic water system to service the proposed restroom facilities.

Consistent with the existing restroom facilities located near Canyon View Avenue a 4" sanitary sewer service was assumed for the proposed restroom facilities. A point of connection to the existing 24" sanitary sewer conveyance system has been identified as a probable point of connection within the adjacent creek (Figure 2(C)). This conveyance system is serviced by Irvine Ranch Water District (IRWD) utility agency. IRWD has provided a conditional will-serve letter included in Appendix A for tapping into the 24" sanitary sewer system to service the proposed restroom facilities.

A field topographic survey would be required to accurately place restroom location with the least amount of impacts to the existing vegetation.

Due to the proposed location of the restroom facilities being outside the existing 100-year flood zone and riparian habitat, the need for regulatory permits and/or sensitive habitat mitigation for construction work within this area is not expected.

Due to the proposed location of the restroom facilities being on the northwest side of the existing Lower Peters Canyon Reservoir improvements, the points of connections to the existing utilities is reduced. The distance to the nearest residential property line is approximately 185'.

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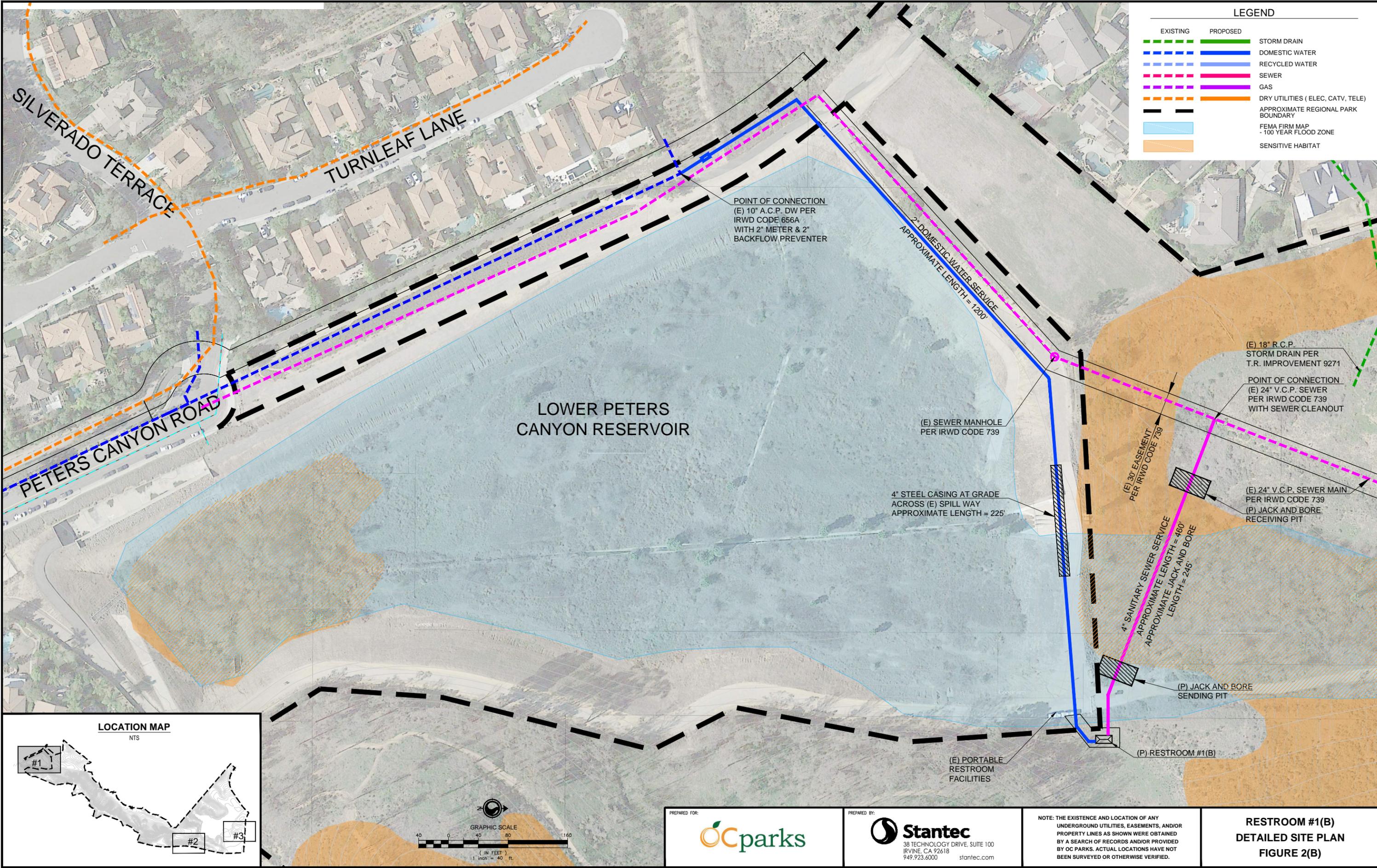
Based on the existing facility maps, SCE does not currently have electric service to either of these locations. There are no existing electric facilities in the immediate vicinity. If any lighting is to be placed at this facility, then Stantec recommends using photovoltaic lights.

There are no existing facilities in the immediate vicinity for AT&T, Cox, or Southern California Gas. It is assumed that telephone, data, and gas would not be required to this facility.

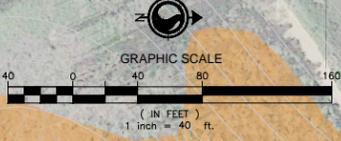
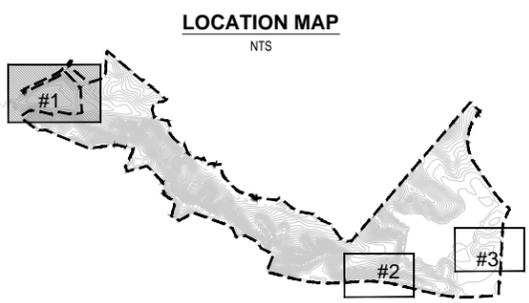
A rough order of magnitude cost for site utility improvements for Option 1(A), Option 1(B), and Option 1(C) have been included in Appendix B. They do not include associated costs for the proposed building improvements.



