

BIOLOGICAL SURVEY REPORT

Bowerman Renewable Natural Gas Plant Frank R. Bowerman Landfill Orange County, CA

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Prepared by



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EXECUTIVE SUMMARY

On behalf of Bowerman Power LFG, LLC (Bowerman Power) (Bowerman Power, Project Proponent), Tetra Tech has prepared this Biological Survey Report for the proposed Renewable Natural Gas (RNG) Plant planned at the Frank R. Bowerman Landfill (Bowerman Landfill) in Orange County, California (Project). This Report describes the literature review, survey methodology, and results of the biological survey conducted for the Project. This Project is being conducted under a partnership agreement between Montauk and Orange County Waste & Recycling (OCWR) to process the landfill gas (LFG) produced by the Bowerman Landfill and deliver it to Southern California Gas Company (SoCal Gas).

A literature review and biological survey to assess special-status plant and wildlife species were conducted. Vegetation mapping and habitat assessments for potential special-status species were conducted. Rare plants were surveyed for during their blooming period when they were identifiable. One rare plant species, intermediate mariposa lily (*Calochortus weedii* var. *intermedius*), was found during the biological survey conducted in 2023. The survey area also provides suitable nesting habitat for tree-nesting, shrub-nesting, and/or ground-nesting birds, including the coastal California gnatcatcher (*Polioptila californica californica*). No nests were observed during the survey. Raptor nesting habitat is also present in the form of mature trees onsite. The survey area has the potential to support other special-status species such as western spadefoot (*Spea hammondi*), orange-throated whiptail (*Aspidoscelis hyperythra*), red-diamond rattlesnake (*Crotalus ruber*), and coast patch-nosed snake (*Salvadora hexalepis virgulata*).

This report provides recommendations for special-status species, including intermediate mariposa lily and raptors and nesting birds, and as required by the Central Coastal Subregional Natural Community Conservation Plan and Habitat Conservation Plan (NCCP/HCP).

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Acronyms and Abbreviations

BIOS	Biogeographic and Information Observation System
Bowerman Landfill	Frank R. Bowerman Landfill
Bowerman Power	Bowerman Power LFG, LLC
CDFW	California Department of Fish and Wildlife
CEQA	California Environmental Quality Act
CNDDDB	California Natural Diversity Database
CNPS	California Native Plant Society
CO ₂	carbon dioxide
CRPR	California Rare Plant Rank
ECA	Essential Connectivity Area
GIS	Geographic Information System
GPS	Global Positioning System
H ₂ S	sulfur hydroxide
LFG	landfill gas
LFGTE	Landfill Gas to Energy
N ₂	nitrogen
NCCP/HCP	Natural Community Conservation Plan and Habitat Conservation Plan
NLB	Natural Landscape Block
O ₂	oxygen
OCWR	Orange County Waste & Recycling
RNG	renewable natural gas
ROW	right-of-way
SoCal Gas	Southern California Gas Company
SSC	Species of Special Concern
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
WL	Watch List

1.0 INTRODUCTION

Tetra Tech has prepared this Biological Survey Report for the proposed Renewable Natural Gas (RNG) Plant planned at the Frank R. Bowerman Landfill (Bowerman Landfill) in Orange County, California (Project). This Project is being conducted under a partnership agreement between Montauk Renewables (Montauk) and Orange County Waste & Recycling (OCWR) to process the landfill gas (LFG) produced by the Bowerman Landfill and deliver it to Southern California Gas Company (SoCal Gas).

The purpose of this Biological Survey Report is to:

- Document the methods and results of the field survey,
- Summarize the existing biological resources and conditions within the Project site and vicinity,
- Assess potential presence of special-status wildlife and rare plants, and
- Recommend preliminary measures for avoiding, minimizing, or mitigating impacts to special-status species.

Rainfall in 2023 has been higher than normal. From July 1, 2022 through June 30, 2023, rainfall for the Irvine area was estimated to be about 163 percent of normal. This high rainfall resulted in suitable conditions to conduct the biological surveys (Golden Gate Weather Services 2023).

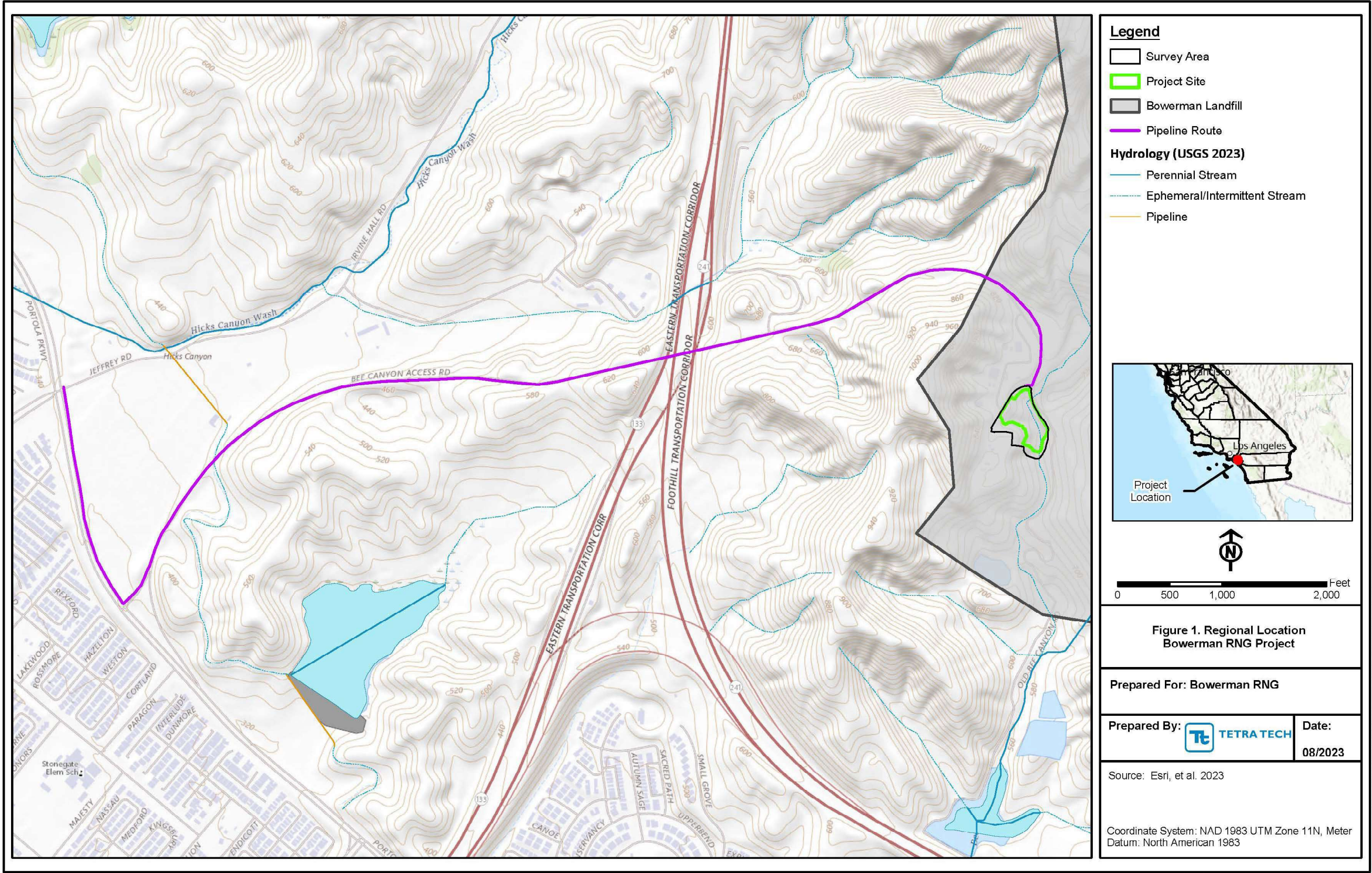
1.1 Project Location

The proposed Project is located at Bowerman Landfill in Orange County, California and consists of a proposed RNG Plant footprint (i.e., Project site) and proposed pipeline route (Figure 1). The Project site is generally bound by Bee Canyon Access Road to the north and northeast, the existing Landfill Gas to Energy (LFGTE) plant and flare station to the west, and open space and roads to the south (Figure 2). The proposed pipeline route connecting the proposed RNG Plant to the SoCal Gas interconnection goes north and west along Bee Canyon Access Road until the intersection of Jeffrey Road and Portola Parkway (Figure 1). The site is located within the U.S. Geological Survey (USGS) *El Toro* 7.5-Minute Topographic Quadrangle Map (Figure 3). Surrounding land uses consist of other areas of the Bowerman Landfill, open space, residential uses, and highways and roads.

