

APPENDIX G

Biological Resources: *Humboldt Wind Energy Project Botanical Resources
Report, Humboldt County, California, Spring and Summer 2018*



Humboldt Wind Energy Project
Botanical Resources Report

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Acronyms and Abbreviations

% RC	percent relative cover
ac	acre/acres
Cal-IPC	California Invasive Plant Council
CDFW	California Department of Fish and Wildlife
CESA	California Endangered Species Act
CNDDB	California Natural Diversity Database
CNPS	California Native Plant Society
CRPR	California Rare Plant Rank
ESA	Endangered Species Act
ft	foot/feet
gen-tie	generation transmission line
HRC	Humboldt Redwood Company
MCV	A Manual of California Vegetation, 2nd Edition
mi	mile/miles
USFWS	U.S. Fish and Wildlife Service

Note:

Often, agency suggestions and guidelines are provided in US units of measure (e.g., acres [ac] feet [ft], or miles [mi]), and in other instances, agency guidance is provided in metric (aka SI, or System International) units (e.g., meters [m] or kilometers [km]). To convert an otherwise readily recognized agency standard (e.g., 10 mi or 1 km) to the other system may result in confusion. Accordingly, measures are provided in either system, using the original agency suggestion unchanged, and provide conversion to the other standard only when it makes sense to do so.

1.0 INTRODUCTION

Humboldt Wind, LLC (Humboldt Wind) is planning to construct and operate the Humboldt Wind Energy Project (project) in south-central Humboldt County, California (Figure 1). The proposed project consists of up to 60 wind turbines and associated facilities including meteorological towers, electrical collection system, access roads, construction staging areas, a substation, an operations and maintenance facility, up to a 25-mile (mi) generation transmission line (gen-tie), and its associated point of interconnection. The project would have a nameplate generating capacity of up to 155 megawatts. Proposed turbine locations are situated on two ridgelines, Bear River Ridge and Monument Ridge, 4.7 mi south and southwest of Scotia, in Humboldt County, California (Figure 1).

The project area includes a 1,000-foot-(ft-) wide corridor centered on proposed turbine locations; a 200-ft-wide corridor centered on project roads, the electrical collection line, and the gen-tie; and a 500-ft-wide buffer around proposed staging and temporary impact areas and project substations (Figure 2). In addition to the wind turbines and associated facilities, several locations require temporary improvements to accommodate transportation of project components to the project site. These transportation improvement areas are located along Highway 101 from Depot Road along Humboldt Bay in the north to just south of Stafford (Figure 2). Transportation improvements will occur in five locations along this corridor, and for descriptive purposes are referred to as:

- Hookton Overpass
- Loleta Ramp
- Finch Creek Bridge and Bypass
- 12th Street Overpass Bypass
- Site Access (Jordan Gate)

The entire project area encompasses 2,244 acres (ac) and is divided into the following segments for description purposes:

- Bear River Ridge
- Western Monument Ridge
- Eastern Monument Ridge
- Monument Ridge – Highway 101
- Highway 101 – Shively Ridge
- Shively Ridge
- Bridgeville
- Transportation Route

Stantec Consulting Services Inc. (Stantec) prepared a Draft Biological Resources Work Plan (Draft Work Plan) detailing biological resource surveys designed to support project planning (Stantec 2018). In the spring, summer, and fall of 2018, Stantec conducted vegetation mapping and the 2018 botanical resources surveys as outlined in the Draft Work Plan. These studies are intended to provide information to support environmental review of the project in accordance with the California Environmental Quality Act and permit applications for plants listed under the Endangered Species Act (ESA) and California Endangered Species Act (CESA), if applicable.

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Stantec mapped vegetation within the entire project area in 2018 (Figure 2). In addition, we conducted a comprehensive botanical survey of approximately 1,736 ac of the project area in 2018 (2018 survey area) (Figure 2). Stantec botanists also conducted a reconnaissance-level survey in the remaining 508 ac of the project area and will conduct a comprehensive botanical survey in the remaining 508 ac in the spring of 2019 (2019 survey area) to confirm the findings of the reconnaissance-level survey. We did not conduct a comprehensive botanical survey of these 508 ac in 2018 because timing of land access did not allow for a complete survey of these areas during appropriate plant identification periods. This report documents the methods and results of all botanical resource and vegetation mapping surveys in the project area conducted during 2018.

2.0 ENVIRONMENTAL SETTING

Humboldt County is within the Klamath/North Coast bioregion, and features a rocky coastline, montane forests, and small and sparsely populated settlements. The climate on the coast is cool and moist, driven by heavy rain and fog, and becomes progressively drier, warmer, and more variable inland while remaining relatively mild. In general, Humboldt County is mountainous and densely forested, with an expansive coastline that includes Humboldt Bay. Humboldt Bay, located about 16 mi north of the project, is the second largest estuary in California.

Humboldt County spans two geologic provinces: the Coast Ranges Province and the Klamath Mountains Province. The Coast Ranges Province in the county's center and southwest is composed mainly of the Franciscan Complex, with schists, sand, and other alluvial deposits associated with the coast. The Klamath Mountains Province in the northeast features older sedimentary rock including sandstone, chert, slate, and schist. The U.S. Department of Agriculture, Natural Resources Conservation Service (2018) has mapped 33 soil mapunits in the project area (Table 1, Figure 3). Soil mapunits have not been mapped in portions of Bridgeville.

Table 1. Soil Mapunits Within the Project Area

Mapunit Symbol	Mapunit Name
Water and Fluvents, 0 to 2 percent slopes	100
Weott, 0 to 2 percent slopes	110
Arlynda, 0 to 2 percent slopes	119
Jollygiant, 0 to 2 percent slopes	127
Typic Fluvaquents, 0 to 2 percent slopes	131
Udifuvents, 0 to 2 percent slopes	132
Parkland-Garberville complex, 2 to 9 percent slopes	151
Eelriver and Cottoneva soils, 0 to 2 percent slopes	179
Grizzlycreek-Chaddcreek complex, 2 to 9 percent slopes	181
Russ, 0 to 2 percent slopes	195
Ferndale, 0 to 2 percent slopes	220
Canalschool, 0 to 2 percent slopes	221
Hookton-Tablebluff complex, 2 to 9 percent slopes	230

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Mapunit Symbol	Mapunit Name
Hookton-Tablebluff-Cannonball complex, 9 to 15 percent slopes	231
Tablebluff-Cannonball-Lepoil complex, 15 to 30 percent slopes	232
Cannonball-Candymountain-Lepoil complex, 30 to 50 percent slopes	233
Ferncat-Sleepyhollow-Oilcreek complex, 30 to 50 percent slopes	344
Sleepyhollow-Oilcreek complex, 50 to 75 percent slopes	345
Ferncat-Sleepyhollow complex, 9 to 30 percent slopes	368
Scoutcamp-Redcrest complex, 15 to 30 percent slopes	382
Scoutcamp-Rootcreek-Redcrest complex, 5 to 30 percent slopes	383
Scoutcamp-Rootcreek-Redcrest complex, 30 to 50 percent slopes	384
Scoutcamp-Redcrest complex, 50 to 75 percent slopes	385
Scoutcamp-Rootcreek-Redcrest complex, 50 to 75 percent slopes	386
Salmoncreek-Rootcreek complex, 2 to 15 percent slopes	387
Salmoncreek-Rootcreek complex, 15 to 30 percent slopes	388
Salmoncreek-Rootcreek complex, 30 to 50 percent slopes	389
Burgsblock-Coolyork-Tannin complex, 15 to 30 percent slopes	451
Burgsblock-Coolyork-Tannin complex, 30 to 50 percent slopes	452
Tannin-Burgsblock-Rockyglen complex, 30 to 50 percent slopes	461
Northbear-Caperidge-Taylorpeak complex, 30 to 50 percent slopes	505
Redwoodhouse-Yagercreek-Mailridge complex, 15 to 30 percent slopes	512
Redwoodhouse-Yagercreek-Mailridge complex, 30 to 50 percent slopes	513
Redwoodhouse-Yagercreek-Mailridge complex, 50 to 75 percent slopes	514
Redwoodhouse-Mailridge-Mountbaldy complex, 15 to 30 percent slopes	520
Crazycoyote-Sproulish-Caperidge complex, 15 to 50 percent slopes	567
Sproulish-Canoe creek-Redwohly complex, 30 to 50 percent slopes, warm	574
Canoe creek-Sproulish-Redwohly complex, 50 to 75 percent slopes, warm	575
Wirefence-Windynip-Devilshole complex, 5 to 30 percent slopes	646
Windynip-Wirefence-Devilshole complex, 30 to 50 percent slopes	649
Yorknorth-Witherell complex, 15 to 30 percent slopes	655
Yorknorth-Witherell complex, 30 to 50 percent slopes	662
Dryfield-Yorknorth-Witherell complex, 5 to 30 percent slopes	667
Hydraquents-Wassents mucky silt loam, strongly saline, 0-3 percent slopes, very frequently flooded	1009
Urban land-Friendlycity association, 0 to 2 percent	1010
Urban land-Anthraltic Xerorthents association, 0 to 2 percent slopes	1014
Peaked-Oceanhouse-Forhaux complex, 5 to 30 percent slopes	4406
Dolason-Forhaux-Peaked complex, 5 to 30 percent slopes	4408
Forhaux-Peaked-Dolason complex, 30 to 50 percent slopes	4409

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Mapunit Symbol	Mapunit Name
Hoagland-Chalkmountain-Pasturerock complex, 30 to 50 percent slopes	4417
Highyork-Elkcamp-Airstrip complex, 30 to 50 percent slopes	4422

Source: Natural Resources Conservation Service. 2018. USDA Web Soil Survey. <http://websoilsurvey.nrcs.usda.gov>. Accessed August 2018.

The project is primarily on privately owned and managed lands in rural, unincorporated south-central Humboldt County, 10 mi southeast of Ferndale, 20 mi south of Eureka, and 22 mi north of Garberville, California. Most of the project would be located on two ridgelines that are located south and east of the town of Scotia. Monument Ridge is located south and west of Highway 101 and the Eel River, and Shively Ridge is located north and east of Highway 101 and the Eel River.

The project area consists primarily of managed timberlands that are dominated by redwood (*Sequoia sempervirens*) forests and Douglas-fir (*Pseudotsuga menziesii*) forests, with annual grassland, hardwood, and chaparral inclusions. In addition to timber production, portions of the project area are managed for cattle grazing. The topography is diverse and steep in places, and elevation ranges from nearly sea level to just over 3,000 ft.

3.0 METHODS

3.1 DATABASE AND LITERATURE REVIEW

Stantec identified existing plant communities and potentially occurring special-status plant species in the project area using a combination of database searches, review of existing information, and vegetation mapping conducted during field visits. For the purpose of this evaluation, special-status plant species include plants that are: 1) listed as threatened or endangered under the CESA or the federal ESA; 2) proposed endangered or threatened by the U.S. Fish and Wildlife Service (USFWS); 3) designated as rare by the California Department of Fish and Wildlife (CDFW); 4) a state or federal candidate species for listing as threatened or endangered; and/or 5) have a California Rare Plant Rank (CRPR) of 1 or 2. All species encompassed in this list are included in the CDFW *Special Vascular Plants, Bryophytes, and Lichens List* (CDFW 2018d).

Prior to conducting field work, we developed a list of special-status plant species that could occur in the project area. To develop this list, the following databases were searched: the California Natural Diversity Database (CNDDDB) (CDFW 2018b), the California Native Plant Society (CNPS) *Inventory of Rare and Endangered Plants* (CNPS 2018b), the USFWS database of federally protected species (USFWS 2018), and Humboldt Redwood Company, LLC (HRC) botanical resource data (HRC 2015). The CNDDDB was queried for reported occurrences of special-status plants within the 7.5-minute U.S. Geological Survey topographic quadrangles in the project area, as well as those immediately adjacent. Twenty-three quadrangles were included in the search: Arcata South, Blocksburg, Bridgeville, Buckeye Mtn., Bull Creek, Cannibal Island, Capetown, Eureka, Ferndale, Fields Landing Fortuna, Hydesville, Larabee Valley, McWhinney Creek, Myers Flat, Owl Creek, Petrolia, Redcrest, Scotia, Showers Mountain, Taylor Peak, Weott, and Yager Junction. The CNDDDB is a database consisting of historical observations of special-status plant species, wildlife species, and natural plant communities. Because the CNDDDB is limited to reported sightings, it

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is not a comprehensive list of species that may occur in an area. However, it is useful in refining the list of special-status species that potentially occur in the project area.

Stantec also queried the CNPS online *Inventory of Rare and Endangered Plants of California* (CNPS 2018b), which allows users to search the inventory using a set of criteria (e.g., location, habitat, elevation). The CNPS inventory was queried for all CRPR 1, 2, 3, and 4 plants occurring in the same 23 quadrangles included in the CNDDDB query. All CRPR 3 and 4 plant species were included in the queries of the CNPS inventory to evaluate whether any of these plant species have the potential to occur in the project area. Finally, we queried the CNPS inventory for CRPR 1, 2, 3, and 4 plant occurrences in Humboldt County, from 1 to 3,600 ft. in elevation, for the following vegetation communities: coastal prairie, coastal scrub, cismontane woodland, meadows and seeps, North Coast coniferous forest, redwood forest, riparian woodland, and valley and foothill grassland.

Stantec also reviewed Trust Resources Reports generated from the USFWS Information, Planning, and Conservation System database, which summarizes federally listed species, critical habitat, and other biological resources potentially occurring in the project area (USFWS 2018). We also reviewed records included in the Consortium of California Herbaria (Consortium of California Herbaria 2018), Calflora (Calflora 2018), and HRC special-status plant occurrence data. Soil types mapped in the project area (Table 1, Figure 3) were also reviewed to determine if any unique soils (e.g., serpentine, limestone) are known to occur that may provide suitable habitat for special-status plant species.

For the purposes of this evaluation, we considered that a special-status species could occur within the project area if suitable habitat was present and its geographic and elevational ranges overlapped with the project area. All special-status plant species evaluated in the database searches and review of existing information are included in Appendix A. Based on the review of existing information, species habitat requirements, and habitat characteristics present in the project area, Stantec determined that 37 special-status and 38 CRPR 3 or 4 plant species have the potential to occur in the project area (Appendix A).

3.2 FIELD SURVEYS

3.2.1 Vegetation Mapping

Stantec conducted surveys to characterize vegetation communities and describe the existing environment in the complete project area in 2018 (Figure 2). Vegetation mapping followed the technical approach and vegetation alliance classification system described in *A Manual of California Vegetation*, 2nd Edition (MCV) (Sawyer et al. 2009) and updated in the current online edition (CNPS 2018a). The MCV represents the most recent efforts to provide a common and accepted vegetation classification system for use throughout California and classifies vegetation into a set of plant alliances, associations, special stands, or semi-natural stands. A plant species' dominance or importance in the stratum (i.e., tree, woody shrub/subshrub, or non-woody herbaceous) with the greatest amount of cover generally determines the vegetation alliance classification. The mapping effort included identifying and documenting all CDFW California Sensitive Natural Communities in the project area. Sensitive natural communities as defined by CDFW are those with a state rarity ranking of S1 (critically imperiled), S2 (imperiled), or S3 (vulnerable). To identify sensitive natural communities within the project area, we checked each vegetation community identified during field mapping against the California Natural Community List dated January 24, 2018 (CDFW 2018a).

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Stantec botanists mapped vegetation in the field by walking through the project area and assessing vegetative cover within stands. The full extent, or a representative portion, of all vegetation communities mapped in the project area were visited during 2018 surveys. We classified all stands to the alliance level, or association level when an association was present. During field assessments, we identified and delineated the MCV or other alliance and association types onto field maps with aerial imagery. Stantec botanists delineated the boundaries of mapped vegetation communities based on characteristics observed in the field and vegetation signatures observed on aerial imagery. Information was collected by Stantec botanists to document each mapped vegetation community including: plant species composition (i.e., percent relative cover [% RC] of dominant and sub-dominant species within each stratum), stand structure, regional occurrence, and other notable characteristics. Stantec then digitized the delineated boundaries in current ArcGIS software for display and data query purposes.

Several vegetation communities were encountered in the project area that are not currently described in the MCV. As a result, and for the purposes of this project, we designated several new alliance and association types not currently provided in the MCV. These new alliances and associations were described by classifying dominant and sub-dominant vegetation and by assessing repeated plant species composition across the project area. Stantec assessed the status of new vegetation communities as sensitive natural communities based on existing CDFW classifications. CDFW considers all associations within sensitive alliances to be sensitive. As such, Stantec considered new associations mapped within existing sensitive alliances to be sensitive. For this assessment, we presumed that new alliances dominated by non-native species would not be considered sensitive communities. For new alliances and associations dominated by native species, we followed CDFW guidance and used corresponding vegetation types and listing status provided in *Preliminary Descriptions of the Terrestrial Natural Communities of California* (Holland 1986).

3.2.2 Botanical Resources

3.2.2.1 Reference Population Visits

To the extent practicable, we visited nearby reference populations of special-status or CRPR 3 or 4 plant species determined to potentially occur in the project area to ensure that the project botanists had an accurate search image for a species and to determine whether the species was identifiable at the time of our surveys. Reference site visits were made for plant occurrences documented by HRC or the CNDDDB near the project area.

Stantec botanist Tim Hanson conducted reference site visits with HRC botanist James Regan on March 20, 2018, of documented occurrences of coast fawn lily (*Erythronium revolutum*), Howell's montia (*Montia howellii*), maple-leaved checkerbloom (*Sidalcea malachroides*), Methuselah's beard lichen (*Usnea longissima*), Pacific gilia (*Gilia capitata* var. *pacifica*), short-leaved evax (*Hesperivax sparsiflora* var. *brevifolia*), and Siskiyou checkerbloom (*Sidalcea malviflora* ssp. *patula*). Mr. Hanson and Mr. Regan did not observe either the Coast fawn lily or short-leaved evax at the documented locations during the March 20 site visit. Howell's montia, maple-leaved checkerbloom, Pacific gilia, and Siskiyou checkerbloom were not flowering at the time of the initial reference site visits but were identified by both botanists based on previous knowledge of the populations, growth habit, and vegetative characteristics. Methuselah's beard lichen is identifiable at any point in the season due to its consistent appearance throughout the year.

Stantec botanists also visited reference populations of Humboldt County milk-vetch (*Astragalus agnicidus*), nodding semaphore grass (*Pleuropogon refractus*), and running-pine (*Lycopodium clavatum*) in or near the project area during subsequent field surveys. Humboldt County milk-vetch was observed in flower and fruit on July 20, 2018 at

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documented occurrences about 3 miles south of the project area in the Larabee Creek drainage. Nodding semaphore grass was observed in flower on June 14, 2018 at a documented population in the project area on Western Monument Ridge. Running pine was observed on June 13, 2018 at a documented population in the project area on Shively Ridge. Reference populations were revisited on multiple occasions during the botanical field surveys to confirm phenology for identification purposes.

3.2.2.2 Field Investigation

Botanical surveys were conducted in accordance with the CDFW *Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Sensitive Natural Communities* (CDFW 2018c). Tim Hanson, Stantec staff botanist, served as the lead investigator for the botanical survey. Wendy Boes and Sara Taylor, Stantec staff botanists, provided additional field assistance. Mr. Hanson holds a Master of Science degree in Biological Sciences and has 9 years of experience conducting botanical surveys in California. Ms. Boes holds a Bachelor of Science degree in Botany and has 15 years of experience conducting botanical surveys in California. Ms. Taylor holds a Bachelor of Science degree in Environmental Studies and a Master of Science degree in Environmental Science. She has over 5 years of experience conducting botanical surveys in northern California and Oregon.

Stantec botanists conducted several survey passes of the project area, each of which consisted of walking meandering transects that covered all safely accessible portions of the 2018 survey area. We completed multiple survey passes to observe early-, mid-, and late-season blooming plants (Table 2), expending 396 person-hours of field survey time. The timing of the botanical field surveys coincided with the blooming period(s) for potentially occurring special-status and CRPR 3 or 4 plants in the project area and provides a comprehensive survey effort for these species within the 2018 survey area. Stantec also conducted reconnaissance level field surveys of the 2019 survey area to assess habitat suitability and record incidental observations of special-status or CRPR 3 or 4 plants.

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Table 2. Humboldt Wind Energy Project Botanical Survey Dates in 2018

March	April	May	June	July	August
20	2	1	1	9	6
21	3	2	11	10	7
	4	3	12	11	8
	24	28	13	12	9
	25	29	14	23	10
	26	30	15	24	
	27	31	19	25	
			20	26	
			21	27	
			22		

The field surveys were floristic in nature; we identified each species observed to the taxonomic level necessary to determine whether the plant was listed as a special-status or CRPR 3 or 4 species or not. Plant taxonomy follows Baldwin et al. (2012), including applicable errata and supplements (Jepson Flora Project 2018). We also reviewed all non-native plant species observed to determine their status as invasive plants (i.e., noxious weeds) according to the ratings in the *California Invasive Plant Inventory* produced by California Invasive Plant Council (Cal-IPC) (Cal-IPC 2018). For this assessment, invasive plant species are those included in the Cal-IPC inventory with ratings of High, Moderate, or Limited.

4.0 RESULTS AND DISCUSSION

4.1 VEGETATION COMMUNITIES

Stantec mapped 83 vegetation communities in the project area to the alliance or association level (Figure 4 and Table 3). This includes 10 alliances and 14 associations not currently described in the MCV. Of these communities, those dominated by non-native/invasive species were not considered to be sensitive natural communities, and associations in existing sensitive alliances were considered sensitive. Remaining communities were assessed based upon status of a corresponding vegetation type in Holland per CDFW guidance. Two alliances and two associations dominated by native species do not have corresponding communities in Holland; Diana Hickson of CDFW was contacted regarding these communities; her response is pending.

Forty-three of the vegetation communities in the project area are categorized as sensitive natural communities (including new associations Stantec presumed to be considered sensitive by CDFW due to their inclusion in an existing sensitive alliance), which account for approximately 1,073 ac of the project area (Table 3). Each mapped vegetation alliance is described below. In general, vegetation communities are listed by stratum (i.e., tree, shrub, herb). Alliance descriptions are based on plant community characteristics observed in the project area and do not represent an exhaustive description of these alliances. Percent RC pertains to the dominant, co-dominant, or sub-dominant species in each stratum and not to the overall vegetation within a stand. This usage of % RC corresponds to the MCV guidelines and membership rules for classification.

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Table 3. Vegetation Communities in the Project Area

Alliance	Association	Sensitive Natural Community	Map ID	Area (Acres)
¹ A Manual of California Vegetation Alliances and Associations				
Forests and Woodlands				
grand fir forest	No Association	Yes	6	1.5
bigleaf maple forest	<i>Acer macrophyllum</i>	Yes	10	0.6
	<i>Acer macrophyllum</i> – <i>Pseudotsuga menziesii</i> / <i>Polystichum munitum</i>	Yes	10.1	5.4
red alder forest	No Association	Yes	14	4.8
	<i>Alnus rubra</i> – <i>Salix lasiolepis</i>	Yes	14.1	1.2
madrone forest	No Association	Yes	15	2.9
tanoak forest	<i>Notholithocarpus densiflorus</i>	Yes	39	12.5
	<i>Notholithocarpus densiflorus</i> – <i>Arbutus menziesii</i>	Yes	39.1	26.9
	<i>Notholithocarpus densiflorus</i> – <i>Umbellularia californica</i>	Yes	39.2	7.4
	<i>Notholithocarpus densiflorus</i> – <i>Vaccinium ovatum</i>	Yes	39.3	11.5
² Monterey pine plantation	No Association	² No	40	0.4
Fremont cottonwood forest	<i>Populus fremontii</i>	Yes	68	0.8
black cottonwood forest	<i>Populus trichocarpa</i> – <i>Salix lasiandra</i>	Yes	70.1	0.8
Douglas-fir forest	<i>Pseudotsuga menziesii</i>	No	74	343.3
	<i>Pseudotsuga menziesii</i> – <i>Gaultheria shallon</i>	Yes	74.1	28.7
	<i>Pseudotsuga menziesii</i> – <i>Arbutus menziesii</i>	Yes	74.2	15.4
	<i>Pseudotsuga menziesii</i> – <i>Quercus garryana</i> var. <i>garryana</i> /grass	Yes	74.3	1.2
	<i>Pseudotsuga menziesii</i> – <i>Umbellularia californica</i> / <i>Polystichum munitum</i>	No	74.4	23.3
	<i>Pseudotsuga menziesii</i> / <i>Mahonia nervosa</i>	Yes	74.5	5.7
Douglas-fir–tanoak forest	<i>Pseudotsuga menziesii</i> – <i>Notholithocarpus densiflorus</i>	No	76	104.8
	<i>Pseudotsuga menziesii</i> – <i>Notholithocarpus densiflorus</i> / <i>Vaccinium ovatum</i> –(<i>Gaultheria shallon</i>)	No	76.1	103.5

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Alliance	Association	Sensitive Natural Community	Map ID	Area (Acres)
¹ A Manual of California Vegetation Alliances and Associations				
	<i>Pseudotsuga menziesii</i> – <i>Notholithocarpus densiflorus</i> – (<i>Acer macrophyllum</i>)/ <i>Polystichum munitum</i>	No	76.2	53.8
	<i>Pseudotsuga menziesii</i> – <i>Notholithocarpus densiflorus</i> /Iris	No	76.3	1.4
	<i>Pseudotsuga menziesii</i> – <i>Notholithocarpus densiflorus</i> /Mahonia nervosa	No	76.4	0.5
	<i>Pseudotsuga menziesii</i> – <i>Notholithocarpus densiflorus</i> /Achllys triphylla	No	76.5	4.8
Oregon white oak woodland	No Association	Yes	82	5.8
	<i>Quercus garryana</i> – <i>Umbellularia californica</i> – <i>Quercus (agrifolia, kelloggii)</i>	Yes	82.1	0.4
shining willow groves	<i>Salix lasiandra</i>	Yes	91	2.5
redwood forest	<i>Sequoia sempervirens</i>	Yes	93	108.6
	<i>Sequoia sempervirens</i> – <i>Pteridium aquilinum</i>	Yes	93.1	9.5
	<i>Sequoia sempervirens</i> – <i>Polystichum munitum</i>	Yes	93.2	152.7
	³ <i>Sequoia sempervirens</i> – <i>Pseudotsuga menziesii</i> – <i>Notholithocarpus densiflorus</i> – <i>Vaccinium ovatum</i>	³ Yes	93.3	6.5
	<i>Sequoia sempervirens</i> – <i>Pseudotsuga menziesii</i> /Gaultheria shallon	Yes	93.4	381.2
	<i>Sequoia sempervirens</i> – <i>Pseudotsuga menziesii</i> /Vaccinium ovatum	Yes	93.5	26.6
	<i>Sequoia sempervirens</i> – <i>Pseudotsuga menziesii</i> – <i>Umbellularia californica</i>	Yes	93.6	15.5
	<i>Sequoia sempervirens</i> – <i>Acer macrophyllum</i> – <i>Umbellularia californica</i>	Yes	93.7	4.0
	<i>Sequoia sempervirens</i> – <i>Notholithocarpus densiflorus</i> /Vaccinium ovatum	Yes	93.8	60.8
California bay forest	<i>Umbellularia californica</i>	Yes	97	4.6

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Alliance	Association	Sensitive Natural Community	Map ID	Area (Acres)
¹ A Manual of California Vegetation Alliances and Associations				
Shrublands				
⁴ redwood manzanita stands/montane manzanita chaparral	⁴ <i>Arctostaphylos columbiana</i>	⁴ No	904	1.4
coyote brush scrub	<i>Baccharis pilularis</i>	No	151	1.7
	<i>Baccharis pilularis</i> – <i>Ceanothus thyrsiflorus</i>	No	151.1	0.8
	<i>Baccharis pilularis</i> /Annual grass-herb	No	151.2	8.6
	<i>Baccharis pilularis</i> – <i>Toxicodendron diversilobum</i>	No	151.3	1.5
broom patches	No Association	No	156	1.5
blue blossom chaparral	No Association	No	169	4.6
	<i>Ceanothus thyrsiflorus</i> – <i>Vaccinium ovatum</i> – <i>Rubus parviflorus</i>	No	169.1	1.7
ocean spray brush	No Association	Yes	215	15.1
Himalayan blackberry–rattlebox–edible fig riparian scrub	<i>Rubus armeniacus</i>	No	272	3.5
coastal brambles	<i>Rubus parviflorus</i> – <i>Rubus spectabilis</i> – <i>Rubus ursinus</i>	Yes	273	1.5
	<i>Rubus ursinus</i>	Yes	273.1	3.7
	<i>Rubus spectabilis</i>	Yes	273.2	0.3
	<i>Rubus parviflorus</i>	Yes	273.3	1.6
arroyo willow thickets	<i>Salix lasiolepis</i>	No	282	3.8
poison oak scrub	No Association	No	301	1.1
Herbaceous				
⁶ Spanish lotus fields	⁶ <i>Acmispon americanus</i>	⁶ Not listed, insufficient data	910	0.1
⁴ spike bentgrass prairie/coastal terrace prairie	⁴ <i>Agrostis exarata</i>	⁴ Yes	900	57.8
	⁴ <i>Agrostis exarata</i> – <i>Holcus lanatus</i> – <i>Anthoxanthum odoratum</i>	⁴ Yes	900.1	1.5
	⁴ <i>Agrostis exarata</i> – <i>Juncus</i> spp.	⁴ Yes	900.2	12.6
⁵ yellow hairgrass grasslands	⁵ <i>Aira praecox</i>	⁵ No	903	0.9
⁵ sweet vernal grass meadows	No Association	⁵ No	911	0.9
upland mustards	<i>Brassica nigra</i>	No	330	2.0

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Alliance	Association	Sensitive Natural Community	Map ID	Area (Acres)
¹ A Manual of California Vegetation Alliances and Associations				
annual brome grasslands	No Association	No	331	52.4
sand dune sedge swaths	<i>Carex praegracilis</i>	Yes	359	0.5
⁴ foothill sedge meadows	⁴ <i>Carex tumulicola</i>	⁴ Yes	905	0.1
pampas grass patches	<i>Cortaderia (jubata, selloana)</i>	No	374	3.9
annual dogtail grasslands	No Association	No	376	11.5
	<i>Cynosurus echinatus</i> – <i>Linum bienne</i> – <i>Brodiaea elegans</i>	No	376.1	2.6
California oat grass prairie	<i>Danthonia californica</i>	Yes	377	6.3
	³ <i>Danthonia californica</i> – <i>Juncus</i> spp.	³ Yes	377.1	3.7
	³ <i>Danthonia californica</i> – <i>Agrostis exarata</i>	³ Yes	377.2	14.9
tufted hair grass meadows	<i>Deschampsia cespitosa</i>	Yes	381	11.5
California brome-blue wildrye prairie	<i>Elymus glaucus</i>	Yes	388	35.6
⁴ coast buckwheat patches	⁴ <i>Eriogonum latifolium</i>	⁴ No	906	0.3
perennial rye grass fields	<i>Festuca perennis</i>	No	425	4.2
common velvet grass–sweet vernal grass meadows	<i>Holcus lanatus</i> – <i>Anthoxanthum odoratum</i>	No	400	142.6
	<i>Holcus lanatus</i>	No	400.1	24.7
soft rush marshes	<i>Juncus effusus</i>	No	407	4.0
western rush marshes	<i>Juncus patens</i>	No	412	0.8
⁵ pennyroyal marshes	⁵ <i>Mentha pulegium</i>	⁵ No	907	2.9
Harding grass–reed canary grass swards	<i>Phalaris aquatica</i>	No	446	8.4
⁵ purple awned wallaby grass prairie	⁵ <i>Rytidosperma penicillatum</i>	⁵ No	901	174.3
⁶ Wallace's spike moss mats	⁶ <i>Selaginella wallacei</i>	⁶ Not listed, insufficient data	909	0.3
Other Habitat Types				
⁵ barren/urban	No Association	⁵ No	908	18.0

¹A Manual of California Vegetation, 2nd Edition (Sawyer et al. 2009)

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²CDFW recognizes Monterey pine forests as a sensitive natural community. However, the stands within the project area are roadside plantations that occur outside the Central Coast range of this species. Therefore, Stantec presumes these stands are not sensitive natural communities.

³Association not described in the MCV, but is included within an existing alliance in MCV that is designated as sensitive.

⁴Not described in MCV, corresponds to a vegetation type in Holland.

⁵Not described in MCV and dominated by invasive/non-native species (or barren/urban).

⁶Not described in MCV or in Holland. Insufficient data to determine sensitivity.

4.1.1 Forests and Woodlands

4.1.1.1 Grand Fir Forest

Grand fir (*Abies grandis*) forest alliance occurs as a small stand of trees along the proposed gen-tie route west of the Eel River. This forest community is dominated by grand fir (70–80% RC) with a few scattered Douglas-fir (10–20% RC). The understory is dominated by western sword fern (*Polystichum munitum*). Stantec mapped grand fir forest to the alliance level and did not observe associations in the project area. CDFW considers grand fir forest to be a sensitive natural community.

4.1.1.2 Bigleaf Maple Forest

Bigleaf maple (*Acer macrophyllum*) forest alliance occurs at two locations along the proposed gen-tie route: west of the Eel River and in the eastern portion of the project area near Bridgeville. This alliance is dominated by bigleaf maple (30–80% RC) and Douglas-fir. California blackberry (*Rubus ursinus*) and thimbleberry (*Rubus parviflorus*) are common in the shrub layer and western sword fern in the herbaceous layer. Stantec mapped two associations in the project area: *Acer macrophyllum* and *Acer macrophyllum*-*Pseudotsuga menziesii*/*Polystichum munitum*. CDFW considers all associations within bigleaf maple forest to be sensitive natural communities.

4.1.1.3 Red Alder Forest

Red alder (*Alnus rubra*) forest alliance occurs as relatively small stands of trees in seeps or along the banks of creeks, rivers, and small drainages in the project area. This forest community is dominated by red alder (60–80% RC) with arroyo willow (*Salix lasiolepis*) (30–40% RC), and blackberry (*Rubus* spp.) in the shrub layer. Where shrubs are absent, western sword fern occurs and is dominant. Stantec mapped red alder forest at both the alliance level and at the association level (*Alnus rubra*-*Salix lasiolepis*). CDFW considers red alder forest to be a sensitive natural community.

4.1.1.4 Madrone Forest

Madrone (*Arbutus menziesii*) forest alliance occurs in openings along road sides and as relatively small stands in forested areas. Stands are found scattered throughout the project area. This forest community is dominated by madrone (60–80% RC) with less cover of Douglas-fir and tanoak (*Notholithocarpus densiflorus*). Stands within the project area lack a developed understory, most likely due to high canopy cover, a relatively thick layer of leaf litter, and the species' tendency to form dense seedling and sapling patches. Stantec mapped madrone forest at the alliance level only. CDFW considers madrone forest to be a sensitive natural community.

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4.1.1.5 Tanoak Forest

Tanoak forest alliance is common to the project area and occurs scattered throughout. This forest community is dominated by a tree layer of tanoak (>60% RC) and was commonly observed by Stantec botanists co-dominating with madrone and California bay (*Umbellularia californica*). California huckleberry (*Vaccinium ovatum*) is also present in the understory of several stands with moderate to high cover. Stantec mapped four associations in the project area: *Notholithocarpus densiflorus*, *Notholithocarpus densiflorus* - *Arbutus menziesii*, *Notholithocarpus densiflorus* - *Umbellularia californica*, and *Notholithocarpus densiflorus* - *Vaccinium ovatum*. CDFW considers all associations within tanoak forest to be sensitive natural communities.

4.1.1.6 Monterey Pine Plantations

Two stands of Monterey pine (*Pinus radiata*) plantations are located in the project area. Both locations are small areas in the Transportation Route bounded by Highway 101 offramps and county roads. In both locations, Monterey pine accounts for 100% of the tree species in the stand, with a moderate herbaceous layer dominated by *Anthoxanthum odoratum* (*Anthoxanthum odoratum*) and rattlesnake grass (*Briza maxima*). Monterey pine has been widely planted outside of its original range in the Central Coast, where it is known only from three remaining native stands. Naturally occurring stands of Monterey pine are considered sensitive by CDFW. However, the two stands in the project area are planted as landscape and are therefore not considered a sensitive natural community.

4.1.1.7 Fremont Cottonwood Forest

Fremont cottonwood (*Populus fremontii*) forest alliance occurs along the edge of Alder Point Road in the eastern portion of the project area. Fremont cottonwood is dominant with >50% RC and in association with various willows (*Salix* spp.), Himalayan blackberry (*Rubus armeniacus*), and coyote brush (*Baccharis pilularis*). Stantec mapped one association in the project area: *Populus fremontii*. CDFW considers Fremont cottonwood forest to be a sensitive natural community.

4.1.1.8 Black Cottonwood Forest

Black cottonwood (*Populus trichocarpa*) forest alliance occurs along the east bank of the Eel River as a relatively narrow, linear stand of riparian trees and shrubs. This forest community is dominated by black cottonwood and Pacific willow (*Salix lasiandra* var. *lasiandra*). Stantec mapped one association in the project area: *Populus trichocarpa* - *Salix lasiandra*. CDFW considers black cottonwood forest to be a sensitive natural community.

4.1.1.9 Douglas-Fir Forest

Douglas-fir forest alliance is one of the most abundant forest community types in the project area. It is also one of the most variable in community composition due to stands existing in various states of succession. Douglas-fir (70–80% RC) stands in early seral stages with no developed shrub or herbaceous layers are present in areas grazed by cattle and in areas recently logged. More developed stands had sub-dominant hardwoods such as California bay, madrone, and Oregon white oak (*Quercus garryana* var. *garryana*). Other Douglas-fir stands had little to no hardwood cover and a more developed shrub layer with high % RC of salal (*Gaultheria shallon*) and Oregon grape (*Mahonia nervosa*). Other dominant species present in the understory include poison oak (*Toxicodendron diversilobum*), California huckleberry, and western sword fern. Stantec mapped six associations: *Pseudotsuga menziesii*, *Pseudotsuga menziesii* - *Gaultheria shallon*, *Pseudotsuga menziesii* - *Arbutus menziesii*, *Pseudotsuga menziesii* -

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Quercus garryana var. *garryana*/grass, *Pseudotsuga menziesii*-*Umbellularia californica*/*Polystichum munitum*, and *Pseudotsuga menziesii*/*Mahonia nervosa*. CDFW considers the *Pseudotsuga menziesii* - *Gaultheria shallon*, *Pseudotsuga menziesii* - *Arbutus menziesii*, *Pseudotsuga menziesii*-*Quercus garryana* var. *garryana*/grass, and *Pseudotsuga menziesii*/*Mahonia nervosa* associations within the Douglas-fir forest alliance to be sensitive natural communities.

4.1.1.10 Douglas-Fir-Tanoak Forest

Douglas-fir-tanoak forest alliance is an abundant forest community type in the project area and is variable in its composition. This forest community contains a tree layer of Douglas-fir and tanoak, and both species have 30–60% RC. Several stands have little to no shrub or herbaceous layer, but most stands have varying combinations of California huckleberry, Iris (*Iris* spp.), Oregon grape, and salal. Stantec mapped six associations in the project area: *Pseudotsuga menziesii* - *Notholithocarpus densiflorus*, *Pseudotsuga menziesii* - *Notholithocarpus densiflorus*/*Vaccinium ovatum* - (*Gaultheria shallon*), *Pseudotsuga menziesii* - *Notholithocarpus densiflorus*-(*Acer macrophyllum*)/*Polystichum munitum*, *Pseudotsuga menziesii*- *Notholithocarpus densiflorus*/*Iris*, *Pseudotsuga menziesii*-*Notholithocarpus densiflorus*/*Mahonia nervosa*, and *Pseudotsuga menziesii*-*Notholithocarpus densiflorus*/*Achlys triphylla*. CDFW does not consider any of the associations observed in the Douglas-fir-tanoak forest in the project area to be sensitive natural communities.