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LEGEND		
EXISTING	PROPOSED	
		STORM DRAIN
		DOMESTIC WATER
		RECYCLED WATER
		SEWER
		GAS
		DRY UTILITIES ( ELEC, CATV, TELE)
		APPROXIMATE REGIONAL PARK BOUNDARY
		FEMA FIRM MAP - 100 YEAR FLOOD ZONE
		SENSITIVE HABITAT



POINT OF CONNECTION  
(E) 10" A.C.P. DW PER  
IRWD CODE 656A  
WITH 2" METER & 2"  
BACKFLOW PREVENTER

2" DOMESTIC WATER SERVICE  
APPROXIMATE LENGTH = 1200'

(E) SEWER MANHOLE  
PER IRWD CODE 739

4" STEEL CASING AT GRADE  
ACROSS (E) SPILL WAY  
APPROXIMATE LENGTH = 225'

(E) 30' EASEMENT  
PER IRWD CODE 739

(E) 18" R.C.P.  
STORM DRAIN PER  
T.R. IMPROVEMENT 9271

POINT OF CONNECTION  
(E) 24" V.C.P. SEWER  
PER IRWD CODE 739  
WITH SEWER CLEANOUT

(E) 24" V.C.P. SEWER MAIN  
PER IRWD CODE 739  
(P) JACK AND BORE  
RECEIVING PIT

4" SANITARY SEWER SERVICE  
APPROXIMATE LENGTH = 460'  
APPROXIMATE JACK AND BORE  
LENGTH = 245'

(P) JACK AND BORE  
SENDING PIT

(E) PORTABLE  
RESTROOM  
FACILITIES

(P) RESTROOM #1(B)

LOWER PETERS  
CANYON RESERVOIR

SILVERADO TERRACE

TURNLEAF LANE

PETERS CANYON ROAD

PREPARED FOR:



PREPARED BY:



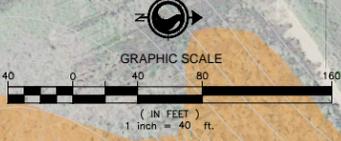
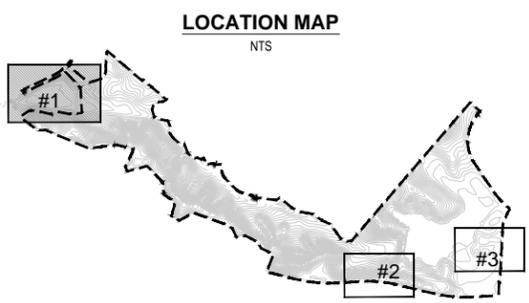
NOTE: THE EXISTENCE AND LOCATION OF ANY UNDERGROUND UTILITIES, EASEMENTS, AND/OR PROPERTY LINES AS SHOWN WERE OBTAINED BY A SEARCH OF RECORDS AND/OR PROVIDED BY OC PARKS. ACTUAL LOCATIONS HAVE NOT BEEN SURVEYED OR OTHERWISE VERIFIED.

RESTROOM #1(B)  
DETAILED SITE PLAN  
FIGURE 2(B)

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PREPARED FOR:

PREPARED BY:

38 TECHNOLOGY DRIVE, SUITE 100  
 IRVINE, CA 92618  
 949.923.6000 stantec.com

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**RESTROOM #1(C)**  
**DETAILED SITE PLAN**  
**FIGURE 2(C)**

## **3.0 RESTROOM #2**

Restroom #2 is located adjacent to Peters Canyon Regional Riding & Hiking Trail which serves as the main trail through the regional park. The location serves as an ideal resting point between the northern primary point of entry and southern primary point of entry. The proposed restroom has been located near the intersection of multiple existing trails. The location of the proposed restroom can be seen in more detail in Figure 3.

### **3.1 EXISTING CONDITIONS**

Stantec found multiple existing utilities and easements of record within the proposed restroom location and surrounding area during the existing utility document research and title report review. A field review of the proposed restroom location showed no signs of above grade utility features that would conflict with the proposed improvements. The existing site of the proposed restroom is in a gentle sloping area in between two branches of adjacent existing trails. Stantec recommends that the proposed restroom facilities be located outside the limits of the existing easements of record and away from adjacent existing below grade utilities. The location of the proposed restroom facilities is outside the limits of the 100-year flood zone which is subject to inundation by the 1% annual chance flood (100-year flood) identified by the Federal Emergency Management Agency (FEMA). A portion of the adjacent flood zone area can be seen in the upper middle and upper right corner of Figure 3.

### **3.2 PROPOSED ALIGNMENTS AND POINTS OF CONNECTION**

Consistent with the existing restroom facilities located near Canyon View Avenue, the proposed restroom facility will require domestic water and sanitary sewer to service the sinks and toilets. Existing recycled water conveyance systems within the surrounding area are distribution systems and IRWD does not allow connections to these systems. A 2" domestic water service was assumed for the proposed restroom facilities. All other domestic water services within the surrounding area are distribution systems and IRWD does not allow connections to these distribution systems. A point of connection to the existing 16" domestic water conveyance system in adjacent Jamboree Road has been identified as a probable point of connection (Figure 3). Due to the location of the existing 16" domestic water line, improvements require trenching through upland sage Gnatcatcher habitat and then across Jamboree Road and through the landscape median. This conveyance system is serviced by Irvine Ranch Water District (IRWD) utility agency. IRWD has provided a conditional will-serve letter included in Appendix A for tapping into the 16" domestic water system to service the proposed restroom facilities.

Due to the proposed alignment of the domestic water service crossing through native upland vegetation (sage /Gnatcatcher habitat), mitigation will be required for work within these areas. The disturbed earth would be to pre-construction conditions and elevations. Replanting with a non-irrigated seed mix would also be required. This area would need to be maintained free of

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weeds until no longer needed. The duration of monitoring is expected to be 3-5 years. A field topographic survey would be required to accurately place the alignment with the least amount of impacts to the existing vegetation while staying out of existing utility easements.