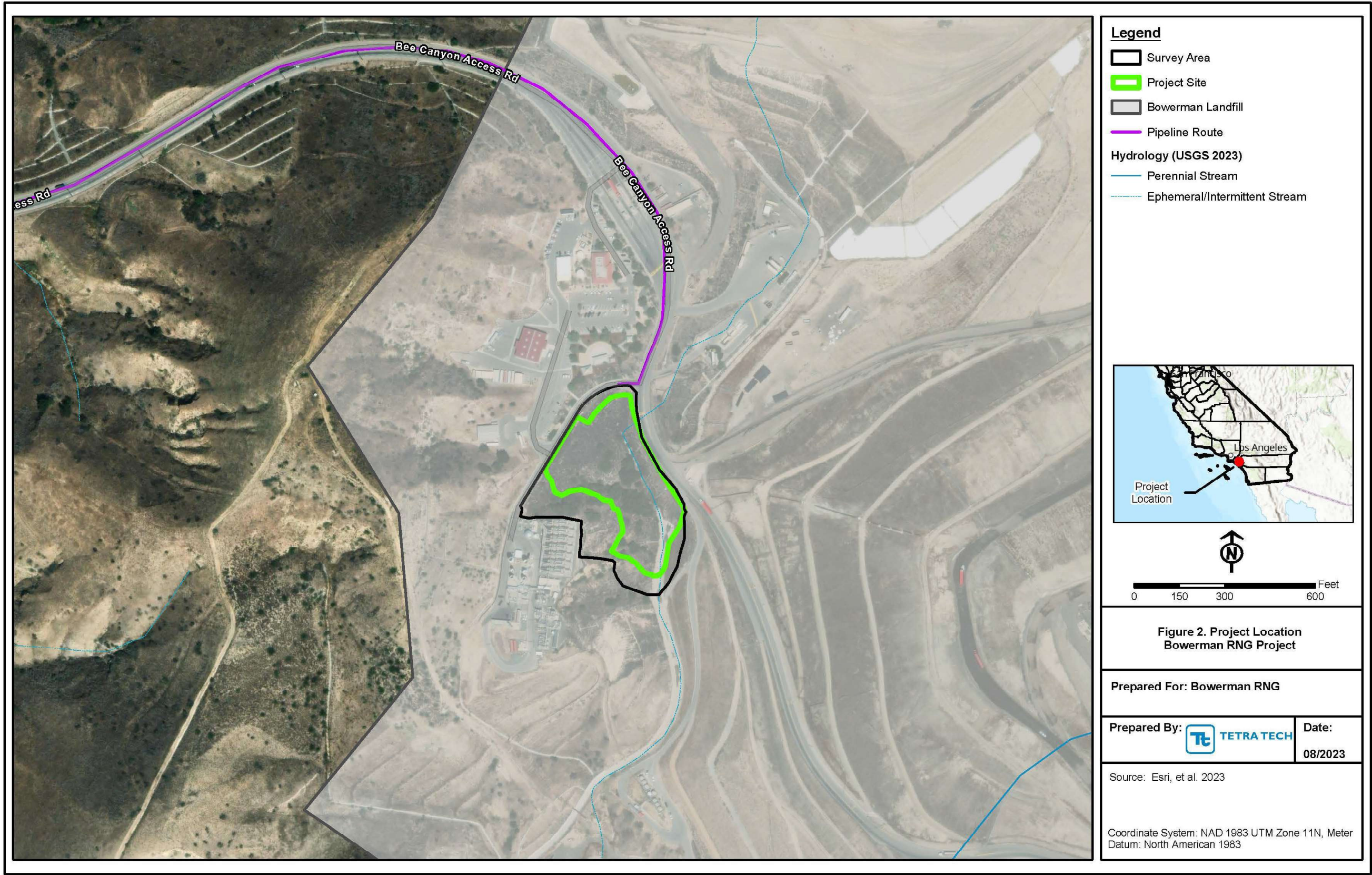
The survey area for the biological survey is shown in the figures, which approximates the Project Lease Boundary. The Project site consists of the proposed RNG Plant footprint. A 50-foot buffer was also surveyed adjacent to the pipeline route.