4.1.1.11 Oregon White Oak Woodland

Oregon white oak woodland alliance occurs alongside grasslands in the eastern portion of the project area. This woodland community is dominated by Oregon white oak (50–80% RC) with Douglas-fir sometimes co-dominating or present with much less cover. Other hardwoods, such as California bay and black oak (*Quercus kelloggii*), were also present in the tree layer. In the understory, stands have a variety of grasses and forbs along with poison oak. Stantec mapped Oregon white oak woodland to the alliance level and one association level: *Quercus garryana* - *Umbellularia californica* - *Quercus (agrifolia, kelloggii)*. CDFW considers Oregon white oak woodland to be a sensitive natural community.

4.1.1.12 Shining Willow Groves

Shining willow groves alliance occurs in seeps and drainages in the project area. This woodland community is dominated by Pacific willow and was observed forming dense thickets with native and non-native blackberry (*Rubus* spp.). Stantec mapped one association, in the project area: *Salix lasiandra*. CDFW considers shining willow groves to be a sensitive natural community.

4.1.1.13 Redwood Forest

Redwood forest alliance is one of the most abundant forest community types in the project area and is the most variable in community composition due to stands being in various states of succession. Stands of redwood (40–80% RC) generally co-dominate with Douglas-fir (30–70% RC) in the tree layer; however, several stands have sub-dominant to co-dominant hardwoods such as bigleaf maple, California bay, and tanoak. Most of the developed stands have a mixture of California huckleberry and salal in the understory. Several stands with less dense canopy cover have moderate to dense cover of bracken fern (*Pteridium aquilinum* var. *pubescens*) or western sword fern. Stands with undeveloped shrub or herbaceous layers are common and present in early seral stage stands, areas grazed by

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cattle, and in recently logged areas. Stantec mapped nine associations in the project area: *Sequoia sempervirens*, *Sequoia sempervirens* - *Pteridium aquilinum*, *Sequoia sempervirens* - *Polystichum munitum*, *Sequoia sempervirens* - *Pseudotsuga menziesii* - *Notholithocarpus densiflorus* - *Vaccinium ovatum*, *Sequoia sempervirens* - *Pseudotsuga menziesii*/*Gaultheria shallon*, *Sequoia sempervirens*-*Pseudotsuga menziesii*/*Vaccinium ovatum*, *Sequoia sempervirens*-*Pseudotsuga menziesii*-*Umbellularia californica*, *Sequoia sempervirens* - *Acer macrophyllum* - *Umbellularia californica*, and *Sequoia sempervirens*-*Notholithocarpus densiflorus*/*Vaccinium ovatum*. CDFW considers all associations within redwood forest to be sensitive natural communities.

4.1.1.14 California Bay Forest

California bay forest alliance occurs as small stands in the project area. This forest community is dominated by California bay with madrone or tanoak co-dominating in the tree layer. The understory is relatively open and often dominated by sapling California bay, tanoak, or madrone. Stantec mapped one association in the project area: *Umbellularia californica*. CDFW considers California bay forest to be a sensitive natural community.

4.1.2 Shrublands

4.1.2.1 Redwood Manzanita Stands

Redwood manzanita (*Arctostaphylos columbiana*) stands alliance occurs in the project area in one opening within Douglas-fir forest. This shrub community is dominated by redwood manzanita (60–80% RC) with coyote brush, blue blossom, and poison oak interspersed throughout. This alliance and association (*Arctostaphylos columbiana*) were developed by Stantec during vegetation mapping. Redwood manzanita stands alliance is not currently described in the MCV, but CDFW does not consider the corresponding Holland classification (montane manzanita chaparral) to be a sensitive natural community.

4.1.2.2 Coyote Brush Scrub

Coyote brush scrub alliance occurs in forest openings and in disturbed areas such as log landings and along roadsides. This shrub community is common in the project area and is generally dominated by coyote brush (50–80% RC). Stands are present with various shrubs including blackberry (*Rubus* spp.), poison oak, blue blossom (*Ceanothus thyrsiflorus*), and redwood manzanita. Co-dominant species in the herbaceous layer include many non-native annual grass species and pampas grass (*Cortaderia* spp.). Stantec mapped four associations in the project area: *Baccharis pilularis*, *Baccharis pilularis*-*Ceanothus thyrsiflorus*, *Baccharis pilularis*/Annual grass-herb, and *Baccharis pilularis*-*Toxicodendron diversilobum*. CDFW does not consider any of the coyote brush scrub associations observed in the project area to be sensitive natural communities.

4.1.2.3 Broom Patches

Broom patches semi-natural alliance occurs in very disturbed, partially developed landscapes within the project area. This shrub community is generally dominated by scotch broom (*Cytisus scoparius*) or French broom (*Genista monspessulana*) (50–70% RC) and sometimes co-dominates with Himalayan blackberry (30–50% RC). Stantec mapped all broom patches in the project area to the alliance level. CDFW does not consider broom patches to be a sensitive natural community.

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4.1.2.4 Blue Blossom Chaparral

Blue blossom chaparral alliance occurs in forest openings and disturbed areas, such as log landings and roadsides. This shrub community is characterized by blue blossom (35–70% RC) and is present in pure stands with grasses and forbs as well as in stands co-dominating with California huckleberry and redwood manzanita. Stantec mapped blue blossom chaparral to the alliance level and one association level (*Ceanothus thyrsiflorus*-*Vaccinium ovatum*-*Rubus parviflorus*). CDFW does not consider any of the associations of blue blossom chaparral observed in the project area to be sensitive natural communities.

4.1.2.5 Ocean Spray Brush

Ocean spray (*Holodiscus discolor*) brush alliance occurs in dense stands bordering grasslands in the western portion of the project area. This shrub community is dominated by ocean spray (70–90% RC) and is present in stands mixed with California blackberry, thimbleberry, poison oak, and coast man-root (*Marah oregana*). Many of these stands have coast man-root growing over the tops of the ocean spray. Stantec did not observe any associations in the project area; therefore, ocean spray brush was mapped to the alliance level only. CDFW considers ocean spray brush to be a sensitive natural community.

4.1.2.6 Himalayan Blackberry – Rattlebox – Edible Fig Riparian Scrub

Himalayan blackberry - rattlebox - edible fig riparian scrub semi-natural alliance occurs in very disturbed, partially developed landscapes in the project area. This shrub community is dominated by Himalayan blackberry (50% RC) and includes other introduced species such as firethorn (*Pyracantha* spp.) (10–20% RC), poison oak (20–30% RC), and bromes (*Bromus* spp.) (10–30% RC). Stantec mapped one association in the project area: *Rubus armeniacus*. CDFW does not consider Himalayan blackberry - rattlebox - edible fig riparian scrub to be a sensitive natural community.

4.1.2.7 Coastal Brambles

Coastal bramble alliance occurs in disturbed areas such as roadsides and in forest openings throughout the project area. This shrub community is dominated by California blackberry (60–80% RC), thimbleberry (60–80% RC), or salmonberry (*Rubus spectabilis*) (60–80% RC), or a combination of these species. Many stands have coast man-root (10–20% RC) or grasses and forbs growing throughout. Stantec mapped four associations: *Rubus parviflorus*-*spectabilis*-*ursinus*, *Rubus ursinus*, *Rubus spectabilis*, and *Rubus parviflorus*. CDFW considers all associations within coastal brambles to be sensitive natural communities.

4.1.2.8 Arroyo Willow Thickets

Arroyo willow thickets alliance occurs in deep drainages within the grassland prairies and along ditches in the Transportation Route near Highway 101. This shrub community is dominated by arroyo willow (70–80% RC) with occasional Douglas-fir (10–20% RC). Stantec mapped one association in the project area: *Salix lasiolepis*. CDFW considers arroyo willow thickets to be a sensitive natural community.

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4.1.2.9 Poison Oak Scrub

Poison oak scrub alliance occurs along the proposed gen-tie route in the eastern portion of the project area. This shrub community is dominated by poison oak (60–80% RC) and was often mixed with coyote brush (10–15% RC) and Himalayan blackberry (10–20% RC). Poison oak sometimes occurred in pure stands with scattered grasses and forbs. Stantec mapped poison oak scrub to the alliance level only. CDFW does not consider poison oak scrub to be a sensitive natural community.

4.1.3 Herbaceous Vegetation

4.1.3.1 Spanish Lotus Fields

Spanish lotus (*Acmispon americanus*) fields alliance occurs in one location within grasslands in the western portion of the project area. This herbaceous plant community is dominated by Spanish lotus (70–80% RC), which occur in dense patches on the flanks of a shallow drainage. Other sub-dominant species in this stand are purple awned wallaby grass (30–40% RC) and English plantain (*Plantago lanceolata*) (10–20% RC). This alliance and association (*Acmispon americanus*) were developed by Stantec during vegetation mapping. CDFW has not assessed the status of Spanish lotus fields as a sensitive natural community and this alliance does not have a corresponding community in Holland. Diana Hickson of CDFW was contacted regarding the sensitive status of this community; her response is pending.

4.1.3.2 Spike Bentgrass Prairie

Spike bentgrass (*Agrostis exarata*) prairie alliance occurs in the Transportation Route in wet depressions within large grasslands. This herbaceous plant community is characterized by spike bentgrass (30–60% RC) and in many stands co-dominates with common velvet grass (*Holcus lanatus*) (20–30% RC) and sweet vernal grass (10–30% RC). Several stands contained a high density of rush species (10–30% RC), including slender rush (*Juncus occidentalis*), Bolander's rush (*Juncus bolanderi*), and toad rush (*Juncus bufonius*). This alliance and its associations were developed by Stantec during vegetation mapping. Associations include *Agrostis exarata* - *Holcus lanatus* - *Anthoxanthum odoratum* and *Agrostis exarata* - *Juncus* spp. Spike bentgrass prairie alliance is not currently described in the MCV, but CDFW considers the corresponding Holland classification (coastal terrace prairie) to be a sensitive natural community.

4.1.3.3 Yellow Hairgrass Grasslands

Yellow hairgrass grasslands (*Aira praecox*) semi-natural alliance occurs in the western portion of the project area. This herbaceous plant community is limited to shallow soils on top of rolling grasslands and is dominated by yellow hairgrass (70–80% RC). Overall grass cover is low in this stand type. In some stands, yellow hairgrass co-dominates with sheep sorrel (*Rumex acetosella*) (40–60% RC); bracken fern and bristly dogtail grass (*Cynosurus echinatus*) are also present at lower cover. This alliance and association (*Aira praecox*) were developed by Stantec during vegetation mapping. CDFW has not assessed the status of yellow hairgrass grasslands as a sensitive natural community. For this assessment, Stantec presumes that CDFW would not consider yellow hairgrass grassland a sensitive natural community because it is dominated by non-native species.

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4.1.3.4 Sweet Vernal Grass Meadows

Sweet vernal grass meadows semi-natural alliance is common in the Transportation Route and is dominated by sweet vernal grass (40–80% RC). In many stands it co-dominates with other grasses such as rattlesnake grass and velvet grass or non-native forbs such as jointed charlock (*Raphanus sativus*) or English plantain. CDFW has not assessed the status of sweet vernal grass meadows as a sensitive natural community, and for this assessment, Stantec presumes that CDFW would not consider it a sensitive community because it is dominated by non-native species.

4.1.3.5 Upland Mustards

Upland mustards semi-natural alliance occurs in disturbed landscapes within the project area. This herbaceous plant community is characterized by black mustard (*Brassica nigra*) (20–40% RC) and a high diversity of introduced grasses and forbs. Introduced plants are common in this community and include English plantain, bristly dogtail grass, bromes (*Bromus* spp.), and Mediterranean barley (*Hordeum marinum*). Stantec mapped one association in the project area: *Brassica nigra*. CDFW does not consider upland mustards to be a sensitive natural community.

4.1.3.6 Annual Brome Grasslands

Annual brome grasslands semi-natural alliance occurs in disturbed areas and within large grassland prairies in the project area. This herbaceous plant community is generally dominated by soft chess (*Bromus hordeaceus*) (40% RC) and is associated with other introduced annual grasses such as bristly dogtail grass (20% RC), rattail sixweeks grass (*Festuca myuros*) (30% RC), and ripgut grass (*Bromus diandrus*) (10% RC). Stantec mapped this herbaceous community to the alliance level. CDFW does not consider annual brome grasslands to be a sensitive natural community.

4.1.3.7 Sand Dune Sedge Swaths

Sand dune sedge swaths alliance occurs as a small, linear stand along a wet, grassland ridgetop in the western portion of the project area and Stantec only observed it in one location. This herbaceous plant community is characterized by field sedge (*Carex praegracilis*) (30% RC) but is heavily invaded with introduced herbs such as smooth cats ear (*Hypochaeris glabra*) (30–50% RC), English plantain (15% RC), and bristly dogtail grass (5% RC). Bracken fern (20% RC) was also observed in this stand. Stantec mapped one association in the project area: *Carex praegracilis*. CDFW considers sand dune sedge swaths to be a sensitive natural community.

4.1.3.8 Foothill Sedge Meadows

Foothill sedge meadows alliance occurs in one location; a large grassland in the central portion of the project area. This herbaceous plant community is limited to a wet seep where foothill sedge (*Carex tumulicola*) (70–80% RC) dominates the stand. Several other species such as rush (*Juncus* spp.) and blue wild-rye are mixed throughout but have low cover. This alliance and association (*Carex tumulicola*) were developed by Stantec during vegetation mapping. CDFW has not assessed the status of foothill sedge meadows as a sensitive natural community.

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4.1.3.9 Pampas Grass Patches

Pampas grass patches semi-natural alliance occurs in disturbed areas throughout the project area. This herbaceous plant community is characterized by pampas grass (50–80% RC) with varying amounts of coyote brush and Himalayan blackberry at lower covers. Introduced grasses and forbs are also present within this alliance. Stantec mapped one association in the project area: *Cortaderia (jubata, selloana)*. CDFW does not consider pampas grass patches to be a sensitive natural community.

4.1.3.10 Annual Dogtail Grasslands

Annual dogtail grasslands semi-natural alliance occurs as small stands (<1 ac) on the top of grassy slopes in dry, rocky, shallow soils throughout grassland prairies and in disturbed roadside areas. This herbaceous plant community is dominated by bristly dogtail grass (50% RC) and is associated with other introduced herbs such as flax (*Linum bienne*), smooth cats ear, soft chess, and rattail sixweeks grass. This alliance generally has a high cover of introduced annual and perennial herbs. One stand in the project area has a low cover of several native species. Native species present include California plantain (*Plantago erecta*), tarweed (*Madia* spp.), and harvest brodiaea (*Brodiaea elegans*). This plant community was mapped to the alliance level and one association level (*Cynosurus echinatus* - *Linum bienne* - *Brodiaea elegans*). CDFW does not consider annual dogtail grasslands to be a sensitive natural community.

4.1.3.11 California Oat Grass Prairie

California oat grass (*Danthonia californica*) prairie alliance occurs in the western and eastern portions of the project area within large, open grasslands. This herbaceous plant community is characterized by California oatgrass and historically dominated many coastal grasslands in California. Introduction of grazing likely changed the composition of these stands, leading to a community with less California oatgrass (40–60% RC) and more introduced annual and perennial grasses and forbs. Currently, stands are characterized by a combination of introduced annual species, including bromes and smooth cat's ear, and perennial native and introduced species, including California oatgrass, rushes (*Juncus* spp.), purple awned wallaby grass (*Rytidosperma penicillatum*), and narrow leaved flax (*Linum bienne*). Stantec mapped one MCV association in the project area: *Danthonia californica*. Stantec also created two association types during vegetation mapping: *Danthonia californica*-*Juncus* spp. and *Danthonia californica*-*Agrostis exarata*. CDFW considers all associations within California oat grass prairie to be sensitive natural communities.

4.1.3.12 Tufted Hair Grass Meadows

Tufted hair grass (*Deschampsia cespitosa*) meadow alliance occurs in the western portion of the project area within large, open grasslands. This herbaceous plant community is characterized by tufted hairgrass (30–60% RC), a perennial bunchgrass. Although MCV membership rules require >50% RC of tufted hairgrass in the herbaceous layer to classify the stand to this type, other native perennial grass cover was considered to define these stands as the tufted hair grass meadow alliance. Other native perennial grasses that were observed throughout the stands are spike bent grass (*Agrostis exarata*) (10–40% RC) and California oatgrass (10–30% RC). Historically, tufted hairgrass stands were maintained by fire (Walsh 1995) and without fire their composition has changed to include introduced annual and perennial herbs such as purple awned wallaby grass (*Rytidosperma penicillatum*) (10–20% RC), English plantain (10–20% RC), and smooth cats ear (20–40% RC). Stantec mapped one association in the project area: *Deschampsia cespitosa*. CDFW considers tufted hair grass meadows to be a sensitive natural community.

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4.1.3.13 California Brome-Blue Wildrye Prairie

California brome-blue wildrye (*Elymus glaucus* ssp. *glaucus*) prairie alliance occurs in small openings along forest edges and roadsides. This herbaceous plant community is characterized by blue wild-rye (30–50% RC) and bracken fern (10–30% RC), but is heavily invaded by introduced grasses such as common velvet grass (20–30% RC), sweet vernal grass (10–20% RC), and bromes (10–20% RC). Stantec mapped one association in the project area: *Elymus glaucus*. CDFW considers California brome-blue wildrye prairie to be a sensitive natural community.

4.1.3.14 Coast Buckwheat Patches

Coast buckwheat (*Eriogonum latifolium*) patches alliance occurs in disturbed locations in grasslands in the western portion of the project area. This herbaceous plant community is limited to old gravel pits with well-drained soils and is dominated by coast buckwheat (50% RC). Other species present in this community include common velvet grass, sheep sorrel, and rattail sixweeks grass. This alliance and association (*Eriogonum latifolium*) were developed by Stantec during vegetation mapping. Coast buckwheat patches alliance is not currently described in the MCV, but CDFW does not consider the corresponding Holland classification (northern coastal bluff scrub) to be a sensitive natural community.

4.1.3.15 Common Velvet Grass – Sweet Vernal Grass Meadows

Common velvet grass–sweet vernal grass meadows semi-natural alliance is one of the most abundant herbaceous community types and occurs throughout the project area. This herbaceous plant community is dominated by common velvet grass (40–80% RC) and in many stands co-dominates with sweet vernal grass (40–50% RC). Other associate species in this stand type include California oatgrass, bracken fern, bristly dogtail grass, tall fescue (*Festuca arundinacea*), and non-native bromes. Stantec mapped two associations in the project area: *Holcus lanatus* - *Anthoxanthum odoratum* and *Holcus lanatus*. CDFW does not consider common velvet grass – sweet vernal grass meadows to be a sensitive natural community.

4.1.3.16 Soft Rush Marshes

Soft rush (*Juncus effusus* ssp. *pacificus*) marsh alliance occurs in wet seeps and drainages within large grasslands in the eastern and western portions of the project area. This herbaceous plant community is dominated by soft rush (80–90% RC). Very few other species were observed within this type due to its dense cover. Stantec mapped one association in the project area: *Juncus effusus*. CDFW does not consider soft rush marshes to be a sensitive natural community.

4.1.3.17 Western Rush Marshes

Western rush (*Juncus patens*) marshes alliance occurs in wet seeps and drainages within the large grasslands in the eastern and western portion of the project area. This herbaceous plant community is dominated by western rush (70–80% RC) and in some stands is co-dominant with soft rush (20–30% RC). Other associated species within this stand type are Harding grass (*Phalaris aquatica*) (10–30% RC) and pennyroyal (*Mentha pulegium*) (10–30% RC). Stantec mapped one association in the project area: *Juncus patens*. CDFW does not consider western rush marshes to be a sensitive natural community.

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4.1.3.18 Pennyroyal Marshes

Pennyroyal semi-natural alliance occurs in wet depressions and shallow drainages throughout grasslands in the project area. This herbaceous plant community is dominated by pennyroyal (60–90% RC) with some native species present such as tufted hairgrass, sedges (*Carex* spp.), and rushes. Native species are inconspicuous in these stands, with 5–20% RC overall. This alliance and association (*Mentha pulegium*) were developed by Stantec during vegetation mapping. CDFW has not assessed the status of pennyroyal marshes as a sensitive natural community. For this assessment, Stantec presumes that CDFW would not consider pennyroyal marshes a sensitive natural community because it is dominated by non-native species.

4.1.3.19 Perennial Rye Grass Fields

Perennial rye grass (*Festuca perennis*) fields semi-natural alliance occurs in small stands west of the Eel River. This herbaceous plant community is dominated by perennial rye grass (60–80% RC) with sub-dominant grasses present such as common velvet grass, sweet vernal grass, and blue wild-rye. Stantec mapped one association in the project area: *Festuca perennis*. CDFW does not consider perennial rye grass fields to be a sensitive natural community.

4.1.3.20 Harding Grass-Reed Canary Grass Swards

Harding grass-reed canary grass swards semi-natural alliance occurs in the eastern portion of the project area on wet, steep slopes within large grasslands. It is also found in disturbed areas along roadsides. This herbaceous plant community is dominated by Harding grass (40–80% RC) with medusa head (*Elymus caput-medusae*) and non-native bromes present as well. Stantec mapped one association in the project area: *Phalaris aquatica*. CDFW does not consider any associations within Harding grass-reed canary grass swards to be sensitive natural communities.

4.1.3.21 Purple Awned Wallaby Grass Prairie

Purple awned wallaby grass prairie semi-natural alliance occurs throughout the larger grasslands and in disturbed areas. It is one of the most common herbaceous stand types found in the project area. This herbaceous plant community is dominated by purple awned wallaby grass (30–70% RC) and, in some stands, co-dominates with common velvet grass (10–30% RC) and sweet vernal grass (10–20% RC). In general, this stand type has a lower density of grass cover compared to other herbaceous stand types. This alliance and association (*Rytidosperma penicillatum*) were developed by Stantec during vegetation mapping. CDFW has not assessed the status of purple awned wallaby grass prairie as a sensitive natural community. For this assessment, Stantec presumes that CDFW would not consider purple awned wallaby grass prairie a sensitive natural community because it is dominated by non-native species.

4.1.3.22 Wallace's Spike Moss Mats

Wallace's spike moss mats alliance occurs in one location within grasslands in the eastern portion of the project area. This herbaceous plant community is located on a west facing, rocky outcrop. At this location Wallace's spike moss (*Selaginella wallacei*) (50–60% RC) dominates the rock surface, and grasses such as blue wild-rye (10–30% RC) and wild oat (*Avena fatua*) (10–20% RC) dominate the area outside the rock outcrop. This alliance and association (*Selaginella wallacei*) were developed by Stantec during vegetation mapping. CDFW has not assessed the status of Wallace's spike moss mats as a sensitive natural community and this alliance does not have a corresponding

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community in Holland. Diana Hickson of CDFW was contacted regarding the sensitive status of this community; her response is pending.

4.1.4 Other

4.1.4.1 Barren/Urban

Barren/urban was developed by Stantec to delineate areas that are not vegetated or are landscaped. These areas include roads, road shoulders, structures and associated landscaping, and parking areas. For this assessment, Stantec presumes that barren/urban is not a sensitive natural community because it is not a natural community.

4.2 SPECIAL-STATUS SPECIES

All special-status plant species evaluated in the database searches and review of other existing information are included in Appendix A. Based on the review of existing information, species habitat requirements, and habitat characteristics present in the project area, Stantec determined that 37 special-status plant species have the potential to occur in the project area (Appendix A).

Stantec identified four special-status plant species in the project area during the 2018 botanical surveys (Table 4). The species are further described in the subsections that follow. Stantec did not document any federally or state-listed plant species in the project area during the 2018 botanical surveys. The locations of all special-status plant occurrences found in the project area during the 2018 botanical surveys are shown in Figure 5.

Table 4. Special-Status Plant Species Identified in the Humboldt Wind Energy Project During 2018 Botanical Surveys

Species	Status ¹ (Federal/ State/CRPR)	Number of Occurrences Identified in the Project Area
Pacific gilia (<i>Gilia capitata</i> ssp. <i>pacifica</i>)	NL/NL/1B.2	3
short-leaved evax (<i>Hesperrevax sparsiflora</i> var. <i>brevifolia</i>)	NL/NL/1B.2	2
Howell's montia (<i>Montia howellii</i>)	NL/NL/2B.2	2
Siskiyou checkerbloom (<i>Sidalcea malviflora</i> ssp. <i>patula</i>)	NL/NL/1B.2	2

¹ Federal and State Codes:

T = Threatened; E = Endangered; R = Rare; NL = Not Listed

California Rare Plant Rank Codes and Threat Ranks:

1B Plants rare, threatened, or endangered in California and elsewhere.

2B Plants rare, threatened, or endangered in California, but more common elsewhere.

3 Plants about which more information is needed—a review list.

4 Plants of limited distribution—a watch list.

0.1 Seriously endangered in California

0.2 Fairly endangered in California

Field surveys were conducted in the 2018 survey area during time periods where all potentially occurring special-status plant species could be identified if they were present. No adverse conditions (e.g., drought, herbivory) were encountered that would affect the identification of potential special-status plant species. Special-status plants observed at reference populations were consistent with previously reported conditions, suggesting that conditions during the 2018 survey period represent normal conditions for the area. All plants identified in the project area during the 2018 botanical surveys are listed in Appendix B. Representative photographs of each special-status plant species identified in the project area are shown in Appendix C. Stantec completed CNDDDB forms documenting all special-status plant occurrences identified in the project area. Updated CNDDDB forms were also completed for documented special-status plant occurrences in the project area that were not observed during field surveys.

4.2.1 Pacific Gilia

Pacific gilia is not protected under the CESA or the ESA and is a CRPR 1B.2 species. Pacific gilia is an herbaceous annual plant in the phlox family (Polemoniaceae) that grows in the coastal mountains of northern California and southern Oregon. Pacific gilia grows on steep slopes and open flats in coastal prairies, grassland, and dune habitats. This species flowers between May and August and generally occurs at elevations below 1,300 ft. Occurrences of Pacific gilia were found growing in coastal prairie habitat on Monument Ridge and on the Monument Ridge – Highway 101 gen-tie segment. The three Pacific gilia occurrences observed in the project area occupy a total of 0.95 acre and contain an estimated 1,495 plants.

4.2.2 Short-Leaved Evax

Short-leaved evax is not protected under the CESA or the ESA and is a CRPR 1B.2 species. Short-leaved evax is an herbaceous annual plant in the sunflower family that grows on coastal bluffs and prairies in northern California and southern Oregon and is restricted to a relatively narrow band along the Pacific coast. Short-leaved evax flowers between May and August and generally occurs at elevations below 710 ft., although we found it in the project area at two locations above 2,200 ft. Occurrences of short-leaved evax were found growing in coastal prairie habitat on Bear River Ridge. The two short-leaved evax occurrences observed in the project area occupy a total of 0.17 acre and contain an estimated 1,150 plants.

4.2.3 Howell's Montia

Howell's montia is not protected under the CESA or the ESA and is a CRPR 2B.2 species. Howell's montia is an herbaceous annual plant in the miner's lettuce family (Montiaceae) that is only known to occur in Humboldt and Trinity counties. This species grows in vernal wet, often compacted soils, including roadbeds. Howell's montia generally flowers between March and May and occurs at elevations below 2,740 ft. Occurrences of Howell's montia were found in moderately used roadbeds near Monument Ridge and on the Monument Ridge – Highway 101 gen-tie segment. The two Howell's montia occurrences observed in the project area occupy a total of 0.15 acre and contain about 70 plants.

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4.2.4 Siskiyou Checkerbloom

Siskiyou checkerbloom is not protected under the CESA or the ESA and is a CRPR 1B.2 species. Siskiyou checkerbloom is an herbaceous perennial plant in the mallow family that grows in open coastal forests and prairies in northwestern California and southern Oregon. This species generally flowers between May and August and occurs at elevations between 50 and 2,890 ft. Occurrences of Siskiyou checkerbloom were located in coastal prairie on Bear River Ridge. The two Siskiyou checkerbloom occurrences observed in the project area occupy a total of 17.31 acres and contain about 2,001 plants.

4.3 CRPR 3 OR 4 PLANT SPECIES

All CRPR 3 or 4 plant species evaluated in the database searches and review of other existing information are listed in Appendix A. Based on the review of existing information, species habitat requirements, and habitat characteristics present in the project area, Stantec determined that 38 CRPR 3 or 4 plant species have the potential to occur in the project area (Appendix A).

Stantec identified 11 CRPR 3 or 4 plant species in the project area during the 2018 botanical surveys (Table 5). The species are further described in the subsections that follow. The locations of all CRPR 3 or 4 plant species occurrences found in the project area during the 2018 botanical surveys are shown in Figure 5.

Table 5. California Rare Plant Rank 3 or 4 Plant Species Identified in the Humboldt Wind Energy Project During 2018 Botanical Surveys

Species	Status ¹ (Federal/ State/CRPR)	Number of Occurrences Identified in the Project Area
Methuselah's beard lichen (<i>Usnea longissima</i>)	NL/NL/4.2	7
Pacific golden saxifrage (<i>Chrysosplenium glechomifolium</i>)	NL/NL/4.3	1
Tracy's tarplant (<i>Hemizonia congesta</i> ssp. <i>tracyi</i>)	NL/NL/4.3	4
redwood lily (<i>Lilium rubescens</i>)	NL/NL/4.2	9
heart-leaved twayblade (<i>Listera cordata</i>)	NL/NL/4.2	8
running-pine (<i>Lycopodium clavatum</i>)	NL/NL/4.1	2
leafy-stemmed mitrewort (<i>Mitellastra caulescens</i>)	NL/NL/4.2	1

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Species	Status ¹ (Federal/ State/CRPR)	Number of Occurrences Identified in the Project Area
California pinefoot (<i>Pityopus californicus</i>)	NL/NL/4.2	5
nodding semaphore grass (<i>Pleuropogon refractus</i>)	NL/NL/4.2	9
hoary gooseberry (<i>Ribes roezlii</i> var. <i>amictum</i>)	NL/NL/4.3	3
maple-leaved checkerbloom (<i>Sidalcea malachroides</i>)	NL/NL/4.2	1

¹ Federal and State Codes:

T = Threatened; E = Endangered; R = Rare; NL = Not Listed

California Rare Plant Rank Codes and Threat Ranks:

- 1B Plants rare, threatened, or endangered in California and elsewhere.
- 2B Plants rare, threatened, or endangered in California, but more common elsewhere.
- 3 Plants about which more information is needed—a review list.
- 4 Plants of limited distribution—a watch list.
- 0.1 Seriously endangered in California
- 0.2 Fairly endangered in California
- 0.3 Not very endangered in California

Stantec took representative photographs of each CRPR 3 or 4 plant species identified in the project area (Appendix C). Stantec completed CNDDDB forms documenting all CRPR 3 or 4 plant occurrences identified in the project area. Stantec also completed updated CNDDDB forms for documented CRPR 3 or 4 plant occurrences in the project area that were not observed during field surveys.

4.3.1 Methuselah's Beard Lichen

Methuselah's beard lichen is not protected under the CESA or the ESA and is a CRPR 4.2 species. This species has a nearly circumboreal distribution and occurs in variety of coniferous and broadleaf forests habitats. In California, it is restricted to the coastal mountains north of the San Francisco Bay Area at elevations from 160 to 4,790 ft. This long, pendulous lichen grows on tree branches and is often found in old-growth forest habitats, although it also grows in forests with no old-growth characteristics. We found Methuselah's beard lichen in the project area growing on big-leaf maple, California bay, coast redwood, grand fir, and tanoak. Occurrences were located on Bear River and Monument ridges and on the Monument Ridge – Highway 101 gen-tie segment. The seven Methuselah's beard lichen occurrences observed in the project area occupy a total of 4.93 acres and contain an estimated 382 plants.

4.3.2 Pacific Golden Saxifrage

Pacific golden saxifrage (*Chrysosplenium glechomifolium*) is not protected under the CESA or the ESA and is a CRPR 4.3 species. Pacific golden saxifrage is an herbaceous perennial plant in the saxifrage family (Saxifragaceae) that occurs in the western US from California to Washington. This species grows in wet habitats including seeps, springs, and streambanks. This species flowers between February and June and is found in California at elevations between 30 and 720 ft. A single occurrence of Pacific golden saxifrage was located in the project area in a seep

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within mature Douglas-fir forest on the north side of Bear River Ridge. The single Pacific golden saxifrage occurrence observed in the project area occupies a total of 0.04 acre. This occurrence was growing as a continuous, rhizomatous mat and differentiation of individual plants was not possible.

4.3.3 Tracy's Tarplant

Tracy's tarplant (*Hemizonia congesta* ssp. *tracyi*) is not protected under the CESA or the ESA and is a CRPR 4.3 species. Tracy's tarplant is an herbaceous annual plant in the sunflower family (Asteraceae). This species is only known to occur in northwestern California in Humboldt, Mendocino, and Trinity counties in coastal prairie and grassy openings in scrub, woodland, and forest habitats. This species flowers between May and October and generally occurs at elevations between 390 and 3,940 ft. Occurrences of Tracy's tarplant were found growing in coastal prairie habitat on Bear River and Monument ridges. The four Tracy's tarplant occurrences observed in the project area occupy a total of 1.73 acres and contain an estimated 2,750 plants.

4.3.4 Redwood Lily

Redwood lily (*Lilium rubescens*) is not protected under the CESA or the ESA and is a CRPR 4.2 species. Redwood lily is an herbaceous perennial plant in the lily family (Liliaceae) that grows in dry shrubland and forest habitats in northwestern California. This species generally flowers between April and August and occurs at elevations between 100 and 6,260 ft. Occurrences of redwood lily were found growing in dry Douglas-fir and tan oak forests on Eastern Monument Ridge and on the Shively Ridge and Bridgeville gen-tie segments. Unconfirmed *Lilium* species at two mapped occurrences (LIRU-8 and LIRU-9) on the Shively Ridge and Bridgeville gen-tie segments (Figure 5) did not flower this year and Stantec was not able to positively identify to species. For the purposes of this report, these two occurrences are presumed to be redwood lily based on habitat characteristics and the presence of other known redwood lily occurrences in the vicinity. The nine redwood lily occurrences observed in the project area occupy a total of 0.50 acre and contain an estimated 78 plants.

4.3.5 Heart-Leaved Twayblade

Heart-leaved twayblade (*Listera cordata*) is not protected under the CESA or the ESA and is a CRPR 4.2 species. Heart-leaved twayblade is an herbaceous perennial plant in the orchid family (Orchidaceae) that grows in moist forest habitats throughout northern North America and into Eurasia. This species flowers between February and July and occurs at elevations between 20 and 4,490 ft. Occurrences of heart-leaved twayblade were found growing in both redwood - Douglas-fir and redwood forest habitats on Bear River, Monument, and Shively ridges. The eight heart-leaved twayblade occurrences observed in the project area occupy a total of 0.29 acre and contain an estimated 362 plants.

4.3.6 Running-Pine

Running-pine is not protected under the CESA or the ESA and is a CRPR 4.1 species. Running-pine is a creeping perennial plant in the club-moss family (Lycopodiaceae) that grows on moist ground in forest habitats and in marshes. This species has an extensive, world-wide range but in California it is restricted to the North Coast at elevations below 4,000 ft. Occurrences of running-pine were found growing in redwood forest habitats on Shively Ridge. The two running-pine occurrences observed in the project area occupy a total of 0.20 acre. These occurrences were growing in continuous, rhizomatous mats and differentiation of individual plants was not possible.

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4.3.7 Leafy-Stemmed Mitrewort

Leafy-stemmed mitrewort (*Mitellastrum caulescens*) is not protected under the CESA or the ESA and is a CRPR 4.2 species. Leafy-stemmed mitrewort is an herbaceous perennial plant in the saxifrage family that grows in wet, shady areas in forests and along streams from northwestern California to British Columbia. This species flowers between May and August and occurs at elevations between 20 and 5,580 ft. A single occurrence of leafy-stemmed mitrewort was located in the project area in redwood forest along Greenlow Creek. The one leafy-stemmed mitrewort occurrence observed in the project area occupies a total of 0.29 acre and contains an estimated 300 plants.

4.3.8 California Pinefoot

California pinefoot (*Pityopus californicus*) is not protected under the CESA or the ESA and is a CRPR 4.2 species. California pinefoot is an herbaceous perennial plant in the heath family (Ericaceae) that grows in coniferous or mixed-deciduous forests in California, Oregon, and Washington. This species generally flowers between May and August and occurs at elevations between 50 and 7,300 ft. Occurrences of California pinefoot were found in mixed tan oak and Douglas-fir forest on the eastern portion of Monument Ridge. The five California pinefoot occurrences observed in the project area occupy a total of 0.04 acre and contain 15 plants.

4.3.9 Nodding Semaphore Grass

Nodding semaphore grass is not protected under the CESA or the ESA and is a CRPR 4.2 species. Nodding semaphore grass is a perennial plant in the grass family (Poaceae) that grows in seeps and other wet forest habitats in California, Oregon, and Washington. This species generally flowers between April and September and occurs at elevations between sea level and 5,250 ft. Occurrences of nodding semaphore grass were found in seeps in coniferous forest habitats on Bear River and Monument ridges, and on the Monument Ridge – Highway 101 gen-tie segment. The nine nodding semaphore grass occurrences observed in the project area occupy a total of 1.30 acres and contain an estimated 835 plants.

4.3.10 Hoary Gooseberry

Hoary gooseberry (*Ribes roezlii* var. *amictum*) is not protected under the CESA or the ESA and is a CRPR 4.3 species. Hoary gooseberry is a perennial shrub in the gooseberry family (Grossulariaceae) that grows in forest and woodland habitats and is restricted to northwestern California. This species flowers between March and April and occurs at elevations between sea level and 7,500 ft. Occurrences of hoary gooseberry were found in Douglas-fir forest and coastal prairie on Western Monument Ridge. The three hoary gooseberry occurrences observed in the project area occupy a total of 11.34 acres and contain an estimated 300 plants.

4.3.11 Maple-Leaved Checkerbloom

Maple-leaved checkerbloom is not protected under the CESA or the ESA and is a CRPR 4.2 species. Maple-leaved checkerbloom is an herbaceous perennial subshrub in the mallow family (Malvaceae) that grows in forests and woodlands near the Pacific coast in California and southern Oregon. This species generally flowers between April and August and occurs at elevations between sea level and 2,390 ft. One occurrence of maple-leaved checkerbloom was found in mixed redwood and Douglas-fir forest along the proposed access road corridor on Eastern Monument

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Ridge. The one maple-leaved checkerbloom occurrence observed in the project area occupies less than 0.01 acre and contains one plant.