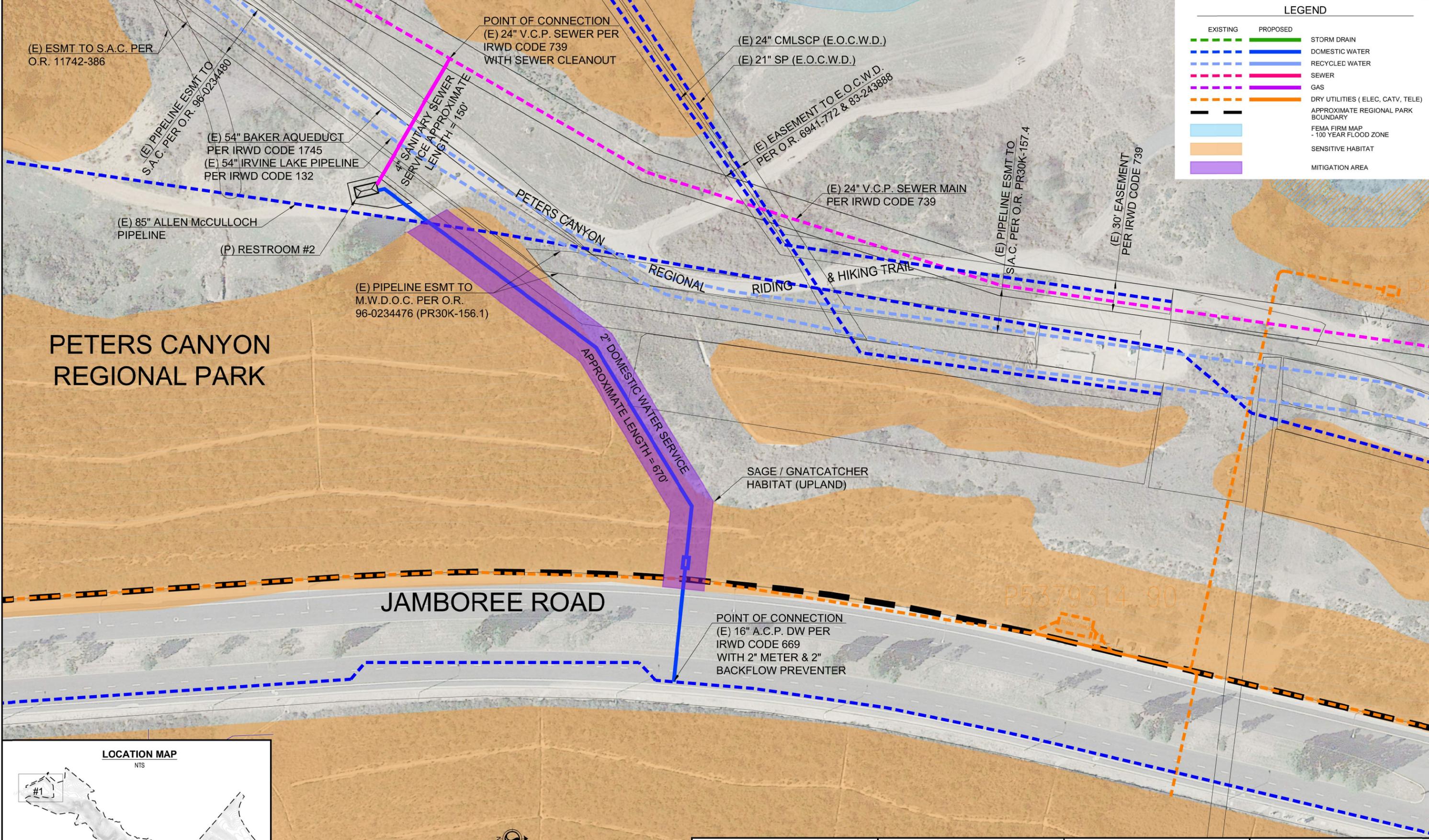
Consistent with the existing restroom facilities located near Canyon View Avenue a 4" sanitary sewer service was assumed for the proposed restroom facilities. A point of connection to the existing 24" sanitary sewer conveyance system has been identified as a probable point of connection within the adjacent slope (Figure 3). This conveyance system is serviced by Irvine Ranch Water District (IRWD) utility agency. IRWD has provided a conditional will-serve letter included in Appendix A for tapping into the 24" sanitary sewer system to service the proposed restroom facilities.

The water connection traverses Gnatcatcher habitat so supplemental mitigation measures may be required.

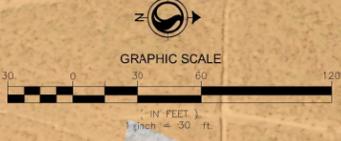
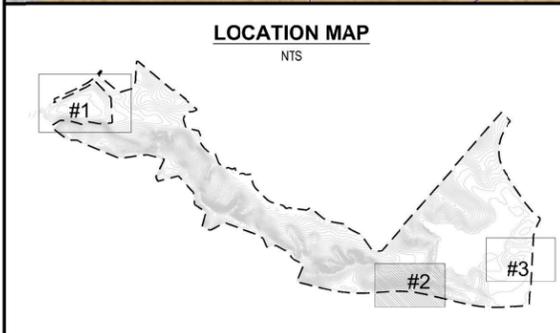
Based on the existing facility maps, SCE does not currently have electric service to this location. There are no existing electric facilities in the immediate vicinity. If any lighting is to be placed at this facility, then Stantec recommends using photovoltaic lights. If additional electric service is required to this facility, SCE would need to bring up a new service from Jamboree Road.

Based on the existing facility maps, AT&T, COX, and Southern California Gas Company do not currently have service to this location. It is assumed that these utilities would not be required at this facility. If it is determined that any of these services are necessary, they would need to be brought up from Jamboree Road.

A rough order of magnitude cost for site utility improvements has been included in Appendix B for site utility improvements only and do not include associated costs for the proposed building improvements.



LEGEND		
EXISTING	PROPOSED	
		STORM DRAIN
		DOMESTIC WATER
		RECYCLED WATER
		SEWER
		GAS
		DRY UTILITIES ( ELEC, CATV, TELE)
		APPROXIMATE REGIONAL PARK BOUNDARY
		FEMA FIRM MAP - 100 YEAR FLOOD ZONE
		SENSITIVE HABITAT
		MITIGATION AREA



PREPARED FOR:

PREPARED BY:

38 TECHNOLOGY DRIVE, SUITE 100  
IRVINE, CA 92618  
949.923.6000 stantec.com

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**RESTROOM #2**  
**DETAILED SITE PLAN**  
**FIGURE 3**

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## **4.0 PARK OFFICE / MAINTENANCE / STORAGE YARD**

The park office and maintenance / storage service yard is proposed to be near the northern parking area of the regional park which serves as a primary point of entry for public access along Canyon View Avenue. The proposed park office and maintenance / storage yard has been located outside the limits of the existing parking area and outside the limits of existing trails but near the existing information kiosk and existing restrooms. The location of the proposed park office and maintenance / storage yard can be seen in more detail in Figure 4.

### **4.1 EXISTING CONDITIONS**

Stantec was unable to find existing utilities or easements of record within the proposed park office and maintenance / storage yard location or surrounding area during the existing utility document research and title report review. A field review of the proposed restroom location showed no signs of above grade utility features that would conflict with the proposed improvements. The existing site of the park office is in a relatively non-sloping area adjacent to the existing trail and parking lot. There are existing site features including a parking lot, information kiosk, and portable trailer that can be seen in Figure 4. Portions of Upper Peters Canyon reservoir are located within the 100-year flood zone area subject to inundation by the 1% annual chance flood (100-year flood) identified by the Federal Emergency Management Agency (FEMA). The limits of the flood zone areas can be seen in more detail in Figure 4. Stantec recommends that the proposed park office and maintenance/storage yard facilities be located outside the limits of the existing 100-year flood zone area.