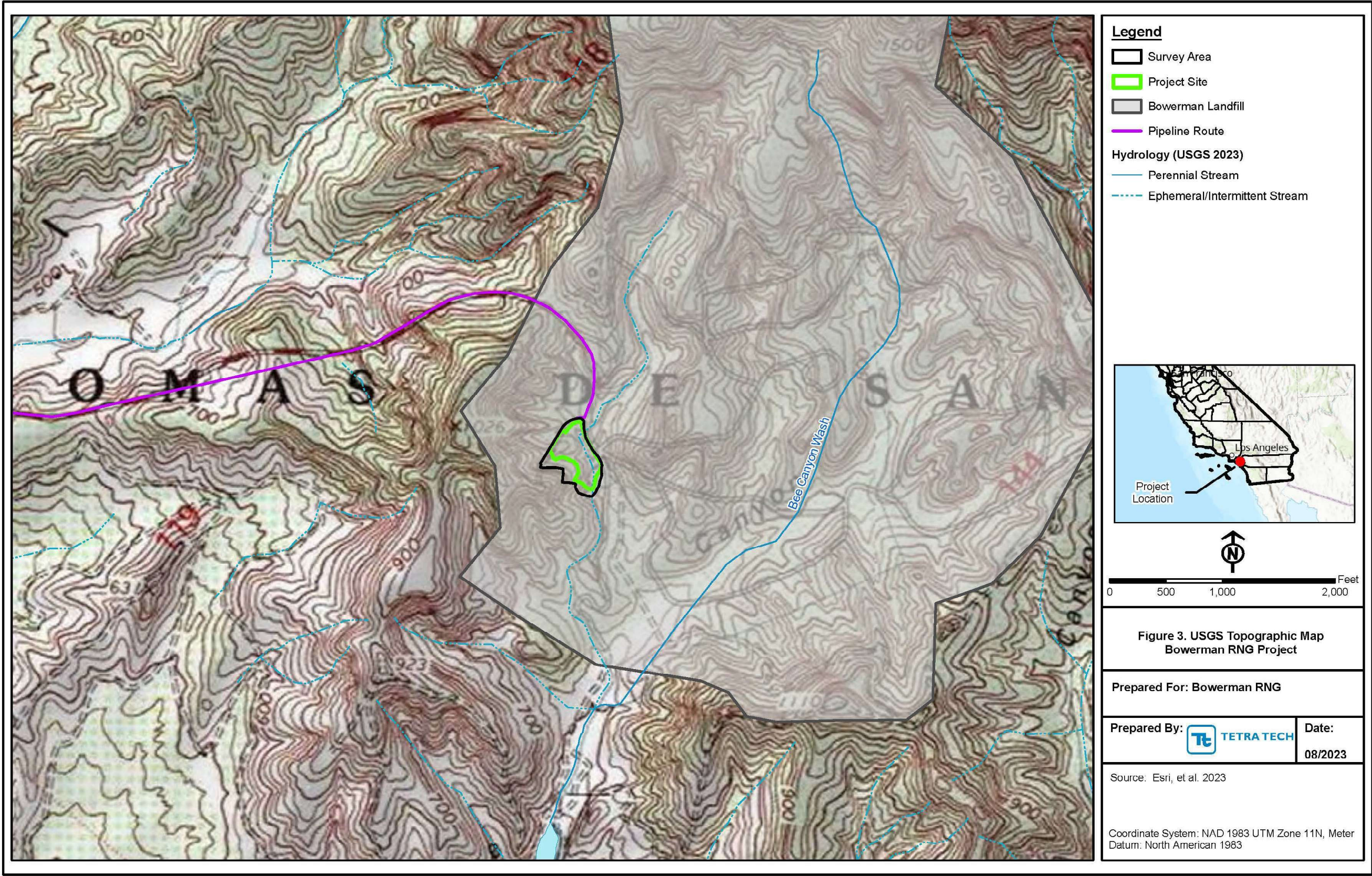
1.2 Ecoregion

California can be divided into 11 Geomorphic Provinces. The proposed Project is located within the Peninsular Ranges Geomorphic Province, which is a series of ranges separated by northwest trending valleys, almost parallel to faults branching from the San Andreas Fault. The Peninsular Ranges extend into lower California and are bound on the east by the Colorado Desert Geomorphic Province. The Los Angeles Basin and the Southern Channel Islands (Santa Catalina, Santa Barbara, San Clemente, and San Nicolas islands), together with the surrounding continental shelf, are included in this province (California Department of Conservation, California Geological Survey 2002). In addition, the Project is located within the South Coast Subregion of the Southwestern California Region (Jepson Flora Project [eds.] 2023).



Not for Construction





2.0 PROJECT DESCRIPTION

The proposed Project would develop a RNG Plant and pipeline to process and transport LFG that is produced by the Bowerman Landfill to the SoCal Gas pipeline. The RNG Plant would be approximately 3.1 acres in size and the proposed pipeline would cover approximately 2.5 miles. The RNG Plant would be designed to process a maximum of 6,000 standard cubic feet per minute of raw LFG at the inlet. The process would remove nitrogen (N₂), oxygen (O₂), carbon dioxide (CO₂), sulfur hydroxide (H₂S), volatile organic compounds, and other minor impurities to meet the specifications of SoCal Gas.

3.0 LITERATURE REVIEW

This section describes the literature review performed to evaluate the biological resources that occur within the Project area.

3.1 Topography

Methods

The USGS 7.5-Minute Topographic Map *El Toro* Quadrangle as well as aerial imagery (Google Earth©) were reviewed. Topography describes the physical features of an area of land. The potential topographic features looked at include natural landforms, aquatic features, developed lands, agricultural lands, undeveloped lands, and terrain. Natural landforms are natural physical features on the surface of the land, such as mountains, hills, and canyons.

Results

Topography consists of hilly terrain throughout the survey area. A concrete channel is located at the southern end of the survey area and drains water from ephemeral drainages. Surrounding land use includes the larger Bowerman Landfill, agricultural use, open space, highways and roads, and residential built-up land. The elevational range of the survey area is approximately 690 to 800 feet above mean sea level. The elevational range of the proposed pipeline is approximately 330 to 810 feet above mean sea level.

3.2 Sensitive Natural Communities

Methods

The California Department of Fish and Wildlife (CDFW)'s California Natural Diversity Database (CNDDB) (CDFW 2023a) was used to identify sensitive natural communities that exist within the survey area.

Results

No sensitive natural communities were identified (CDFW 2023a).

3.3 Special-status Plant and Wildlife Species

Methods

Plant and wildlife species protected by Federal agencies, State agencies, and local conservation agencies and organizations, such as the California Native Plant Society (CNPS), are collectively referred to as special-status species in this report. Tetra Tech conducted a literature review by using CDFW's CNDDB RareFind 5 online database and CNPS' online *Inventory of Rare and Endangered Plants of California* to identify special-status plant and wildlife species that may exist within the Project area (CDFW 2023a, CNPS 2023). Species from the CNDDB and CNPS' online inventory that do not have habitat in the survey area, such as freshwater marsh and open water, are not carried forward in the analysis.

Results

The potential for each species to occur has been reviewed and updated based on the results of the field surveys and is provided in the special-status species results section of this report.

3.4 Critical Habitat

Methods

The U.S. Fish and Wildlife Service (USFWS) Critical Habitat Portal was reviewed to identify Federal threatened and endangered species designated final and proposed Critical Habitat within the survey area (USFWS 2023).

Results

The literature review determined that the survey area is not located within or near designated or proposed Critical Habitat for Federally listed plant or wildlife species.

3.5 Wildlife Movement

Methods

The Essential Connectivity Map located on CDFW's Biogeographic and Information Observation System (BIOS) Habitat Connectivity Viewer was reviewed to determine whether the survey area is located within or near a CDFW designated Natural Landscape Block (NLB) or Essential Connectivity Area (ECA) (CDFW 2023b).

Results

Per the BIOS Habitat Connectivity Viewer, the survey area is located within a NLB but not within an ECA (CDFW 2023b). The Bowerman Landfill is adjacent to large areas of open space, including Limestone Canyon Nature Preserve and the Irvine Ranch Natural Landmarks. However, the survey area is located near other developed areas of the Bowerman Landfill where human presence and noise may deter wildlife from using the area. Therefore, while the survey area may provide cover and forage for local wildlife and migrating birds, it is unlikely to provide a significant wildlife movement corridor. In addition, the Project site consists of a relatively small footprint that would not substantially reduce habitat connectivity in the region. The ability of wildlife to move through areas adjacent to the Project site would be unaffected.

4.0 FIELD SURVEY METHODS

A biological survey, including a rare plant survey, was conducted on June 19 and 20, 2023. The survey was conducted during daylight hours and not during abnormal or excessive cold, heat, wind, rain, or other inclement weather. An Eos Arrow 100 sub-meter Global Positioning System (GPS) unit and a paired tablet running the Geographic Information System (GIS) Field Maps application were used to collect location and attribute data during the surveys. Representative photographs that were taken during the surveys are provided in Appendix A.

The biological survey was conducted to assess special-status species wildlife species that have the potential to occur within the survey area and pipeline route. The biological survey area approximates the Project Lease Boundary and includes the Project site (i.e., RNG Plant footprint). Any special-status species or their sign (e.g., nests, burrows, pellets, scat/guano, roosts) observed or detected during the survey was recorded and mapped to sub-meter accuracy. A list of plant and wildlife species observed onsite was recorded. Vegetation communities were also mapped during the survey based on dominant plant species present. In addition, potential bird nesting habitat was identified. The biological survey included a 50-foot buffer on either side of the proposed pipeline route.

The biological survey also identified any special-status plant species that occur within the survey area. The survey was timed to occur during June when potential rare plant species were in bloom and identifiable. Pedestrian transect surveys were conducted within potential rare plant habitat to survey for rare plants. All rare plants found were mapped to sub-meter accuracy and the number of individuals observed in each population was recorded.

5.0 FIELD SURVEY RESULTS

5.1 List of Plants and Wildlife

Plant and wildlife species observed in the survey area are listed in Tables 1 and 2. One rare plant species, intermediate mariposa lily, was found in the survey area. No special-status wildlife species were observed.