4.4 INVASIVE SPECIES

Seven invasive plant species with Cal-IPC ratings of High were located in the project area: Andean pampas grass (*Cortaderia jubata*), fennel (*Foeniculum vulgare*), French broom, Himalayan blackberry, medusa head, scotch broom (*Cytisus scoparius*), and spotted knapweed (*Centaurea stoebe* ssp. *micranthos*). We observed an additional 36 invasive plant species with Cal-IPC ratings of Moderate or Limited. All invasive species observed in the project area and their associated Cal-IPC ratings are summarized in Appendix B.

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HUMBOLDT WIND ENERGY PROJECT BOTANICAL RESOURCES REPORT

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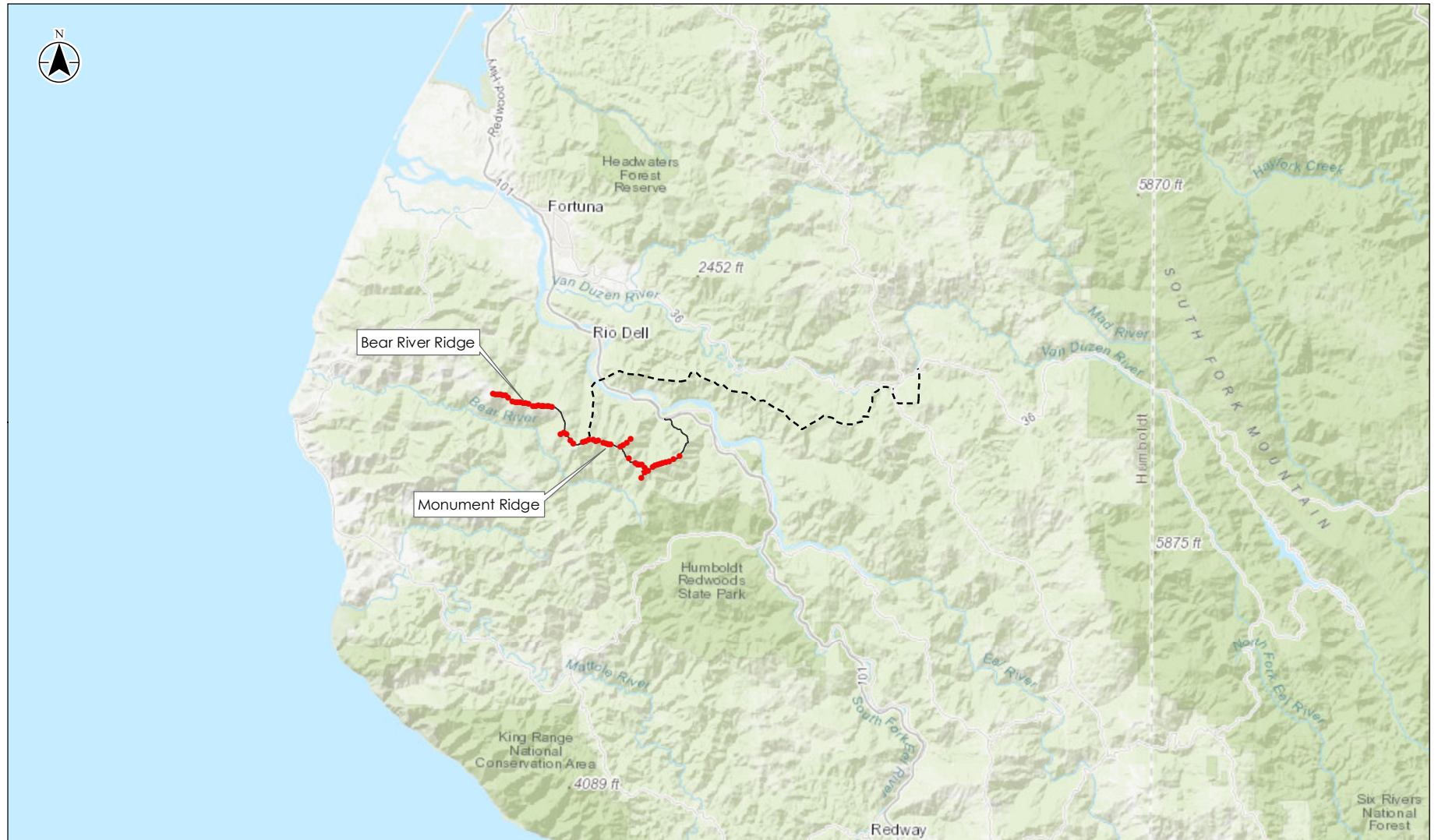
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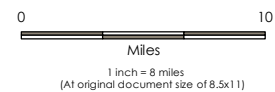
FIGURES

HUMBOLDT WIND ENERGY PROJECT BOTANICAL RESOURCES REPORT

Figure 1. General Overview Map



- Proposed Representative Wind Turbine Locations
- Generation Transmission line (gen-tie)
- Proposed Access Roads



Notes
 1. Coordinate System: NAD 1983 UTM Zone 10N
 2. Base map: ESRI World Topographic Map web mapping service.



Project Location 185703758
 Humboldt County, California
 Prepared by PG on 2018-08-06
 Technical Reviewed by YA on 2018-08-07
 Independent Review by JD on 2018-08-07

Client/Project
 Humboldt Wind, LLC
 Humboldt Wind Energy Project

Figure No.

1

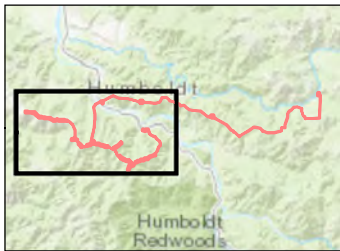
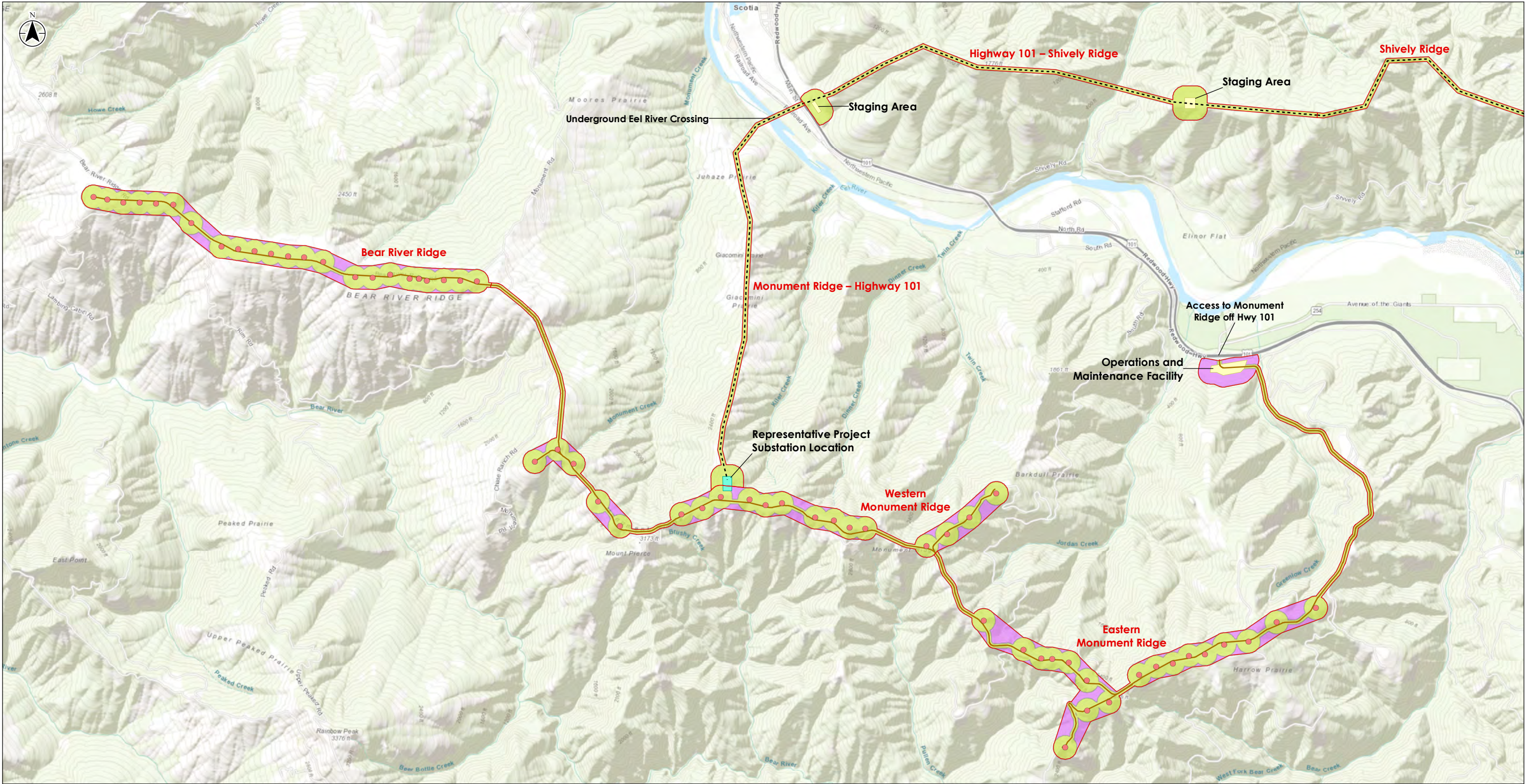
Title

General Overview

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HUMBOLDT WIND ENERGY PROJECT BOTANICAL RESOURCES REPORT

Figure 2. Botanical Resources Survey Areas

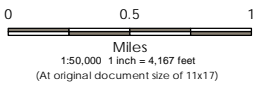


Botanical Resources Survey Areas

- 2018 Survey Area
- 2019 Survey Area

Project Components

- Project Area (with segment names)
- Proposed Representative Wind Turbine Locations
- Generation Transmission line (Gen-Tie)
- Proposed Access Roads
- Substation
- Staging Area



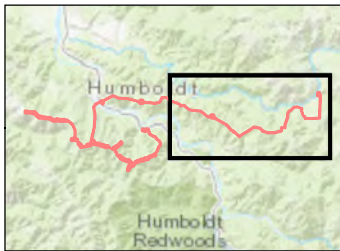
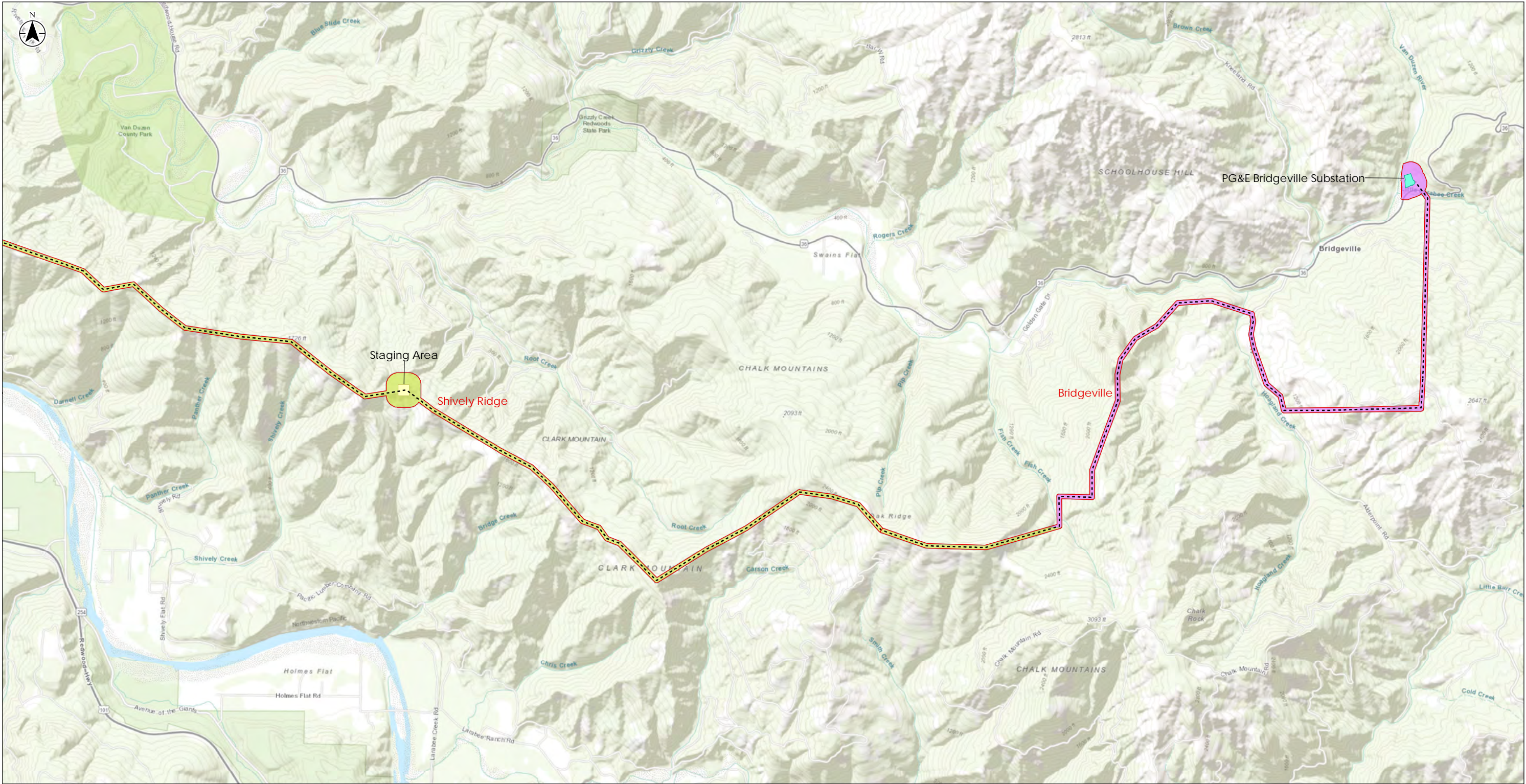
- Notes**
- 1. Coordinate System: NAD 1983 UTM Zone 10N
 - 2. Base map: Esri World Topographic Map



Project Location
Humboldt County, California

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Figure No.
2
Title
Botanical Resources Survey Areas

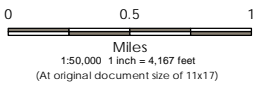


Botanical Resources Survey Areas

- 2018 Survey Area
- 2019 Survey Area

Project Components

- Project Area (with segment names)
- Proposed Representative Wind Turbine Locations
- Generation Transmission line (Gen-Tie)
- Proposed Access Roads
- Substation
- Staging Area



Notes
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2. Base map: Esri World Topographic Map



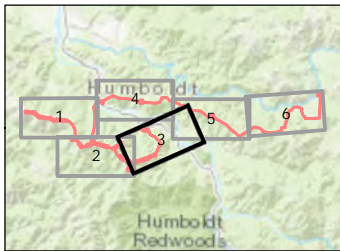
Project Location
Humboldt County, California
Prepared by PG on 2018-09-18
Technical Review by TH on 2018-09-18

Client/Project
Humboldt Wind, LLC
Humboldt Wind Energy Project

Figure No.
2
Title
Botanical Resources Survey Areas

HUMBOLDT WIND ENERGY PROJECT BOTANICAL RESOURCES REPORT

Figure 3. Soils Map



Soil Unit Boundary
(See Table X for Soil Unit Descriptions)

Project Area (by segment)

- Bear River Ridge
- Western Monument Ridge
- Monument Ridge - Highway 101
- Eastern Monument Ridge

- Highway 101 - Shively Ridge
- Shively Ridge
- Bridgeville

0 1,000 2,000
Feet
1 Inch = 2,000 feet
(At original document size of 11x17)

Notes
1. Soils Data Source: USDA Natural Resources Conservation Service SSURGO Soils Database
2. Coordinate System: NAD 1983 UTM Zone 10N
3. Base map: ESRI World Imagery Map web

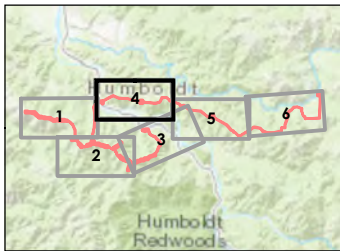
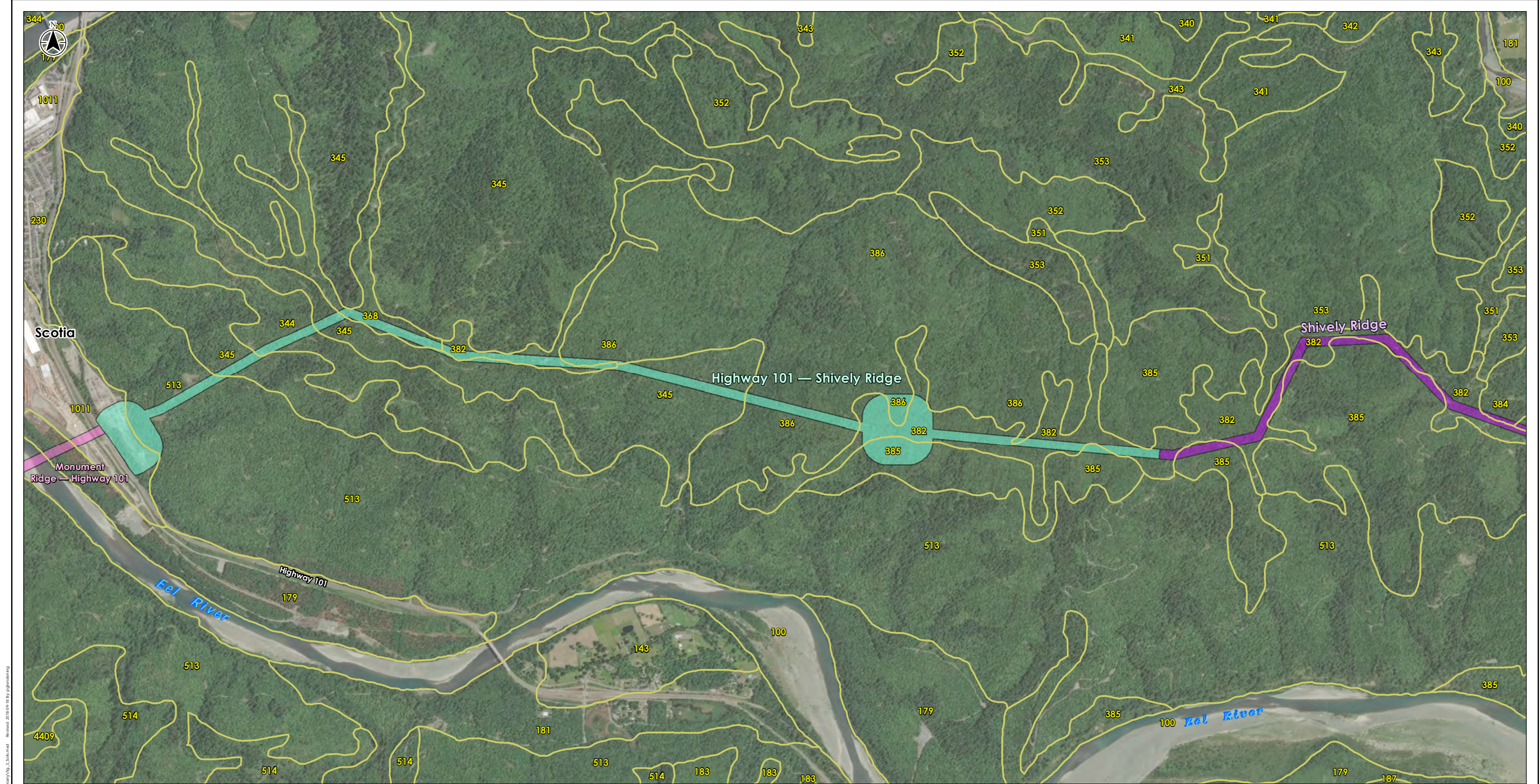


Project Location
Humboldt County, California
Prepared by PC on 2018-09-06
Technical Review by SC on 2018-09-06
Independent Review by JD on 2018-09-06

Client/Project
Humboldt Wind, LLC
Humboldt Wind Energy Project

Figure No.
3

Title
Soils



Soil Unit Boundary
(See Table X for Soil Unit Descriptions)

Project Area (by segment)

- | | |
|------------------------------|-----------------------------|
| Bear River Ridge | Highway 101 - Shively Ridge |
| Western Monument Ridge | Shively Ridge |
| Monument Ridge - Highway 101 | Bridgeville |
| Eastern Monument Ridge | |

0 1,000 2,000
Feet
1 inch = 2,000 feet
(At original document size of 11x17)

Notes
1. Soils Data Source: USDA Natural Resources Conservation Service SSURGO Soils Database
2. Coordinate System: NAD 1983 UTM Zone 10N
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Project Location
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Prepared by PC on 2018-09-06
Technical Review by SC on 2018-09-06
Independent Review by JD on 2018-09-06

Client/Project
Humboldt Wind, LLC
Humboldt Wind Energy Project

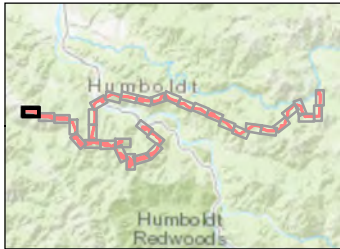
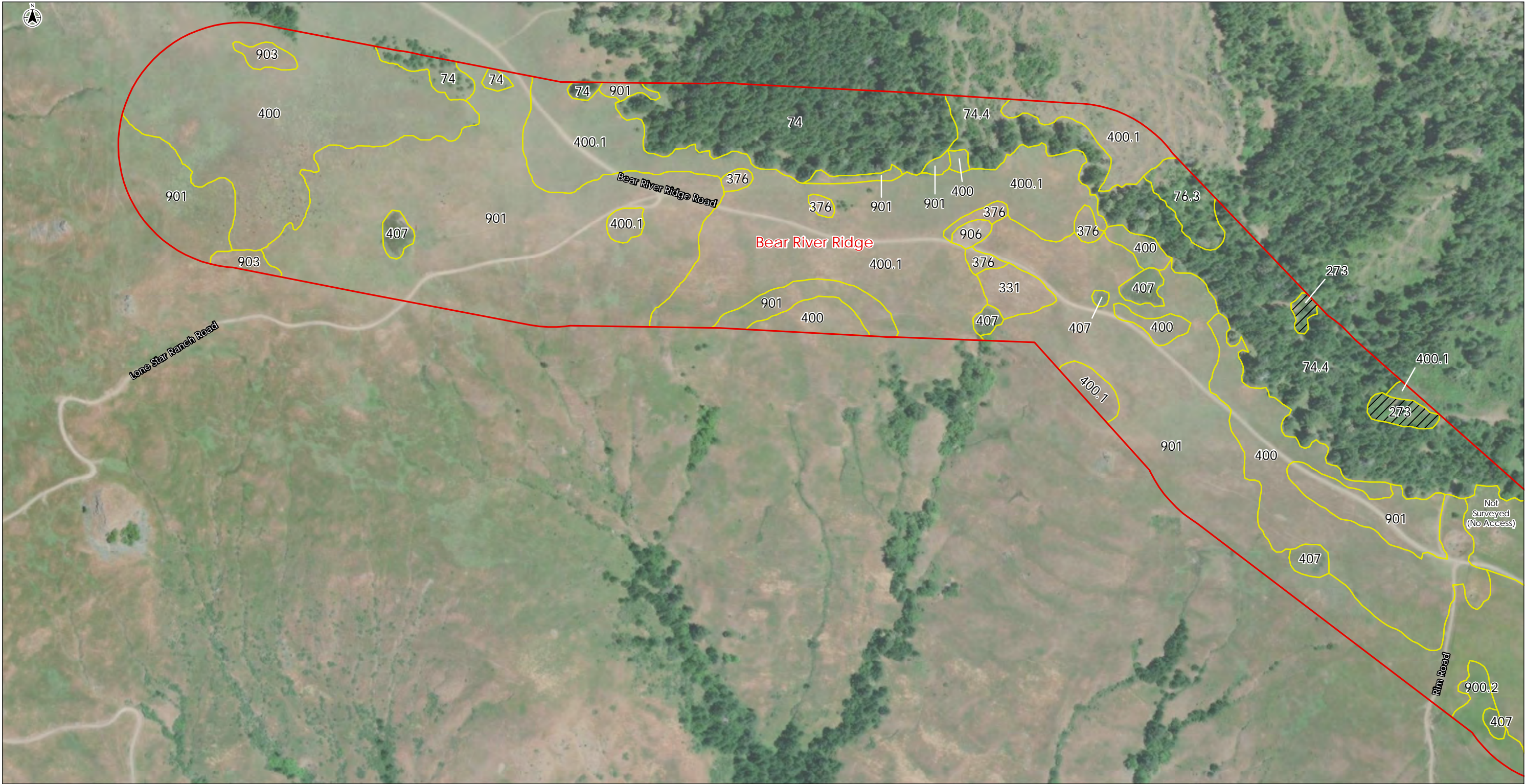
Figure No.
3
Title
Soils

HUMBOLDT WIND ENERGY PROJECT BOTANICAL RESOURCES REPORT

Figure 4. Vegetation Communities

Map ID	Alliance	Association	Sensitive Community
A Manual of California Vegetation Alliances and Associations			
Forests and Woodlands			
6	grand fir forest	No Association	Yes
10	bigleaf maple forest	<i>Acer macrophyllum</i>	Yes
10.1		<i>Acer macrophyllum</i> – <i>Pseudotsuga menziesii</i> / <i>Polystichum munitum</i>	Yes
14	red alder forest	No Association	Yes
14.1		<i>Alnus rubra</i> – <i>Salix lasiolepis</i>	Yes
15	madrone forest	No Association	Yes
39	tanoak forest	<i>Notholithocarpus densiflorus</i>	Yes
39.1		<i>Notholithocarpus densiflorus</i> – <i>Arbutus menziesii</i>	Yes
39.2		<i>Notholithocarpus densiflorus</i> – <i>Umbellularia californica</i>	Yes
39.3		<i>Notholithocarpus densiflorus</i> – <i>Vaccinium ovatum</i>	Yes
68	Fremont cottonwood forest	<i>Populus fremontii</i>	Yes
70.1	black cottonwood forest	<i>Populus trichocarpa</i> – <i>Salix lasiandra</i>	Yes
74	Douglas-fir forest	<i>Pseudotsuga menziesii</i>	No
74.1		<i>Pseudotsuga menziesii</i> – <i>Gaultheria shallon</i>	Yes
74.2		<i>Pseudotsuga menziesii</i> – <i>Arbutus menziesii</i>	Yes
74.3		<i>Pseudotsuga menziesii</i> – <i>Quercus garryana</i> var. <i>garryana</i> /grass	Yes
74.4		<i>Pseudotsuga menziesii</i> – <i>Umbellularia californica</i> / <i>Polystichum munitum</i>	No
74.5		<i>Pseudotsuga menziesii</i> / <i>Mahonia nervosa</i>	Yes
76	Douglas-fir–tanoak forest	<i>Pseudotsuga menziesii</i> – <i>Notholithocarpus densiflorus</i>	No
76.1		<i>Pseudotsuga menziesii</i> – <i>Notholithocarpus densiflorus</i> / <i>Vaccinium ovatum</i> –(<i>Gaultheria shallon</i>)	No
76.2		<i>Pseudotsuga menziesii</i> – <i>Notholithocarpus densiflorus</i> – (<i>Acer macrophyllum</i>)/ <i>Polystichum munitum</i>	No
76.3		<i>Pseudotsuga menziesii</i> – <i>Notholithocarpus densiflorus</i> /iris	No
76.4		<i>Pseudotsuga menziesii</i> – <i>Notholithocarpus densiflorus</i> / <i>Mahonia nervosa</i>	No
76.5		<i>Pseudotsuga menziesii</i> – <i>Notholithocarpus densiflorus</i> / <i>Achlys triphylla</i>	No
82	Oregon white oak woodland	No Association	Yes
82.1		<i>Quercus garryana</i> – <i>Umbellularia californica</i> – <i>Quercus (agrifolia, kelloggii)</i>	Yes
91	shining willow groves	<i>Salix lasiandra</i>	Yes
93	redwood forest	<i>Sequoia sempervirens</i>	Yes
93.1		<i>Sequoia sempervirens</i> – <i>Pteridium aquilinum</i>	Yes
93.2		<i>Sequoia sempervirens</i> – <i>Polystichum munitum</i>	Yes
93.3		¹ <i>Sequoia sempervirens</i> – <i>Pseudotsuga menziesii</i> – <i>Notholithocarpus densiflorus</i> – <i>Vaccinium ovatum</i>	Not listed, within sensitive alliance
93.4		<i>Sequoia sempervirens</i> – <i>Pseudotsuga menziesii</i> / <i>Gaultheria shallon</i>	Yes
Map ID	Alliance	Association	Sensitive Community
93.5		<i>Sequoia sempervirens</i> – <i>Pseudotsuga menziesii</i> / <i>Vaccinium ovatum</i>	Yes
93.6		<i>Sequoia sempervirens</i> – <i>Pseudotsuga menziesii</i> – <i>Umbellularia californica</i>	Yes
93.7		<i>Sequoia sempervirens</i> – <i>Acer macrophyllum</i> – <i>Umbellularia californica</i>	Yes
93.8		<i>Sequoia sempervirens</i> – <i>Notholithocarpus densiflorus</i> / <i>Vaccinium ovatum</i>	Yes
97	California bay forest	<i>Umbellularia californica</i>	Yes
Shrublands			
904	² redwood manzanita stands	<i>Arctostaphylos columbiana</i>	Not listed, insufficient data to assess sensitivity
151	coyote brush scrub	<i>Baccharis pilularis</i>	No
151.1		<i>Baccharis pilularis</i> – <i>Ceanothus thyrsiflorus</i>	No
151.2		<i>Baccharis pilularis</i> /Annual grass-herb	No
151.3		<i>Baccharis pilularis</i> – <i>Toxicodendron diversilobum</i>	No
156	broom patches	No Association	No
169	blue blossom chaparral	No Association	No
169.1		<i>Ceanothus thyrsiflorus</i> – <i>Vaccinium ovatum</i> – <i>Rubus parviflorus</i>	No
215	ocean spray brush	No Association	Yes
272	Himalayan blackberry–rattlebox–edible fig riparian scrub	<i>Rubus armeniacus</i>	No
273	coastal brambles	<i>Rubus parviflorus</i> – <i>Rubus spectabilis</i> – <i>Rubus ursinus</i>	Yes
273.1		<i>Rubus ursinus</i>	Yes
273.2		<i>Rubus spectabilis</i>	Yes
273.3		<i>Rubus parviflorus</i>	Yes
282	arroyo willow thickets	<i>Salix lasiolepis</i>	No
301	poison oak scrub	No Association	No
Herbaceous			
910	² Spanish lotus fields	<i>Acmispon americanus</i>	Not listed, insufficient data to assess sensitivity
900	² spike bentgrass prairie	<i>Agrostis exarata</i>	Not listed, insufficient data to assess sensitivity
900.1		<i>Agrostis exarata</i> – <i>Holcus lanatus</i> – <i>Anthoxanthum odoratum</i>	Not listed, insufficient data to assess sensitivity
900.2		<i>Agrostis exarata</i> – <i>Juncus</i> spp.	Not listed, insufficient data to assess sensitivity
903	² yellow hairgrass grasslands	<i>Aira praecox</i>	Not listed, presumed not sensitive
330	upland mustards	<i>Brassica nigra</i>	No
331	annual brome grasslands	No Association	No
Map ID	Alliance	Association	Sensitive Community
359	sand dune sedge swaths	<i>Carex praegracilis</i>	Yes
905	² foothill sedge meadows	<i>Carex tumulicola</i>	Not listed, insufficient data to assess sensitivity
374	pampas grass patches	<i>Cortaderia (jubata, selloana)</i>	No
376	annual dogtail grasslands	No Association	No
376.1		<i>Cynosurus echinatus</i> – <i>Linum bienne</i> – <i>Brodiaea elegans</i>	No
377	California oat grass prairie	<i>Danthonia californica</i>	Yes
377.1		¹ <i>Danthonia californica</i> – <i>Juncus</i> spp.	Not listed, within sensitive alliance
377.2		¹ <i>Danthonia californica</i> – <i>Agrostis exarata</i>	Not listed, within sensitive alliance
381	tufted hair grass meadows	<i>Deschampsia cespitosa</i>	Yes
381.1		<i>Deschampsia cespitosa</i> – <i>Danthonia californica</i>	Yes
388	California brome-blue wildrye prairie	<i>Elymus glaucus</i>	Yes
906	² coast buckwheat patches	<i>Eriogonum latifolium</i>	Not listed, insufficient data to assess sensitivity
425	perennial rye grass fields	<i>Festuca perennis</i>	No
400	common velvet grass–sweet vernal grass meadows	<i>Holcus lanatus</i> – <i>Anthoxanthum odoratum</i>	No
400.1		<i>Holcus lanatus</i>	No
407	soft rush marshes	<i>Juncus effusus</i>	No
412	western rush marshes	<i>Juncus patens</i>	No
907	² pennyroyal marshes	<i>Mentha pulegium</i>	Not listed, presumed not sensitive
446	Harding grass–reed canary grass swards	<i>Phalaris aquatica</i>	No
901	² purple awned wallaby grass prairie	<i>Rytidosperma penicillatum</i>	Not listed, presumed not sensitive
909	² Wallace's spike moss mats	<i>Selaginella wallacei</i>	Not listed, insufficient data to assess sensitivity
Other Habitat Types			
908	barren/urban	No Association	Not listed, presumed not sensitive
not surveyed (no access)	N/A	N/A	N/A
¹ Association not described in the MCV. For this assessment, Stantec presumes that new associations would be considered sensitive communities by CDFW if they are included in an existing alliance designated as sensitive.			
² Alliance not described in the MCV. For this assessment, Stantec presumes that alliances dominated by non-native species would not be considered sensitive communities by CDFW. However, sufficient data is not available to assess the sensitive status of undescribed alliances dominated by native species.			