Areas surrounding the existing parking lot have been identified as sensitive vegetation and habitat and can be seen in more detail in figure 4. Since the County of Orange is a signatory to the implementing agreement of the Natural Community Conservation Plan and Habitat Conservation Plan (NCCP/HCP), any proposed construction will need to follow Appendix N of the Wildland Fire Management Plan which outlines specific guidelines to create fuel management zones composed of combining irrigated and non-irrigated native plantings which can support identified species and other species. The fuel management zones and practices serve to function as the fire management portion of the Southern Subregion NCCP/HCP Adaptive Management Plan (AMP).

Peters Canyon Regional Park has been identified by Cal Fire as a local agency very high fire hazard severity zone (VHFHSZ). The designation is based on multiple factors such as fuel, slope, average weather, and historic fire events which affect the probability of burning and expected fire behavior should the area burn in a wildfire. Due to the proposed structure being located within a VHFHSZ, vegetation management will be required to be implemented within 100' of the proposed dwelling per the NCCP/HCP Adaptive Management Plan outlined above as well as more intense defensible space within 30' of the proposed dwelling per the California Government Code 51175-51189. These two zones provide an integral level of protection for

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structures from wildfires by slowing the speed and reducing the intensity of the fire as it approaches the structure. It is expected that the 100' of defensible space required by the California Government Code 51175-51189 can be accommodated by combining irrigated and non-irrigated native plantings which can support identified species and other species per the NCCP/HCP.

The 2016 California Fire Code provides the fire sprinkler requirements for the type of construction of the building materials for the proposed park office. It can be assumed that the proposed park office would classify as a type B occupancy, having a floor area not exceeding 1,000 square feet, primarily constructed of noncombustible exterior walls with wood or steel roof framing, having a Class A roof assembly which would not require installing an approved automatic sprinkler system in the proposed park office.

The 2016 California Fire Code also provides the requirements for providing fire hydrants for the protection of buildings. It can be assumed that the proposed park office would classify as a type B occupancy, having a floor area not exceeding 1,000 square feet, primarily constructed of noncombustible exterior walls with wood or steel roof framing, having a Class A roof assembly which would not require providing a fire hydrant near the proposed park office.

Although automatic sprinklers and fire hydrant are not required by the California Fire Code, since the proposed park office and maintenance / storage yard are located within a VHFHSZ as well as NCCP/HCP, it would be recommended to install a fire hydrant at a maximum distance of 250' from the most remote point of the proposed unsprinklered park office which would serve to protect not only the building but also the storage yard, sensitive vegetation, and habitat should a fire event take place. The location of the proposed fire hydrant and 8" service line can be seen in more detail in Figure 4. The fire hydrant and service line improvements would be required to be submitted to the City of Orange for approval.

## 4.2 PROPOSED ALIGNMENTS AND POINTS OF CONNECTION

It was assumed that the proposed park office facility will require domestic water and sanitary sewer to service the sinks and toilets.

A 2.5" domestic water service was assumed for the proposed park office and maintenance / storage yard facilities. A point of connection to the existing 2.5" domestic water service has been identified as the point of connection to the existing restroom domestic water service line (Figure 4). A 2.5" domestic water service lateral has been provided for future use. The domestic water service line is currently under design and is expected to be installed in 2017 to service the existing restroom facility and adjacent drinking fountains.

A 4" sanitary sewer service was assumed for the proposed restroom requirements. A point of connection to the existing 4" sanitary sewer service has been identified as a probable point of connection to the existing restroom sanitary sewer service line (Figure 4). The sanitary sewer service line was installed in 2011 to service the existing restroom facility.

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Based on the existing SCE facility maps, there is an existing single phase (120/240 Volt) service on-site, which is fed from Canyon View Avenue to an existing transformer (P5444516). It is assumed the existing service is sufficient to serve the new park office. With the existing facilities, SCE may need to upsize the existing transformer on the existing structure. A new panel in the new office would require new conduit from the transformer to the new panel location as shown in Figure 4 and accounted for in the rough order of magnitude cost.

If the electrical requirements dictate a larger panel, or a 3 phase service, then SCE will need to place a new system from Canyon View. There is an existing switch (P5379586) on Canyon View, approximately 500' east of the entry that could potentially be the source point for this new system. From this switch, a new conduit run would need to be installed to a new transformer on-site, and from there to the new panel location.

Based on the existing AT&T facility maps, there is existing AT&T service to the site, which is fed from Canyon View Avenue to the existing park trailer. This should be sufficient to feed the new park office.

Based on the existing facility maps, Cox and Southern California Gas do not currently have service to this location. It is assumed that these services will not be necessary to feed the new park office.

The necessary utility connections do not traverse sensitive habitat or wetlands so supplemental agency permits or mitigation measures will not be required.

The utility connections will meet the park office, maintenance / storage yard program requirements. During the conceptual phase, a schematic layout of the park office, maintenance / storage yard, existing restroom, parking spaces, pay stations, and drinking fountain will help determine the connection of the utilities in an efficient and practical manner.

A rough order of magnitude cost for site utility improvements has been included in Appendix B for site utility improvements only and do not include associated costs for the proposed building improvements.

# UPPER PETERS CANYON RESERVOIR

(E) DRINKING FOUNTAIN  
PER "PETERS CANYON REGIONAL  
PARK RESTROOM ADDITIONAL PLAN"  
DATED 12/19/11 BY MBI

POINT OF CONNECTION  
(E) 4" PVC SEWER  
PER "PETERS CANYON  
REGIONAL PARK RESTROOM  
ADDITIONAL PLAN" DATED  
12/19/11 BY MBI

(P) 2.5" DOMESTIC WATER SERVICE  
APPROXIMATE LENGTH = 80'

(P) 4" SANITARY SEWER SERVICE  
APPROXIMATE LENGTH = 135'

30' DEFENSIBLE  
SPACE LIMITS PER  
CALIFORNIA  
GOVERNMENT CODE 51182

100' FUEL MANAGEMENT ZONE  
PER DRAFT NCCP APPENDIX N  
WILDLAND FIRE MANAGEMENT  
PLAN

(P) PARK OFFICE  
995 SQ. FT

(P) MAINTENANCE/  
STORAGE YARD  
1,440 SQ. FT

(P) ELECTRIC CONDUIT  
APPROXIMATE  
LENGTH = 55'

POINT OF CONNECTION  
(E) SOUTHERN CALIFORNIA  
EDISON TRANSFORMER  
#P5444516

250' RADIUS PER  
CFC TABLE C102.1

(E) 3" PVC DW SERVICE  
PER ON-SITE WATER  
IMPROVEMENT PLANS

(E) 4" PVC SEWER  
LATERAL

(E) 22'-0" x 10'-8"  
RESTROOM  
MSR#: 4992250

(E) 27' - 3" CONDUIT

(P) FIRE HYDRANT AND 8" LATERAL  
APPROXIMATE LENGTH = 585'