Table 1. Plant Species Observed

Scientific Name	Common Name	Native/Non-Native
<i>Acacia</i> sp.	Acacia	Non-Native
<i>Acmispon glaber</i>	Deerweed	Native
<i>Ambrosia acanthicarpa</i>	Annual bur-sage	Native
<i>Ambrosia psilostachya</i>	Western ragweed	Native
<i>Antirrhinum nuttallianum</i>	Nuttall's snapdragon	Native
<i>Artemisia californica</i>	California sagebrush	Native
<i>Avena</i> sp.	Oat	Non-Native
<i>Baccharis salicifolia</i>	Mule fat	Native
<i>Brachypodium distachyon</i>	False brome	Non-Native
<i>Bromus diandrus</i>	Ripgut grass	Non-Native
<i>Bromus madritensis</i>	Foxtail chess	Non-Native
<i>Calochortus weedii</i> var. <i>intermedius</i>	Intermediate mariposa lily	Native
<i>Calystegia macrostegia</i>	Island morning glory	Native
<i>Centaurea melitensis</i>	Tocalote	Non-Native
<i>Cuscuta californica</i>	California dodder	Native
<i>Cynodon dactylon</i>	Bermuda grass	Non-Native
<i>Daucus</i> sp.	Wild carrot	Native
<i>Deinandra fasciculata</i>	Clustered tarweed	Native
<i>Diplacus aurantiacus</i>	Orange Bush Monkeyflower	Native
<i>Dudleya lanceolata</i>	Lance-leaved dudleya	Native
<i>Dudleya pulverulenta</i>	Chalk dudleya	Native
<i>Encelia californica</i>	Bush sunflower	Native
<i>Encelia farinosa</i>	Brittlebush	Native
<i>Erigeron</i> sp.	Fleabane	Native
<i>Eriogonum fasciculatum</i>	California buckwheat	Native
<i>Eriophyllum confertiflorum</i>	Golden-yarrow	Native
<i>Eschscholzia californica</i>	California poppy	Native
<i>Eucalyptus</i> sp.	Eucalyptus	Non-Native
<i>Foeniculum vulgare</i>	Fennel	Native
<i>Hedypnois rhagadioloides</i>	Crete weed	Non-Native
<i>Helianthus annuus</i>	Common sunflower	Native
<i>Hesperoyucca whipplei</i>	Chaparral yucca	Native

Scientific Name	Common Name	Native/Non-Native
<i>Heteromeles arbutifolia</i>	Toyon	Native
<i>Heterotheca grandiflora</i>	Telegraph weed	Native
<i>Hirschfeldia incana</i>	Mediterranean hoary mustard	Non-Native
<i>Hordeum murinum</i>	wall barley	Non-Native
<i>Isocoma menziesii</i>	Menzies' goldenbush	Native
<i>Lactuca serriola</i>	Prickly lettuce	Non-Native
<i>Lysimachia arvensis</i>	Scarlet pimpernel	Non-Native
<i>Malacothamnus fasciculatus</i>	Chaparral mallow	Native
<i>Malacothrix saxatilis</i>	Cliff aster	Native
<i>Malosma laurina</i>	Laurel sumac	Native
<i>Malva parviflora</i>	Cheeseweed	Non-Native
<i>Marah</i> sp.	Man-root	Native
<i>Marrubium vulgare</i>	White horehound	Non-Native
<i>Melilotus albus</i>	White sweetclover	Non-Native
<i>Melilotus indicus</i>	Sourclover	Non-Native
<i>Mesembryanthemum crystallinum</i>	Crystalline iceplant	Non-Native
<i>Nicotiana glauca</i>	Tree tobacco	Non-Native
<i>Oncosiphon pilulifer</i>	Stinknet	Non-Native
<i>Opuntia littoralis</i>	Coast prickly pear	Native
<i>Pennisetum setaceum</i>	Crimson fountain grass	Non-Native
<i>Phacelia parryi</i>	Parry's phacelia	Native
<i>Pinus</i> sp.	Conifers	Native
<i>Polypogon monspeliensis</i>	Annual beard grass	Non-Native
<i>Quercus agrifolia</i>	Coast live oak	Native
<i>Rhus integrifolia</i>	Lemonade berry	Native
<i>Salsola tragus</i>	Russian thistle	Non-Native
<i>Salvia apiana</i>	White sage	Native
<i>Salvia mellifera</i>	Black sage	Native
<i>Sequoia</i> sp.	Redwoods	Native
<i>Silene laciniata</i>	Cardinal catchfly	Native
<i>Solanum douglasii</i>	Douglas' nightshade	Native
<i>Sonchus oleraceus</i>	Common sow thistle	Non-Native
<i>Verbesina encelioides</i>	Golden crownbeard	Non-Native
<i>Vicia villosa</i>	Hairy vetch	Non-Native

Species in bold text have special-status designation.

Table 2. Wildlife Species Observed

Scientific Name	Common Name	Federal/State Status
Invertebrates		
<i>Apis</i> sp.	Honeybee	None
<i>Coccinellinae</i>	Lady beetles	None
<i>Estigmene</i> sp.	Salt marsh moth	None
<i>Odonata</i>	Dragonflies	None
<i>Papilio</i> sp.	Swallowtails	None
<i>Pepsis</i> sp.	Tarantula hawk	None
<i>Pierinae</i> sp.	Whites (butterfly)	None
Reptiles		
<i>Sceloporus occidentalis</i>	Western fence lizard	None
Birds		
<i>Buteo jamaicensis</i>	Red-tailed hawk	None
<i>Calypte anna</i>	Anna's hummingbird	None
<i>Cathartes aura</i>	Turkey vulture	None
<i>Chamaea fasciata</i>	Wrentit	None
<i>Corvus corax</i>	Common raven	None
<i>Haemorhous mexicanus</i>	House finch	None
<i>Melospiza melodia</i>	Song sparrow	None
<i>Mimus polyglottos</i>	Northern mockingbird	None
<i>Passerina amoena</i>	Lazuli bunting	None
<i>Pipilo maculatus</i>	Spotted towhee	None
<i>Psaltiriparus minimus</i>	Bushtit	None
<i>Sayornis nigricans</i>	Black phoebe	None
<i>Spinus psaltria</i>	Lesser goldfinch	None
<i>Thryomanes bewickii</i>	Bewick's wren	None
Mammals		
<i>Odocoileus hemionus</i>	Mule deer	None

5.2 Vegetation Communities

The survey area contains multiple vegetation communities, as described below. Table 3 summarizes the vegetation communities observed and their corresponding acreage within the Project site, survey area, and proposed pipeline. Vegetation communities are shown in Figure 4.

Table 3. Vegetation Communities

Vegetation Communities	Acre within Project site	Acre within Survey Area	Acre along Proposed Pipeline
Coast live oak	0.7	0.9	0.0
Developed	0.2	0.3	18.4
Sagebrush scrub	2.2	3.6	6.8
Disturbed	0.0	0.0	2.4
Disturbed sagebrush scrub	0.0	0.0	0.2

Vegetation Communities	Acres within Project site	Acres within Survey Area	Acres along Proposed Pipeline
Eucalyptus	0.0	0.0	1.2
Ornamental trees	0.0	0.0	1.0
Total	3.1	4.8	30.0