Figure 4
Vegetation Communities

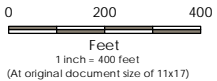


 Project Area

Vegetation Communities

 Sensitive

 Not Sensitive



Notes
1. Soils Data Source: USDA Natural Resources Conservation Service SSURGO Soils Database
2. Coordinate System: NAD 1983 UTM Zone 10N
3. Base map: ESRI World Imagery Map web

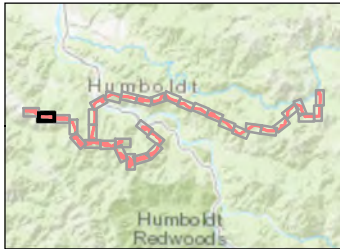
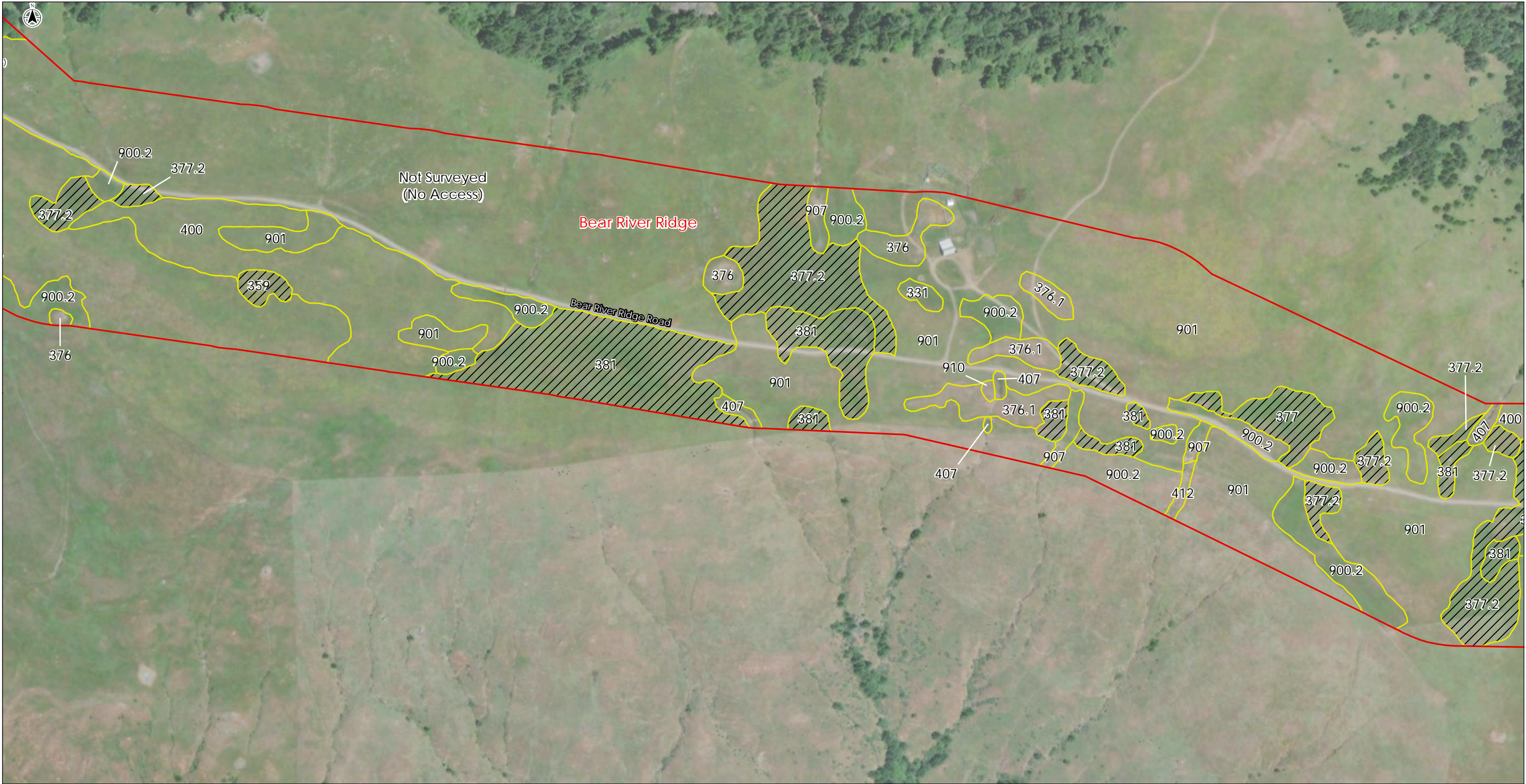


Project Location
Humboldt County, California
185703758
Prepared by PG on 2018-09-19
Technical Review by KB on 2018-09-19
Independent Review by JD on 2018-09-19

Client/Project
Humboldt Wind, LLC
Humboldt Wind Energy Project

Figure No.
4

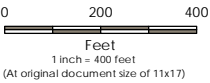
Title
Vegetation Communities



Project Area

Vegetation Communities

- 93 Sensitive
- 74 Not Sensitive



Notes
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2. Coordinate System: NAD 1983 UTM Zone 10N
3. Base map: ESRI World Imagery Map web

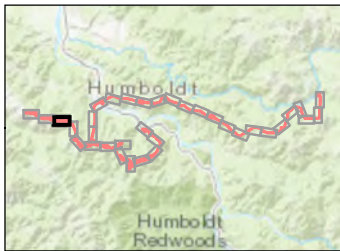
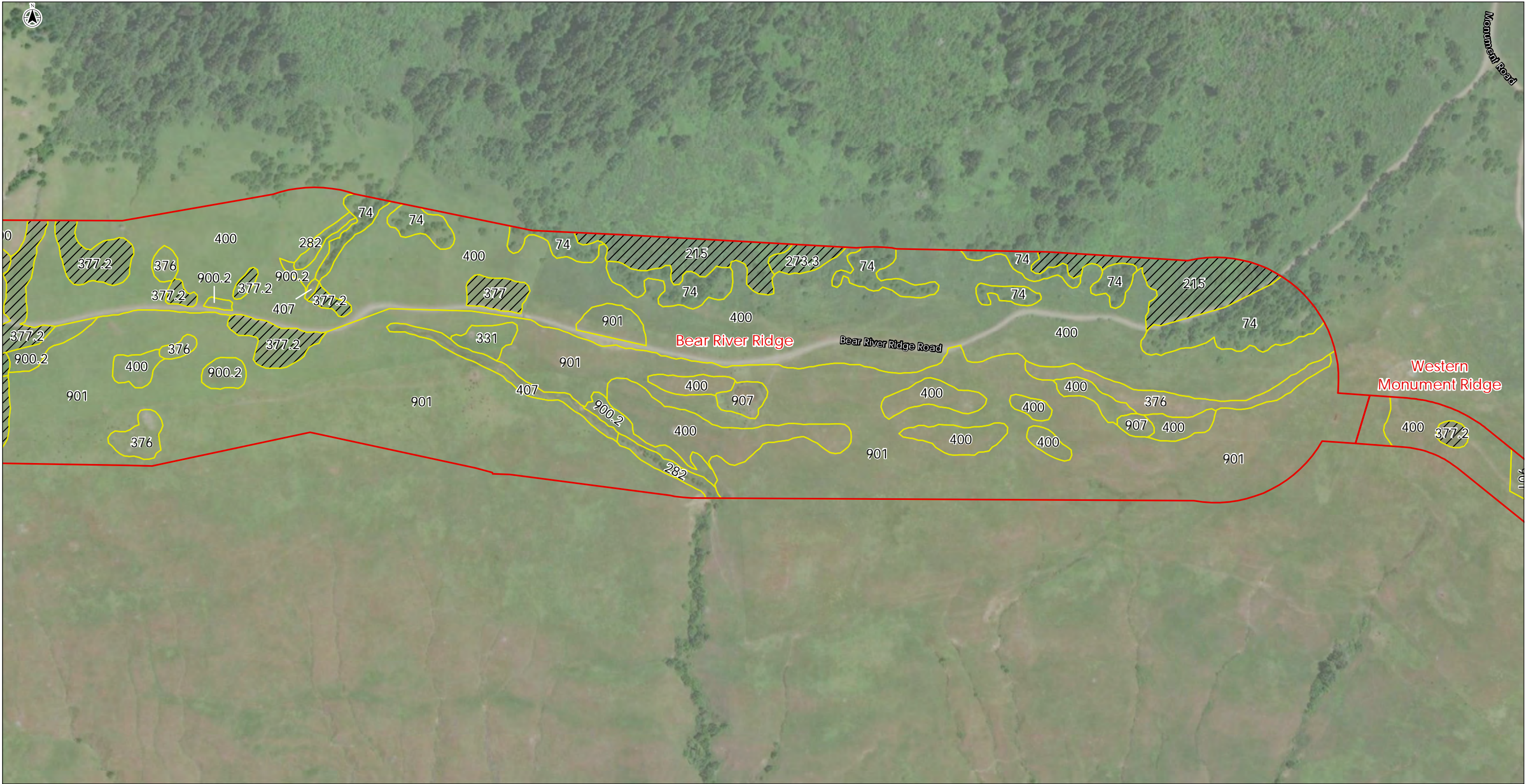


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185703758
Prepared by PG on 2018-09-19
Technical Review by KB on 2018-09-19
Independent Review by JD on 2018-09-19

Client/Project
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Humboldt Wind Energy Project

Figure No.
4

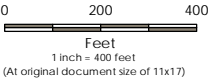
Title
Vegetation Communities



Project Area

Vegetation Communities

- 93 Sensitive
- 74 Not Sensitive



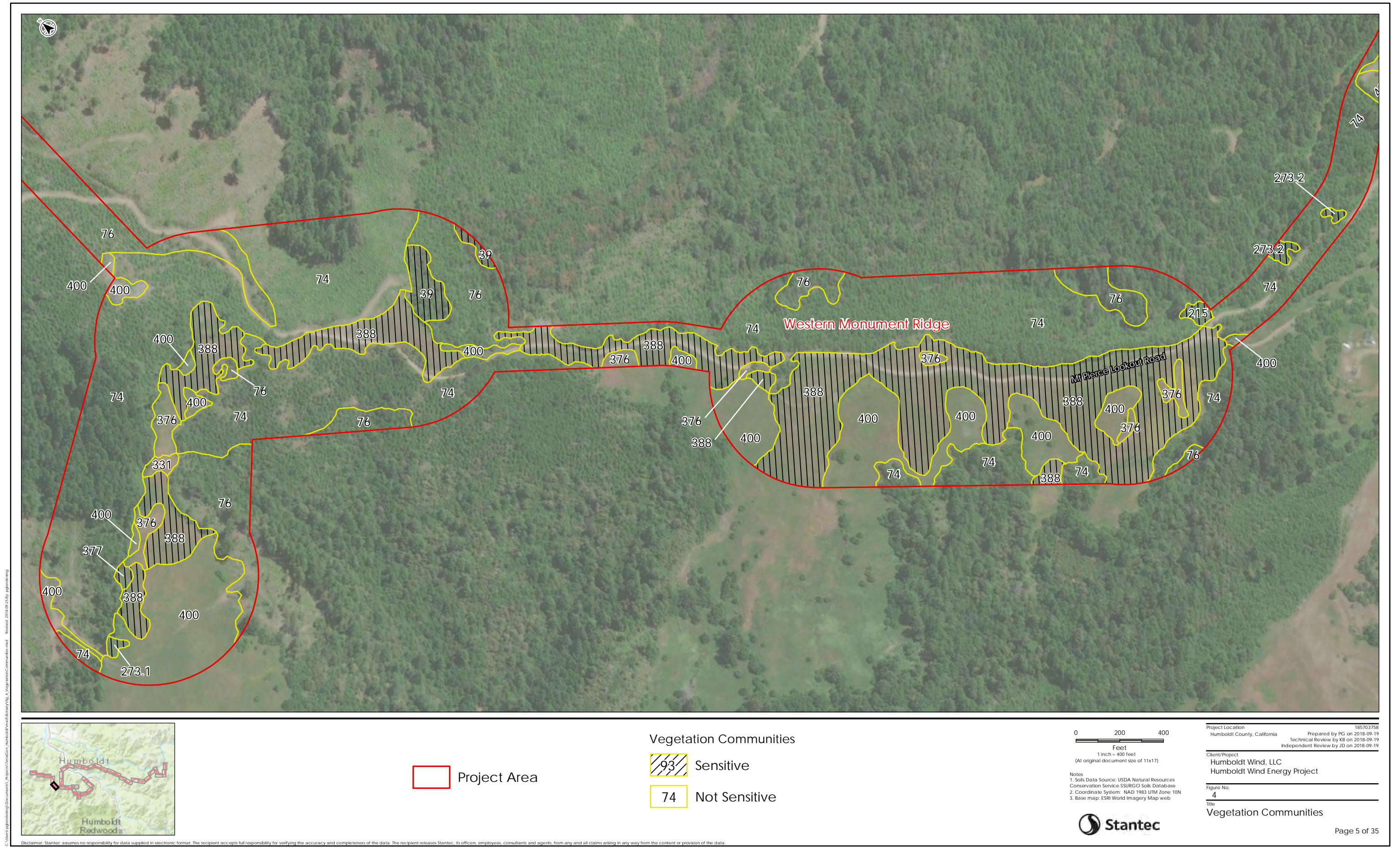
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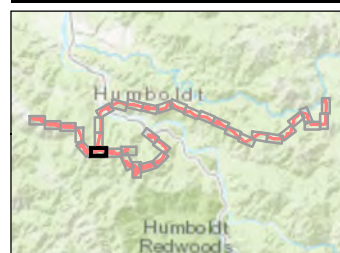
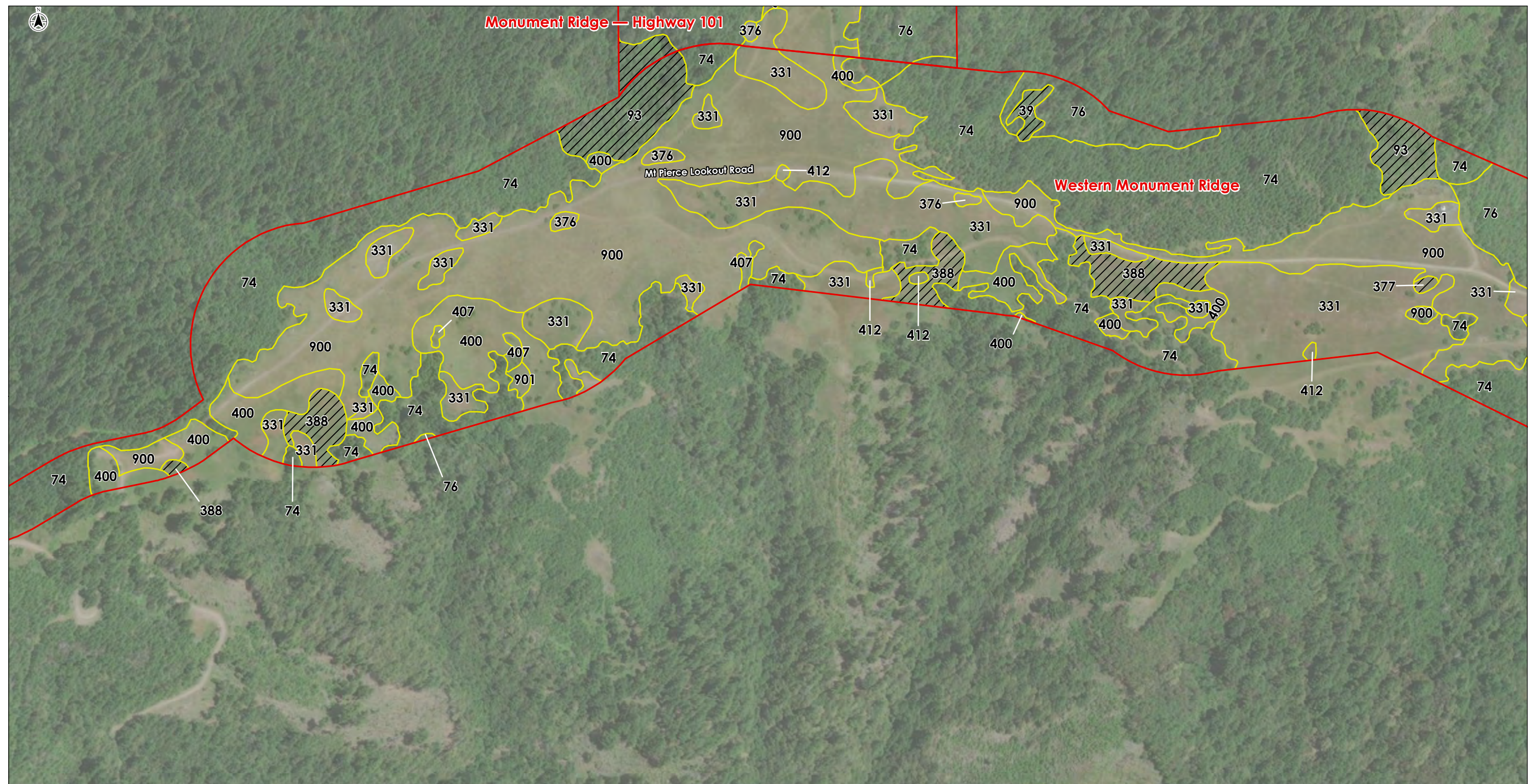


Project Location
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Client/Project
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Humboldt Wind Energy Project

Figure No.
4
Title
Vegetation Communities

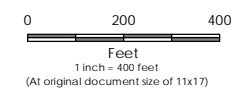




Vegetation Communities

93 Sensitive

74 Not Sensitive

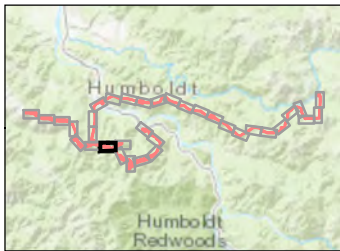
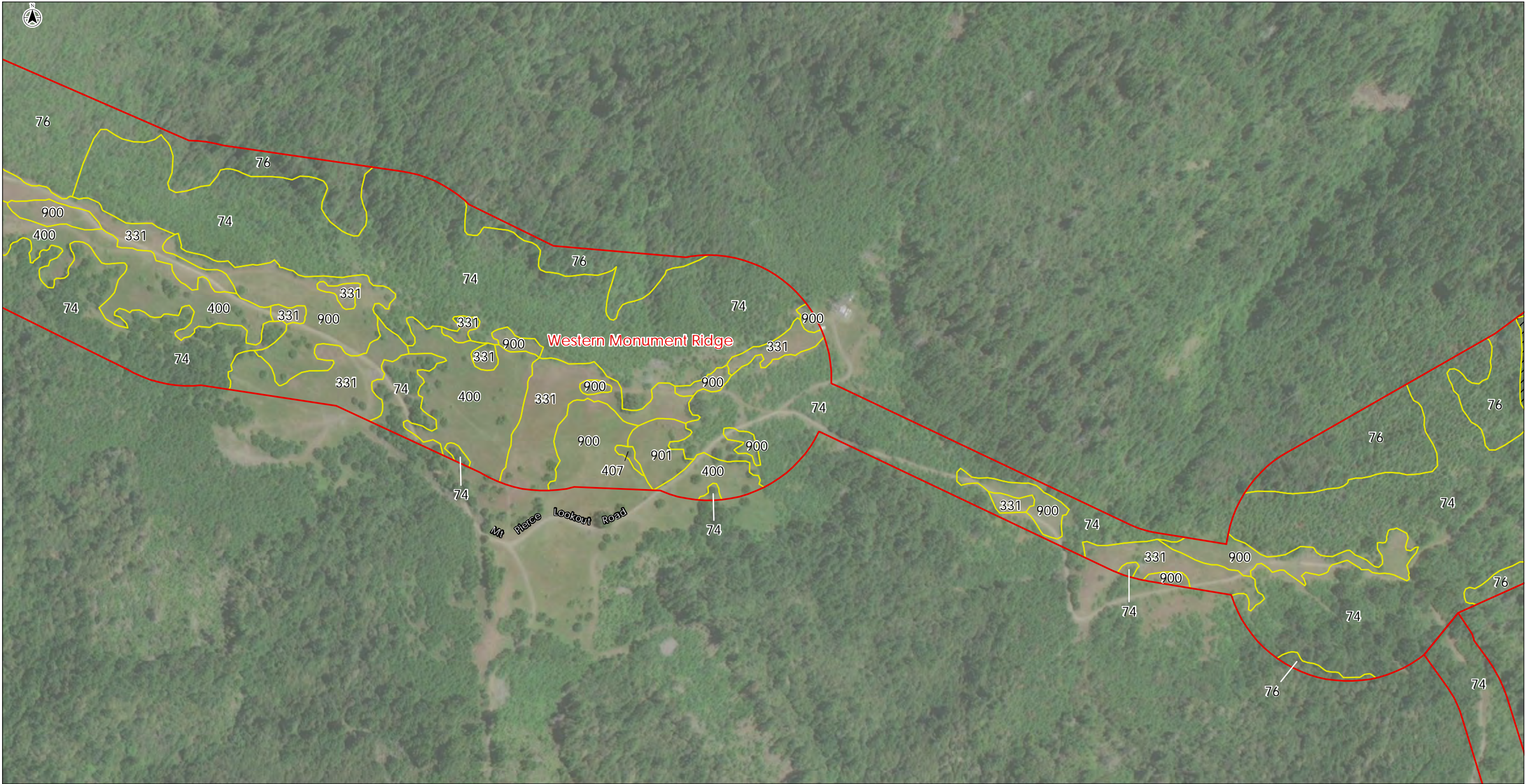


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Project Location	185703758
Humboldt County, California	Prepared by PG on 2018-09-19
	Technical Review by KB on 2018-09-19
	Independent Review by JD on 2018-09-19

Figure No.
4
Title
Vegetation Communities


Page 6 of 35



 Project Area

Vegetation Communities

 Sensitive

 Not Sensitive

0 200 400
Feet
1 inch = 400 feet
(At original document size of 11x17)

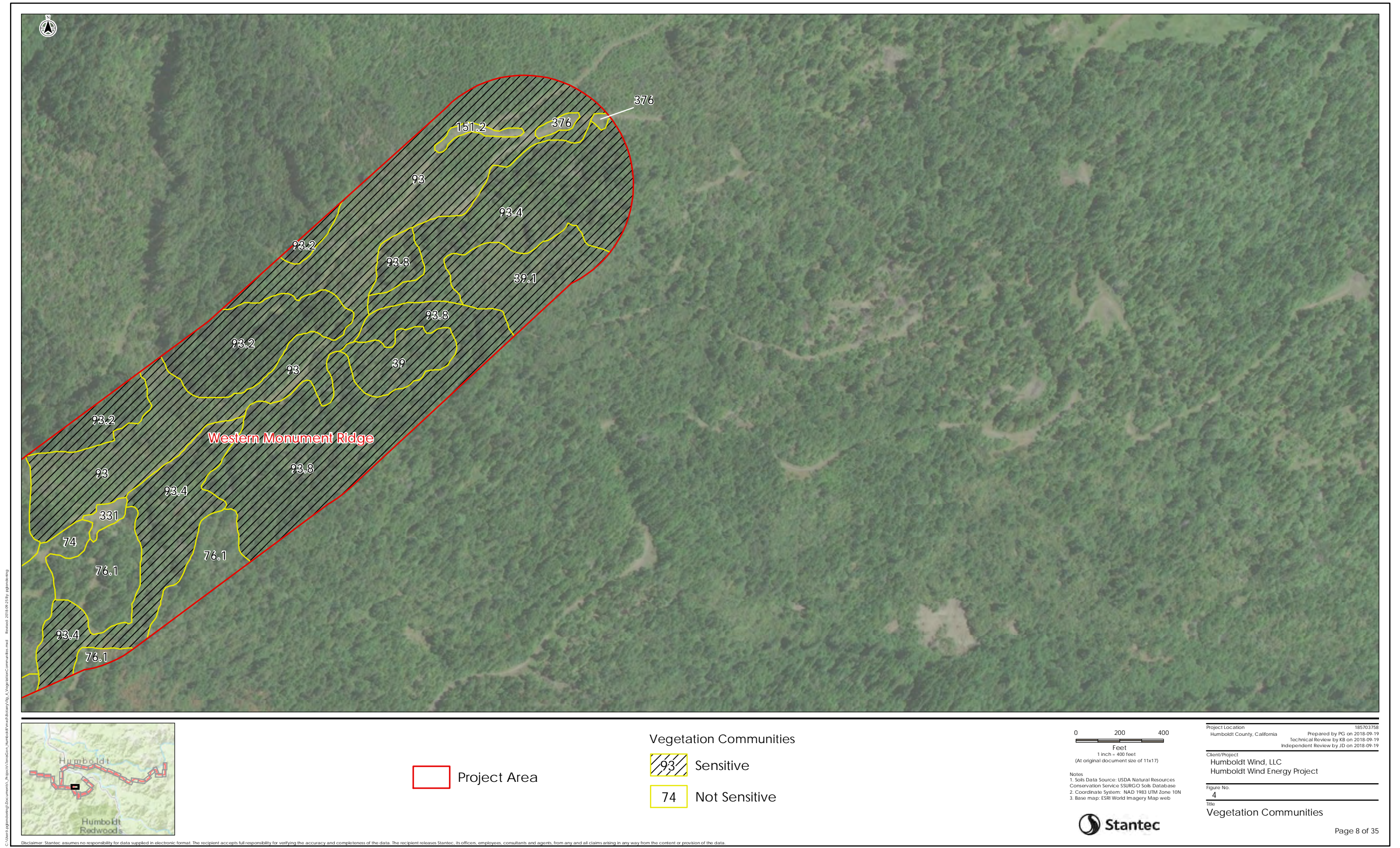
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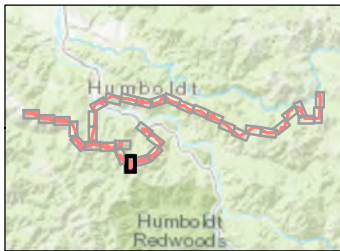
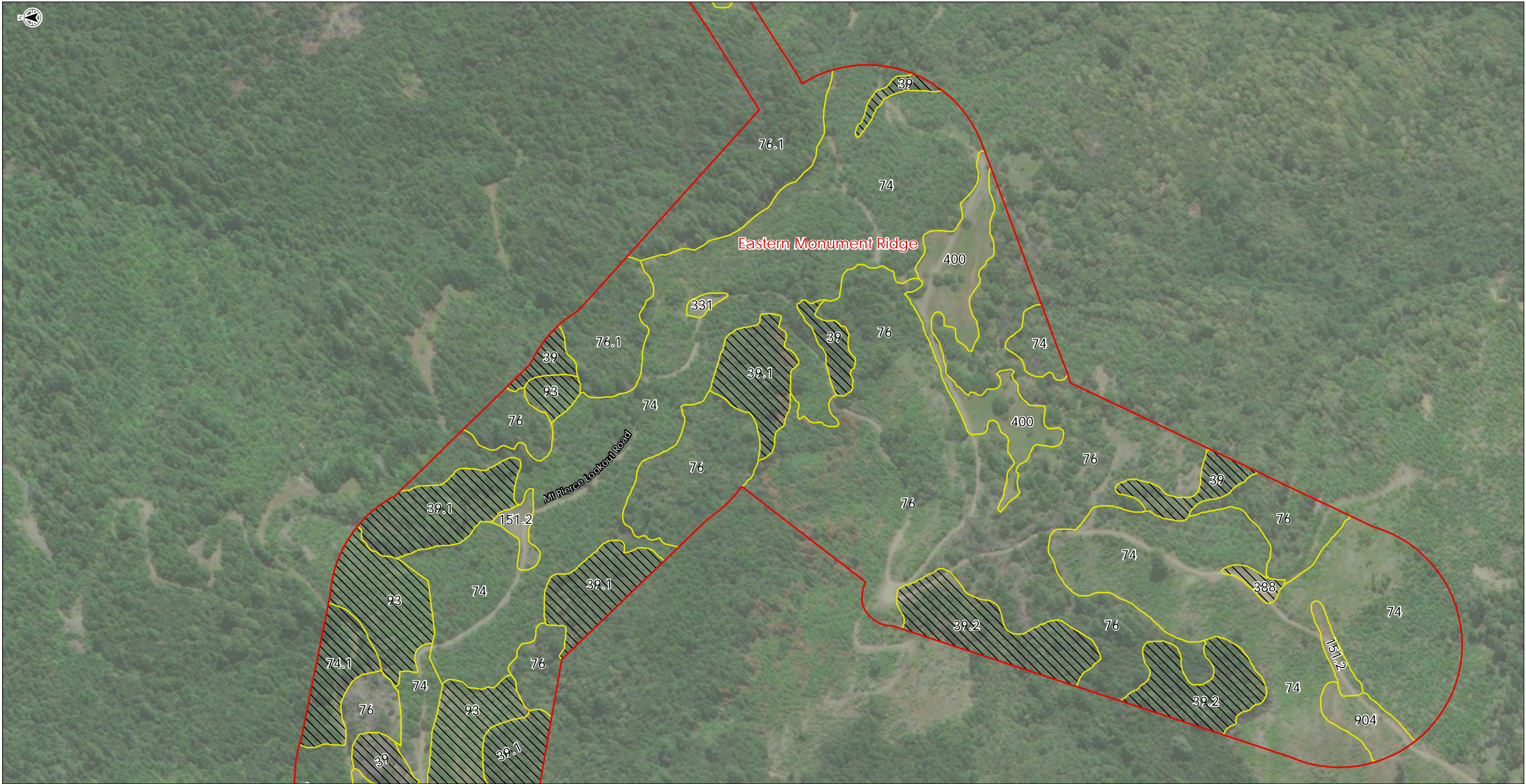


Project Location
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Prepared by PG on 2018-09-19
Technical Review by KB on 2018-09-19
Independent Review by JD on 2018-09-19

Client/Project
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Humboldt Wind Energy Project

Figure No.
4
Title
Vegetation Communities




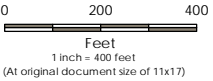


 Project Area

Vegetation Communities

 Sensitive

 Not Sensitive



Notes
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3. Base map: ESRI World Imagery Map web

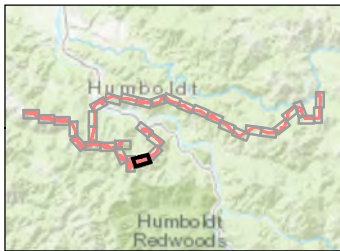
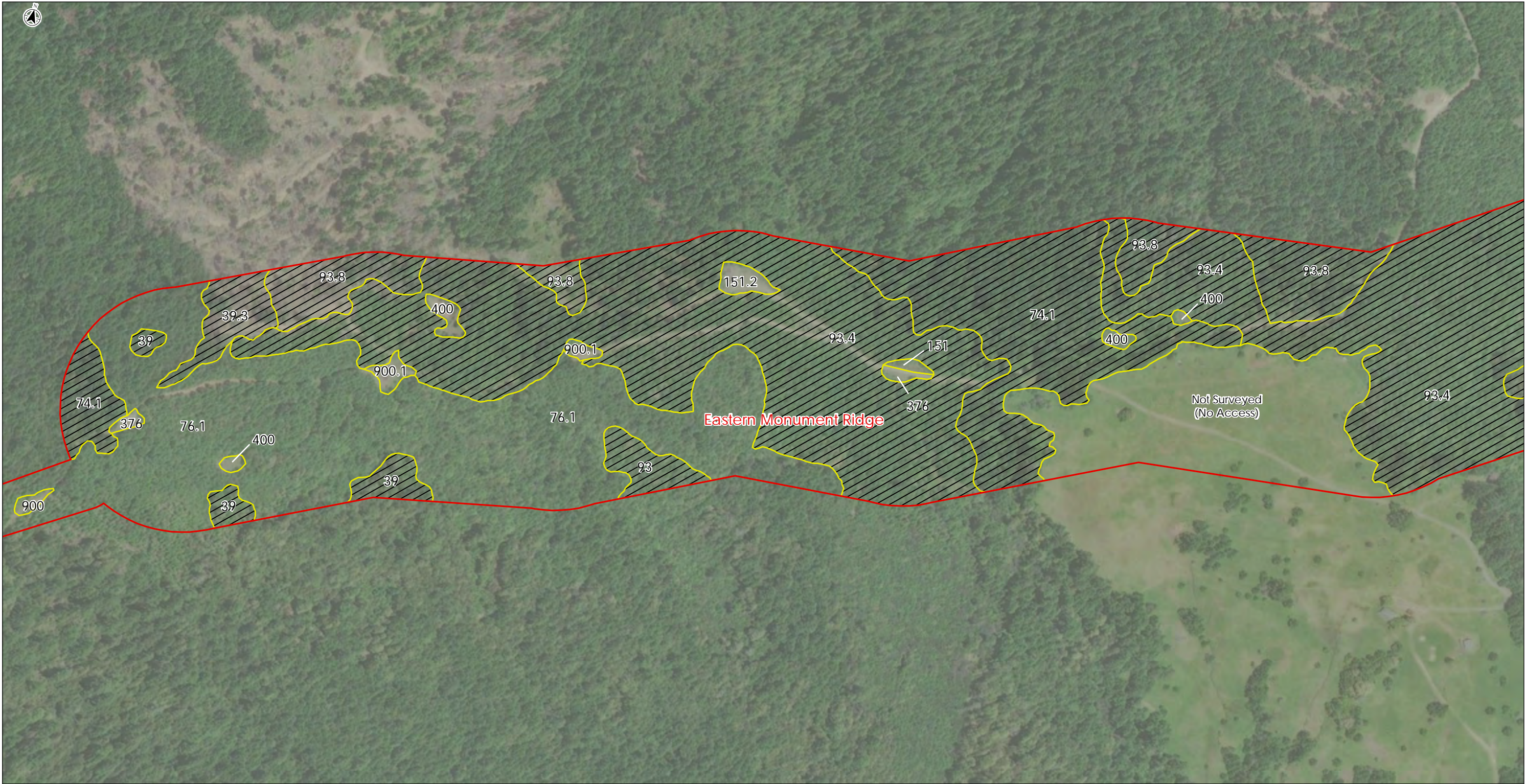


Project Location
Humboldt County, California
185703758
Prepared by PG on 2018-09-19
Technical Review by KB on 2018-09-19
Independent Review by JD on 2018-09-19

Client/Project
Humboldt Wind, LLC
Humboldt Wind Energy Project

Figure No.
4

Title
Vegetation Communities

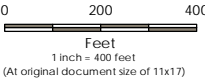


Project Area

Vegetation Communities

93 Sensitive

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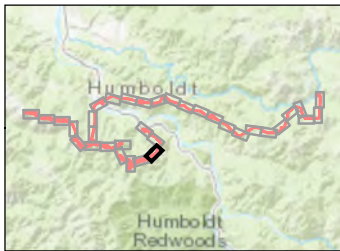


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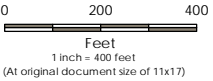


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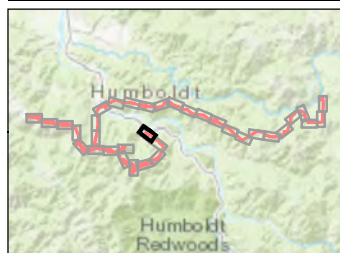
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Figure No.
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Vegetation Communities





 Project Area

Vegetation Communities

-  Sensitive
-  Not Sensitive

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Feet
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(At original document size of 11x17)

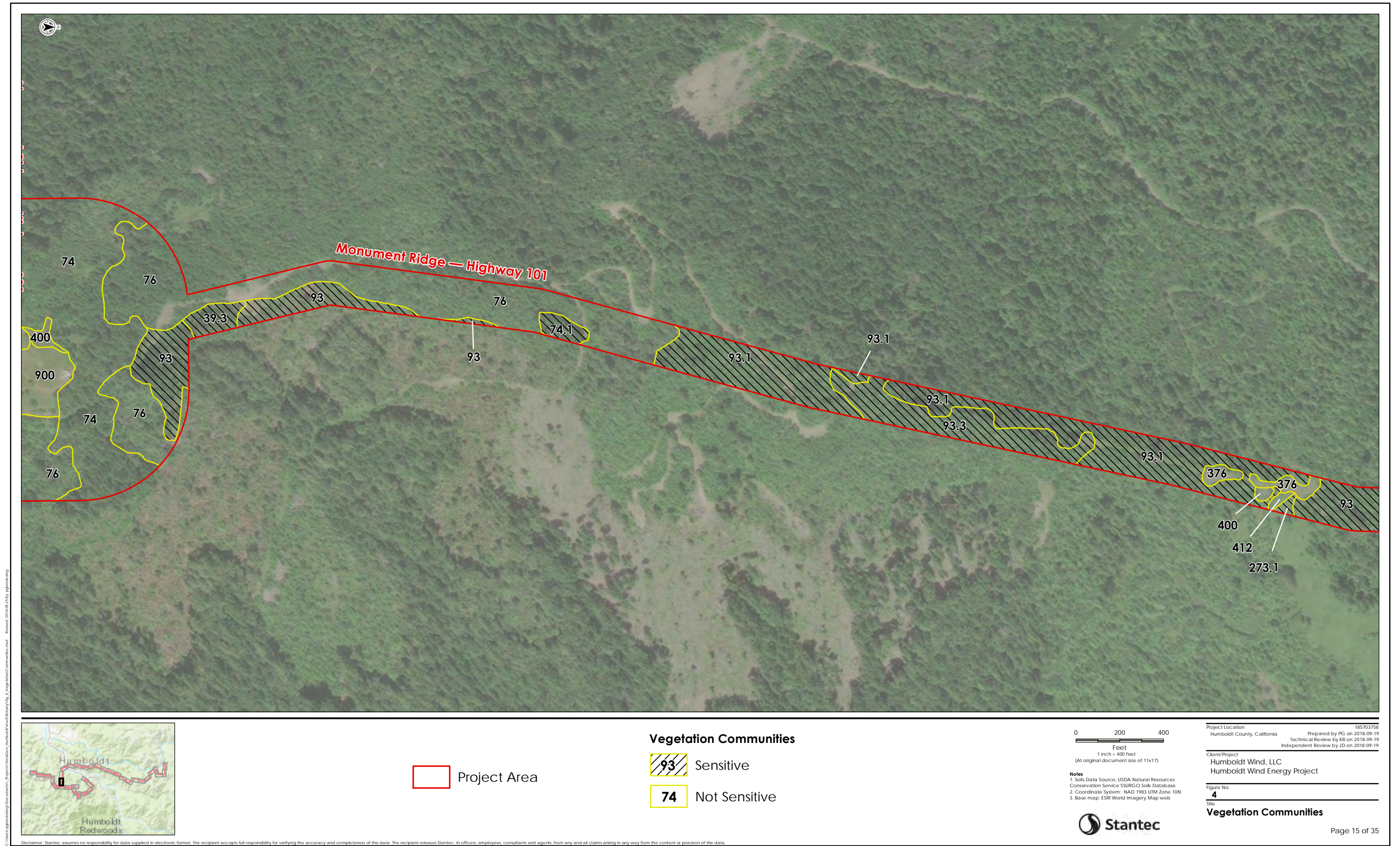
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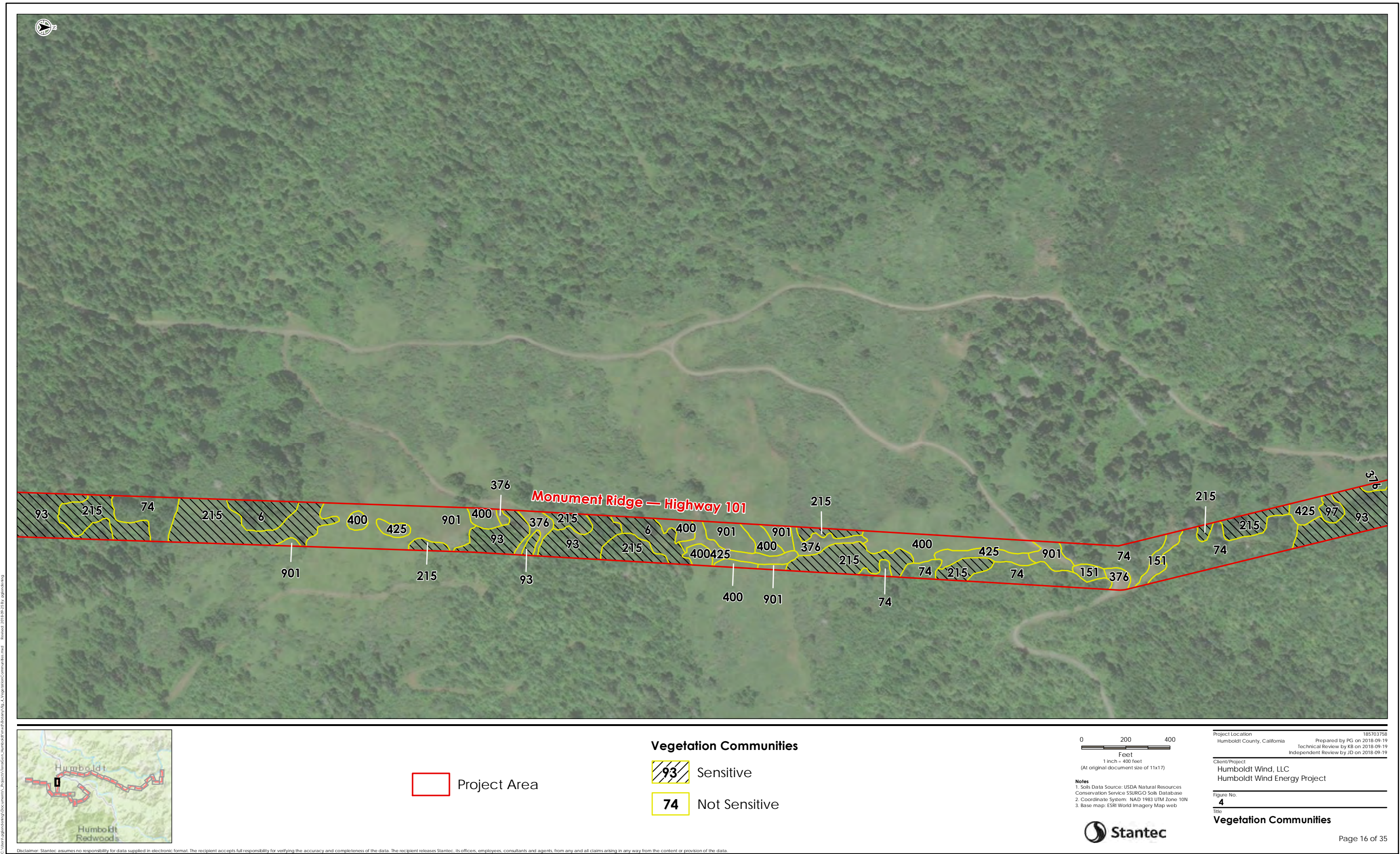


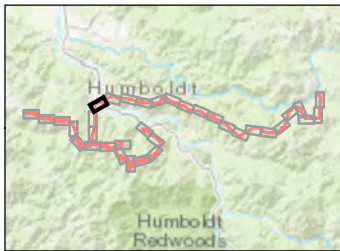
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Humboldt Wind Energy Project

Figure No.
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Title
Vegetation Communities