(E) S.C.E. DRY  
UTILITY CONDUIT

(E) SOUTHERN CALIFORNIA  
EDISON SWITCH  
#P5379586 90

(E) 15' EASEMENT PER  
O.R. 88-262257

(E) COX AMPLIFIER

LEGEND		
EXISTING	PROPOSED CONCEPTUAL	
		STORM DRAIN
		DOMESTIC WATER
		RECYCLED WATER
		SEWER
		GAS
		DRY UTILITIES ( ELEC, CATV, TELE)
		APPROXIMATE REGIONAL PARK BOUNDARY
		FEMA FIRM MAP - 100 YEAR FLOOD ZONE
		SENSITIVE HABITAT
		PROPOSED FIRE HYDRANT
		EXISTING FIRE HYDRANT

NOTE: PETERS CANYON REGIONAL PARK IS LOCATED WITHIN A VERY HIGH FIRE HAZARD SEVERITY ZONE AS RECOMMENDED BY CAL FIRE

(E) SOUTHERN CALIFORNIA  
EDISON TRANSFORMER  
#P5598047 08

(E) DOMESTIC WATER  
METER AND BACKFLOW DEVICE  
PER ON-SITE WATER  
IMPROVEMENT PLANS

(E) 12" DIP WATER MAIN  
BUILT PER CITY OF ORANGE  
T.R. 12417

(E) UNDERGROUND  
CABLE VISION  
SUPPLY PER O.R.  
88-262257

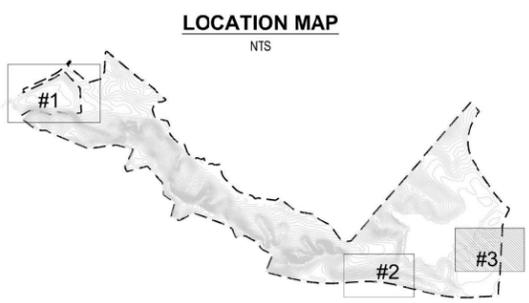
(E) UTILITY  
IMPROVEMENTS  
BUILT PER CITY OF  
ORANGE T.R. 15398

OLD CAMP

(E) AT&T UNDERGROUND  
PER 'BEN1814'

CANYON VIEW AVENUE

# PETERS CANYON REGIONAL PARK



PREPARED FOR:



PREPARED BY:



NOTE: THE EXISTENCE AND LOCATION OF ANY UNDERGROUND UTILITIES, EASEMENTS, AND/OR PROPERTY LINES AS SHOWN WERE OBTAINED BY A SEARCH OF RECORDS AND/OR PROVIDED BY OC PARKS. ACTUAL LOCATIONS HAVE NOT BEEN SURVEYED OR OTHERWISE VERIFIED.

**PARK OFFICE AND MAINTENANCE / STORAGE YARD DETAILED SITE PLAN**  
**FIGURE 4**

DRAWING: v:\projects\2014\262610\10\drawing\vertical\_files\462610\_10-es-er7004.dwg PLOTTED: 2/6/2017 10:40 AM BY: Martinez, Chris

## **5.0 RESTROOM FACILITY ALTERNATIVE – STANDALONE SELF-CONTAINED SYSTEM**

Restroom #1 and Restroom #2 can be connected to existing conventional sewer and water systems; however, there will be some impacts to sensitive habitat and regulatory agency permitting will be necessary. An alternate to the conventional restroom system utility connections was considered.

Standalone self-contained systems, such as composting restrooms have recently been used by the national park as well as the state park system. Some installations were successful, and others less so. The more remote and less used the systems were, the more successful the results. This may be due to the fact that time is required to compost the waste. Temperature is also a significant factor. The facilities installed in cooler temperatures were more successful. Those in hot environments have a strong offensive odor.

Other issues include vandalism and accidental misuse which caused damage to the somewhat unpredictable systems. These systems also require specialty maintenance. Park staff would have to be trained to maintain the systems or the maintenance would have to be contracted out to an experienced company. Currently there is not a large group of contractors trained to maintain these standalone self-contained systems.

The initial costs of composting restroom systems are comparable to standard prefabricated facilities. While the actual building structure is less robust in many cases, the improvements below grade are far more extensive. The additional costs associated with these improvements is offset in remote areas since the cost of bringing sewer and water to these locations is impossible or cost prohibitive. The installation costs of these systems vary widely depending on the building type and number of daily users.

Since this is a fast growing technology, this alternative should be studied in more depth during the Conceptual Phase in implementing the GDP.

**PETERS CANYON REGIONAL PARK-GENERAL DEVELOPMENT PLAN  
STRUCTURES  
UTILITY SERVICES FEASIBILITY ANALYSIS**

## Appendix A

### A.1 IRVINE RANCH WATER DISTRICT WILL SERVE LETTER



#### **IRVINE RANCH WATER DISTRICT**

15600 Sand Canyon Ave., P.O. Box 57000, Irvine, CA 92619-7000 (949) 453-5300

September 30, 2016

OC Parks  
Planning & Design  
13042 Old Myford Rd  
Irvine, CA 92602

**SUBJECT:** Conditional Water and Sewer Will Serve Letter for Proposed Development known as Peters Canyon Regional Park, in the Cities of Orange and Tustin, County of Orange, State of California, described as Parcel 1 & 2 of Inst. No. 92-136032 of Records of O.C

To Whom it may concern:

This is to advise you that the IRWD would have adequate domestic water supplies to furnish each and every proposed facility, without exception, in Peters Canyon Regional Park, subject to the developer providing for construction of additional water supply and transmission mains as may be identified in Sub Area Master Plan update, and the developer installing the necessary distribution main.

The District will also be able to provide sewer service to each proposed facility, without exception, in the park, conditioned upon the developer providing for the construction of additional sewer trunk lines and local sewer collection facilities, as may be identified in Sub Area Master Plan update, and the developer installing the necessary sewer mains.

This letter does not constitute either a water supply verification, as required by California Government Code Section 66473.7, or a water supply assessment, as required by California Water Code Section 10910. If compliance with one or both of such requirements is necessary for the project, appropriate requests shall be submitted to the District.

If you have any questions or require any additional information, please feel free to call the undersigned.

Yours truly,

A handwritten signature in blue ink that reads "Kevin L. Burton".