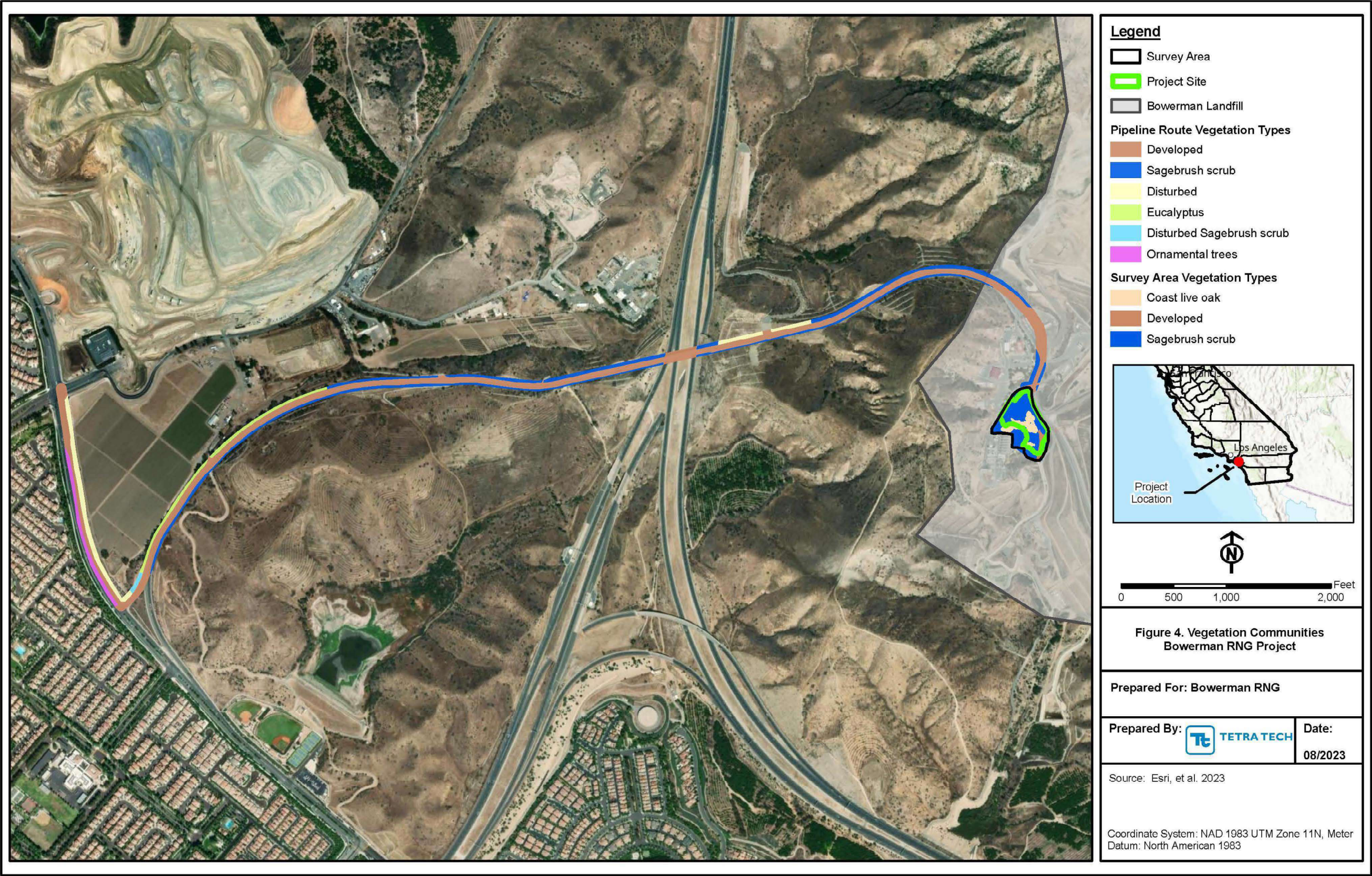
The survey area is covered primarily by sagebrush scrub, with bands of coast live oak habitat present. Within the bounds of the survey area is an approximately 35-foot wide, unvegetated concrete channel. The survey area is on a northeast-facing slope. Multiple concrete-lined channels of approximately one-foot width run downslope from the existing LFGTE plant or Bee Canyon Access Road into the wider concrete channel. Soils covered in natural vegetation were generally loose and gravelly. Burrows were not noticeable in areas of natural vegetation because vegetation coverage was dense.

The proposed pipeline impact area covers Bee Canyon Access Road, Portola Parkway, and the road right-of-way (ROW) (Figure 4). The impacts will be limited to the existing developed roads. Directly outside of these areas are some naturally occurring (sagebrush scrub) or naturalized habitats (eucalyptus grove). Also, directly outside of the ROW are artificial habitats (ornamental trees) and disturbed habitats.

Sagebrush Scrub (Survey Area): Sagebrush scrub covers about 75 percent of the survey area. This habitat group has over 100 percent vegetation coverage. The dominant shrub within the habitat is California sagebrush (*Artemisia californica*). Interspersed within the California sagebrush are native species such as California buckwheat (*Eriogonum fasciculatum*), deerweed (*Acmispon glaber*) and brittlebrush (*Encelia farinosa*). Native succulent species like coast prickly pear (*Opuntia littoralis*), chalk dudleya (*Dudleya pulverulenta*), and lance-leaved dudleya (*Dudleya lanceolata*) are also found interspersed in this habitat. Rock outcrops are present at the top of some of the steep slopes in the sagebrush scrub, mostly bordering the existing facility to the west. Along the edges of this habitat and spaced between shrubs are patches of non-native species like Mediterranean hoary mustard (*Hirschfeldia incana*) and prickly lettuce (*Lactuca serriola*). Immediately surrounding the existing facility are non-native grass species, such as oat (*Avena* sp.). There is no tree canopy within this habitat. Within the sagebrush scrub and along the margins of the coast live oak (*Quercus agrifolia*) habitat are populations of a California native rare plant, intermediate mariposa lily (*Calochortus weedii* var. *intermedius*).

Coast Live Oak (Survey Area): Along the slope, coast live oak dominates the tree canopy. The tree understory is comprised of non-native grasses, like ripgut grass (*Bromus diandrus*) and foxtail chess (*Bromus madritensis*), and sparse coverage of low-growing sagebrush scrub species, like California buckwheat.

Developed (Survey Area): A concrete channel runs from north to south at the base of the slope and along the roadside of Bee Canyon Access Road. Water run-off from the existing LFGTE facility is fed into the channel through smaller concrete channels and culverts at the north end of the channel. The channel bed is filled with soil debris. The channel feeds into an isolated evaporation/collection pool south of the existing facility.



Pipeline Developed: This area encompasses Bee Canyon Access Road, Portola Parkway, and any structures in and along the road, such as fencing and gates.

Pipeline Disturbed: These areas include hardpan pads along the roadside of Bee Canyon Access Road. These pads are vegetated with primarily non-native ruderal species like Mediterranean hoary mustard. Also, colonizing shrubs of California sagebrush grow on the pads. There is also a portion of the roadside (north of Portola Parkway) which is habitat disturbed by current agricultural practices.

Pipeline Sagebrush Scrub: This habitat is on a slope and is covered by California buckwheat and California sagebrush. One-foot wide, unvegetated concrete channels run along the roadside and through this habitat.

Pipeline Disturbed Sagebrush Scrub: Along the north side of Bee Canyon Access Road, towards the end of the proposed pipeline that opens up to Portola Parkway, is a gravel pad covered in low-growing (under 1-foot) California buckwheat. Interspersed within the buckwheat are ruderal species such as Mediterranean hoary mustard and clustered tarweed (*Deinandra fasciculata*). This area appears to be disturbed by adjacent construction activities.

Pipeline Eucalyptus: A strip of eucalyptus (*Eucalyptus* sp.) grove habitat runs along the north side of Bee Canyon Access Road. Eucalyptus trees over 15-feet tall dominate the tree canopy. Eucalyptus trees under 8-feet, annual grasses, and leaf litter dominate the ground canopy.

Pipeline Ornamental Trees: Along the south side of Portola Parkway are trees planted for roadside beautification. Tree species include acacias (*Acacia* sp.), conifers (*Pinus* sp.), and redwood (*Sequoia* sp.) species. Within the ROW are paved sidewalks and utility boxes.

5.3 Raptor and Nesting Bird Habitat

All vegetated areas of the survey area provide suitable nesting habitat for tree-nesting, shrub-nesting, and/or ground-nesting birds. Raptor nesting habitat is present in the form of mature trees in the coast live oak habitat in the survey area and eucalyptus groves along the proposed pipeline. These mature trees consisted of coast live oak trees in the survey area and eucalyptus trees in the buffer area along the proposed pipeline.