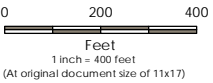


 Project Area

Vegetation Communities

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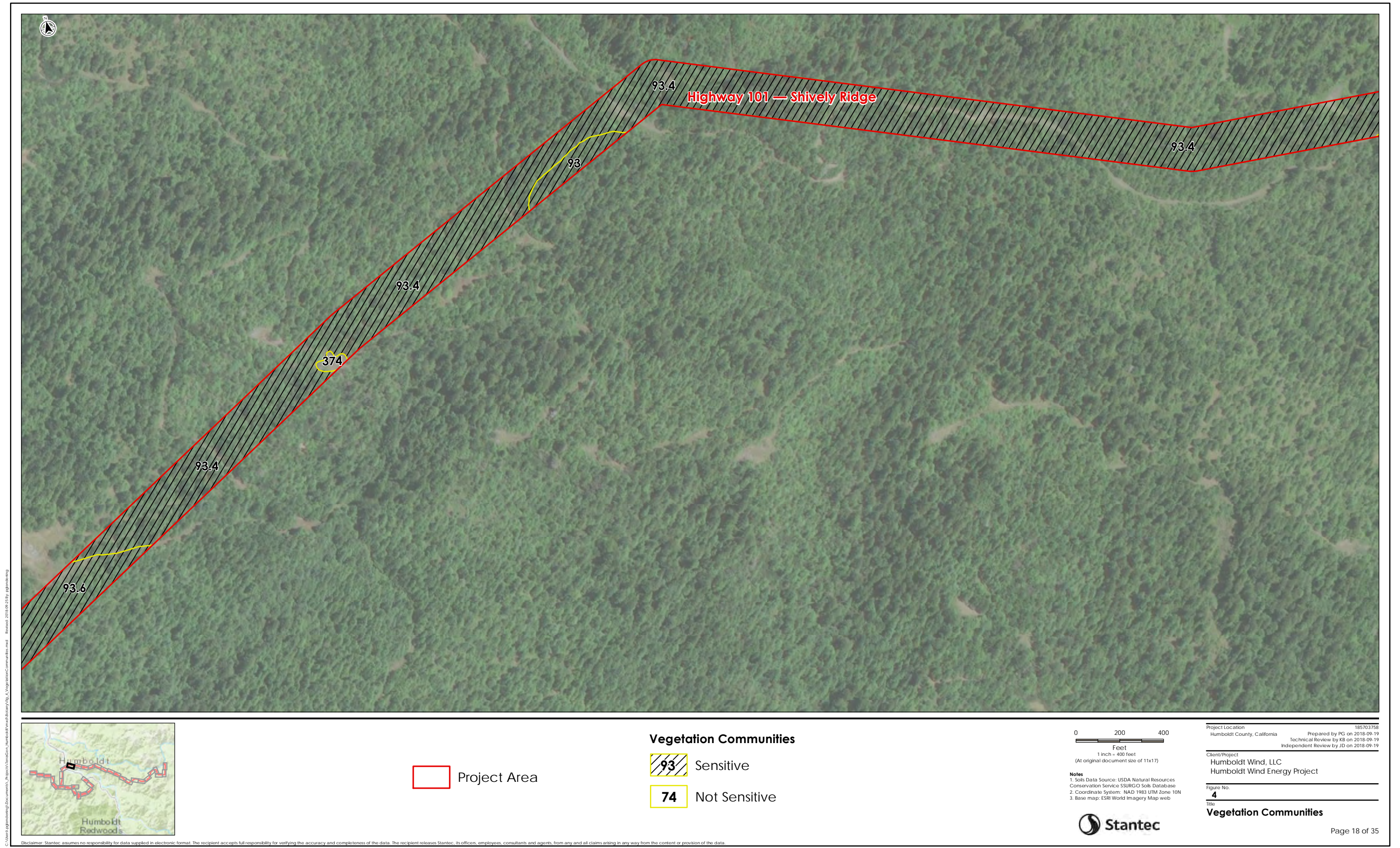


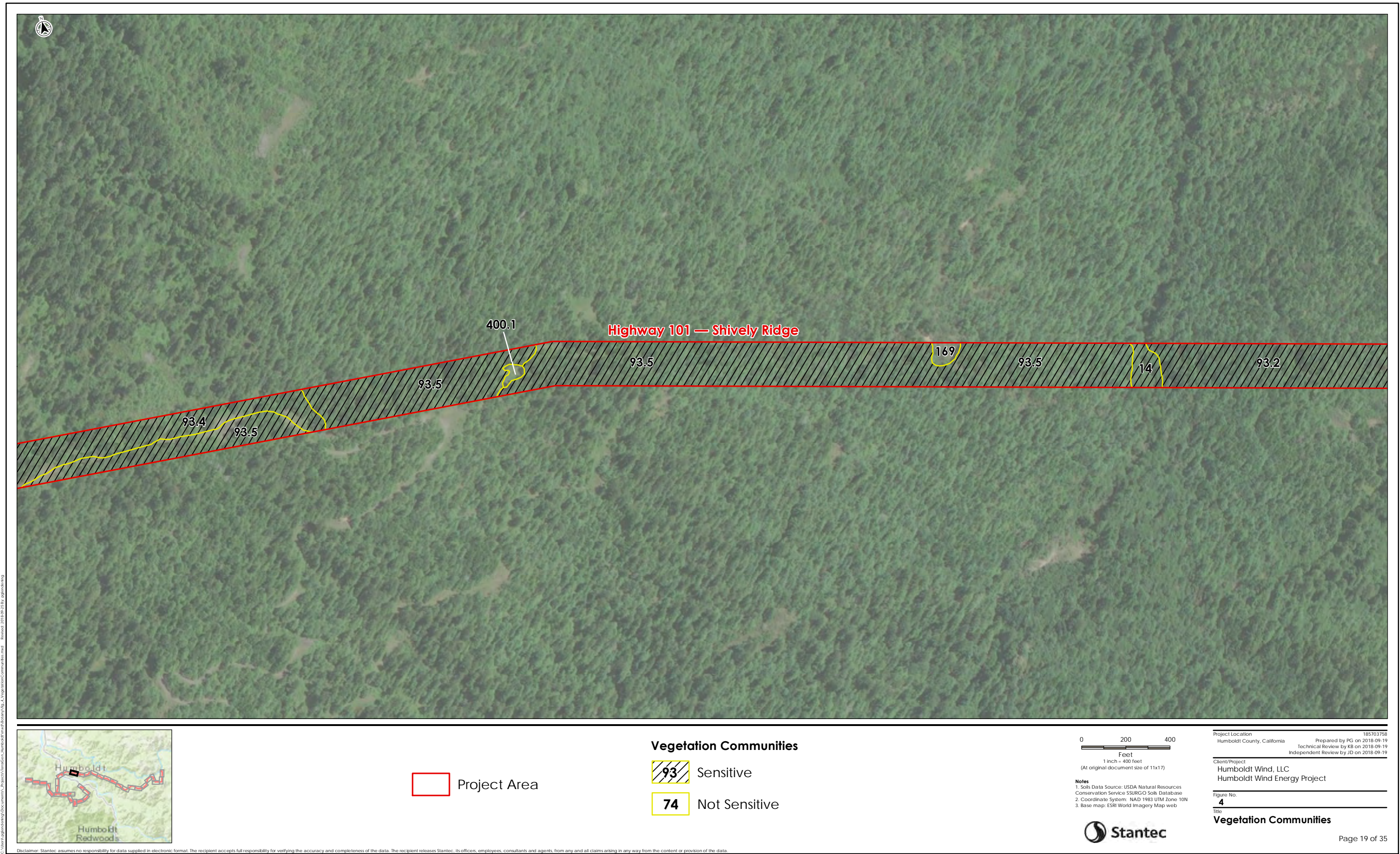
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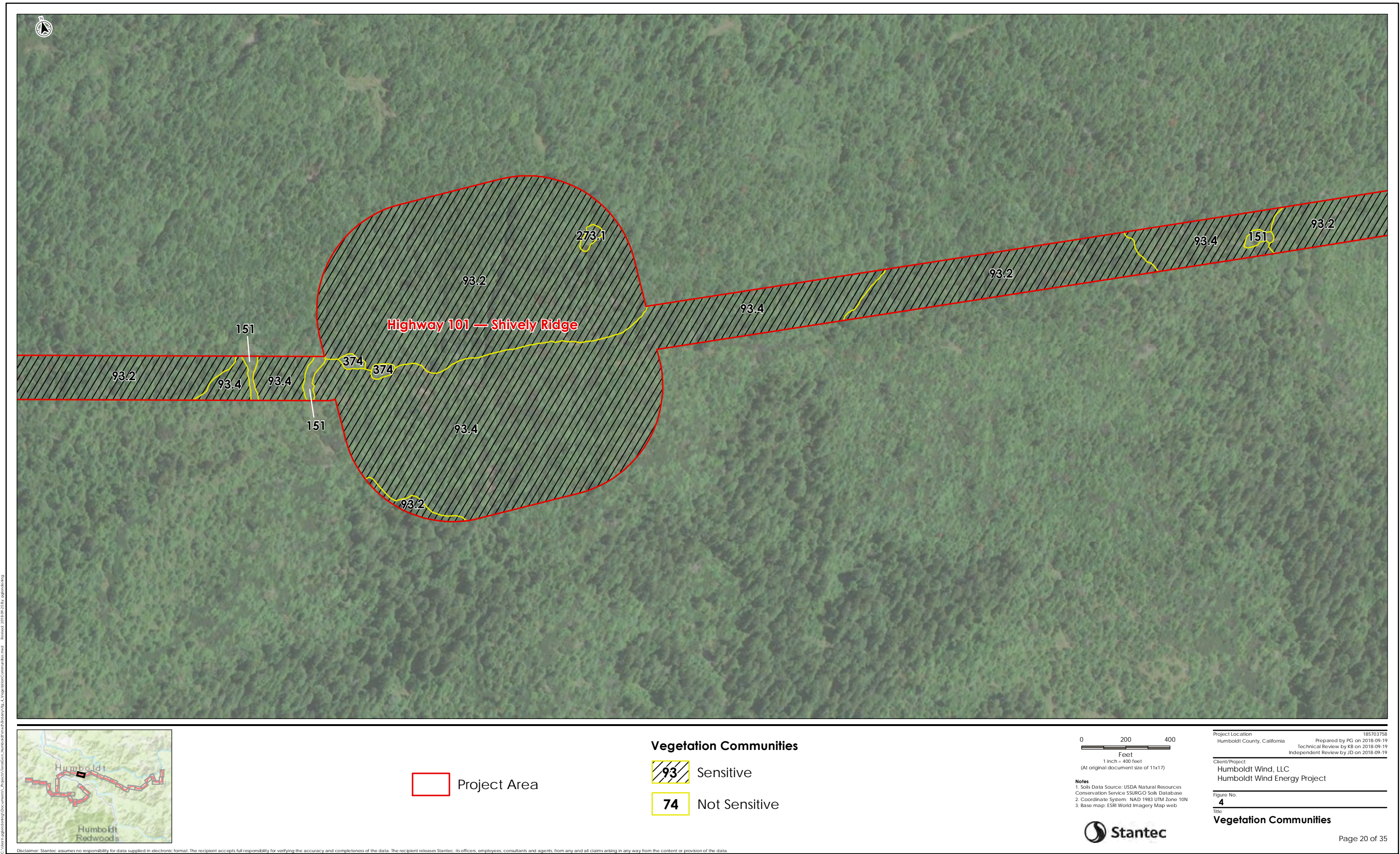
Client/Project
Humboldt Wind, LLC
Humboldt Wind Energy Project

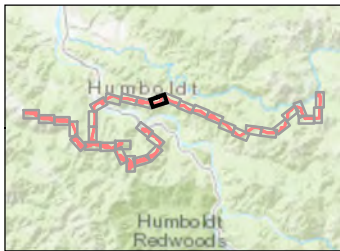
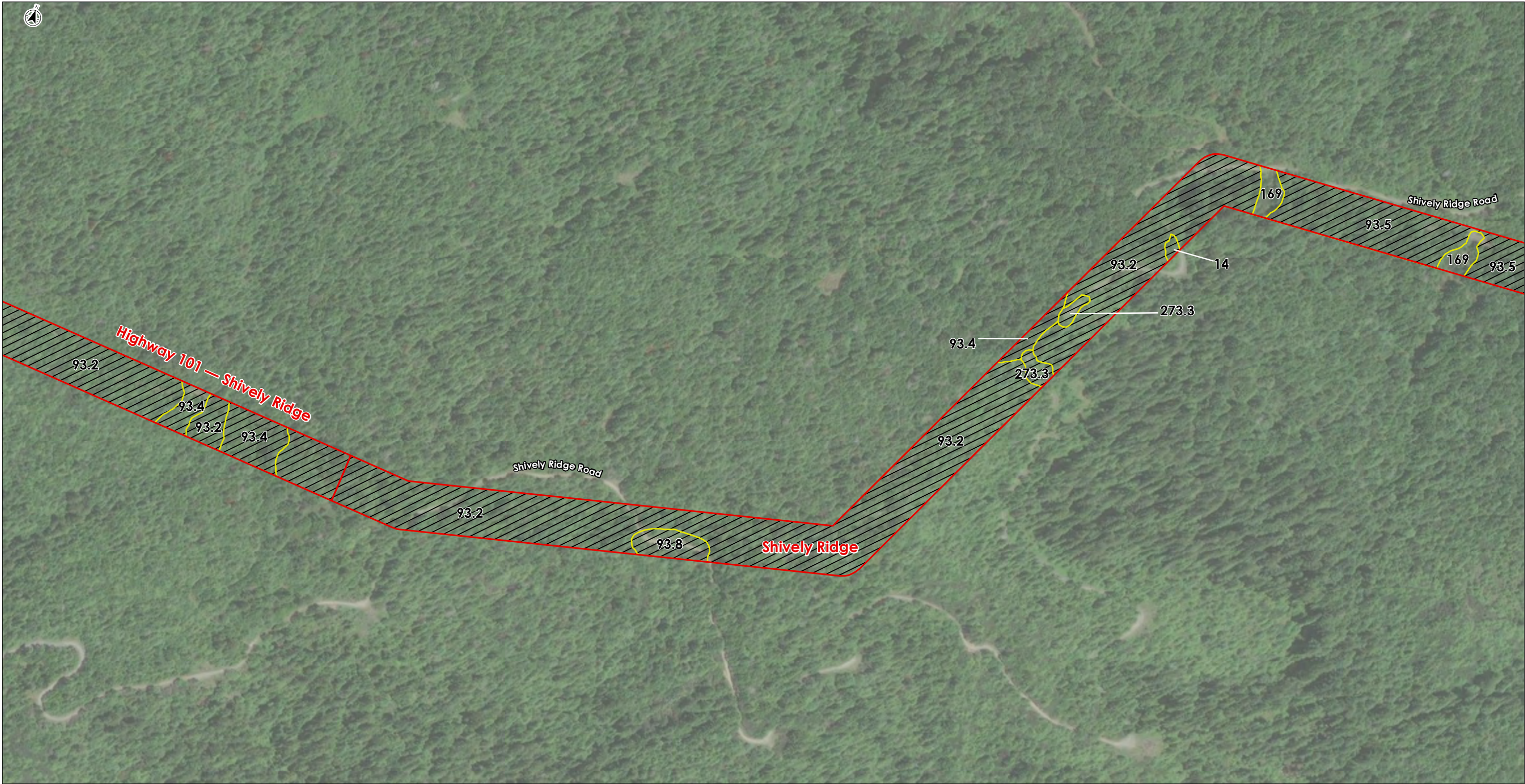
Figure No.
4

Vegetation Communities







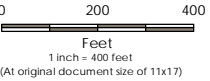




 Project Area

Vegetation Communities

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-  Not Sensitive



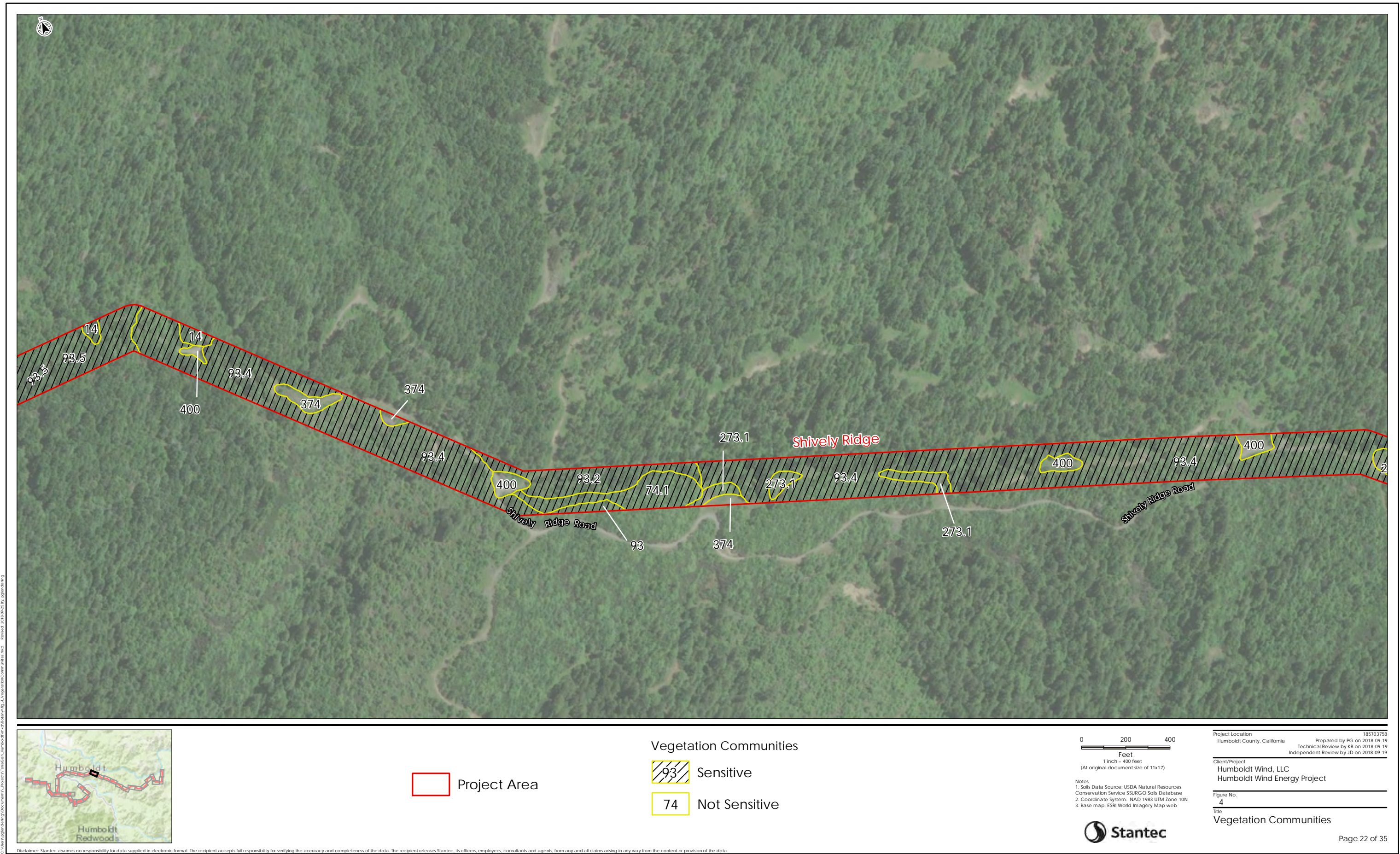
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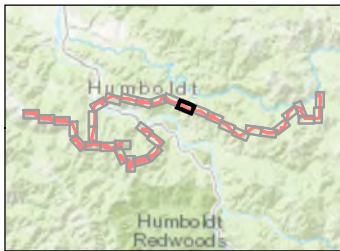


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Client/Project
Humboldt Wind, LLC
Humboldt Wind Energy Project

Figure No.
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Vegetation Communities




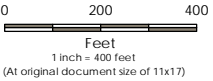


 Project Area

Vegetation Communities

 93 Sensitive

 74 Not Sensitive



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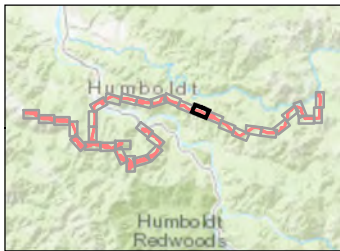


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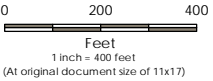


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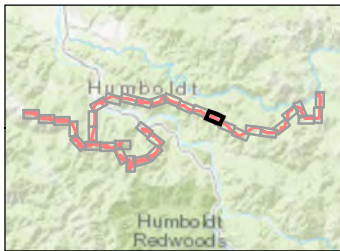
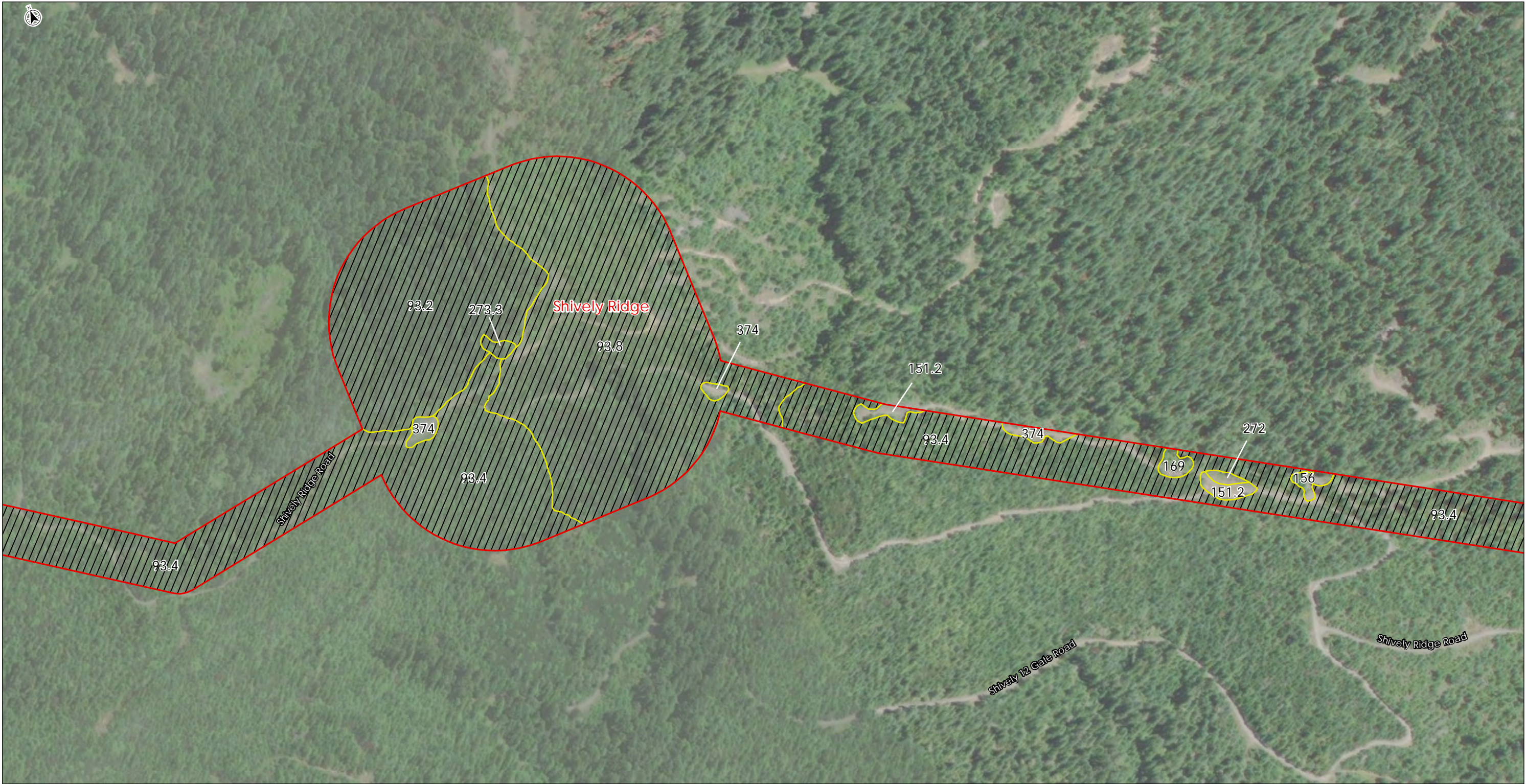


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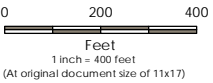


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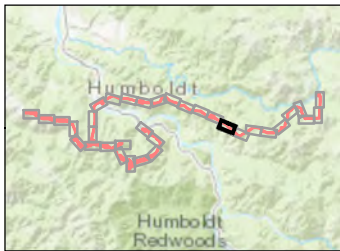


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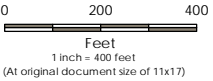


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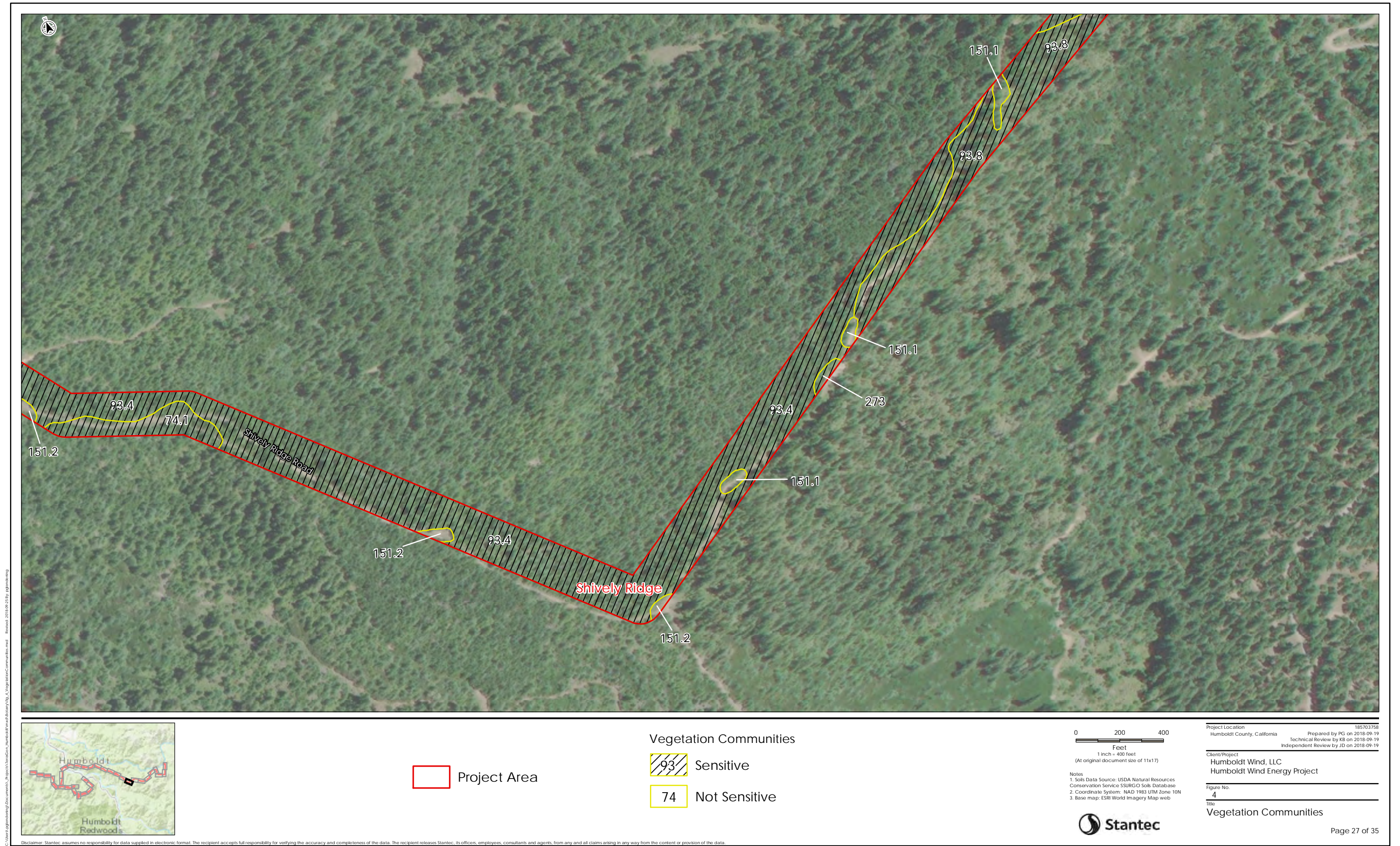


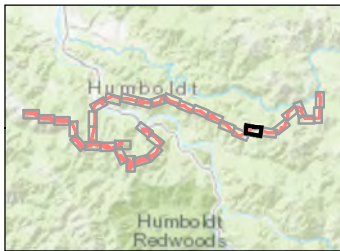
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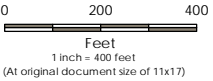


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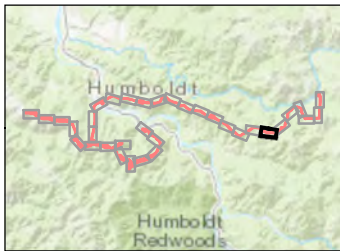


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Vegetation Communities



Project Area

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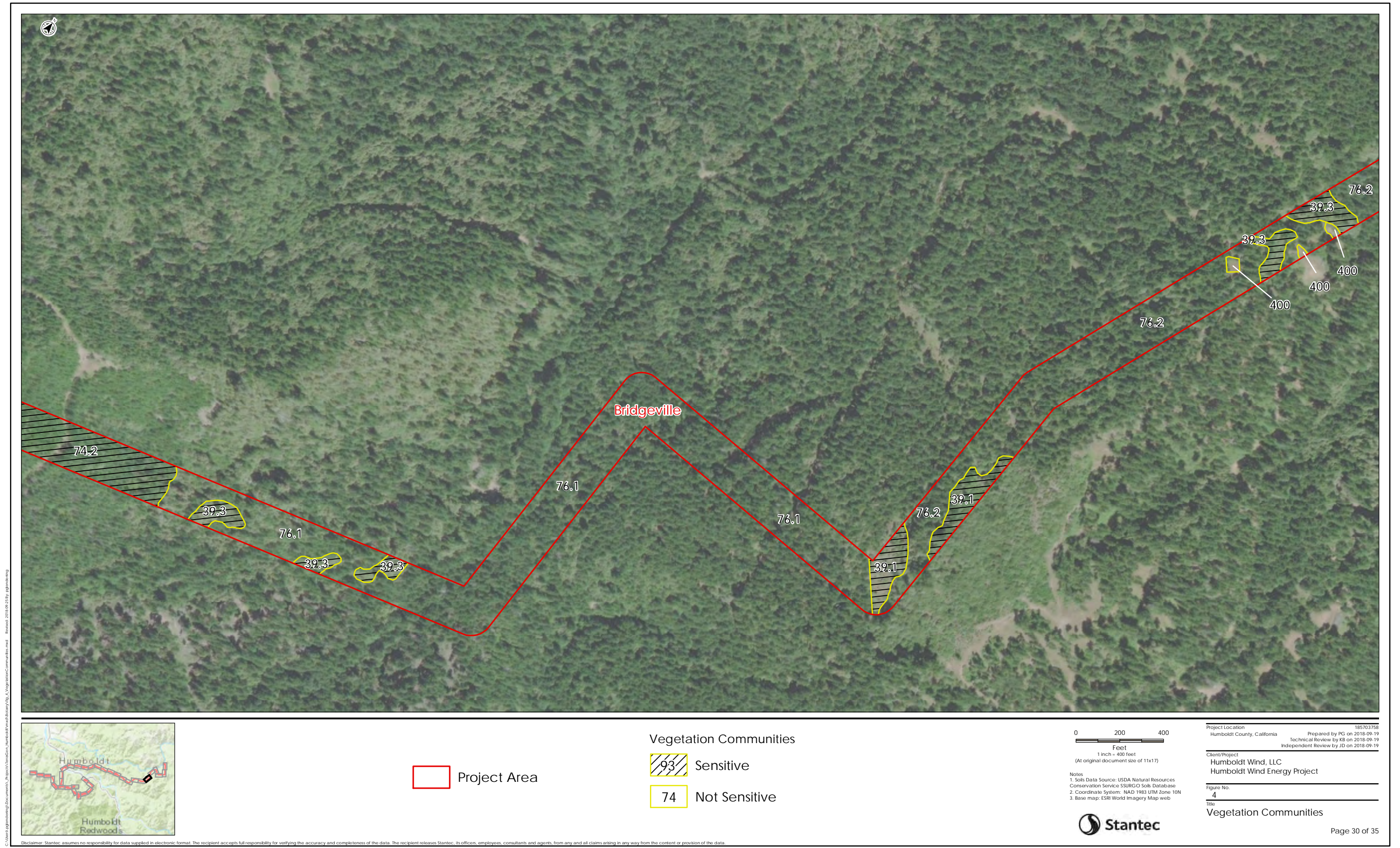


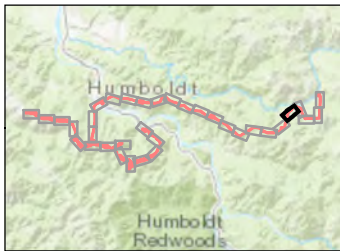
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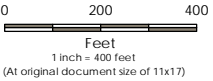


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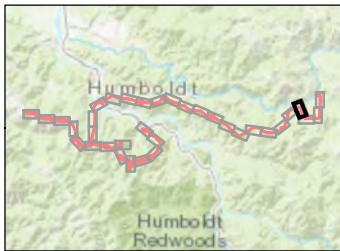


Project Location
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185703758
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Client/Project
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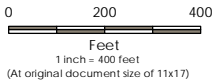


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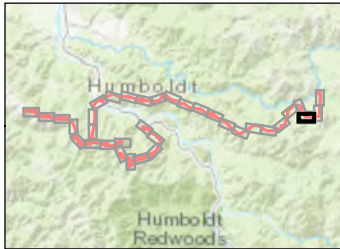


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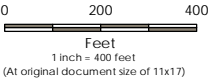


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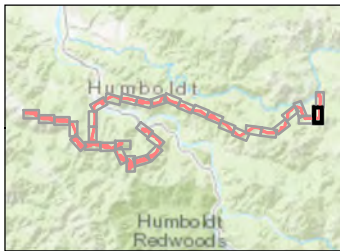


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Vegetation Communities



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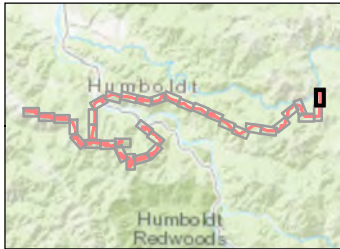


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Client/Project
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Vegetation Communities

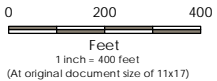


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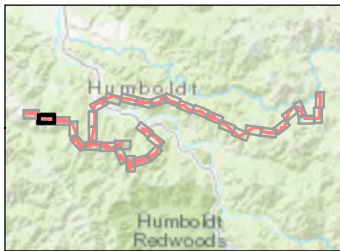
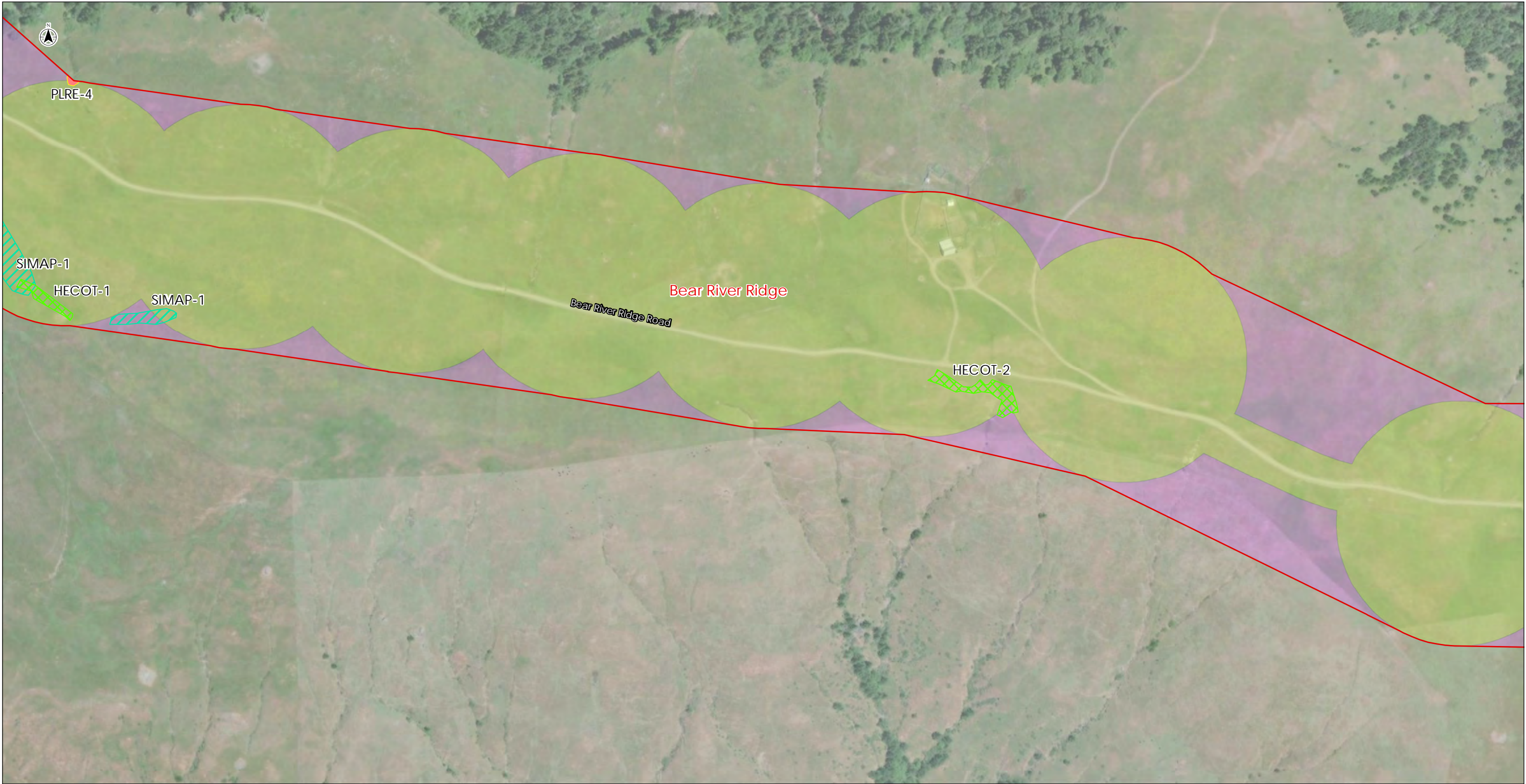
Client/Project
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Humboldt Wind Energy Project

Figure No.
4

Title
Vegetation Communities

HUMBOLDT WIND ENERGY PROJECT BOTANICAL RESOURCES REPORT

Figure 5. Botanical Resources Survey Results Map



- Project Area
- Botanical Resources Survey Areas
- 2018 Survey Area
 - 2019 Survey Area

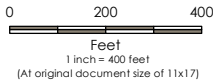
Special-Status Plants

- SIMAP — Siskiyou checkerbloom (*Sidalcea malviflora* ssp. *patula*)
- HESPB — short-leaved evax (*Hesperis matronalis* var. *breviflora*)
- MOHO — Howell's montia (*Montia howellii*)
- GICAP — Pacific gilia (*Gilia capitata* ssp. *pacifica*)

California Rare Plant Rank 3 or 4 Plants

- PICA — California pinefoot (*Pityopus californicus*)
- LICO — heart-leaved twayblade (*Listera cordata*)

- RIROA — hoary gooseberry (*Ribes roezlii* var. *amictum*)
- MICA — leafy-stemmed mitrewort (*Mitella caulescens*)
- SIMA — maple-leaved checkerbloom (*Sidalcea malachroides*)
- USLO — Methuselah's Beard Lichen (*Usnea longissima*)
- PLRE — nodding semaphore grass (*Pleuropogon refractus*)
- CHGL — Pacific golden saxifrage (*Chrysosplenium glechomifolium*)
- LIRU — redwood lily (*Lilium rubescens*)
- LYCL — running-pine (*Lycopodium clavatum*)
- HECOT — Tracy's tarplant (*Hemizonia congesta* ssp. *tracyi*)



Notes

1. Soils Data Source: USDA Natural Resources Conservation Service SSURGO Soils Database
2. Coordinate System: NAD 1983 UTM Zone 10N
3. Base map: ESRI World Imagery Map web