Kevin L. Burton, P.E.  
Executive Director of Engineering and Water Quality

Reviewed: KLB

**PETERS CANYON REGIONAL PARK-GENERAL DEVELOPMENT PLAN  
STRUCTURES  
UTILITY SERVICES FEASIBILITY ANALYSIS**

**A.2 SOUTHERN CALIFORNIA EDISON WILL SERVE LETTER**

Will Serve Letter Only



4/11/16

OC Community Resources

Peter's Canyon Regional Park, Orange

Your project is located in Southern California Edison (SCE) service territory. SCE will serve the above subject project's electrical requirements per the California Public Utilities Commission and Federal Energy Regulatory Commission tariffs.

SCE may need to conduct utility studies, where applicable, to assess whether additions or modifications to the existing electric infrastructure are required to serve this project. Where applicable, SCE has attached Appendix (B) which not only describes the study, and permitting, but includes a Project Information Sheet that will need to be completed by you and submitted to SCE if your project is at a point where SCE has to determine the required electrical utility work. This Will-Serve letter does not imply that either: (i) these studies have been completed, or (ii) that any required California Environmental Quality Act (CEQA) analysis of project-related electric utility impacts has been conducted.

I am the SCE Design Representative currently assigned to this project. SCE or Applicant will design and construct all required electrical infrastructure to serve this project provided you enter into the applicable contractual agreements with SCE identify scope of electrical utility work required, and supply the following information:

- Site plans as required
- Required contracts and agreements (fully executed)
- Applicable fees
- Local permits
- Required easement documents

Your project will be scheduled for construction once SCE has all the necessary information for your project and you have submitted or agreed to the applicable requirements as stated above, and paid any necessary fees.

If your project will not require SCE services, please notify us so that we can update our records.

SCE appreciates your business. If you have any questions, please feel free to call me at (714) 296-7609.

Sincerely,

SCE Design Representative

Enclosure: Appendix B, where applicable

Rev. 07/09/12

DS-125

**PETERS CANYON REGIONAL PARK-GENERAL DEVELOPMENT PLAN  
STRUCTURES  
UTILITY SERVICES FEASIBILITY ANALYSIS**

**Appendix B**

**B.1 ROUGH ORDER OF MAGNITUDE COSTS**

		LOCATION :	Peters Canyon Regional Park Restroom #1 ( A )		
Quantity	Unit	Item		Unit Price	Total Cost Per Item
<b>GENERAL CONDITIONS</b>					
1	LS	Mobilization		\$ 5,000.00	\$ 5,000.00
1	LS	Traffic Control		\$ 2,000.00	\$ 2,000.00
1	LS	Plant Mitigation, Maintenance, and Monitoring (5 Years)		\$ 30,000.00	\$ 30,000.00
1	LS	Regulatory Permits		\$ 40,000.00	\$ 40,000.00
1	LS	Sensitive Habitat On-Site Construction Biologist Monitoring		\$ 10,000.00	\$ 10,000.00
1	LS	Construction Staking Survey		\$ 7,500.00	\$ 7,500.00
1	LS	Protection of Existing Trees and Vegetation		\$ 2,500.00	\$ 2,500.00
1	LS	Temporary Security / Construction Fencing		\$ 5,000.00	\$ 5,000.00
1	LS	Erosion, Sediment, Dust Control BMPs		\$ 7,500.00	\$ 7,500.00
<b>REMOVALS</b>					
2300	SF	Clearing and Grubbing		\$ 1.00	\$ 2,300.00
300	CY	Utility Excavation Trench Spoils Removal		\$ 12.00	\$ 3,600.00
<b>INSTALLATIONS</b>					
2	EA	Existing Utility Pothole Verifications		\$ 2,750.00	\$ 5,500.00
1	EA	Connect to Existing 24" VCP Sewer		\$ 5,000.00	\$ 5,000.00
1	EA	4" Sewer Cleanout		\$ 1,250.00	\$ 1,250.00
460	LF	4" PVC SDR-35 Sewer Pipe and Bedding		\$ 80.00	\$ 36,800.00
1	EA	SS Cap End at Proposed Building Point of Connection		\$ 1,000.00	\$ 1,000.00
2300	SF	Utility Trench Repair - Existing Natural Grade Recontouring		\$ 4.00	\$ 9,200.00
1	EA	Connect to Existing 10" ACP Domestic Water		\$ 5,000.00	\$ 5,000.00
1	EA	2" Domestic Water Meter		\$ 3,500.00	\$ 3,500.00
1	EA	2" Domestic Water Backflow Preventer and Enclosure		\$ 2,500.00	\$ 2,500.00
1200	LF	2" PVC Domestic Water Pipe and Bedding		\$ 22.50	\$ 27,000.00
225	LF	4" Steel Sleeve and Concrete Cap at Reservoir Crossing		\$ 42.00	\$ 9,450.00
1	EA	DW Cap End at Proposed Building Point of Connection		\$ 750.00	\$ 750.00
6000	SF	Utility Trench Repair - Existing Roadway Repair		\$ 6.00	\$ 36,000.00
		<b>SUBTOTAL</b>			<b>\$ 258,350.00</b>
		Contingency		10%	\$ 25,835.00
		<b>ESTIMATE SUBTOTAL (PRIOR TO PSE/CM)</b>			<b>\$ 284,185.00</b>
		Environmental Clearance		5%	\$ 14,209.25
		Design Engineering		10%	\$ 2,583.50
		Plan Check / Permit / Inspection Fees		2%	\$ 5,683.70
		Construction Support		10%	\$ 28,418.50
<b>RESTROOM #1 (A) ESTIMATE GRAND TOTAL</b>					<b>\$ 335,079.95</b>
*Rough Order of Magnitude Costs provided for site utility improvements only and do not include associated costs for the proposed building improvements.					