One raptor species, red-tailed hawk (*Buteo jamaicensis*), was observed during the surveys, as well as other bird species that may nest onsite. However, no nests were observed during the survey.

5.4 Special-status Wildlife Species

5.4.1 Amphibians

The western spadefoot (*Spea hammondi*) is a CDFW Species of Special Concern (SSC) and an Identified Species under the Central Coastal Subregional Natural Community Conservation Plan and Habitat Conservation Plan (NCCP/HCP) that has been previously documented 0.3 miles south of the survey area (CDFW 2023a). The closest breeding habitat is 1.5 miles northwest of the survey area (CDFW 2023a). Although there are no pools within the survey area that would allow for breeding, upland habitat is present that may support transient individuals moving from breeding habitat to estivating habitat.

5.4.2 Reptiles

Orange-throated whiptail (*Aspidoscelis hyperythra*) is a CDFW Watch List (WL) species and is a Target Species under the NCCP/HCP. This species has been previously recorded within less than 0.1 miles of the survey area (CDFW 2023a) and is known to occur in semi-arid brushy areas with loose soil and rocks, in rocky hillside and chaparral habitats. Preferred habitat characteristics for this species, including loose soils and coastal sage scrub habitat, are present within the survey area.

Red-diamond rattlesnake (*Crotalus ruber*) is a CDFW SSC and an Identified Species under the NCCP/HCP. This species has been previously recorded 2 miles northeast of the survey area (CDFW 2023a) and is known to occur in arid scrub, coastal chaparral, oak and pine woodlands, and rocky grassland. Preferred habitat characteristics for this species are present within the survey area.

Coast horned lizard (*Phrynosoma blainvillii*) is a CDFW SSC that has been recorded 2 miles northeast of the survey area (CDFW 2023a). The species requires open habitat with loose soils and an abundant supply of ants or other insects. Given the dense vegetation present in the survey area and the lack of ants and other insects observed, coast horned lizard is unlikely to occur.

The coast patch-nosed snake (*Salvadora hexalepis virgultea*) is a CDFW SSC that has also been recorded 2 miles northwest of the survey area (CDFW 2023a). This species requires semi-arid brushy areas and chaparral in canyons, rocky hillsides, and plains. Preferred habitat characteristics for this species, including semi-arid brushy areas, are present within the survey area.

5.4.3 Birds

The coastal cactus wren (*Campylorhynchus brunneicapillus sandiegensis*) is a CDFW SSC and a Target Species under the NCCP/HCP. The nearest recorded occurrence is 0.6 miles west of the survey area; however, this did not include records of nesting (CDFW 2023a). Their nesting habitat consists of prickly-pear cacti (*Opuntia* sp.), which was only observed in low numbers during the survey. Therefore, the survey area is unlikely to support coastal cactus wren nesting but may provide foraging habitat for the species.

Yellow-breasted chat (*Icteria virens*) is a CDFW SSC that has been recorded 1.5 miles southeast of the survey area (CDFW 2023a). During this occurrence, two pairs were observed but nesting was not observed. This species occurs in riparian habitats with a well-developed shrub layer and an open canopy. Suitable habitat requirements for this species are not present in the survey area.

The coastal California gnatcatcher (*Poliophtila californica californica*) is a federally threatened species, a CDFW SSC, and Target Species under the NCCP/HCP. The nearest recorded occurrence is along the western boundary of the survey area and the southern boundary of the pipeline (CDFW 2023a). Additional nesting observations have been recorded at the Siphon Reservoir, which is 1.5 miles west of the survey area and 0.5 mile south of the proposed pipeline (CDFW 2023a). Foraging habitat includes habitat with California buckwheat, coastal sages, and cacti. Suitable plant species and habitat requirements are found in the survey area for this species.

The least Bell's vireo (*Vireo bellii pusillus*) is a federally and state endangered species and is a Conditionally Covered Species under the NCCP/HCP. The nearest known occurrence for this species is at the Siphon Reservoir approximately 1.5 miles west of the survey area and 0.5 mile south of the

proposed pipeline (CDFW 2023a). However, this species' habitat consists of low-elevation riparian species in proximity to water or in dry river bottoms. They typically nest in willows, coyote brush, or mesquite. Preferred nesting habitat does not exist within the survey area.

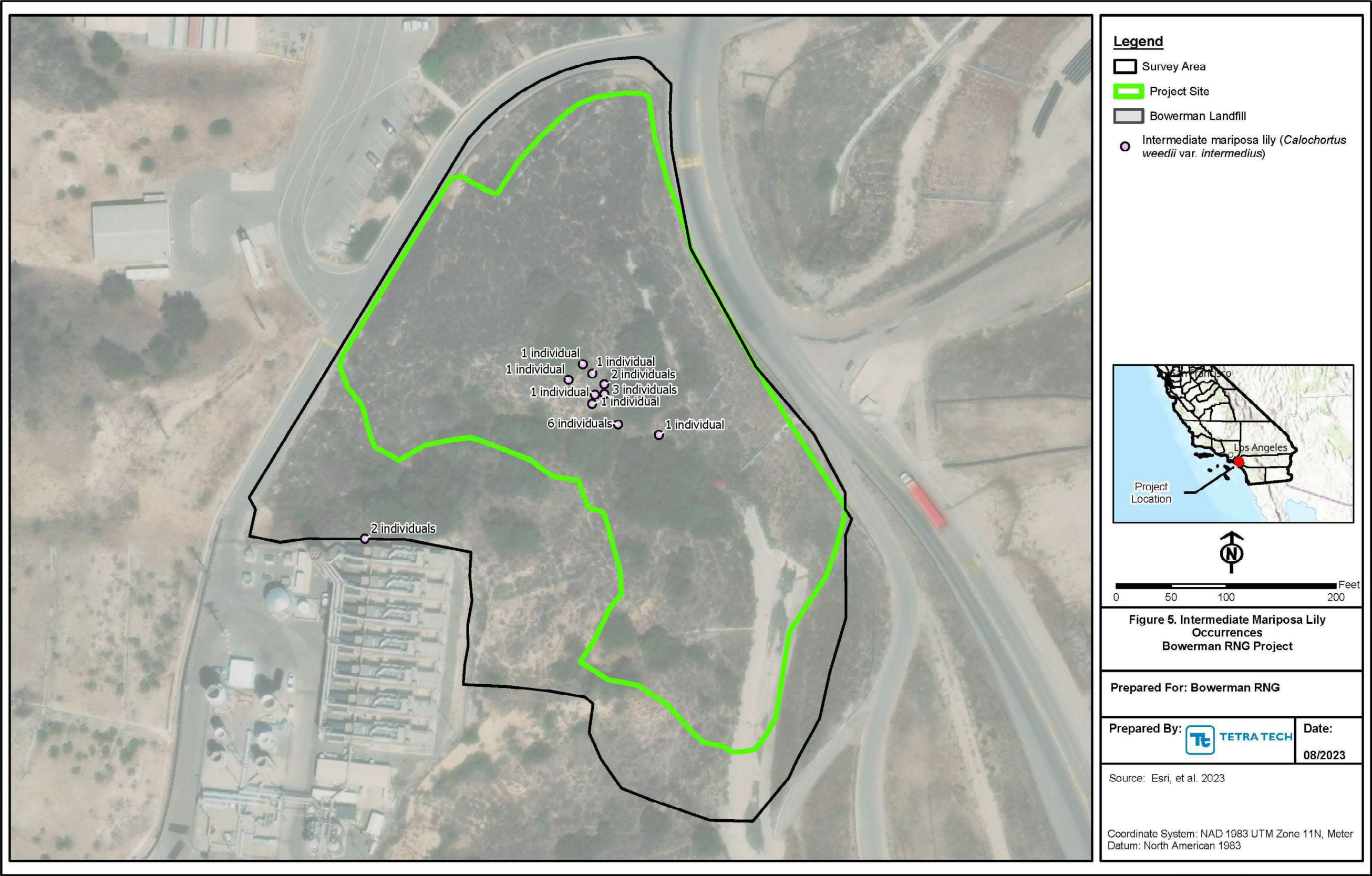
5.5 Rare Plants

Rare plants searched for in the survey area included intermediate mariposa lily and many-stemmed dudleya (*Dudleya multicaulis*). Robinson's pepper-grass (*Lepidium virginicum* var. *robinsonii*) and intermediate monardella (*Monardella hypoleuca* ssp. *intermedia*) also had potential to occur. Intermediate mariposa lily, a CNPS California Rare Plant Rank (CRPR) 1B.2 species and Conditionally Covered Species under the NCCP/HCP, was the only rare plant observed during the survey. Populations with a total of 17 individuals occurred within the center of the proposed RNG Plant. A population with 2 individuals was found outside the Project site within the survey area near the existing LFGTE plant and flare station (Figure 5). Table 4 provides additional details on the intermediate mariposa lily populations observed.