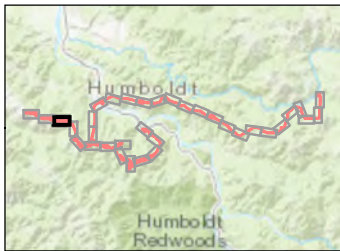
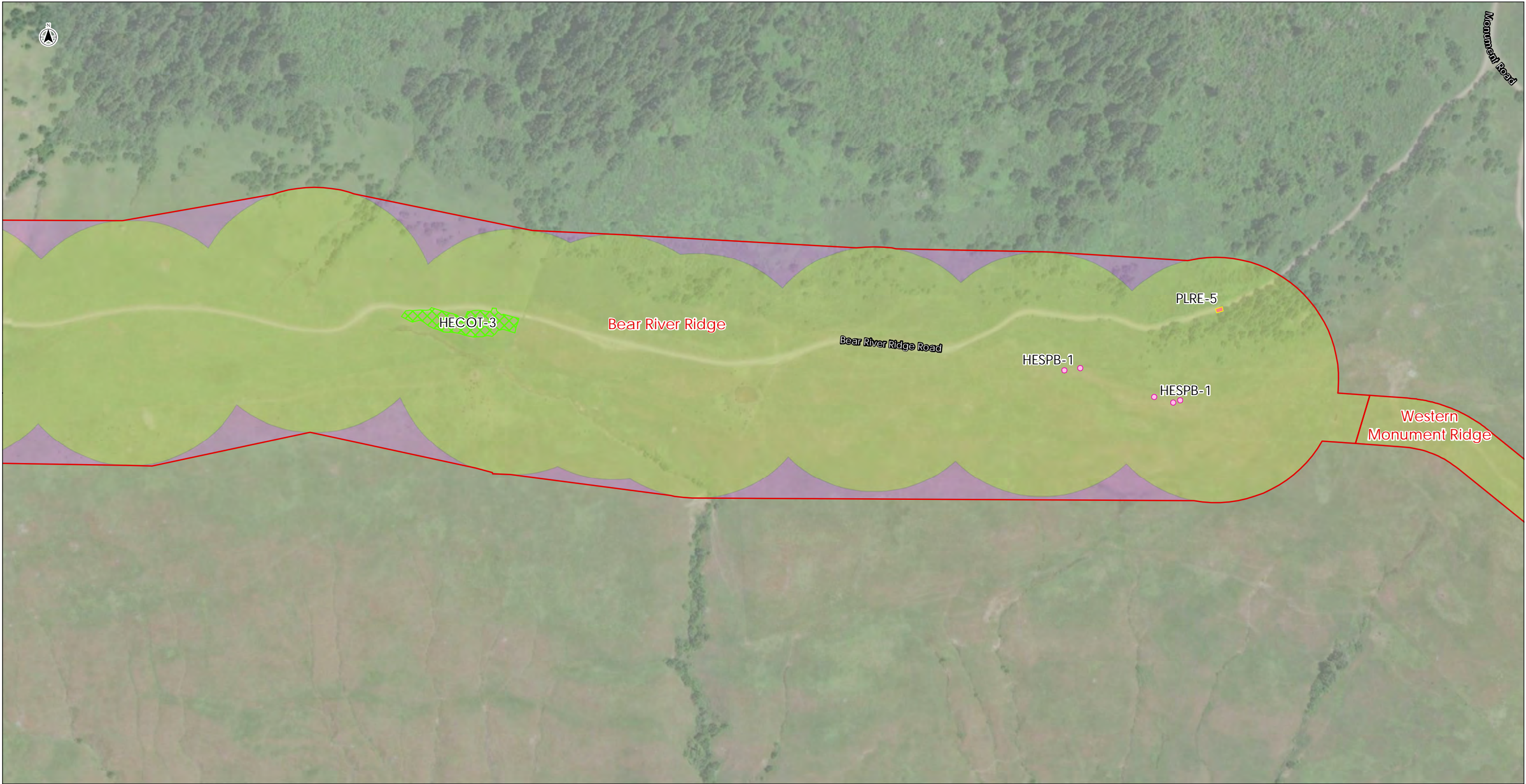
Project Location
Humboldt County, California

Prepared by PD on 2018-09-05
Technical Review by SC on 2018-09-06
Independent Review by JD on 2018-09-06

Client/Project
Humboldt Wind, LLC
Humboldt Wind Energy Project

Figure No.
5

Title
Botanical Resources Survey
Results



- Project Area
- Botanical Resources Survey Areas
- 2018 Survey Area
 - 2019 Survey Area

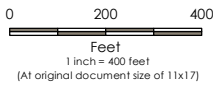
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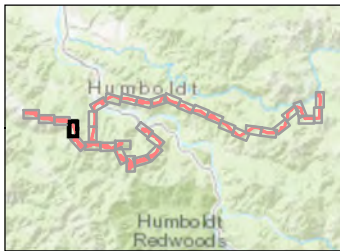
Project Location
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Client/Project
Humboldt Wind, LLC
Humboldt Wind Energy Project

Figure No.
5

Title
Botanical Resources Survey
Results



- Project Area
- Botanical Resources Survey Areas
- 2018 Survey Area
 - 2019 Survey Area

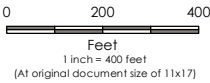
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- PLRE — nodding semaphore grass (*Pleuropogon refractus*)
- CHGL — Pacific golden saxifrage (*Chrysosplenium glechomifolium*)
- LIRU — redwood lily (*Lilium rubescens*)
- LYCL — running-pine (*Lycopodium clavatum*)
- HECOT — Tracy's tarplant (*Hemizonia congesta* ssp. *tracyi*)



Notes

1. Soils Data Source: USDA Natural Resources Conservation Service SSURGO Soils Database
2. Coordinate System: NAD 1983 UTM Zone 10N
3. Base map: ESRI World Imagery Map web



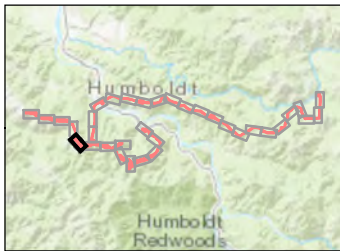
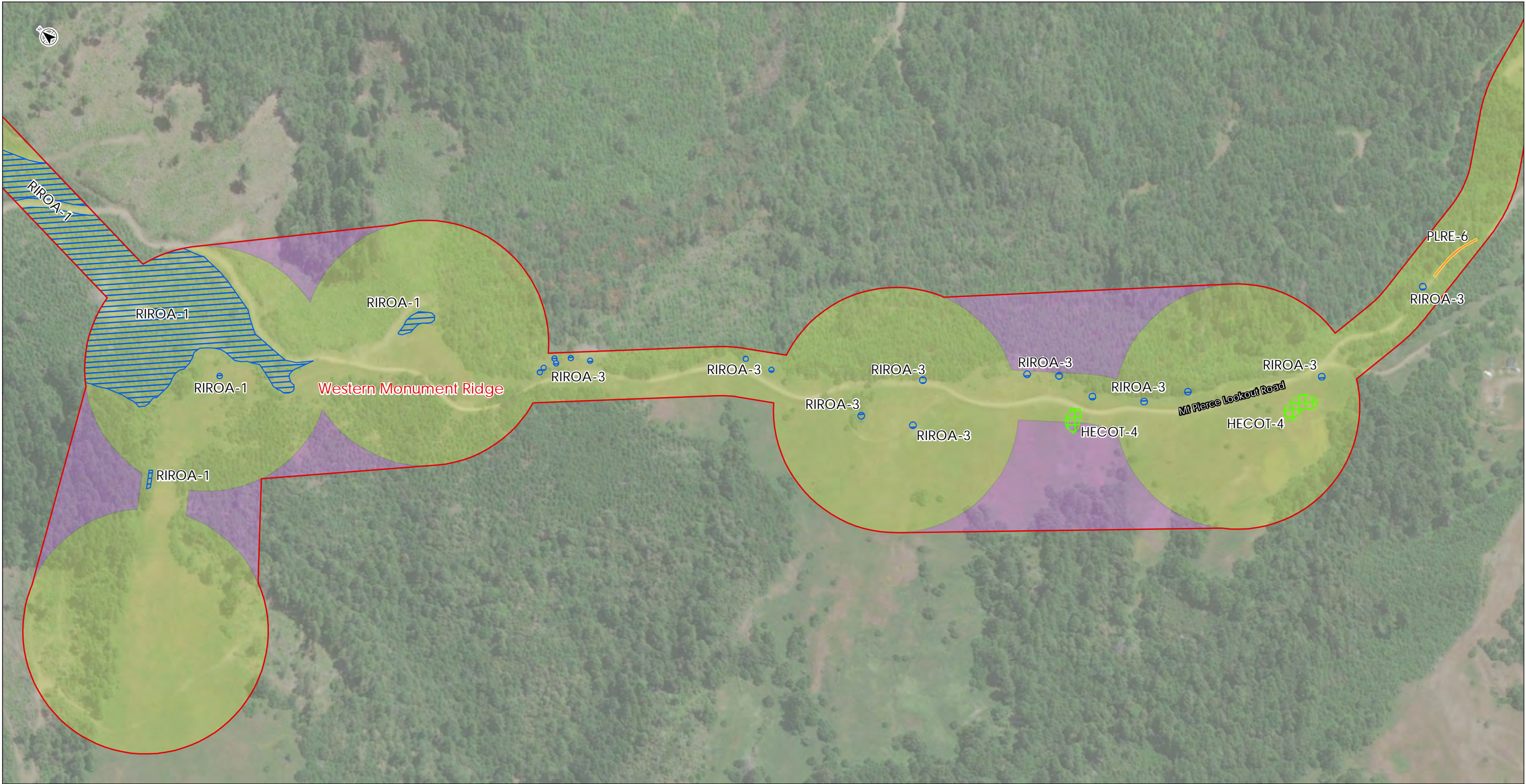
Project Location
Humboldt County, California

185703758
Prepared by PG on 2018-09-05
Technical Review by SC on 2018-09-06
Independent Review by JD on 2018-09-06

Client/Project
Humboldt Wind, LLC
Humboldt Wind Energy Project

Figure No.
5

Botanical Resources Survey
Results



Project Area

Botanical Resources Survey Areas

- 2018 Survey Area
- 2019 Survey Area

Special-Status Plants

- SIMAP — Siskiyou checkerbloom (*Sidalcea malviflora* ssp. *patula*)
- HESPB — short-leaved evax (*Hesperis matronalis* var. *breviflora*)
- MOHO — Howell's montia (*Montia howellii*)
- GICAP — Pacific gilia (*Gilia capitata* ssp. *pacifica*)

California Rare Plant Rank 3 or 4 Plants

- PICA — California pinefoot (*Pityopus californicus*)
- LICO — heart-leaved twayblade (*Listera cordata*)

- RIROA — hoary gooseberry (*Ribes roezlii* var. *amictum*)
- MICA — leafy-stemmed mitrewort (*Mitella caulescens*)
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0 200 400
Feet
1 inch = 400 feet
(At original document size of 11x17)

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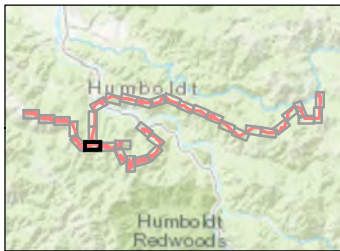
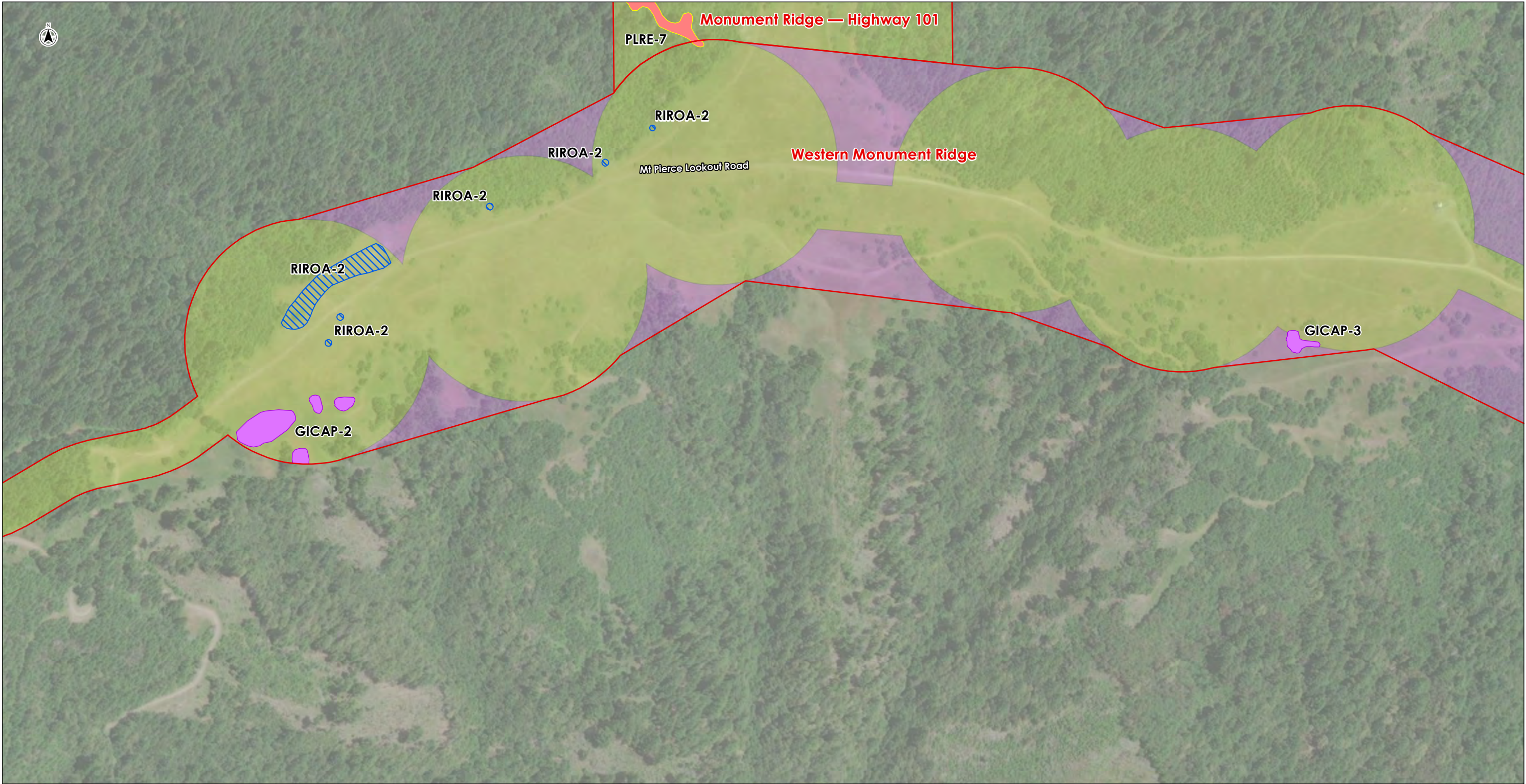


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Prepared by PD on 2018-09-05
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Client/Project
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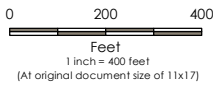
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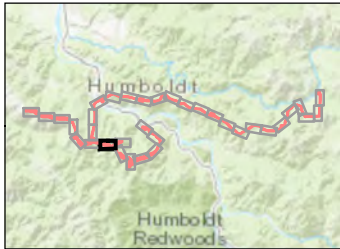
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185703758
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Client/Project
Humboldt Wind, LLC
Humboldt Wind Energy Project

Figure No.
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Botanical Resources Survey Results



- Project Area
- Botanical Resources Survey Areas
- 2018 Survey Area
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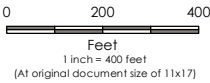
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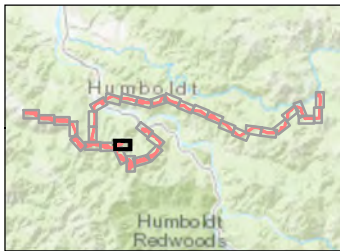
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185703758
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Client/Project
Humboldt Wind, LLC
Humboldt Wind Energy Project

Figure No.
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Title
Botanical Resources Survey
Results



- Project Area
- Botanical Resources Survey Areas
- 2018 Survey Area
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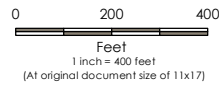
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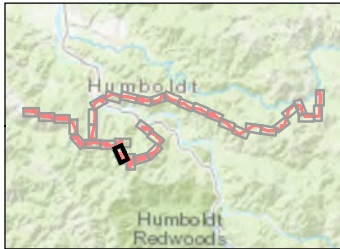
Project Location
Humboldt County, California

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Humboldt Wind, LLC
Humboldt Wind Energy Project

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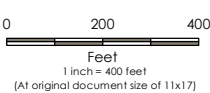
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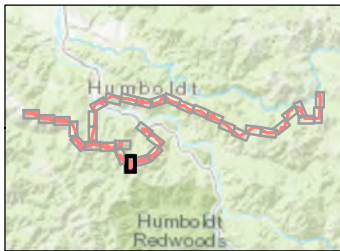
Project Location
Humboldt County, California

Client/Project
Humboldt Wind, LLC
Humboldt Wind Energy Project

Figure No.
5

Title
Botanical Resources Survey
Results

Page 9 of 35



- Project Area
- Botanical Resources Survey Areas
- 2018 Survey Area
 - 2019 Survey Area

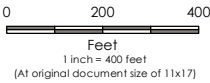
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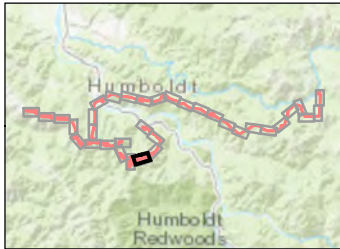
Project Location
Humboldt County, California

Prepared by PG on 2018-09-05
Technical Review by SC on 2018-09-06
Independent Review by JD on 2018-09-06

Client/Project
Humboldt Wind, LLC
Humboldt Wind Energy Project

Figure No.
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Title
Botanical Resources Survey
Results



- Project Area
- Botanical Resources Survey Areas
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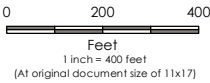
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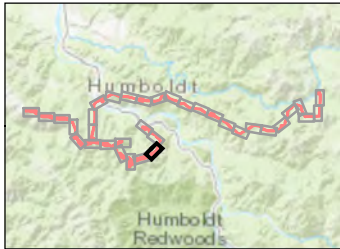
Project Location
Humboldt County, California

185703758
Prepared by PG on 2018-09-05
Technical Review by SC on 2018-09-06
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Client/Project
Humboldt Wind, LLC
Humboldt Wind Energy Project

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Botanical Resources Survey
Results



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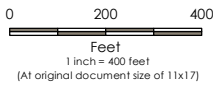
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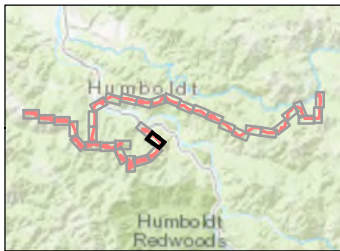


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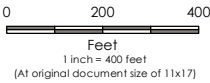
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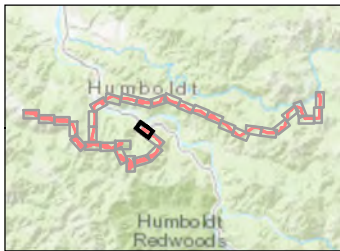


Project Location
Humboldt County, California
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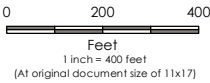
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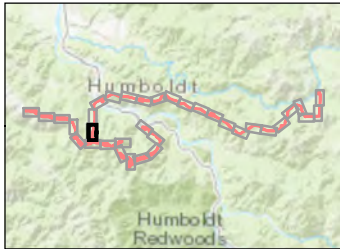
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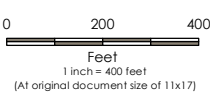
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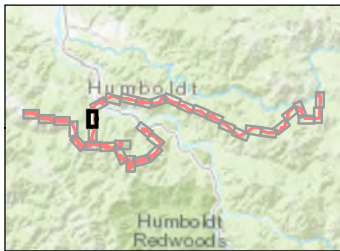
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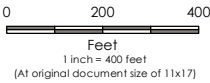
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Notes

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2. Coordinate System: NAD 1983 UTM Zone 10N
3. Base map: ESRI World Imagery Map web



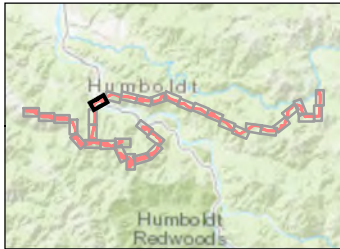
Project Location
Humboldt County, California

185703758
Prepared by PG on 2018-09-05
Technical Review by SC on 2018-09-06
Independent Review by JD on 2018-09-06

Client/Project
Humboldt Wind, LLC
Humboldt Wind Energy Project

Figure No.
5

Botanical Resources Survey Results



- Project Area
- Botanical Resources Survey Areas**
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 - 2019 Survey Area

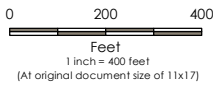
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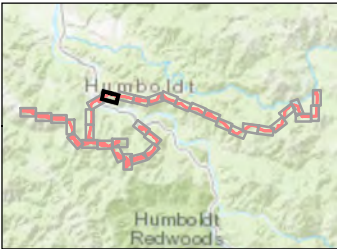
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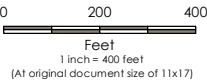
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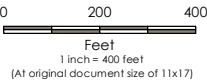
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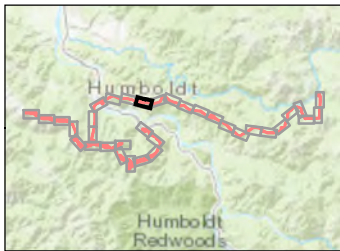
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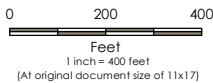
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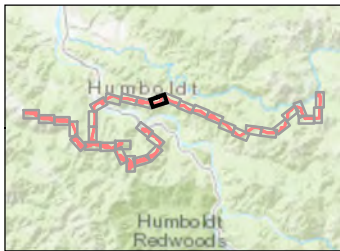
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Humboldt County, California

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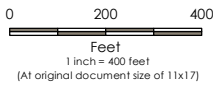
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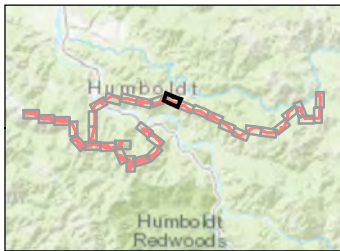
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Humboldt County, California

185703758
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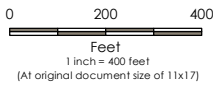
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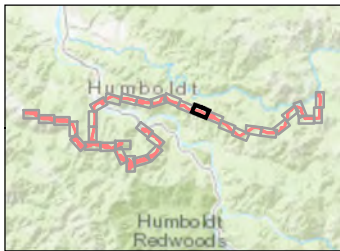
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Humboldt Wind Energy Project

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Botanical Resources Survey
Results



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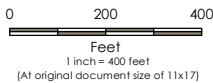
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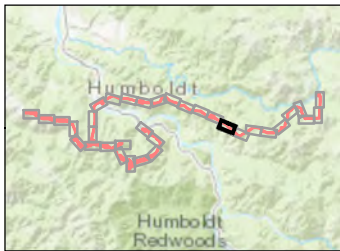
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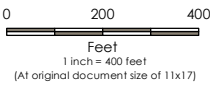
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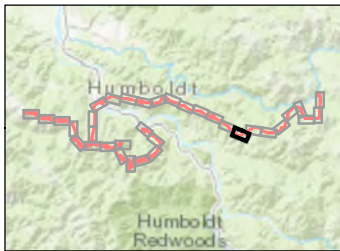


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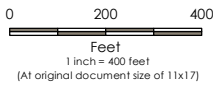
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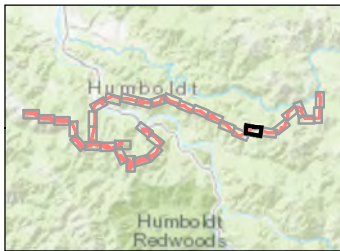
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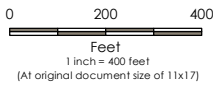
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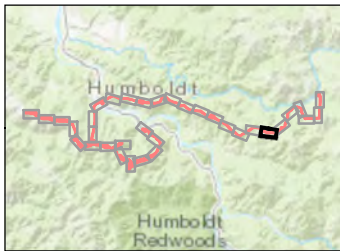
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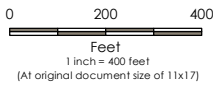
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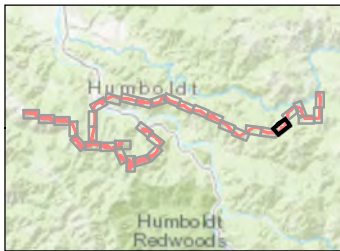
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185703758
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Technical Review by SC on 2018-09-06
Independent Review by JD on 2018-09-06

Client/Project
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Humboldt Wind Energy Project

Figure No.
5

Botanical Resources Survey
Results



- Project Area
- Botanical Resources Survey Areas
- 2018 Survey Area
 - 2019 Survey Area

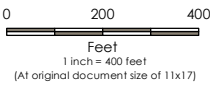
Special-Status Plants

- SIMAP — Siskiyou checkerbloom (*Sidalcea malviflora* ssp. *patula*)
- HESPB — short-leaved evax (*Hesperis matronalis* var. *breviflora*)
- MOHO — Howell's montia (*Montia howellii*)
- GICAP — Pacific gilia (*Gilia capitata* ssp. *pacifica*)

California Rare Plant Rank 3 or 4 Plants

- PICA — California pinefoot (*Pityopus californicus*)
- LICO — heart-leaved twayblade (*Listera cordata*)

- RIROA — hoary gooseberry (*Ribes roezlii* var. *amictum*)
- MICA — leafy-stemmed mitrewort (*Mitella caulescens*)
- SIMA — maple-leaved checkerbloom (*Sidalcea malachroides*)
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- PLRE — nodding semaphore grass (*Pleuropogon refractus*)
- CHGL — Pacific golden saxifrage (*Chrysosplenium glechomifolium*)
- LIRU — redwood lily (*Lilium rubescens*)
- LYCL — running-pine (*Lycopodium clavatum*)
- HECOT — Tracy's tarplant (*Hemizonia congesta* ssp. *tracyi*)



Notes

1. Soils Data Source: USDA Natural Resources Conservation Service SSURGO Soils Database
2. Coordinate System: NAD 1983 UTM Zone 10N
3. Base map: ESRI World Imagery Map web



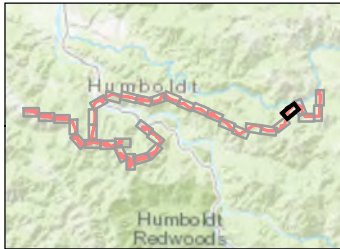
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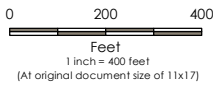
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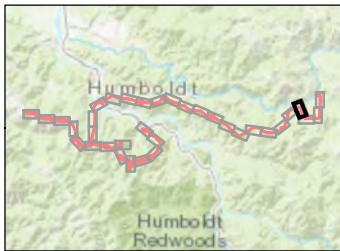
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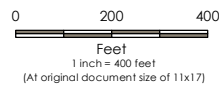
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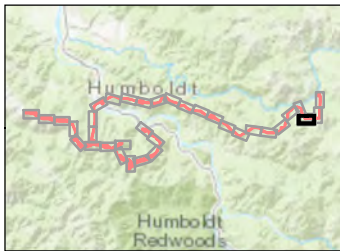
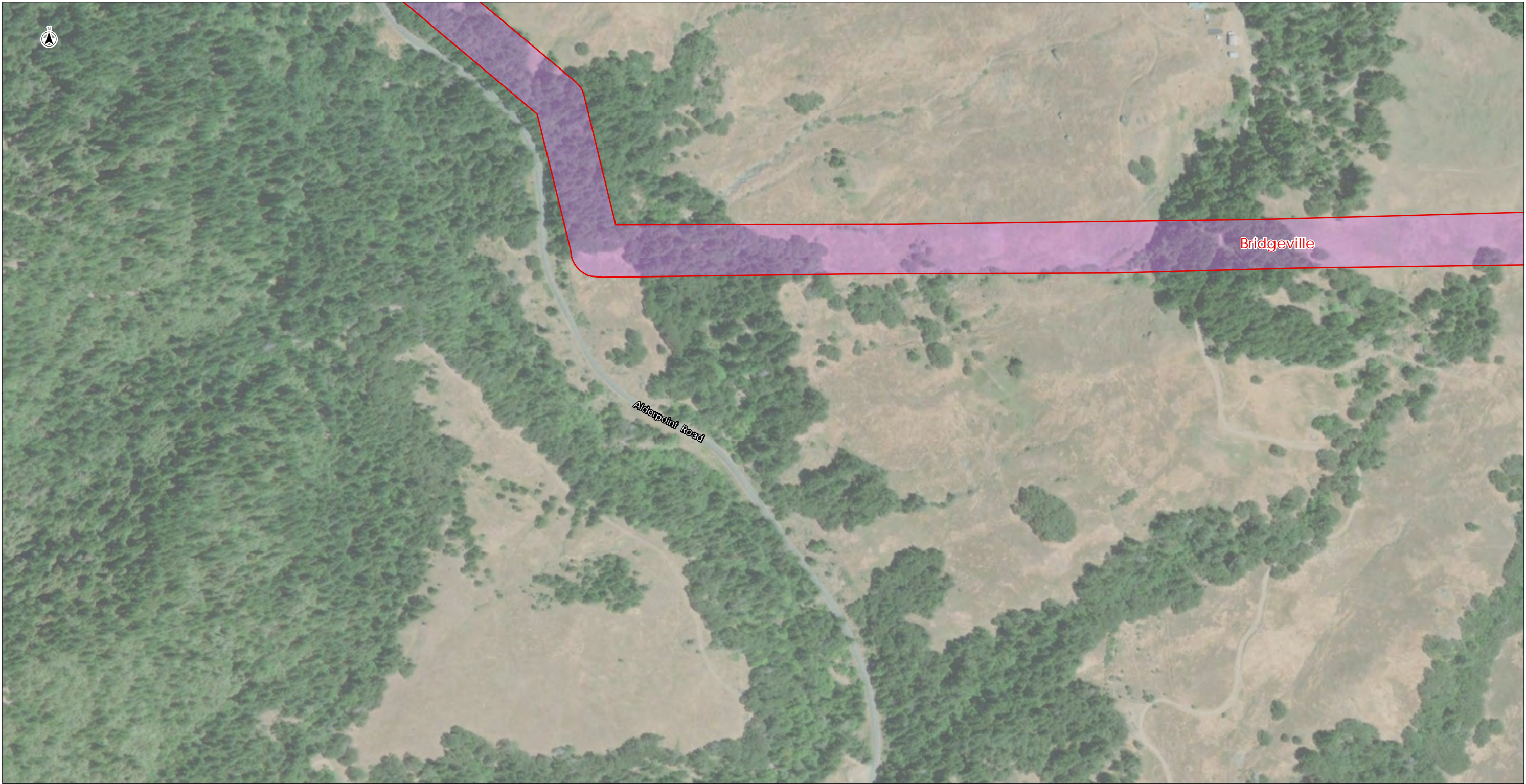
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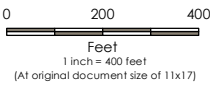
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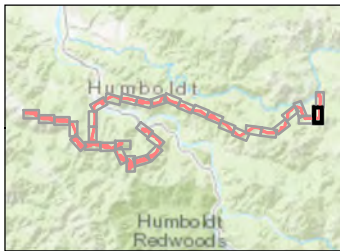


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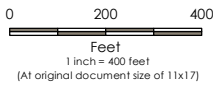
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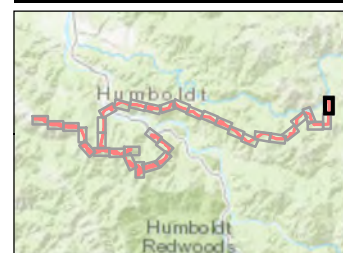
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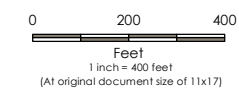
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APPENDICES

Appendix A PLANT SPECIES EVALUATED

Table A-1. Plant Species Evaluated

Species	Status ¹ (Federal/ State/CRPR)	General Habitat Description and Blooming Period	Potential to Occur within Project Area
Bryophytes			
slender silver moss (<i>Anomobryum julaceum</i>)	NL/NL/4.2	Broadleaf upland forest, lower montane coniferous forest, North Coast coniferous forest/damp rock and soil on outcrops, usually on roadcuts. Elevation: 330–3,280 feet.	Suitable habitat occurs in the project area; the project area contains damp rock outcrops and roadcuts in North Coast coniferous forest. This species was not detected during 2018 surveys, suitable habitat is present in 2019 survey areas.
minute pocket moss (<i>Fissidens pauperculus</i>)	NL/NL/1B.2	North Coast coniferous forest (damp coastal soil). Elevation: 30–3,360 feet.	Suitable habitat occurs in the project area; the project area contains damp soil in North Coast coniferous forest. This species was not detected during 2018 surveys, suitable habitat is present in 2019 survey areas.
three-ranked hump moss (<i>Meesia triquetra</i>)	NL/NL/4.2	Bogs and fens, meadows and seeps, subalpine coniferous forest, upper montane coniferous forest (mesic) Elevation: 4,260–9,680 feet.	Suitable habitat does not occur in the project area; the project area is below the recognized elevational range of this species. This species was not detected during 2018 surveys, suitable habitat is not present in 2019 survey areas.
Lichens			
false gray horsehair lichen (<i>Bryoria pseudocapillaris</i>)	NL/NL/3.2	Coastal dunes in San Luis Obispo County, North Coast coniferous forest (immediate coast). Usually on conifers. Elevation: 0–300 feet.	Suitable habitat does not occur in the project area; the project area is not directly on the coast. This species was not detected during 2018 surveys, suitable habitat is not present in 2019 survey areas.
twisted horsehair lichen (<i>Bryoria spiralifera</i>)	NL/NL/1B.1	North Coast coniferous forest (immediate coast). Usually on conifers. Elevation: 0–100 feet.	Suitable habitat does not occur in the project area; the project area is not directly on the coast. This species was not detected during 2018 surveys, suitable habitat is not present in 2019 survey areas.

Species	Status ¹ (Federal/ State/CRPR)	General Habitat Description and Blooming Period	Potential to Occur within Project Area
angel's hair lichen (<i>Ramalina thrausta</i>)	NL/NL/2B.1	North Coast coniferous forest on dead twigs and other lichens. Elevation: 250–1,410 feet.	Suitable habitat occurs in the project area; the project area contains North Coast coniferous forest. This species was not detected during 2018 surveys, suitable habitat is present in 2019 survey areas.
Methuselah's beard lichen (<i>Usnea longissima</i>)	NL/NL/4.2	Broadleaf upland forest, North Coast coniferous forest/on tree branches; usually on old growth hardwoods and conifers. Elevation: 160–4,790 feet.	Suitable habitat occurs in the project area; the project area contains North Coast coniferous forest. This species was detected on Bear River and Monument ridges and on the 101-Monument Ridge gen-tie segment during 2018 surveys.
Vascular Plants			
Humboldt County milk-vetch (<i>Astragalus agnicidus</i>)	NL/SE/1B.1	Broadleaf upland forest, North Coast coniferous forest/openings, disturbed areas, sometimes roadsides. Elevation: 390–2,620 feet. Bloom: Apr–Sep.	Suitable habitat occurs in the project area; the project area contains disturbed North Coast coniferous forest habitat. This species is known to occur near the project area in the Larabee Creek drainage. This species was not detected during 2018 surveys, suitable habitat is present in 2019 survey areas.
Rattan's milk-vetch (<i>Astragalus rattanii</i> var. <i>rattanii</i>)	NL/NL/4.3	Chaparral, cismontane woodland, lower montane coniferous forest/gravelly streambanks. Elevation: 100–2,710 feet. Bloom: Apr–Jul.	Suitable habitat occurs in the project area; the project area contains gravel substrates along the Eel River or other streams. This species was not detected during 2018 surveys, suitable habitat is present in 2019 survey areas.
Bald Mountain milk-vetch (<i>Astragalus umbraticus</i>)	NL/NL/2B.3	Cismontane woodland, lower montane coniferous forest/sometimes roadside. Elevation: 490–4,100 feet. Bloom: May–Aug.	Suitable habitat occurs in the project area; the project area contains woodland and forest habitats in the project area. This species was not detected during 2018 surveys, suitable habitat is present in 2019 survey areas.

Species	Status ¹ (Federal/ State/CRPR)	General Habitat Description and Blooming Period	Potential to Occur within Project Area
bensoniella (<i>Bensoniella oregona</i>)	NL/SR/1B.1	Bogs and fens, lower montane coniferous forest (openings), meadows and seeps/mesic. Elevation: 3,000–4,590 feet. Bloom: May–Jul.	Suitable habitat occurs in the project area; the project area contains seeps and other mesic areas. This species was not detected during 2018 surveys, suitable habitat is present in 2019 survey areas.
Bolander's reed grass (<i>Calamagrostis bolanderi</i>)	NL/NL/4.2	Bogs and fens, broadleaf upland forest, closed-cone coniferous forest, coastal scrub, meadows and seeps(mesic), marshes and swamps(freshwater), North Coast coniferous forest/mesic. Elevation: 0–1,490 feet. Bloom: May–Aug.	Suitable habitat occurs in the project area; the project area contains seeps and other mesic areas in North Coast coniferous forest. This species was not detected during 2018 surveys, suitable habitat is present in 2019 survey areas.
leafy reed grass (<i>Calamagrostis foliosa</i>)	NL/SR/4.2	Coastal bluff scrub, North Coast coniferous forest/rocky. Elevation: 0–4,000 feet. Bloom: May–Sep.	Suitable habitat occurs in the project area; the project area contains rocky areas in North Coast coniferous forest. This species was not detected during 2018 surveys, suitable habitat is present in 2019 survey areas.
small-flowered calycadenia (<i>Calycadenia micrantha</i>)	NL/NL/1B.2	Chaparral, meadows and seeps (volcanic), valley and foothill grassland/roadsides, rocky, talus, scree, sometimes serpentinite, sparsely vegetated areas. Elevation: 20–4,920 feet. Bloom: Jun–Sep.	Suitable habitat occurs in the project area; the project area contains grasslands. This species was not detected during 2018 surveys, suitable habitat is present in 2019 survey areas.
seaside bittercress (<i>Cardamine angulata</i>)	NL/NL/2B.2	Lower montane coniferous forest, North Coast coniferous forest/Wet areas, streambanks. Elevation: 80–3,000 feet. Bloom: (Jan), Mar–Jul.	Suitable habitat occurs in the project area; the project area contains mesic areas in North Coast coniferous forest. This species was not detected during 2018 surveys, suitable habitat is present in 2019 survey areas.