**PETERS CANYON REGIONAL PARK-GENERAL DEVELOPMENT PLAN  
STRUCTURES  
UTILITY SERVICES FEASIBILITY ANALYSIS**

LOCATION :		Peters Canyon Regional Park Restroom #1 ( B )		
Quantity	Unit	Item	Unit Price	Total Cost Per Item
<b>GENERAL CONDITIONS</b>				
1	LS	Mobilization	\$ 5,000.00	\$ 5,000.00
1	LS	Traffic Control	\$ 2,000.00	\$ 2,000.00
1	LS	Sensitive Habitat On-Site Construction Biologist Monitoring	\$ 5,000.00	\$ 5,000.00
1	LS	Construction Staking Survey	\$ 7,500.00	\$ 7,500.00
1	LS	Protection of Existing Trees and Vegetation	\$ 2,500.00	\$ 2,500.00
1	LS	Temporary Security / Construction Fencing	\$ 5,000.00	\$ 5,000.00
1	LS	Erosion, Sediment, Dust Control BMPs	\$ 7,500.00	\$ 7,500.00
<b>REMOVALS</b>				
1075	SF	Clearing and Grubbing	\$ 1.00	\$ 1,075.00
250	CY	Utility Excavation Trench Spoils Removal	\$ 12.00	\$ 3,000.00
<b>INSTALLATIONS</b>				
2	EA	Existing Utility Pothole Verifications	\$ 2,750.00	\$ 5,500.00
1	EA	Connect to Existing 24" VCP Sewer	\$ 5,000.00	\$ 5,000.00
231	CY	Excavation	\$ 11.50	\$ 2,656.50
1250	SF	Shoring for Sending / Receiving Pits	\$ 22.50	\$ 28,125.00
231	CY	Backfill and Compaction	\$ 27.50	\$ 6,352.50
245	LF	12" Steel Casing	\$ 125.00	\$ 30,625.00
1	EA	4" Sewer Cleanout	\$ 1,250.00	\$ 1,250.00
460	LF	4" PVC SDR-35 Sewer Pipe and Bedding	\$ 80.00	\$ 36,800.00
1	EA	SS Cap End at Proposed Building Point of Connection	\$ 1,000.00	\$ 1,000.00
1075	SF	Utility Trench Repair - Existing Natural Grade Recontouring	\$ 4.00	\$ 4,300.00
1	EA	Connect to Existing 10" ACP Domestic Water	\$ 5,000.00	\$ 5,000.00
1	EA	2" Domestic Water Meter	\$ 3,500.00	\$ 3,500.00
1	EA	2" Domestic Water Backflow Preventer and Enclosure	\$ 2,500.00	\$ 2,500.00
1200	LF	2" PVC Domestic Water Pipe and Bedding	\$ 22.50	\$ 27,000.00
225	LF	4" Steel Sleeve and Concrete Cap at Reservoir Crossing	\$ 42.00	\$ 9,450.00
1	EA	DW Cap End at Proposed Building Point of Connection	\$ 750.00	\$ 750.00
6000	SF	Utility Trench Repair - Existing Roadway Repair	\$ 6.00	\$ 36,000.00
		<b>SUBTOTAL</b>		<b>\$ 244,424.57</b>
		Contingency	10%	\$ 24,442.46
		<b>ESTIMATE SUBTOTAL (PRIOR TO PSE/CM)</b>		<b>\$ 268,867.03</b>
		Environmental Clearance	5%	\$ 13,443.35
		Design Engineering	10%	\$ 2,444.25
		Plan Check / Permit / Inspection Fees	2%	\$ 5,377.34
		Construction Support	10%	\$ 26,886.70
<b>RESTROOM #1 (B) ESTIMATE GRAND TOTAL</b>				<b>\$ 317,018.67</b>
*Rough Order of Magnitude Costs provided for site utility improvements only and do not include associated costs for the proposed building improvements.				

**PETERS CANYON REGIONAL PARK-GENERAL DEVELOPMENT PLAN  
STRUCTURES  
UTILITY SERVICES FEASIBILITY ANALYSIS**

Quantity	Unit	Item	Unit Price	Total Cost Per Item
<b>GENERAL CONDITIONS</b>				
1	LS	Mobilization	\$ 5,000.00	\$ 5,000.00
1	LS	Traffic Control	\$ 2,000.00	\$ 2,000.00
1	LS	Sensitive Habitat On-Site Construction Biologist Monitoring	\$ 5,000.00	\$ 5,000.00
1	LS	Construction Staking Survey	\$ 5,000.00	\$ 5,000.00
1	LS	Protection of Existing Trees and Vegetation	\$ 2,500.00	\$ 2,500.00
1	LS	Temporary Security / Construction Fencing	\$ 5,000.00	\$ 5,000.00
1	LS	Erosion, Sediment, Dust Control BMPs	\$ 7,500.00	\$ 7,500.00
<b>REMOVALS</b>				
250	SF	Clearing and Grubbing	\$ 1.00	\$ 250.00
125	CY	Utility Excavation Trench Spoils Removal	\$ 12.00	\$ 1,500.00
<b>INSTALLATIONS</b>				
2	EA	Existing Utility Pothole Verifications	\$ 2,750.00	\$ 5,500.00
1	EA	Connect to Existing 24" VCP Sewer	\$ 5,000.00	\$ 5,000.00
1	EA	4" Sewer Cleanout	\$ 1,250.00	\$ 1,250.00
50	LF	4" PVC SDR-35 Sewer Pipe and Bedding	\$ 80.00	\$ 4,000.00
1	EA	SS Cap End at Proposed Building Point of Connection	\$ 1,000.00	\$ 1,000.00
250	SF	Utility Trench Repair - Existing Natural Grade Recontouring	\$ 4.00	\$ 1,000.00
1	EA	Connect to Existing 10" ACP Domestic Water	\$ 5,000.00	\$ 5,000.00
1	EA	2" Domestic Water Meter	\$ 3,500.00	\$ 3,500.00
1	EA	2" Domestic Water Backflow Preventer and Enclosure	\$ 2,500.00	\$ 2,500.00
665	LF	2" PVC Domestic Water Pipe and Bedding	\$ 22.50	\$ 14,962.50
1	EA	DW Cap End at Proposed Building Point of Connection	\$ 750.00	\$ 750.00
3325	SF	Utility Trench Repair - Existing Roadway Repair	\$ 6.00	\$ 19,950.00
		<b>SUBTOTAL</b>		<b>\$ 98,162.50</b>
		Contingency	10%	\$ 9,816.25
		<b>ESTIMATE SUBTOTAL (PRIOR TO PSE/CM)</b>		<b>\$ 107,978.75</b>
		Environmental Clearance	5%	\$ 5,398.94
		Design Engineering	10%	\$ 981.63
		Plan Check / Permit / Inspection Fees	2%	\$ 2,159.58
		Construction Support	10%	\$ 10,797.88
<b>RESTROOM #1 (C) ESTIMATE GRAND TOTAL</b>				<b>\$ 127,316.76</b>

\*Rough Order of Magnitude Costs provided for site utility improvements only and do not include associated costs for the proposed building improvements.