Table 4. Rare Plant Survey Results

Intermediate Mariposa Lily Points	Number of Individuals
1	1
2	1
3	1
4	6
5	1
6	2
7	3
8	1
9	1
10*	2
TOTAL	19

*This population is located outside of the Project site.



5.6 Summary of Special-status Species

Based on the results of the field surveys, the potential to occur for each special-status plant and wildlife species has been reviewed and updated, as described in Table 5. Species are not included in the table that have no habitat in the survey area, such as species that only use tidal, coastal dune, or montane woodland habitats.

Table 5. Special-Status Species with Potential to Occur

Scientific Name	Common Name	Federal Status	State Status/ Other Status	Summary	Probability To Occur Within the Survey Area	Probability To Occur Within the Pipeline Buffer
Plants						
<i>Calochortus weedii</i> var. <i>intermedius</i>	Intermediate mariposa-lily	None	CRPR 1B.2	During the June 2023 survey, 19 individuals of this plant were observed; 17 individuals are located within the Project site and 2 individuals are outside of the Project site. There are 16 recorded observations of this species within 2 miles of the survey area, with five recorded observations being immediately outside of the survey area (CDFW 2023a). This plant is found on dry, rocky slopes at less than 680 meters elevation. Its blooming period is June to July.	Observed in sagebrush scrub habitat.	Medium in undisturbed sagebrush scrub. Unlikely to occur elsewhere.
<i>Dudleya multicaulis</i>	Many-stemmed dudleya	None	CRPR 1B.2	Although individuals of lanceleaf liveforever (<i>Dudleya lanceolata</i>) were found in the survey area, no many-stemmed dudleya (<i>Dudleya multicaulis</i>) individuals were observed. The closest known occurrence of many-stemmed dudleya is located approximately 2 miles from the survey area in a nature reserve within Limestone Canyon Regional Park (CDFW 2023a). This plant is found in clay soils on coastal plains and sandstone outcrops at less than 600 meters elevation. Its blooming period is from May to June.	Although there is medium potential for this species to occur in sagebrush scrub, it was not observed during the field survey.	Although there is medium potential for this species to occur in sagebrush scrub, it was not observed during the field survey. Unlikely to occur elsewhere.
<i>Lepidium virginicum</i> var. <i>robinsonii</i>	Robinson's pepper-grass	None	CRPR 4.3	Previously recorded observations have been documented 2 miles north of the survey area along a riverbank (CDFW 2023a). This species' habitat consists of dry, disturbed areas, cliffs, and scrub. This plant is found at elevations less than 2800 meters. Its blooming period is from March to June.	Although there is medium potential for this species to occur in sagebrush scrub and oak habitat, it was not observed	Although there is medium potential for this species to occur in sagebrush scrub, it was not observed during the field survey.

Scientific Name	Common Name	Federal Status	State Status/ Other Status	Summary	Probability To Occur Within the Survey Area	Probability To Occur Within the Pipeline Buffer
					during the field survey.	Unlikely to occur elsewhere.
<i>Monardella hypoleuca</i> ssp. <i>intermedia</i>	Intermediate monardella	None	CRPR 1B.3	One large population is documented in the Limestone Canyon Regional Park 2 miles northeast of the survey area (CDFW 2023a). This species' habitat consists of chaparral, oak woodland, and dry slopes. This plant is found at an elevation of 200 to 1250 meters. Its blooming period is from June to September.	Medium in area of sagebrush scrub and oak habitat. No possibility in the concrete channel.	Although there is medium potential for this species to occur in sagebrush scrub, it was not observed during the field survey. Unlikely to occur elsewhere.
Amphibians						
<i>Spea hammondi</i>	Western spadefoot	None	SSC	The nearest recorded observation for western spadefoot is 0.3 miles south of the survey area. In 2017, four adults were observed in evaporation/collection pool south of the existing facility (CDFW 2023a). The nearest recorded breeding habitat is 1.5 miles northwest of the survey area (CDFW 2023a). The survey area is 0.75 miles from the nearest natural pool of water. This species requires pooling water that lasts four to eleven weeks for breeding. This species' habitat consists of open areas with sandy or gravelly soils, in a variety of habitats including mixed woodlands, coastal sage scrub, chaparral, sandy washes, and foothills. There are no pools existing in the survey area which would allow for breeding. However, given that there is a wetland feature and suitable upland habitat within the survey area, this species could use the area as passage from breeding habitat to estivating habitat.	No breeding habitat onsite. Upland habitat present within the survey area, including the concrete channel.	Unlikely to occur in all habitats within the proposed pipeline area.

Scientific Name	Common Name	Federal Status	State Status/ Other Status	Summary	Probability To Occur Within the Survey Area	Probability To Occur Within the Pipeline Buffer
Reptiles						
<i>Aspidoscelis hyperythra</i>	Orange-throated whiptail	None	WL	There is one recorded observation of several adults within less than 0.1 miles of the survey area from 2005 (CDFW 2023a). Additional observations have been recorded at Siphon reservoir, approximately 0.5 miles south of the pipeline from 1990 (CDFW 2023a). This species' habitat consists of semi-arid brushy areas with loose soil and rocks, in rocky hillside and coastal chaparral and scrub habitat. There are records of this species near the survey area and suitable habitats for this species exist.	High in area of sagebrush scrub and oak habitat. Low in concrete channel.	High in undisturbed sagebrush scrub. Unlikely to occur elsewhere.
<i>Crotalus ruber</i>	Red-diamond rattlesnake	None	SSC	The nearest recorded observation for red-diamond rattlesnake is 2 miles northeast of the survey area. One individual was captured during a pitfall trap study done in the Limestone Canyon Regional Park in 1999. The extension of the landfill since its initial construction in 1990 has further fragmented available and natural habitat surrounding the survey area. Reptiles are relatively fossorial species which spend periods of the year underground until suitable temperatures rebound and prey are accessible. These conditions can lead to low population counts and recorded observations. This species' habitat consists of arid scrub, coastal chaparral, oak and pine woodlands, and rocky grassland. These habitats are found in the survey area.	Medium in area of sagebrush scrub and oak habitat. Low in concrete channel.	Medium in undisturbed sagebrush scrub. Unlikely to occur elsewhere.