Species	Status ¹ (Federal/ State/CRPR)	General Habitat Description and Blooming Period	Potential to Occur within Project Area
northern clustered sedge (<i>Carex arcta</i>)	NL/NL/2B.2	Bogs and fens, North Coast coniferous forest (mesic). Elevation: 200–4,590 feet. Bloom: Jun–Sep.	Suitable habitat occurs in the project area; the project area contains seeps and other mesic habitats in North Coast coniferous forest. This species is known to occur near the project area on Humboldt Redwood Company (HRC) land. This species was not detected during 2018 surveys, suitable habitat is present in 2019 survey areas.
Buxbaum's sedge (<i>Carex buxbaumii</i>)	NL/NL/4.2	Bogs and fens, meadows and seeps (mesic), marshes and swamps. Elevation: 10–10,820 feet. Bloom: Mar–Aug.	Suitable habitat occurs in the project area; the project area contains seeps and other mesic habitats. This species was not detected during 2018 surveys, suitable habitat is present in 2019 survey areas.
lagoon sedge (<i>Carex lenticularis</i> var. <i>limnophila</i>)	NL/NL/2B.2	Bogs and fens, marshes and swamps, North Coast coniferous forest/shores, beaches; often gravelly. Elevation: 0–20 feet. Bloom: Jun–Aug.	Suitable habitat does not occur in the project area; the project area does not contain bogs, fens, or marshes. This species was not detected during 2018 surveys, suitable habitat is not present in 2019 survey areas.
bristle-stalked sedge (<i>Carex leptalea</i>)	NL/NL/2B.2	Bogs and fens, meadows and seeps (mesic), marshes and swamps. Elevation: 0–2,300 feet. Bloom: Mar–Jul.	Suitable habitat occurs in the project area; the project area contains seeps and other mesic habitats. This species was not detected during 2018 surveys, suitable habitat is present in 2019 survey areas.
Lyngbye's sedge (<i>Carex lyngbyei</i>)	NL/NL/2B.2	Marshes and swamps (brackish or freshwater). Elevation: 0–30 feet. Bloom: Apr–Aug.	Suitable habitat does not occur in the project area; the project area does not contain marshes or swamps and is above the recognized elevational range of this species. This species was not detected during 2018 surveys, suitable habitat is not present in 2019 survey areas.

Species	Status ¹ (Federal/ State/CRPR)	General Habitat Description and Blooming Period	Potential to Occur within Project Area
northern meadow sedge (<i>Carex praticola</i>)	NL/NL/2B.2	Meadows and seeps (mesic). Elevation: 0–10,500 feet. Bloom: May–Jul.	Suitable habitat occurs in the project area; the project area contains meadows, seeps, and other mesic habitats. This species was not detected during 2018 surveys, suitable habitat is present in 2019 survey areas.
deceiving sedge (<i>Carex saliniformis</i>)	NL/NL/1B.2	Coastal prairie, Coastal scrub, Meadows and seeps, Marshes and swamps (coastal salt)/mesic. Elevation: 10–750 feet. Bloom: Jun (Jul).	Suitable habitat does not occur in the project area; the project area does not contain salty, mesic areas. This species was not detected during 2018 surveys, suitable habitat is not present in 2019 survey areas.
green yellow sedge (<i>Carex viridula</i> ssp. <i>viridula</i>)	NL/NL/2B.3	Bogs and fens, Marshes and swamps freshwater), North Coast coniferous forest (mesic). Elevation: 0–5,250 feet. Bloom: (Jun), Jul–Sep (Nov).	Suitable habitat does not occur in the project area; the project area does not contain bogs, fens, or marshes. This species was not detected during 2018 surveys, suitable habitat is not present in 2019 survey areas.
johnny-nip (<i>Castilleja ambigua</i> ssp. <i>ambigua</i>)	NL/NL/4.2	Coastal bluff scrub, coastal prairie, coastal scrub, marshes and swamps, valley and foothill grassland, vernal pool margins. Elevation: 0–1,430 feet. Bloom: Mar–Aug.	Suitable habitat occurs in the project area; the project area contains mesic areas in coastal prairie and other grassland habitats. This species was not detected during 2018 surveys, suitable habitat is present in 2019 survey areas.
Humboldt Bay owl's-clover (<i>Castilleja ambigua</i> var. <i>humboldtiensis</i>)	NL/NL/1B.2	Marshes and swamps (coastal salt). Elevation: 0–10 feet. Bloom: Apr–Aug.	Suitable habitat does not occur in the project area; the project area does not contain marshes or swamps and is above the recognized elevational range of this species. This species was not detected during 2018 surveys, suitable habitat is not present in 2019 survey areas.

Species	Status ¹ (Federal/ State/CRPR)	General Habitat Description and Blooming Period	Potential to Occur within Project Area
Oregon coast paintbrush (<i>Castilleja litoralis</i>)	NL/NL/2B.2	Sandy areas in coastal bluff scrub, coastal dunes, or coastal scrub. Elevation: 50–330 feet. Bloom: Jun.	Suitable habitat does not occur in the project area; the project area does not contain sandy areas in coastal habitats. This species was not detected during 2018 surveys, suitable habitat is not present in 2019 survey areas.
Mendocino paintbrush (<i>Castilleja mendocinensis</i>)	NL/NL/1B.2	Coastal bluff scrub, closed-cone coniferous forest, coastal dunes, coastal prairie, coastal scrub on the immediate coast. Elevation: 0–520 feet. Bloom: Apr–Aug.	Suitable habitat does not occur in the project area; the project area is not directly on the coast. This species was not detected during 2018 surveys, suitable habitat is not present in 2019 survey areas.
Pacific golden saxifrage (<i>Chrysosplenium glechomifolium</i>)	NL/NL/4.3	North Coast coniferous forest, riparian forest/streambanks, sometimes seeps, sometimes roadsides. Elevation: 30–720 feet. Bloom: Feb–Jun.	Suitable habitat occurs in the project area; the project area contains mesic areas in North Coast coniferous forest. This species was detected on Bear River Ridge during 2018 surveys.
Whitney's farewell-to-spring (<i>Clarkia amoena</i> ssp. <i>whitneyi</i>)	NL/NL/1B.1	Coastal bluff scrub or coastal scrub. Elevation: 30–330 feet. Bloom: Jun–Aug.	Suitable habitat occurs in the project area; the project area contains coastal scrub habitat. This species was not detected during 2018 surveys, suitable habitat is present in 2019 survey areas.
Tracy's collomia (<i>Collomia tracyi</i>)	NL/NL/4.3	Broadleaf upland forest, lower montane coniferous forest/rocky, sometimes serpentinite. Elevation: 980–6,890 feet. Bloom: Jun–Jul.	Suitable habitat occurs in the project area; the project area contains gravelly substrates in upland forest habitats. This species was not detected during 2018 surveys, suitable habitat is present in 2019 survey areas.
Oregon goldthread (<i>Coptis laciniata</i>)	NL/NL/4.2	Meadows and seeps, North Coast coniferous forest (streambanks)/mesic. Elevation: 0–3,280 feet. Bloom: (Feb), Mar–May (Sep), (Oct), (Nov).	Suitable habitat occurs in the project area; the project area contains seeps and other mesic areas in North Coast coniferous forest. This species was not detected during 2018 surveys, suitable habitat is present in 2019 survey areas.

Species	Status ¹ (Federal/ State/CRPR)	General Habitat Description and Blooming Period	Potential to Occur within Project Area
bunchberry (<i>Cornus canadensis</i>)	NL/NL/2B.2	Bogs and fens, meadows and seeps, North Coast coniferous forest. Elevation: 200–6,300 feet. Bloom: May–Jul.	Suitable habitat occurs in the project area; the project area contains seeps and other mesic areas in North Coast coniferous forest. This species was not detected during 2018 surveys, suitable habitat is present in 2019 survey areas.
clustered lady's-slipper (<i>Cypripedium fasciculatum</i>)	NL/NL/4.2	Lower montane coniferous forest, North Coast coniferous forest/usually serpentinite seeps and streambanks. Elevation: 330–7,990 feet. Bloom: Mar–Aug.	Suitable habitat occurs in the project area; the project area contains mesic, shady areas in North Coast coniferous forest. This species was not detected during 2018 surveys, suitable habitat is present in 2019 survey areas.
mountain lady's-slipper (<i>Cypripedium montanum</i>)	NL/NL/4.2	Broadleaf upland forest, cismontane woodland, lower montane coniferous forest, North Coast coniferous forest. Elevation: 610–7,300 feet. Bloom: Mar–Aug.	Suitable habitat occurs in the project area; the project area contains cismontane woodlands and North Coast coniferous forest. This species was not detected during 2018 surveys, suitable habitat is present in 2019 survey areas.
black crowberry (<i>Empetrum nigrum</i>)	NL/NL/2B.2	Coastal bluff scrub and coastal prairie on the immediate coast. Elevation: 30–660 feet. Bloom: Apr–Jun.	Suitable habitat does not occur in the project area; the project area is not directly on the coast. This species was not detected during 2018 surveys, suitable habitat is not present in 2019 survey areas.
Oregon fireweed (<i>Epilobium oreganum</i>)	NL/NL/1B.2	Bogs and fens, lower montane coniferous forest, meadows and seeps, upper montane coniferous forest/mesic. Elevation: 1,640–7,350 feet. Bloom: Jun–Sep.	Suitable habitat occurs in the project area; the project area contains seeps and other mesic habitats. This species was not detected during 2018 surveys, suitable habitat is present in 2019 survey areas.
Humboldt County fuchsia (<i>Epilobium septentrionale</i>)	NL/NL/4.3	Broadleaf upland forest, North Coast coniferous forest/sandy or rocky. Elevation: 150–5,900 feet. Bloom: Jul–Sep.	Suitable habitat occurs in the project area; the project area contains rocky habitats in North Coast coniferous forest. This species was not detected during 2018 surveys, suitable habitat is present in 2019 survey areas.

Species	Status ¹ (Federal/ State/CRPR)	General Habitat Description and Blooming Period	Potential to Occur within Project Area
streamside daisy (<i>Erigeron biolettii</i>)	NL/NL/3	Broadleaf upland forest, cismontane woodland, North Coast coniferous forest/rocky, mesic. Elevation: 100–3,610 feet. Bloom: Jun–Oct.	Suitable habitat occurs in the project area; the project area contains mesic, rocky woodlands and North Coast coniferous forest. This species was not detected during 2018 surveys, suitable habitat is present in 2019 survey areas.
robust daisy (<i>Erigeron robustior</i>)	NL/NL/4.3	Lower montane coniferous forest, meadows and seeps/sometimes serpentinite. Elevation: 660–2,000 feet. Bloom: Jun–Jul.	Suitable habitat occurs in the project area; the project area contains mesic areas in grassland habitats. This species was not detected during 2018 surveys, suitable habitat is present in 2019 survey areas.
supple daisy (<i>Erigeron supplex</i>)	NL/NL/1B.2	Coastal bluff scrub and coastal prairie on the immediate coast. Elevation: 30–160 feet. Bloom: May–Jul.	Suitable habitat does not occur in the project area; the project area is not directly on the coast. This species was not detected during 2018 surveys, suitable habitat is not present in 2019 survey areas.
bluff wallflower (<i>Erysimum concinnum</i>)	NL/NL/1B.2	Coastal bluff scrub, coastal dunes, and coastal prairie on the immediate. Elevation: 0–610 feet. Bloom: Feb–Jul.	Suitable habitat does not occur in the project area; the project area is not directly on the coast. This species was not detected during 2018 surveys, suitable habitat is not present in 2019 survey areas.
giant fawn lily (<i>Erythronium oregonum</i>)	NL/NL/2B.2	Cismontane woodland, meadows and seeps/sometimes serpentinite, rocky, openings. Elevation: 330–3,770 feet. Bloom: Mar–Jun (Jul).	Suitable habitat occurs in the project area; the project area contains seeps, woodland, and rocky, open habitats. This species was not detected during 2018 surveys, suitable habitat is present in 2019 survey areas.
coast fawn lily (<i>Erythronium revolutum</i>)	NL/NL/2B.2	Bogs and fens, broadleaf upland forest, North Coast coniferous forest/mesic, streambanks. Elevation: 0–5,250 feet. Bloom: Mar–Jul (Aug).	Suitable habitat occurs in the project area; the project area contains mesic areas and streambanks. This species is known to occur on HRC land near the project area. This species was not detected during 2018 surveys, suitable habitat is present in 2019 survey areas.

Species	Status ¹ (Federal/ State/CRPR)	General Habitat Description and Blooming Period	Potential to Occur within Project Area
Purdy's fritillary (<i>Fritillaria purdyi</i>)	NL/NL/4.3	Usually serpentinite. Chaparral, cismontane woodland, lower montane coniferous forest. Elevation: 570-7,400 feet. Bloom: Mar–June.	Suitable habitat does not occur in the project area; serpentinite substrates are not present in the project area. This species was not detected during 2018 surveys, suitable habitat is not present in 2019 survey areas.
Pacific gilia (<i>Gilia capitata</i> ssp. <i>pacifica</i>)	NL/NL/1B.2	Coastal bluff scrub, chaparral (openings), coastal prairie, valley and foothill grassland. Elevation: 20–1,300 feet. Bloom: Apr–Aug.	Suitable habitat occurs in the project area; the project area contains grassland habitats. This species was detected on Monument Ridge and on the Highway 101-Monument Ridge gen-tie segment during 2018 surveys.
dark-eyed gilia (<i>Gilia millefoliata</i>)	NL/NL/1B.2	Coastal dunes. Elevation: 0–100 feet. Bloom: Apr–Jul.	Suitable habitat does not occur in the project area; the project area does not contain coastal dunes. This species was not detected during 2018 surveys, suitable habitat is not present in 2019 survey areas.
American manna grass (<i>Glyceria grandis</i>)	NL/NL/2B.3	Bogs and fens, meadows and seeps, marshes and swamps (streambanks and lake margins). Elevation: 50–6,490 feet. Bloom: Jun–Aug.	Suitable habitat occurs in the project area; the project area contains mesic areas and streambanks. This species was not detected during 2018 surveys, suitable habitat is present in 2019 survey areas.
Tracy's tarplant (<i>Hemizonia congesta</i> ssp. <i>tracyi</i>)	NL/NL/4.3	Coastal prairie, lower montane coniferous forest, North Coast coniferous forest/openings, sometimes serpentinite. Elevation: 390–3,940 feet. Bloom: May–Oct.	Suitable habitat occurs in the project area; the project area contains coastal prairie and other open grassland habitats. This species was detected on Bear River and Monument ridges during 2018 surveys.
short-leaved evax (<i>Hesperovax sparsiflora</i> var. <i>brevifolia</i>)	NL/NL/1B.2	Coastal bluff scrub (sandy), coastal dunes, coastal prairie. Elevation: 0–710 feet. Bloom: Mar–Jun.	Suitable habitat occurs in the project area; the project area contains coastal prairie. This species was detected on Bear River Ridge during 2018 surveys.

Species	Status ¹ (Federal/ State/CRPR)	General Habitat Description and Blooming Period	Potential to Occur within Project Area
glandular western flax (<i>Hesperolinon adenophyllum</i>)	NL/NL/1B.2	Chaparral, cismontane woodland, valley and foothill grassland/usually serpentinite. Elevation: 490–4,310 feet. Bloom: May–Aug.	Suitable habitat does not occur in the project area; serpentine substrates are not present in the project area. This species was not detected during 2018 surveys, suitable habitat is not present in 2019 survey areas.
harlequin lotus (<i>Hosackia gracilis</i>)	NL/NL/4.2	Broadleaf upland forest, coastal bluff scrub, closed-cone coniferous forest, cismontane woodland, coastal prairie, coastal scrub, meadows and seeps, marshes and swamps, North Coast coniferous forest, valley and foothill grassland/wetlands, roadsides. Elevation: 0–2,300 feet. Bloom: Mar–Jul.	Suitable habitat occurs in the project area; the project area contains mesic areas in woodland, prairie, and North Coast coniferous forest. This species was not detected during 2018 surveys, suitable habitat is present in 2019 survey areas.
California globe mallow (<i>Iliamna latibracteata</i>)	NL/NL/1B.2	Chaparral (montane), lower montane coniferous forest, North Coast coniferous forest (mesic), riparian scrub (streambanks), often in burned areas. Elevation: 200–6,560 feet. Bloom: Jun–Aug.	Suitable habitat occurs in the project area; the project area contains streambanks and mesic areas in North Coast coniferous forest. This species was not detected during 2018 surveys, suitable habitat is present in 2019 survey areas.
coast iris (<i>Iris longipetala</i>)	NL/NL/4.2	Coastal prairie, lower montane coniferous forest, meadows and seeps/mesic. Elevation: 0–1,970 feet. Bloom: Mar–May.	Suitable habitat occurs in the project area; the project area contains coastal prairie and other mesic grassland habitats. This species was not detected during 2018 surveys, suitable habitat is present in 2019 survey areas.
small groundcone (<i>Kopsiopsis hookeri</i>)	NL/NL/2B.3	North Coast coniferous forest. Elevation: 300–2,900 feet. Bloom: Apr–Aug.	Suitable habitat occurs in the project area; the project area contains North Coast coniferous forest. This species was not detected during 2018 surveys, suitable habitat is present in 2019 survey areas.

Species	Status ¹ (Federal/ State/CRPR)	General Habitat Description and Blooming Period	Potential to Occur within Project Area
sticky pea (<i>Lathyrus glandulosus</i>)	NL/NL/4.3	Cismontane woodland. Elevation: 980–2,620 feet. Bloom: Apr–Jun.	Suitable habitat occurs in the project area; the project area contains cismontane woodland. This species was not detected during 2018 surveys, suitable habitat is present in 2019 survey areas.
beach layia (<i>Layia carnosa</i>)	FE/SE/1B.1	Coastal dunes or sandy coastal scrub. Elevation: 0–200 feet. Bloom: Mar–Jul.	Suitable habitat does not occur in the project area; the project area does not contain coastal dunes or sandy coastal scrub habitats. This species was not detected during 2018 surveys, suitable habitat is not present in 2019 survey areas.
bristly leptosiphon (<i>Leptosiphon acicularis</i>)	NL/NL/4.2	Chaparral, cismontane woodland, coastal prairie, valley and foothill grassland. Elevation: 180–4,920 feet. Bloom: Apr–Jul.	Suitable habitat occurs in the project area; the project area contains coastal prairies and other grassland habitats. This species was not detected during 2018 surveys, suitable habitat is present in 2019 survey areas.
Kellogg's lily (<i>Lilium kelloggii</i>)	NL/NL/4.3	Lower montane coniferous forest, North Coast coniferous forest/openings, roadsides. Elevation: 10–4,260 feet. Bloom: May–Aug.	Suitable habitat occurs in the project area; the project area contains openings and roadsides in North Coast coniferous forest. This species was not detected during 2018 surveys, suitable habitat is present in 2019 survey areas.
western lily (<i>Lilium occidentale</i>)	FE/SE/1B.1	Bogs and fens, coastal bluff scrub, coastal prairie, coastal scrub, marshes and swamps (freshwater), North Coast coniferous forest dominated by Sitka spruce or shore pine. Elevation: 10–610 feet. Bloom: Jun–Jul.	Suitable habitat does not occur in the project area; the project area does not contain bogs, fens, or suitable North Coast coniferous forest dominated by Sitka spruce or shore pine. This species was not detected during 2018 surveys, suitable habitat is not present in 2019 survey areas.
redwood lily (<i>Lilium rubescens</i>)	NL/NL/4.2	Broadleaf upland forest, chaparral, lower montane coniferous forest, North Coast coniferous forest, upper montane coniferous forest/sometimes serpentinite, sometimes roadsides. Elevation: 100–6,260 feet. Bloom: Apr–Aug (Sep).	Suitable habitat occurs in the project area; the project area contains openings in North Coast coniferous forest. This species was detected on Monument Ridge during 2018 surveys.

Species	Status ¹ (Federal/ State/CRPR)	General Habitat Description and Blooming Period	Potential to Occur within Project Area
purple-flowered Washington lily (<i>Lilium washingtonianum</i> ssp. <i>purpurascens</i>)	NL/NL/4.3	Chaparral, lower montane coniferous forest, upper montane coniferous forest/often serpentine. Elevation: 230–9,020 feet. Bloom: Jun–Aug.	Suitable habitat occurs in the project area, but the project area is outside of the known geographic range of this species. This species was not detected during 2018 surveys, suitable habitat is not present in 2019 survey areas.
heart-leaved twayblade (<i>Listera cordata</i>)	NL/NL/4.2	Bogs and fens, lower montane coniferous forest, North Coast coniferous forest. Elevation: 20–4,490 feet. Bloom: Feb–Jul.	Suitable habitat occurs in the project area; the project area contains North Coast coniferous forest. This species was detected on Bear River, Monument, and Shively ridges during 2018 surveys.
running-pine (<i>Lycopodium clavatum</i>)	NL/NL/4.1	Lower montane coniferous forest (mesic), marshes and swamps, North Coast coniferous forest (mesic)/often edges, openings, and roadsides. Elevation: 150–4,020 feet. Bloom: Jun–Aug (Sep).	Suitable habitat occurs in the project area; the project area contains North Coast coniferous forest. This species was detected on Shively Ridge during 2018 surveys.
northern bugleweed (<i>Lycopus uniflorus</i>)	NL/NL/4.3	Bogs and fens, marshes and swamps. Elevation: 20–6,560 feet. Bloom: Jul–Sep.	Suitable habitat does not occur in the project area; the project area does not contain any bogs, fens, or marshes. This species was not detected during 2018 surveys, suitable habitat is not present in 2019 survey areas.
Marshall's saxifrage (<i>Micranthes marshallii</i>)	NL/NL/4.3	Riparian forest/rocky streambanks. Elevation: 300–6,990 feet. Bloom: Mar–Aug.	Suitable habitat occurs in the project area; the project area contains rocky streambanks. This species was not detected during 2018 surveys, suitable habitat is present in 2019 survey areas.
leafy-stemmed mitrewort (<i>Mitellastrum caulescens</i>)	NL/NL/4.2	Broadleaf upland forest, lower montane coniferous forest, meadows and seeps, North Coast coniferous forest/mesic, sometimes roadsides. Elevation: 20–5,580 feet. Bloom: (Mar), Apr–Oct.	Suitable habitat occurs in the project area; the project area contains streambanks and other mesic habitats in North Coast coniferous forest. This species was detected along Greenlow Creek during 2018 surveys.

Species	Status ¹ (Federal/ State/CRPR)	General Habitat Description and Blooming Period	Potential to Occur within Project Area
woodnymph (<i>Moneses uniflora</i>)	NL/NL/2B.2	Broadleaf upland forest, North Coast coniferous forest. Elevation: 330–3,610 feet. Bloom: May–Aug.	Suitable habitat occurs in the project area; the project area contains North Coast coniferous forest. This species was not detected during 2018 surveys, suitable habitat is present in 2019 survey areas.
ghost-pipe (<i>Monotropa uniflora</i>)	NL/NL/2B.2	Broadleaf upland forest, North Coast coniferous forest. Elevation: 30–1,800 feet. Bloom: Jun–Aug (Sep).	Suitable habitat occurs in the project area; the project area contains North Coast coniferous forest. This species was not detected during 2018 surveys, suitable habitat is present in 2019 survey areas.
Howell's montia (<i>Montia howellii</i>)	NL/NL/2B.2	Meadows and seeps, North Coast coniferous forest, vernal pools/vernally mesic, sometimes roadsides. Elevation: 0–2,740 feet. Bloom: (Feb), Mar–May.	Suitable habitat occurs in the project area; the project area contains seasonally wet roadbeds and other mesic habitats in North Coast coniferous forest. This species was detected near Monument Ridge and on the 101-Monument Ridge gen-tie segment during 2018 surveys.
Kneeland Prairie pennycress (<i>Noccaea fendleri</i> ssp. <i>californica</i>)	FE/NL/1B.1	Coastal prairie (serpentine). Elevation: 2,490–2,670 feet. Bloom: May–Jun.	Suitable habitat does not occur in the project area; serpentine substrates are not present in the project area. This species was not detected during 2018 surveys, suitable habitat is not present in 2019 survey areas.
Wolf's evening-primrose (<i>Oenothera wolfii</i>)	NL/NL/1B.1	Coastal bluff scrub, coastal dunes, coastal prairie, lower montane coniferous forest/sandy, usually mesic. Elevation: 10–2,620 feet. Bloom: May–Oct.	Suitable habitat occurs in the project area; the project area contains mesic areas in coastal prairie. This species was not detected during 2018 surveys, suitable habitat is present in 2019 survey areas.

Species	Status ¹ (Federal/ State/CRPR)	General Habitat Description and Blooming Period	Potential to Occur within Project Area
Suksdorf's wood-sorrel (<i>Oxalis suksdorfii</i>)	NL/NL/4.3	Broadleaf upland forest, North Coast coniferous forest. Elevation: 50–2,300 feet. Bloom: May–Aug.	Suitable habitat occurs in the project area; the project area contains North Coast coniferous forest. This species was not detected during 2018 surveys, suitable habitat is present in 2019 survey areas.
seacoast ragwort (<i>Packera bolanderi</i> var. <i>bolanderi</i>)	NL/NL/2B.2	Coastal scrub, North Coast coniferous forest/sometimes roadsides. Elevation: 100–2,130 feet. Bloom: (Jan), (Feb), (Apr), May–Jul (Aug).	Suitable habitat occurs in the project area; the project area contains North Coast coniferous forest. This species is known to occur near the project area on HRC land. This species was not detected during 2018 surveys, suitable habitat is present in 2019 survey areas.
white-flowered rein orchid (<i>Piperia candida</i>)	NL/NL/1B.2	Broadleaf upland forest, lower montane coniferous forest, North Coast coniferous forest/sometimes serpentinite. Elevation: 100–4,300 feet. Bloom: (Mar), May–Sep.	Suitable habitat occurs in the project area; the project area contains North Coast coniferous forest. This species is known to occur near the project area south of Monument Ridge. This species was not detected during 2018 surveys, suitable habitat is present in 2019 survey areas.
Michael's rein orchid (<i>Piperia michaelii</i>)	NL/NL/4.2	Coastal bluff scrub, Closed-cone coniferous forest, chaparral, cismontane woodland, coastal scrub, lower montane coniferous forest. Elevation: 10–3,000 feet. Bloom: Apr–Aug.	Suitable habitat occurs in the project area; the project area contains cismontane woodland. This species was not detected during 2018 surveys, suitable habitat is present in 2019 survey areas.
California pinefoot (<i>Pityopus californicus</i>)	NL/NL/4.2	Broadleaf upland forest, lower montane coniferous forest, North Coast coniferous forest, upper montane coniferous forest/mesic. Elevation: 50–7,300 feet. Bloom: (Mar), (Apr), May–Aug.	Suitable habitat occurs in the project area; the project area contains mesic areas in North Coast coniferous forest. This species was detected on eastern Monument Ridge during 2018 surveys.

Species	Status ¹ (Federal/ State/CRPR)	General Habitat Description and Blooming Period	Potential to Occur within Project Area
nodding semaphore grass (<i>Pleuropogon refractus</i>)	NL/NL/4.2	Lower montane coniferous forest, meadows and seeps, North Coast coniferous forest, riparian forest/Mesic. Elevation: 0–5,250 feet. Bloom: (Mar), Apr–Aug.	Suitable habitat occurs in the project area; the project area contains seeps and other mesic areas in North Coast coniferous forest. This species was detected on Bear River and Monument ridges, and along the Highway 101-Monument Ridge gen-tie segment during 2018 surveys.
Oregon polemonium (<i>Polemonium carneum</i>)	NL/NL/2B.2	Coastal prairie, coastal scrub, lower montane coniferous forest. Elevation: 0–6,000 feet. Bloom: Apr–Sep.	Suitable habitat occurs in the project area; the project area contains mesic areas in coastal prairie habitat. This species is recorded in the CNDDDB as occurring on Bear River Ridge.
trailing black currant (<i>Ribes laxiflorum</i>)	NL/NL/4.3	North Coast coniferous forest/sometimes roadside. Elevation: 20–4,580 feet. Bloom: Mar–Jul (Aug).	Suitable habitat occurs in the project area; the project area contains North Coast coniferous forest. This species was not detected during 2018 surveys, suitable habitat is present in 2019 survey areas.
hoary gooseberry (<i>Ribes roezlii</i> var. <i>amictum</i>)	NL/NL/4.3	Broadleaf upland forest, cismontane woodland, lower and upper montane forest. Elevation: 30–7,500 feet. Bloom: Mar–Apr.	Suitable habitat occurs in the project area; the project area contains broadleaf upland forest and cismontane woodland. This species is known to occur in the project area in the Western Monument Ridge project segment. This species was detected on western Monument Ridge during 2018 surveys.
great burnet (<i>Sanguisorba officinalis</i>)	NL/NL/2B.2	Bogs and fens, broadleaf upland forest, meadows and seeps, marshes and swamps, North Coast coniferous forest, riparian forest/often serpentinite. Elevation: 200–4,590 feet. Bloom: Jul–Oct.	Suitable habitat occurs in the project area; the project area contains riparian and other mesic areas in North Coast coniferous forest. This species was not detected during 2018 surveys, suitable habitat is present in 2019 survey areas.
Tracy's sanicle (<i>Sanicula tracyi</i>)	NL/NL/4.2	Openings in cismontane woodland, lower montane coniferous forest, or upper montane coniferous forest. Elevation: 330–5,200 feet. Bloom: Apr–Jul.	Suitable habitat occurs in the project area; the project area contains openings in cismontane woodland. This species was not detected during 2018 surveys, suitable habitat is present in 2019 survey areas.

Species	Status ¹ (Federal/ State/CRPR)	General Habitat Description and Blooming Period	Potential to Occur within Project Area
maple-leaved checkerbloom (<i>Sidalcea malachroides</i>)	NL/NL/4.2	Broadleaf upland forest, coastal prairie, coastal scrub, North Coast coniferous forest, riparian woodland/often in disturbed areas. Elevation: 0–2,390 feet. Bloom: (Mar), Apr–Aug.	Suitable habitat occurs in the project area; the project area contains disturbed North Coast coniferous forest and prairie habitats. This species was detected on eastern Monument Ridge during 2018 surveys.
Siskiyou checkerbloom (<i>Sidalcea malviflora</i> ssp. <i>patula</i>)	NL/NL/1B.2	Coastal bluff scrub, coastal prairie, North Coast coniferous forest/often roadcuts. Elevation: 50–2,890 feet. Bloom: May–Aug.	Suitable habitat occurs in the project area; the project area contains coastal prairie and North Coast coniferous forest. This species was detected on Bear River Ridge during 2018 surveys.
coast checkerbloom (<i>Sidalcea oregana</i> ssp. <i>eximia</i>)	NL/NL/1B.2	Lower montane coniferous forest, meadows and seeps, North Coast coniferous forest. Elevation: 20–4,400 feet. Bloom: Jun–Aug.	Suitable habitat occurs in the project area; the project area contains mesic grassland and North Coast coniferous forest. This species was not detected during 2018 surveys, suitable habitat is present in 2019 survey areas.
Hitchcock's blue-eyed grass (<i>Sisyrinchium hitchcockii</i>)	NL/NL/1B.1	Cismontane woodland (openings), valley and foothill grassland. Elevation: 1,000 feet. Bloom: Jun.	Suitable habitat occurs in the project area; the project area contains coastal prairie and grassland habitats. This species was not detected during 2018 surveys, suitable habitat is present in 2019 survey areas.
slender false lupine (<i>Thermopsis gracilis</i>)	NL/NL/4.3	Chaparral, cismontane woodland, lower montane coniferous forest, meadows and seeps, North Coast coniferous forest/sometimes roadsides. Elevation: 330–5,640 feet. Bloom: Mar–Jul.	Suitable habitat occurs in the project area; the project area contains North Coast coniferous forest. This species was not detected during 2018 surveys, suitable habitat is present in 2019 survey areas.
robust false lupine (<i>Thermopsis robusta</i>)	NL/NL/1B.2	Broadleaf upland forest, North Coast coniferous forest. Elevation: 490–4,920 feet. Bloom: May–Jul.	Suitable habitat occurs in the project area; the project area contains North Coast coniferous forest. This species was not detected during 2018 surveys, suitable habitat is present in 2019 survey areas.

Species	Status ¹ (Federal/ State/CRPR)	General Habitat Description and Blooming Period	Potential to Occur within Project Area
trifoliolate laceflower (<i>Tiarella trifoliata</i> var. <i>trifoliata</i>)	NL/NL/3.2	Lower montane coniferous forest, North Coast coniferous forest/edges, moist shady banks, streambanks. Elevation: 560–4,920 feet. Bloom: (May), Jun–Aug.	Suitable habitat occurs in the project area; the project area contains streambanks and other mesic habitats in North Coast coniferous forest. This species was not detected during 2018 surveys, suitable habitat is present in 2019 survey areas.
beaked tracyina (<i>Tracyina rostrata</i>)	NL/NL/1B.2	Chaparral, cismontane woodland, valley and foothill grassland. Elevation: 300–2,590 feet. Bloom: May–Jun.	Suitable habitat occurs in the project area; the project area contains cismontane and grassland habitats. This species was not detected during 2018 surveys, suitable habitat is present in 2019 survey areas.
Humboldt County wyethia (<i>Wyethia longicaulis</i>)	NL/NL/4.3	Broadleaf upland forest, coastal prairie, lower montane coniferous forest/sometimes roadsides. Elevation: 2,460–5,000 feet. Bloom: May–Jul.	Suitable habitat occurs in the project area; the project area contains coastal prairie and forest habitats. This species was not detected during 2018 surveys, suitable habitat is present in 2019 survey areas.
¹ <u>Federal Status Codes:</u> FE = Federally Endangered Species; NL = Not Listed <u>State Status Codes:</u> SE = State Endangered Species; SR = State Rare Species; NL = Not Listed <u>California Rare Plant Rank Codes and Threat Ranks:</u> 1B Plants rare, threatened, or endangered in California and elsewhere. 2B Plants rare, threatened, or endangered in California, but more common elsewhere. 3 Plants about which more information is needed—a review list. 4 Plants of limited distribution—a watch list. 0.1 Seriously endangered in California 0.2 Fairly endangered in California 0.3 Not very endangered in California			

Appendix B PLANT SPECIES OBSERVED

Table B-1. Plant Species Observed in the Humboldt Wind Energy Project Area During 2018 Botanical Field Surveys

Scientific Name	Common Name	Family	Cal-IPC Status
<i>Abies grandis</i>	grand fir	Pinaceae	-
<i>Acer circinatum</i>	vine maple	Sapindaceae	-
<i>Acer macrophyllum</i>	bigleaf maple	Sapindaceae	-
<i>Achillea millefolium</i>	yarrow	Asteraceae	-
<i>Achlys californica</i>	California deer foot	Berberidaceae	-
<i>Acmispon americanus</i> var. <i>americanus</i>	Spanish lotus	Fabaceae	-
<i>Acmispon parviflorus</i>	hill lotus	Fabaceae	-
<i>Acmispon wrangelianus</i>	Chilean trefoil	Fabaceae	-
<i>Actaea rubra</i>	baneberry	Ranunculaceae	-
<i>Adenocaulon bicolor</i>	trail plant	Asteraceae	-
<i>Adiantum aleuticum</i>	five finger maidenhair	Pteridaceae	-
<i>Agrostis exarata</i>	bentgrass	Poaceae	-
<i>Agrostis hallii</i>	Hall's bent grass	Poaceae	-
<i>Agrostis pallens</i>	Diego bent grass	Poaceae	-
* <i>Aira caryophyllea</i>	silvery hairgrass	Poaceae	-
* <i>Aira praecox</i>	yellow hairgrass	Poaceae	-
<i>Allium unifolium</i>	one leaf onion	Alliaceae	-
<i>Alnus rubra</i>	red alder	Betulaceae	-
<i>Alopecurus saccatus</i>	foxtail	Poaceae	-
<i>Amelanchier alnifolia</i> var. <i>semiintegrifolia</i>	service berry	Rosaceae	-
<i>Anaphalis margaritacea</i>	pearly everlasting	Asteraceae	-
<i>Anisocarpus madioides</i>	woodland madia	Asteraceae	-
<i>Anthoxanthum occidentale</i>	California sweet grass	Poaceae	-
* <i>Anthoxanthum odoratum</i>	sweet vernal grass	Poaceae	Moderate
* <i>Anthriscus caucalis</i>	bur chevril	Apiaceae	-
<i>Aphanes occidentalis</i>	ladie's mantle	Rosaceae	-
<i>Apocynum androsaemifolium</i>	spreading dogbane	Apocynaceae	-
<i>Aquilegia formosa</i>	columbine	Ranunculaceae	-
<i>Aralia californica</i>	California spikenard	Araliaceae	-
<i>Arbutus menziesii</i>	madrone	Ericaceae	-
* <i>Arctium minus</i>	common burdock	Asteraceae	-
<i>Arctostaphylos columbiana</i>	redwood manzanita	Ericaceae	-
* <i>Arrhenatherum elatius</i>	tall oatgrass	Poaceae	-
<i>Artemisia douglasiana</i>	California mugwort	Asteraceae	-
* <i>Arum italicum</i>	Italian lords and ladies	Araceae	-

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<i>Asarum caudatum</i>	creeping wild ginger	Aristolochiaceae	-
<i>Athyrium filix-femina</i> var. <i>cyclosorum</i>	western lady fern	Woodsiaceae	-
* <i>Avena fatua</i>	wild oats	Poaceae	Moderate
<i>Baccharis pilularis</i> ssp. <i>consanguinea</i>	coyote brush	Asteraceae	-
* <i>Barbarea verna</i>	wintercress	Brassicaceae	-
* <i>Bellis perennis</i>	English lawn daisy	Asteraceae	-
<i>Berberis aquifolium</i> var. <i>aquifolium</i>	Oregon grape	Berberidaceae	-
<i>Berberis nervosa</i>	Oregon grape	Berberidaceae	-
<i>Blechnum spicant</i>	deer fern	Blechnaceae	-
<i>Boykinia occidentalis</i>	western boykinia	Saxifragaceae	-
* <i>Brassica nigra</i>	black mustard	Brassicaceae	Moderate
* <i>Briza maxima</i>	rattlesnake grass	Poaceae	Limited
* <i>Briza minor</i>	little rattlesnake grass	Poaceae	-
<i>Brodiaea elegans</i> ssp. <i>elegans</i>	harvest brodiaea	Themidaceae	-
<i>Bromus carinatus</i> var. <i>carinatus</i>	California brome	Poaceae	-
<i>Bromus carinatus</i> var. <i>marginatus</i>	mountain brome	Poaceae	-
* <i>Bromus diandrus</i>	ripgut brome	Poaceae	Moderate
* <i>Bromus hordeaceus</i>	soft chess	Poaceae	Limited
<i>Bromus laevipes</i>	narrow flowered brome	Poaceae	-
* <i>Bromus sterilis</i>	sterile brome	Poaceae	-
<i>Bromus vulgaris</i>	common brome	Poaceae	-
<i>Calandrinia menziesii</i>	red maids	Montiaceae	-
* <i>Callitriche stagnalis</i>	pond water starwort	Plantaginaceae	-
<i>Calochortus tolmiei</i>	hairy star tulip	Liliaceae	-
<i>Calypso bulbosa</i> var. <i>occidentalis</i>	fairy slipper	Orchidaceae	-
<i>Camassia quamash</i> ssp. <i>breviflora</i>	small camas	Agavaceae	-
<i>Cardamine californica</i>	bitter cress	Brassicaceae	-
<i>Cardamine nuttallii</i>	Nuttall's toothwort	Brassicaceae	-
<i>Cardamine oligosperma</i>	Idaho bittercress	Brassicaceae	-
* <i>Carduus pycnocephalus</i> ssp. <i>pycnocephalus</i>	Italian thistle	Asteraceae	-
* <i>Carduus tenuiflorus</i>	slender flowered thistle	Asteraceae	Limited
<i>Carex athrostachya</i>	slender leaved sedge	Cyperaceae	-
<i>Carex cusickii</i>	Cusick's sedge	Cyperaceae	-
<i>Carex globosa</i>	round fruit sedge	Cyperaceae	-
<i>Carex gynodynamis</i>	Olney's hairy sedge	Cyperaceae	-