**PETERS CANYON REGIONAL PARK-GENERAL DEVELOPMENT PLAN  
STRUCTURES  
UTILITY SERVICES FEASIBILITY ANALYSIS**

		LOCATION :	Peters Canyon Regional Park Restroom #2		
Quantity	Unit	Item		Unit Price	Total Cost Per Item
<b>GENERAL CONDITIONS</b>					
1	LS	Mobilization		\$ 7,500.00	\$ 7,500.00
1	LS	Traffic Control		\$ 7,500.00	\$ 7,500.00
1	LS	Plant Mitigation, Maintenance, and Monitoring (5 Years)		\$ 30,000.00	\$ 30,000.00
1	LS	Sensitive Habitat On-Site Construction Biologist Monitoring		\$ 10,000.00	\$ 10,000.00
1	LS	Construction Staking Survey		\$ 7,500.00	\$ 7,500.00
1	LS	Protection of Existing Trees and Vegetation		\$ 3,500.00	\$ 3,500.00
1	LS	Temporary Security / Construction Fencing		\$ 5,000.00	\$ 5,000.00
1	LS	Erosion, Sediment, Dust Control BMPs		\$ 7,500.00	\$ 7,500.00
<b>REMOVALS</b>					
3375	SF	Clearing and Grubbing		\$ 1.00	\$ 3,375.00
125	CY	Utility Excavation Trench Spoils Removal		\$ 12.00	\$ 1,500.00
<b>INSTALLATIONS</b>					
2	EA	Existing Utility Pothole Verifications		\$ 2,750.00	\$ 5,500.00
1	EA	Connect to Existing 24" VCP Sewer		\$ 5,000.00	\$ 5,000.00
1	EA	4" Sewer Cleanout		\$ 1,250.00	\$ 1,250.00
150	LF	4" PVC SDR-35 Sewer Pipe and Bedding		\$ 80.00	\$ 12,000.00
1	EA	SS Cap End at Proposed Building Point of Connection		\$ 1,000.00	\$ 1,000.00
3375	SF	Utility Trench Repair - Existing Natural Grade Recontouring		\$ 4.00	\$ 13,500.00
1	EA	Connect to Existing 16" ACP Domestic Water		\$ 5,000.00	\$ 5,000.00
1	EA	2" Domestic Water Meter		\$ 3,500.00	\$ 3,500.00
1	EA	2" Domestic Water Backflow Preventer and Enclosure		\$ 2,500.00	\$ 2,500.00
670	LF	2" PVC Domestic Water Pipe and Bedding		\$ 22.50	\$ 15,075.00
1	EA	DW Cap End at Proposed Building Point of Connection		\$ 750.00	\$ 750.00
1	LS	Repaint Damaged Jamboree Pavement Markings		\$ 2,500.00	\$ 2,500.00
925	SF	Utility Trench Repair - Existing Sidewalk & Roadway Repair		\$ 10.00	\$ 9,250.00
		<b>SUBTOTAL</b>			<b>\$ 160,240.57</b>
		Contingency		10%	\$ 16,024.06
		<b>ESTIMATE SUBTOTAL (PRIOR TO PSE/CM)</b>			<b>\$ 176,264.63</b>
		Environmental Clearance		5%	\$ 8,813.23
		Design Engineering		10%	\$ 1,602.41
		Plan Check / Permit / Inspection Fees		2%	\$ 3,525.29
		Construction Support		10%	\$ 17,626.46
<b>RESTROOM #2 ESTIMATE GRAND TOTAL</b>					<b>\$ 207,832.02</b>

\*Rough Order of Magnitude Costs provided for site utility improvements only and do not include associated costs for the proposed building improvements.

**PETERS CANYON REGIONAL PARK-GENERAL DEVELOPMENT PLAN  
STRUCTURES  
UTILITY SERVICES FEASIBILITY ANALYSIS**

LOCATION :		Peters Canyon Regional Park Park Office / Maintenance / Storage Yard		
Quantity	Unit	Item	Unit Price	Total Cost Per Item
<b>GENERAL CONDITIONS</b>				
1	LS	Mobilization	\$ 5,000.00	\$ 5,000.00
1	LS	Traffic Control	\$ 2,000.00	\$ 2,000.00
1	LS	Plant Mitigation, Maintenance, and Monitoring (5 Years)	\$ 5,000.00	\$ 5,000.00
1	LS	Construction Staking Survey	\$ 5,000.00	\$ 5,000.00
1	LS	Protection of Existing Trees and Vegetation	\$ 2,500.00	\$ 2,500.00
1	LS	Temporary Security / Construction Fencing	\$ 5,000.00	\$ 5,000.00
1	LS	Erosion, Sediment, Dust Control BMPs	\$ 7,500.00	\$ 7,500.00
<b>REMOVALS</b>				
2050	SF	Clearing and Grubbing	\$ 1.00	\$ 2,050.00
75	CY	Utility Excavation Trench Spoils Removal	\$ 12.00	\$ 900.00
<b>INSTALLATIONS</b>				
3	EA	Existing Utility Pothole Verifications	\$ 2,750.00	\$ 8,250.00
1	EA	Connect to Existing 4" PVC Sewer	\$ 2,500.00	\$ 2,500.00
1	EA	4" Sewer Cleanout	\$ 1,250.00	\$ 1,250.00
135	LF	4" PVC SDR-35 Sewer Pipe and Bedding	\$ 80.00	\$ 10,800.00
1	EA	SS Cap End at Proposed Building Point of Connection	\$ 1,000.00	\$ 1,000.00
2050	SF	Utility Trench Repair - Existing Natural Grade Recontouring	\$ 4.00	\$ 8,200.00
1	LF	Connect to Existing 12" DIP Domestic Water	\$ 5,000.00	\$ 5,000.00
585	LF	8" PVC Fire Service Water Pipe and Bedding	\$ 96.75	\$ 56,598.75
1	EA	Fire Hydrant	\$ 3,500.00	\$ 3,500.00
1	EA	Connect to Existing 2.5" PVC Domestic Water	\$ 5,000.00	\$ 5,000.00
80	LF	2.5" PVC Domestic Water Pipe and Bedding	\$ 24.75	\$ 1,980.00
1	EA	DW Cap End at Proposed Building Point of Connection	\$ 750.00	\$ 750.00
3050	SF	Utility Trench Repair - Existing Roadway Repair	\$ 6.00	\$ 18,300.00
55	LF	SCE Trench	\$ 12.00	\$ 660.00
55	LF	SCE Conduit (2-5")	\$ 12.00	\$ 660.00
1	EA	SCE Fees	\$ 5,000.00	\$ 5,000.00
		<b>SUBTOTAL</b>		<b>\$ 164,398.75</b>
		Contingency	10%	\$ 16,439.88
		<b>ESTIMATE SUBTOTAL (PRIOR TO PSE/CM)</b>		<b>\$ 180,838.63</b>
		Environmental Clearance	5%	\$ 9,041.93
		Design Engineering	10%	\$ 1,643.99
		Plan Check / Permit / Inspection Fees	2%	\$ 3,616.77
		Construction Support	10%	\$ 18,083.86
<b>PARK OFFICE / MAINT / STORAGE YARD ESTIMATE GRAND TOTAL</b>				<b>\$ 213,225.18</b>

\*Rough Order of Magnitude Costs provided for site utility improvements only and do not include associated costs for the proposed building improvements.