Scientific Name	Common Name	Family	Cal-IPC Status
<i>Carex hendersonii</i>	Henderson's sedge	Cyperaceae	-
<i>Carex leptopoda</i>	slender-footed sedge	Cyperaceae	-
<i>Carex nudata</i>	torrent sedge	Cyperaceae	-
<i>Carex obnupta</i>	slough sedge	Cyperaceae	-
<i>Carex praegracilis</i>	field sedge	Cyperaceae	-
<i>Carex rossii</i>	Ross' sedge	Cyperaceae	-
<i>Carex tumulicola</i>	split awn sedge	Cyperaceae	-
<i>Castilleja attenuata</i>	narrow leaved owl's clover	Orobanchaceae	-
<i>Ceanothus incanus</i>	coast whitethorn	Rhamnaceae	-
<i>Ceanothus integerrimus</i> var. <i>macrothyrsus</i>	deerbrush	Rhamnaceae	-
<i>Ceanothus parryi</i>	Parry ceanothus	Rhamnaceae	-
<i>Ceanothus thyrsiflorus</i> var. <i>thyrsiflorus</i>	blue blossom	Rhamnaceae	-
<i>Ceanothus velutinus</i>	tobacco brush, snowbrush	Rhamnaceae	-
* <i>Centaurea melitensis</i>	toocalote	Asteraceae	Moderate
* <i>Centaurea stoebe</i> ssp. <i>micranthos</i>	spotted knapweed	Asteraceae	High
* <i>Centaurium erythraea</i>	European centauray	Gentianaceae	-
<i>Cephalanthera austiniiae</i>	phantom orchid	Orchidaceae	-
<i>Cerastium arvense</i> ssp. <i>strictum</i>	field chickweed	Caryophyllaceae	-
* <i>Cerastium glomeratum</i>	large mouse ears	Caryophyllaceae	-
<i>Cerastium viride</i>	field chickweed	Caryophyllaceae	-
<i>Chimaphila umbellata</i>	Blake's prince's pine	Ericaceae	-
<i>Chlorogalum pomeridianum</i> var. <i>pomeridianum</i>	common soaproot	Agavaceae	-
<i>Chrysosplenium</i> <i>glechomifolium</i>	Pacific golden saxifrage	Saxifragaceae	-
* <i>Cichorium intybus</i>	chicory	Asteraceae	-
<i>Circaea alpina</i> ssp. <i>pacifica</i>	Pacific enchanter's nightshade	Onagraceae	-
* <i>Cirsium arvense</i>	Canada thistle	Asteraceae	Moderate
* <i>Cirsium vulgare</i>	bullthistle	Asteraceae	Moderate
<i>Clarkia amoena</i> ssp. <i>huntiana</i>	farewell to spring	Onagraceae	-
<i>Clarkia purpurea</i>	purple clarkia	Onagraceae	-
<i>Claytonia parviflora</i> ssp. <i>parviflora</i>	miner's lettuce	Montiaceae	-
<i>Claytonia perfoliata</i> ssp. <i>intermontana</i>	miner's lettuce	Montiaceae	-
<i>Claytonia perfoliata</i> ssp. <i>perfoliata</i>	claytonia	Montiaceae	-
<i>Claytonia sibirica</i>	candy flower	Montiaceae	-
<i>Clinopodium douglasii</i>	yerba buena	Lamiaceae	-

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<i>Clintonia andrewsiana</i>	red clintonia	Liliaceae	-
<i>Collinsia sparsiflora</i>	few flowered collinsia	Plantaginaceae	-
<i>Collomia heterophylla</i>	varied leaved collomia	Polemoniaceae	-
* <i>Conium maculatum</i>	poison hemlock	Apiaceae	Moderate
<i>Corallorhiza maculata</i>	summer coral root	Orchidaceae	-
<i>Corallorhiza mertensiana</i>	Merten's coral root	Orchidaceae	-
* <i>Cortaderia jubata</i>	Andean pampas grass	Poaceae	High
<i>Corylus cornuta</i> ssp. <i>californica</i>	beaked hazelnut	Betulaceae	-
* <i>Cotoneaster</i> sp.	cotoneaster	Rosaceae	-
<i>Crassula connata</i>	sand pygmy weed	Crassulaceae	-
* <i>Crepis capillaris</i>	smooth hawksbeard	Asteraceae	-
<i>Cynoglossum grande</i>	houndstongue	Boraginaceae	-
* <i>Cynosurus cristatus</i>	crested dogtail grass	Poaceae	-
* <i>Cynosurus echinatus</i>	dogtail grass	Poaceae	Moderate
<i>Cyperus eragrostis</i>	tall cyperus	Cyperaceae	-
<i>Cystopteris fragilis</i>	brittle fern	Woodsiaceae	-
* <i>Cytisus scoparius</i>	scotch broom	Fabaceae	High
* <i>Dactylis glomerata</i>	orchardgrass	Poaceae	Limited
<i>Danthonia californica</i>	California oatgrass	Poaceae	-
<i>Darmera peltata</i>	umbrella plant	Saxifragaceae	-
* <i>Daucus carota</i>	carrot	Apiaceae	-
<i>Daucus pusillus</i>	wild carrot	Apiaceae	-
<i>Delphinium</i> sp.	larkspur	Ranunculaceae	-
<i>Deschampsia cespitosa</i>	tufted hair grass	Poaceae	-
<i>Deschampsia elongata</i>	hairgrass	Poaceae	-
<i>Dicentra formosa</i>	Pacific bleedinghearts	Papaveraceae	-
<i>Dichelostemma capitatum</i> ssp. <i>capitatum</i>	wild hyacinth	Themidaceae	-
<i>Dichelostemma ida-maia</i>	firecracker flower	Themidaceae	-
* <i>Digitalis purpurea</i>	foxglove	Plantaginaceae	Limited
* <i>Dipsacus fullonum</i>	wild teasel	Dipsacaceae	Moderate
<i>Draba verna</i>	whitlow grass	Brassicaceae	-
<i>Drymocallis</i> sp.	cinquefoil	Rosaceae	-
* <i>Dysphania botrys</i>	Jerusalem oak goosefoot	Chenopodiaceae	-
<i>Eleocharis</i> sp.	spike rush	Cyperaceae	-
* <i>Elymus caput-medusae</i>	medusa head	Poaceae	High
<i>Elymus glaucus</i> ssp. <i>glaucus</i>	blue wild rye	Poaceae	-
<i>Epilobium ciliatum</i>	slender willow herb	Onagraceae	-

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<i>Epilobium ciliatum</i> ssp. <i>glandulosum</i>	glandular willowherb	Onagraceae	-
<i>Epilobium</i> sp.	willowherb	Onagraceae	-
<i>Equisetum arvense</i>	common horsetail	Equisetaceae	-
<i>Equisetum telmateia</i> ssp. <i>braunii</i>	giant horsetail	Equisetaceae	-
<i>Erigeron canadensis</i>	canada horseweed	Asteraceae	-
<i>Erigeron philadelphicus</i> var. <i>philadelphicus</i>	Philadelphia fleabane	Asteraceae	-
<i>Erigeron</i> sp.	fleabane	Asteraceae	-
<i>Eriogonum latifolium</i>	coast buckwheat	Polygonaceae	-
<i>Eriogonum nudum</i>	naked buckwheat	Polygonaceae	-
<i>Eriophyllum lanatum</i> var. <i>arachnoideum</i>	wooly sunflower	Asteraceae	-
* <i>Erodium botrys</i>	big heron bill	Geraniaceae	-
* <i>Erodium cicutarium</i>	coastal heron's bill	Geraniaceae	Limited
<i>Eschscholzia californica</i>	California poppy	Papaveraceae	-
* <i>Euchiton gymnocephalus</i>	creeping cudweed	Asteraceae	-
* <i>Euphorbia maculata</i>	spotted spurge	Euphorbiaceae	-
* <i>Festuca arundinacea</i>	reed fescue	Poaceae	Moderate
<i>Festuca californica</i>	California fescue	Poaceae	-
<i>Festuca idahoensis</i>	blue fescue	Poaceae	-
<i>Festuca microstachys</i>	small fescue	Poaceae	-
* <i>Festuca myuros</i>	rattail sixweeks grass	Poaceae	-
<i>Festuca occidentalis</i>	western fescue	Poaceae	-
* <i>Festuca perennis</i>	perennial rye grass	Poaceae	-
<i>Festuca subuliflora</i>	coast range fescue	Poaceae	-
* <i>Foeniculum vulgare</i>	fennel	Apiaceae	High
<i>Fragaria vesca</i>	wild strawberry	Rosaceae	-
<i>Frangula purshiana</i> ssp. <i>purshiana</i>	cascara sagrada	Rhamnaceae	-
<i>Fraxinus latifolia</i>	Oregon ash	Oleaceae	-
<i>Fritillaria affinis</i>	checker lily	Liliaceae	-
<i>Galium aparine</i>	cleavers	Rubiaceae	-
<i>Galium californicum</i> ssp. <i>californicum</i>	California bedstraw	Rubiaceae	-
* <i>Galium parisiense</i>	wall bedstraw	Rubiaceae	-
<i>Galium porrigens</i> var. <i>porrigens</i>	graceful bedstraw	Rubiaceae	-
* <i>Gamochaeta coarctata</i>	gray everlasting	Asteraceae	-
<i>Gamochaeta ustulata</i>	featherweed	Asteraceae	-
* <i>Gastridium phleoides</i>	nit grass	Poaceae	-
<i>Gaultheria shallon</i>	salal	Ericaceae	-

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* <i>Genista monspessulana</i>	French broom	Fabaceae	High
* <i>Geranium dissectum</i>	wild geranium	Geraniaceae	Limited
* <i>Geranium molle</i>	crane's bill geranium	Geraniaceae	-
* <i>Geranium purpureum</i>	herb robert	Geraniaceae	-
<i>Gilia capitata</i> ssp. <i>pacifica</i>	Pacific gilia	Polemoniaceae	-
* <i>Glyceria declinata</i>	waxy mannagrass	Poaceae	Moderate
<i>Gnaphalium palustre</i>	lowland cudweed	Asteraceae	-
<i>Goodyera oblongifolia</i>	rattlesnake plantain	Orchidaceae	-
<i>Gratiola ebracteata</i>	common hedge hyssop	Plantaginaceae	-
<i>Grindelia camporum</i>	gumweed	Asteraceae	-
* <i>Hedera helix</i>	English ivy	Araliaceae	-
* <i>Helenium amarum</i> var. <i>amarum</i>	yellowdicks	Asteraceae	-
<i>Helenium puberulum</i>	sneezeweed	Asteraceae	-
* <i>Helminthotheca echioides</i>	bristly ox-tongue	Asteraceae	-
<i>Hemizonella minima</i>	opposite leaved tarweed	Asteraceae	-
<i>Hemizonia congesta</i> ssp. <i>tracyi</i>	Tracy's tarplant	Asteraceae	-
<i>Heracleum maximum</i>	common cowparsnip	Apiaceae	-
<i>Hesperevax sparsiflora</i> var. <i>brevifolia</i>	short-leaved evax	Asteraceae	-
<i>Heuchera micrantha</i>	alum root	Saxifragaceae	-
<i>Hieracium albiflorum</i>	white flowered hawkweed	Asteraceae	-
* <i>Holcus lanatus</i>	common velvetgrass	Poaceae	Moderate
<i>Holodiscus discolor</i> var. <i>discolor</i>	oceanspray	Rosaceae	-
* <i>Hordeum marinum</i> ssp. <i>gussoneanum</i>	barley	Poaceae	-
* <i>Hordeum murinum</i>	foxtail barley	Poaceae	-
<i>Hydrophyllum tenuipes</i>	Pacific waterleaf	Boraginaceae	-
* <i>Hypericum perforatum</i> ssp. <i>perforatum</i>	klamathweed	Hypericaceae	-
* <i>Hypochaeris radicata</i>	hairy cats ear	Asteraceae	Moderate
<i>Iris douglasiana</i>	Douglas iris	Iridaceae	-
<i>Iris purdyi</i>	Purdy's iris	Iridaceae	-
<i>Isolepis cernua</i>	low bulrush	Cyperaceae	-
<i>Juncus bolanderi</i>	Bolander's rush	Juncaceae	-
<i>Juncus bufonius</i> var. <i>bufonius</i>	toad rush	Juncaceae	-
<i>Juncus effusus</i>	soft rush	Juncaceae	-
<i>Juncus occidentalis</i>	slender juncus	Juncaceae	-
<i>Juncus patens</i>	western rush	Juncaceae	-
* <i>Lactuca serriola</i>	prickly lettuce	Asteraceae	-

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<i>Lasthenia californica</i> ssp. <i>californica</i>	California goldfields	Asteraceae	-
<i>Lasthenia glaberrima</i>	smooth goldfields	Asteraceae	-
<i>Lathyrus sulphureus</i>	sulphur pea	Fabaceae	-
<i>Lathyrus torreyi</i>	redwood pea	Fabaceae	-
<i>Lathyrus vestitus</i> var. <i>vestitus</i>	hillside pea	Fabaceae	-
* <i>Leontodon saxatilis</i>	hawkbit	Asteraceae	-
* <i>Lepidium campestre</i>	field pepper grass	Brassicaceae	-
<i>Leptosiphon androsaceus</i>	false babystars	Polemoniaceae	-
<i>Leptosiphon minimus</i>	true babystars	Polemoniaceae	-
* <i>Leucanthemum vulgare</i>	oxe eye daisy	Asteraceae	Moderate
<i>Lilium rubescens</i>	redwood lily	Liliaceae	-
<i>Limnanthes douglasii</i> ssp. <i>douglasii</i>	snow white Douglas' meadowfoam	Limnanthaceae	-
<i>Limnanthes douglasii</i> ssp. <i>nivea</i>	Douglas' meadowfoam	Limnanthaceae	-
* <i>Linum bienne</i>	flax	Linaceae	-
<i>Listera cordata</i>	heart-leaved twayblade	Orchidaceae	-
<i>Lithophragma affine</i>	common woodland star	Saxifragaceae	-
* <i>Logfia gallica</i>	narrowleaf cottonrose	Asteraceae	-
<i>Lonicera hispidula</i>	pink honeysuckle	Caprifoliaceae	-
* <i>Lotus corniculatus</i>	bird's foot trefoil	Fabaceae	-
<i>Lupinus adsurgens</i>	drew's silky lupine	Fabaceae	-
<i>Lupinus albicaulis</i>	white stemmed lupine	Fabaceae	-
<i>Lupinus bicolor</i>	lupine	Fabaceae	-
<i>Lupinus nanus</i>	valley sky lupine	Fabaceae	-
<i>Lupinus rivularis</i>	riverbank lupine	Fabaceae	-
<i>Luzula comosa</i>	hairy wood rush	Juncaceae	-
<i>Luzula parviflora</i>	small flowered wood rush	Juncaceae	-
<i>Luzula subsessilis</i>	Pacific woodrush	Juncaceae	-
<i>Lycopodium clavatum</i>	running-pine	Lycopodiaceae	-
<i>Lysichiton americanus</i>	yellow skunk cabbage	Araceae	-
* <i>Lysimachia arvensis</i>	scarlet pimpernel	Myrsinaceae	-
<i>Lysimachia latifolia</i>	Pacific starflower	Myrsinaceae	-
<i>Madia elegans</i>	common madia	Asteraceae	-
<i>Madia gracilis</i>	gumweed	Asteraceae	-
<i>Madia sativa</i>	coastal tarweed	Asteraceae	-
<i>Maianthemum dilatatum</i>	Pacific may lily	Ruscaceae	-
<i>Maianthemum racemosum</i>	feathery false lily of the valley	Ruscaceae	-

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<i>Maianthemum stellatum</i>	starry false lily of the valley	Ruscaceae	-
* <i>Malus</i> sp.	apple	Rosaceae	-
* <i>Malva</i> sp.	mallow	Malvaceae	-
<i>Marah oregana</i>	coast man-root	Cucurbitaceae	-
<i>Matricaria discoidea</i>	pineapple weed	Asteraceae	-
* <i>Medicago arabica</i>	spotted burclover	Fabaceae	-
* <i>Medicago lupulina</i>	black medick	Fabaceae	-
<i>Melica californica</i>	California melic	Poaceae	-
<i>Melica harfordii</i>	Harford's melic	Poaceae	-
<i>Melica subulata</i>	Alaska melic	Poaceae	-
* <i>Melilotus albus</i>	white sweetclover	Fabaceae	-
* <i>Melilotus indicus</i>	annual yellow sweetclover	Fabaceae	-
* <i>Mentha pulegium</i>	pennyroyal	Lamiaceae	Moderate
<i>Micropus californicus</i>	q tips	Asteraceae	-
<i>Mimulus dentatus</i>	tooth leaved monkeyflower	Phrymaceae	-
<i>Mimulus guttatus</i>	yellow monkey flower	Phrymaceae	-
<i>Mimulus moschatus</i>	musk monkeyflower	Phrymaceae	-
<i>Minuartia californica</i>	sandwort	Caryophyllaceae	-
<i>Minuartia douglasii</i>	Douglas' sandwort	Caryophyllaceae	-
<i>Mitellastrum caulescens</i>	leafy-stemmed mitrewort	Saxifragaceae	-
<i>Moehringia macrophylla</i>	large leaved sandwort	Caryophyllaceae	-
* <i>Moenchia erecta</i> ssp. <i>erecta</i>	moenchia	Caryophyllaceae	-
<i>Monardella villosa</i> ssp. <i>villosa</i>	coyote mint	Lamiaceae	-
<i>Montia diffusa</i>	diffuse miner's lettuce	Montiaceae	-
<i>Montia fontana</i>	water montia	Montiaceae	-
<i>Montia howellii</i>	Howell's montia	Montiaceae	-
<i>Montia parvifolia</i>	showy rock montia	Montiaceae	-
<i>Morella californica</i>	California wax myrtle	Myricaceae	-
<i>Muhlenbergia rigens</i>	deergrass	Poaceae	-
* <i>Myosotis discolor</i>	forget me not	Boraginaceae	-
<i>Nasturtium officinale</i>	watercress	Brassicaceae	-
<i>Navarretia squarrosa</i>	skunkweed	Polemoniaceae	-
<i>Nemophila menziesii</i> var. <i>atomaria</i>	baby blue eyes	Boraginaceae	-
<i>Nemophila menziesii</i> var. <i>menziesii</i>	baby blue eyes	Boraginaceae	-
<i>Nemophila parviflora</i>	small flowered nemophila	Boraginaceae	-
<i>Notholithocarpus densiflorus</i> var. <i>densiflorus</i>	tanoak	Fagaceae	-

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<i>Oenanthe sarmentosa</i>	water parsley	Apiaceae	-
<i>Olsynium douglasii</i> var. <i>douglasii</i>	Douglas' grasswidow	Iridaceae	-
<i>Osmorhiza berteroi</i>	sweetcicely	Apiaceae	-
<i>Oxalis oregana</i>	redwood sorrel	Oxalidaceae	-
* <i>Parentucellia viscosa</i>	yellow parentucellia	Orobanchaceae	Limited
<i>Pectiantia ovalis</i>	coastal miterwort	Saxifragaceae	-
<i>Penstemon rattanii</i> var. <i>rattanii</i>	Rattan's beardtongue	Plantaginaceae	-
<i>Pentagramma triangularis</i> ssp. <i>triangularis</i>	gold back fern	Pteridaceae	-
<i>Petasites frigidus</i> var. <i>palmatus</i>	western coltsfoot	Asteraceae	-
* <i>Petrorhagia dubia</i>	windmill pink	Caryophyllaceae	-
<i>Phacelia bolanderi</i>	bolander's phacelia	Boraginaceae	-
* <i>Phalaris aquatica</i>	Harding grass	Poaceae	Moderate
<i>Phoradendron leucarpum</i> ssp. <i>tomentosum</i>	mistletoe	Viscaceae	-
<i>Phyla nodiflora</i>	common lippia	Verbenaceae	-
* <i>Pinus</i> sp.	pine (non-native hybrid)	Pinaceae	-
<i>Pityopus californicus</i>	California pinefoot	Ericaceae	-
<i>Plagiobothrys nothofulvus</i>	rusty haired popcorn flower	Boraginaceae	-
<i>Plagiobothrys reticulatus</i>	reticulate popcorn flower	Boraginaceae	-
<i>Plantago erecta</i>	California plantain	Plantaginaceae	-
* <i>Plantago lanceolata</i>	ribwort	Plantaginaceae	Limited
* <i>Plantago major</i>	common plantain	Plantaginaceae	-
<i>Platystemon californicus</i>	cream cups	Papaveraceae	-
<i>Plectritis congesta</i> ssp. <i>brachystemon</i>	shortspur seablush	Valerianaceae	-
<i>Plectritis congesta</i> ssp. <i>congesta</i>	sea blush	Valerianaceae	-
<i>Pleuricospora fimbriolata</i>	fringed pinesap	Ericaceae	-
<i>Pleuropogon refractus</i>	nodding semaphore grass	Poaceae	-
* <i>Poa annua</i>	annual blue grass	Poaceae	-
* <i>Poa bulbosa</i>	bulbous blue grass	Poaceae	-
* <i>Poa pratensis</i> ssp. <i>pratensis</i>	Kentucky blue grass	Poaceae	-
<i>Poa secunda</i> ssp. <i>secunda</i>	Sandberg's bluegrass	Poaceae	-
* <i>Poa trivialis</i>	rough blue grass	Poaceae	-
<i>Polygala californica</i>	milkwort	Polygalaceae	-
<i>Polypodium calirhiza</i>	licorice fern	Polypodiaceae	-
<i>Polypodium glycyrrhiza</i>	licorice fern	Polypodiaceae	-
<i>Polypodium scolieri</i>	leather fern	Polypodiaceae	-

Scientific Name	Common Name	Family	Cal-IPC Status
<i>Polystichum munitum</i>	western sword fern	Dryopteridaceae	-
<i>Populus trichocarpa</i>	black cottonwood	Salicaceae	-
<i>Potentilla anserina</i> ssp. <i>pacifica</i>	silverweed	Rosaceae	-
<i>Primula hendersonii</i>	mosquito bill	Primulaceae	-
<i>Prosartes hookeri</i>	drops of gold	Liliaceae	-
<i>Prosartes smithii</i>	largeflower fairybells	Liliaceae	-
<i>Prunella vulgaris</i> var. <i>lanceolata</i>	mountain selfheal	Lamiaceae	-
* <i>Prunus</i> sp.	plum	Rosaceae	-
<i>Pseudotsuga menziesii</i> var. <i>menziesii</i>	Douglas-fir	Pinaceae	-
<i>Pteridium aquilinum</i> var. <i>pubescens</i>	western bracken fern	Dennstaedtiaceae	-
* <i>Pyracantha</i> sp.	firethorn	Rosaceae	-
<i>Pyrola aphylla</i>	leafless wintergreen	Ericaceae	-
<i>Pyrola picta</i>	white veined shinleaf	Ericaceae	-
<i>Quercus chrysolepis</i>	gold cup live oak	Fagaceae	-
<i>Quercus garryana</i> var. <i>garryana</i>	Oregon oak	Fagaceae	-
<i>Quercus kelloggii</i>	California black oak	Fagaceae	-
<i>Ranunculus aquatilis</i> var. <i>aquatilis</i>	whitewater crowfoot	Ranunculaceae	-
<i>Ranunculus californicus</i> var. <i>californicus</i>	common buttercup	Ranunculaceae	-
<i>Ranunculus occidentalis</i> var. <i>occidentalis</i>	western buttercup	Ranunculaceae	-
* <i>Ranunculus repens</i>	crowfoot, creeping buttercup	Ranunculaceae	Limited
* <i>Ranunculus sardous</i>	hairy buttercup	Ranunculaceae	-
<i>Ranunculus</i> sp.	buttercup	Ranunculaceae	-
<i>Ranunculus uncinatus</i>	hooked fruit buttercup	Ranunculaceae	-
<i>Rhododendron macrophyllum</i>	California rose bay	Ericaceae	-
<i>Ribes menziesii</i> var. <i>menziesii</i>	canyon gooseberry	Grossulariaceae	-
<i>Ribes roezlii</i> var. <i>amictum</i>	hoary gooseberry	Grossulariaceae	-
<i>Ribes roezlii</i> var. <i>cruentum</i>	spiny fruited gooseberry	Grossulariaceae	-
<i>Ribes roezlii</i> var. <i>roezlii</i>	Sierra gooseberry	Grossulariaceae	-
<i>Ribes sanguineum</i> var. <i>glutinosum</i>	flowering currant	Grossulariaceae	-
* <i>Rosa canina</i>	dog rose	Rosaceae	-
<i>Rosa gymnocarpa</i> var. <i>gymnocarpa</i>	wood rose	Rosaceae	-
<i>Rosa nutkana</i> ssp. <i>nutkana</i>	Nootka rose	Rosaceae	-
* <i>Rubus armeniacus</i>	Himalayan blackberry	Rosaceae	High
<i>Rubus leucodermis</i>	white bark raspberry	Rosaceae	-

Scientific Name	Common Name	Family	Cal-IPC Status
<i>Rubus parviflorus</i>	thimbleberry	Rosaceae	-
<i>Rubus spectabilis</i>	salmon berry	Rosaceae	-
<i>Rubus ursinus</i>	California blackberry	Rosaceae	-
* <i>Rumex acetosella</i>	sheep sorrel	Polygonaceae	Moderate
* <i>Rumex crispus</i>	curly dock	Polygonaceae	Limited
* <i>Rytidosperma penicillatum</i>	purple awned wallaby grass	Poaceae	Limited
<i>Sagina procumbens</i>	arctic pearlwort	Caryophyllaceae	-
<i>Salix exigua</i>	narrowleaf willow	Salicaceae	-
<i>Salix hookeriana</i>	coastal willow	Salicaceae	-
<i>Salix lasiandra</i> var. <i>lasiandra</i>	Pacific willow	Salicaceae	-
<i>Salix lasiolepis</i>	arroyo willow	Salicaceae	-
<i>Salix sitchensis</i>	Coulter willow	Salicaceae	-
<i>Sambucus racemosa</i> var. <i>racemosa</i>	red elderberry	Adoxaceae	-
<i>Sanicula bipinnatifida</i>	purple sanicle	Apiaceae	-
<i>Sanicula crassicaulis</i>	Pacific sanicle	Apiaceae	-
<i>Saxifraga mertensiana</i>	wood saxifrage	Saxifragaceae	-
<i>Scirpus microcarpus</i>	mountain bog bulrush	Cyperaceae	-
<i>Scoliopus bigelovii</i>	slink pod	Liliaceae	-
<i>Scrophularia californica</i>	California bee plant	Scrophulariaceae	-
<i>Scutellaria antirrhinoides</i>	snapdragon skullcap	Lamiaceae	-
<i>Scutellaria californica</i>	California skullcap	Lamiaceae	-
<i>Sedum spathulifolium</i>	Pacific stonecrop	Crassulaceae	-
<i>Selaginella wallacei</i>	Wallace's spike moss	Selaginellaceae	-
* <i>Senecio minimus</i>	coastal burnweed	Asteraceae	-
* <i>Senecio vulgaris</i>	common groundsel	Asteraceae	-
<i>Sequoia sempervirens</i>	coast redwood	Cupressaceae	-
* <i>Sherardia arvensis</i>	field madder	Rubiaceae	-
<i>Sidalcea malachroides</i>	maple-leaved checkerbloom	Malvaceae	-
<i>Sidalcea malviflora</i> ssp. <i>patula</i>	siskiyou checkerbloom	Malvaceae	-
* <i>Silene gallica</i>	common catchfly	Caryophyllaceae	-
<i>Silene laciniata</i> ssp. <i>californica</i>	California indian pink	Caryophyllaceae	-
* <i>Silybum marianum</i>	milk thistle	Asteraceae	Limited
<i>Sisyrinchium bellum</i>	blue eyed grass	Iridaceae	-
<i>Solanum xanti</i>	nightshade	Solanaceae	-
* <i>Sonchus asper</i> ssp. <i>asper</i>	sow thistle	Asteraceae	-
* <i>Spergularia rubra</i>	purple sand spurry	Caryophyllaceae	-
<i>Spiranthes romanzoffiana</i>	ladies' tresses	Orchidaceae	-

Scientific Name	Common Name	Family	Cal-IPC Status
<i>Stachys ajugoides</i>	hedge nettle	Lamiaceae	-
<i>Stachys rigida</i> var. <i>quercetorum</i>	rough hedgenettle	Lamiaceae	-
<i>Stellaria crispa</i>	ruffled starwort	Caryophyllaceae	-
* <i>Stellaria media</i>	chickweed	Caryophyllaceae	-
<i>Stellaria nitens</i>	shining chickweed	Caryophyllaceae	-
<i>Stipa lepida</i>	foothill needle grass	Poaceae	-
<i>Symphoricarpos albus</i> var. <i>laevigatus</i>	snowberry	Caprifoliaceae	-
<i>Synthyris reniformis</i>	snow queen	Plantaginaceae	-
* <i>Taraxacum officinale</i>	red seeded dandelion	Asteraceae	-
<i>Tellima grandiflora</i>	fringe cups	Saxifragaceae	-
<i>Thalictrum fendleri</i> var. <i>polycarpum</i>	Torrey's meadow rue	Ranunculaceae	-
<i>Thuja plicata</i>	western red cedar	Cupressaceae	-
<i>Tiarella trifoliata</i> var. <i>unifoliata</i>	foamflower	Saxifragaceae	-
<i>Tolmiea diplomenziesii</i>	pig-a-back plant	Saxifragaceae	-
<i>Tonella tenella</i>	small flowered tonella	Plantaginaceae	-
* <i>Torilis arvensis</i>	field hedge parsley	Apiaceae	Moderate
<i>Toxicodendron diversilobum</i>	poison oak	Anacardiaceae	-
<i>Toxicoscordion fremontii</i>	Fremont's star lily	Melanthiaceae	-
* <i>Trifolium arvense</i>	rabbitfoot clover	Fabaceae	-
<i>Trifolium barbigerum</i>	bearded clover	Fabaceae	-
<i>Trifolium bifidum</i>	notch leaf clover	Fabaceae	-
<i>Trifolium depauperatum</i>	dwarf sack clover	Fabaceae	-
<i>Trifolium dichotomum</i>	branched indian clover	Fabaceae	-
* <i>Trifolium dubium</i>	shamrock	Fabaceae	-
* <i>Trifolium fragiferum</i>	strawberry clover	Fabaceae	-
* <i>Trifolium glomeratum</i>	clustered clover	Fabaceae	-
* <i>Trifolium hirtum</i>	rose clover	Fabaceae	Limited
<i>Trifolium microcephalum</i>	small head clover	Fabaceae	-
* <i>Trifolium striatum</i>	knotted clover	Fabaceae	-
* <i>Trifolium subterraneum</i>	subterranean clover	Fabaceae	-
<i>Trifolium willdenovii</i>	tomcat clover	Fabaceae	-
<i>Trifolium wormskioldii</i>	cow clover	Fabaceae	-
<i>Trillium ovatum</i> ssp. <i>ovatum</i>	western wakerobin	Melanthiaceae	-
<i>Triphysaria eriantha</i> ssp. <i>eriantha</i>	butter 'n' eggs	Orobanchaceae	-
<i>Triphysaria pusilla</i>	little owl's clover	Orobanchaceae	-
<i>Triteleia hyacinthina</i>	wild hyacinth	Themidaceae	-

Scientific Name	Common Name	Family	Cal-IPC Status
<i>Triteleia laxa</i>	Ithuriel's spear	Themidaceae	-
<i>Umbellularia californica</i>	California bay	Lauraceae	-
<i>Urtica dioica</i> ssp. <i>holosericea</i>	stinging nettle	Urticaceae	-
<i>Vaccinium ovatum</i>	evergreen huckleberry	Ericaceae	-
<i>Vaccinium parvifolium</i>	red huckleberry	Ericaceae	-
<i>Vancouveria hexandra</i>	northern vancouveria	Berberidaceae	-
<i>Vancouveria planipetala</i>	inside out flower	Berberidaceae	-
<i>Veratrum californicum</i> var. <i>californicum</i>	California corn lily	Melanthiaceae	-
<i>Veronica americana</i>	American brooklime	Plantaginaceae	-
* <i>Veronica arvensis</i>	speedwell	Plantaginaceae	-
<i>Veronica peregrina</i> ssp. <i>xalapensis</i>	speedwell	Plantaginaceae	-
<i>Vicia americana</i> ssp. <i>americana</i>	American vetch	Fabaceae	-
<i>Vicia gigantea</i>	giant vetch	Fabaceae	-
* <i>Vicia hirsuta</i>	hairy vetch	Fabaceae	-
* <i>Vicia sativa</i> ssp. <i>sativa</i>	common vetch	Fabaceae	-
* <i>Vicia tetrasperma</i>	four seeded vetch	Fabaceae	-
* <i>Vinca major</i>	vinca	Apocynaceae	Moderate
<i>Viola adunca</i> ssp. <i>adunca</i>	western dog violet	Violaceae	-
<i>Viola glabella</i>	stream violet	Violaceae	-
<i>Viola praemorsa</i> ssp. <i>praemorsa</i>	Astoria violet	Violaceae	-
<i>Viola sempervirens</i>	redwood violet	Violaceae	-
<i>Whipplea modesta</i>	modesty	Hydrangeaceae	-
<i>Woodwardia fimbriata</i>	western chain fern	Blechnaceae	-
<i>Wyethia angustifolia</i>	narrow leaved mule ears	Asteraceae	-
<i>Xanthium strumarium</i>	cocklebur	Asteraceae	-

* Introduced plant species not native to California.

Appendix C REPRESENTATIVE PHOTOGRAPHS OF SPECIAL- STATUS AND CRPR 3 OR 4 PLANT SPECIES

Appendix C. Representative Photographs of Special-Status and CRPR 3 or 4 Plant Species



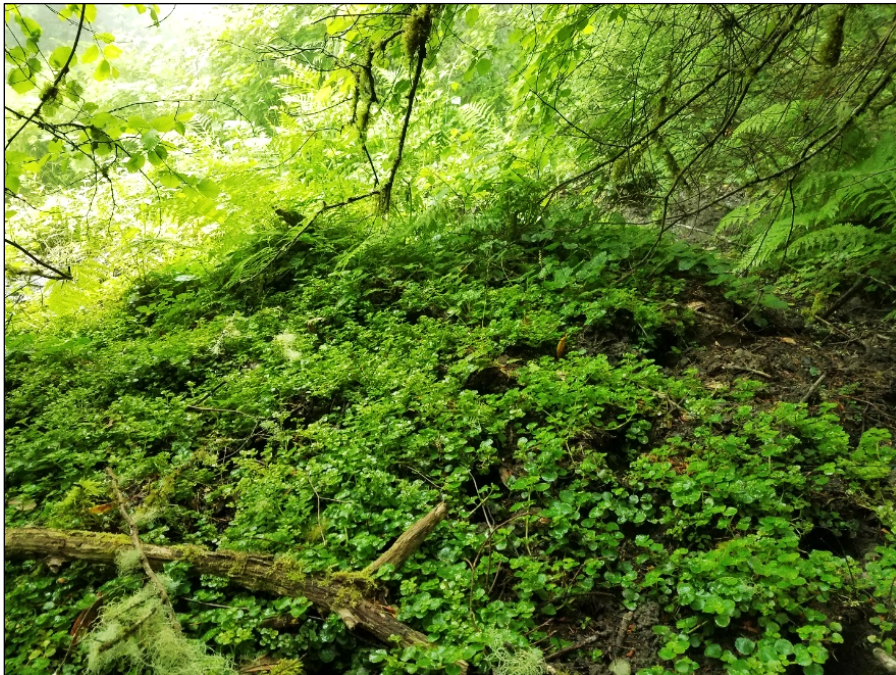
Photograph 1. Methuselah's beard lichen (*Usnea longissima*) with a diagnostic primary branch and numerous short, perpendicular side branches.



Photograph 2. Methuselah's beard lichen growing in a California bay (*Umbellularia californica*) in Douglas-fir (*Pseudotsuga menziesii*) forest on Bear River Ridge.



Photograph 3. Pacific golden saxifrage (*Chrysosplenium glechomifolium*) growing as an herbaceous mat in a mesic habitat.



Photograph 4. Pacific golden saxifrage growing in a perennial seep in Douglas-fir forest on Bear River Ridge.



Photograph 5. Close up of Pacific gilia (*Gilia capitata* var. *pacificum*).



Photograph 6. Pacific gilia growing in coastal prairie grassland habitat on Monument Ridge.



Photograph 7. Close up of Tracy's tarplant (*Hemizonia congesta* ssp. *tracyi*).



Photograph 8. Tracy's tarplant growing in on Bear River Ridge in coastal prairie grassland characterized by a low cover of grasses and likely thinner soils.



Photograph 9. Close up of short-leaved evax (*Hesperrevax sparsiflora* var. *brevifolia*).



Photograph 10. Short-leaved evax growing in coastal prairie grassland habitat on Bear River Ridge.



Photograph 11. Close up of a Redwood lily (*Lilium rubescens*) inflorescence.



Photograph 12. Redwood lily growing in dry Douglas-fir forest on eastern Monument Ridge.



Photograph 13. Close up of heart-leaved twayblade (*Listera cordata*) growing in a moist forest habitat.



Photograph 14. Close up of the diagnostic leaves on heart-leaved twayblade.



Photograph 15. Heart-leaved twayblade growing in moist Douglas-fir forest on Bear River Ridge.



Photograph 16. Running-pine (*Lycopodium clavatum*) growing on a stump in a moist forest habitat.



Photograph 17. Running-pine growing in an old skid trail in damp redwood forest on Shively Ridge.



Photograph 18. Leafy-stemmed mitrewort (*Mitella caulescens*) growing along a stream in a wet, shady forest.



Photograph 19. Leafy-stemmed mitrewort growing in redwood forest along Greenlow Creek.



Photograph 20. Howell's montia (*Montia howellii*) growing in a wet roadbed.



Photograph 21. Howell's montia growing on a moderately used logging road in the Highway 101-Monument Ridge gen-tie segment.



Photograph 22. California pinefoot (*Pityopus californica*) growing in leaf litter in a mixed-deciduous forest.



Photograph 23. California pinefoot growing in tan oak forest on eastern Monument Ridge.



Photograph 24. Nodding semaphore grass (*Pleuropogon refractus*) growing in a wet meadow.



Photograph 25. Nodding semaphore grass growing in a perennially wet roadside ditch in the Highway 101-Monument Ridge gen-tie segment.



Photograph 26. Close up of Hoary gooseberry (*Ribes roezlii* var. *amictum*) growing in a forest opening.



Photograph 27. Hoary gooseberry growing in an open grassland within Douglas-fir forest on Monument Ridge.



Photograph 28. Close up of maple-leaved checkerbloom (*Sidalcea malachroides*) growing in a forest habitat.



Photograph 29. Maple-leaved checkerbloom growing in an old skid trail in redwood/Douglas-fir forest between Monument Ridge and Jordan gate.



Photograph 30. Close up of Siskiyou checkerbloom (*Sidalcea malviflora* ssp. *patula*) growing in an open prairie.



Photograph 31. Siskiyou checkerbloom growing in coastal prairie/grassland habitat on Bear River Ridge.