Scientific Name	Common Name	Federal Status	State Status/ Other Status	Summary	Probability To Occur Within the Survey Area	Probability To Occur Within the Pipeline Buffer
<i>Phrynosoma blainvillii</i>	Coast horned lizard	None	SSC	The nearest recorded observation of coast horned lizard is 2 miles northeast of the survey area. A total of 43 individuals were captured during a pitfall trap study done in the Limestone Canyon Regional Park in 1999 (CDFW 2023a). This species requires open habitat with loose soils for burial and an abundant supply of ants or other insects. The conditions onsite consist of dense vegetation coverage with no visible burrows or burrowing species observed. No ants were observed during the survey despite the presence of natural habitats. These conditions are incompatible with the habitat needs of coast horned lizard.	Low in all habitats.	Low in all habitats.
<i>Salvadora hexalepis virgulata</i>	Coast patch-nosed snake	None	SSC	The nearest recorded observation for coast patch-nosed snake is 2 miles northeast of the survey area. Two individuals were captured during a pitfall trap study done in the Limestone Canyon Regional Park in 1999. The extension of the landfill since its initial construction in 1990 has further fragmented available and natural habitat surrounding the survey area. Reptiles are relatively fossorial species which spend periods of the year underground until suitable temperatures rebound and prey are accessible. These conditions can lead to low population counts and recorded observations. Scrub and oak habitats for this species are found in the survey area.	Medium in area of sagebrush scrub and oak habitat. Low in concrete channel.	Medium in undisturbed sagebrush scrub. Unlikely to occur elsewhere.

Scientific Name	Common Name	Federal Status	State Status/ Other Status	Summary	Probability To Occur Within the Survey Area	Probability To Occur Within the Pipeline Buffer
Birds						
<i>Campylorhynchus brunneicapillus sandiegensis</i>	Coastal cactus wren	None	SSC	The nearest recorded observation for this species is 0.6 miles west of the survey area; this locality did not include records of nesting (CDFW 2023a). Their nesting habitat consists of thickets of prickly-pear cacti (<i>Opuntia</i> sp.) tall enough to support and protect the birds' nests. General foraging habitat consists of coastal sage scrub at elevations below 460 meters where cacti are prominent. Suitable plant species and habitat requirements are found in the survey area for this species. Prickly-pear cacti were observed within the survey area but in low numbers. Therefore, the it is unlikely to support coastal cactus wren nesting but may provide foraging habitat.	No nesting habitat within the survey area. May forage in sagebrush scrub.	Nesting habitat in undisturbed sagebrush scrub.
<i>Icteria virens</i>	Yellow-breasted chat	None	SSC	The nearest recorded observation for this species is 1.5 miles southeast from the survey area; two pairs were observed in a nearby park, but no nests observed (CDFW 2023a). This species' habitat consists of riparian habitats with a well-developed shrub layer and an open canopy. Nesting habitat is typically limited to the margin of streams, creeks, sloughs, and rivers. Suitable habitat requirements for this species are not present in the survey area.	Low in all habitats.	Low in all habitats.

Scientific Name	Common Name	Federal Status	State Status/ Other Status	Summary	Probability To Occur Within the Survey Area	Probability To Occur Within the Pipeline Buffer
<i>Polioptila californica californica</i>	Coastal California gnatcatcher	Threatened	SSC	The nearest recorded observation for this species is along the western boundary of the survey area and southern boundary of the pipeline (CDFW 2023a). Additional observations of nesting have been recorded at the Siphon Reservoir, which is 1.5 miles west of the survey area and 0.5 miles south of the pipeline (CDFW 2023a). This area provides nesting habitat and successful nesting has been documented up to 2015 (CDFW 2023a). Foraging habitat for this species consists of California buckwheat, coastal sages, and cacti. General habitat preferences consist of coastal scrub habitat in arid washes, on mesas, and on slopes of coastal hills. Suitable plant species and habitat requirements are found in the survey area for this species.	Medium in area of sagebrush scrub and oak habitat.	Medium in undisturbed sagebrush scrub. Unlikely to occur elsewhere.
<i>Vireo bellii pusillus</i>	Least Bell's vireo	Endangered	Endangered	The Siphon Reservoir provides habitat for least Bell's vireo individuals found within the vicinity of the survey area; one successful nest was documented at this location in 2001 (CDFW 2023a). This species' habitat consists of low-elevation riparian habitat in proximity to water or in dry river bottoms. They nest along the margins of bushes or on twigs, usually in willows (<i>Salix</i> sp.), coyote brush (<i>Baccharis</i> sp.), or mesquite (<i>Prosopis</i> sp.). Preferred nesting habitat of this species is not found in the survey area. The only habitat requirement met for this species in the survey area is an artificial water source and a feature which resembles a dry river bottom.	No nesting habitat onsite. May visit the concrete channel when there is standing water.	Low in all habitats.

Federally listed endangered: an animal or plant in danger of extinction within the foreseeable future throughout all or a significant portion of its range.

Federally listed threatened: an animal or plant in danger of becoming endangered within the foreseeable future throughout all or a significant portion of its range.

State listed threatened: "threatened species" means a native species or subspecies of a bird, mammal, fish, amphibian, reptile, or plant that, although not presently threatened with extinction, is likely to become an endangered species in the foreseeable future in the absence of special protection and management efforts (Fish and Game Code § 2067).

SSC = CDFW Species of Special Concern: "Species of Special Concern" means a species, subspecies, or distinct population of an animal native to California that currently satisfies one or more of the following criteria:

- Is extirpated from California or, in the case of birds, is extirpated in its primary season or breeding role;
- Is Federally listed, but not State listed, as threatened or endangered; meets the State definition of threatened or endangered but has not formally been listed;
- Is experiencing, or formerly experienced, serious (noncyclical) population declines or range retractions (not reversed) that, if continued or resumed, could qualify it for State threatened or endangered status; and/or
- Has naturally small populations exhibiting high susceptibility to risk from any factor(s), that if realized, could lead to declines that would qualify it for State threatened or endangered status.

WL = CDFW Watch List: animal taxa that were previously designated as SSC but no longer merit that status, or which do not yet meet SSC criteria, but for which there is concern and a need for additional information to clarify status.

Tracked by CDFW: species tracked by CDFW but that do not have a designated Federal or State status.

CRPR = California Rare Plant Rank:

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

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

0.1 = Seriously threatened in California (over 80% of occurrences threatened / high degree and immediacy of threat).

0.2 = Moderately threatened in California (20-80% occurrences threatened / moderate degree and immediacy of threat).

6.0 CONCLUSION AND RECOMMENDATIONS

The recommendations within this report are preliminary and will be refined during the California Environmental Quality Act (CEQA) process as more details about the Project design and schedule are determined. The Project site falls under the Central Coastal Subregional NCCP/HCP as the Bowerman Landfill is in the Central Subregion area of the NCCP Reserve. Projects within the NCCP must comply with the NCCP requirements, including Construction Minimization Measures, pre-construction surveys, and associated mitigation plans if such species are detected. The NCCP/HCP provides Incidental Take coverage related to permitted uses within the Reserve system.

One rare plant species, intermediate mariposa lily (CRPR 1B.2), was found on the Project site during the survey. CRPR 1B.2 applies to species that are rare, threatened, or endangered in California and elsewhere, and are fairly threatened in California. It is recommended that Project impacts avoid the populations of this species to the maximum extent feasible. While intermediate mariposa lily is not Federally or State listed, impacts to this species must be evaluated in the CEQA document. Likewise, it is a Conditionally Covered Species under the NCCP/HCP. Per requirements in the NCCP/HCP, if less than 20 individuals of intermediate mariposa lily are observed in the impact area, no mitigation would be required. If more than 20 individuals are observed, mitigation will be required. During the 2023 survey, 19 individuals were observed in the survey area (17 individuals within the proposed Project site and 2 individuals outside of the proposed Project site). The following preliminary mitigation measures are recommended for this species:

- Prior to initiating construction activities, a qualified biologist shall conduct a focused survey for special-status plant species in the Project impact areas. The survey will be done during the peak blooming period in accordance with the most current protocols approved by CDFW and CNPS.
- If 20 or more individuals of intermediate mariposa lily are found in the Project impact areas during the pre-construction survey, mitigation will be required. A Mitigation Plan shall be prepared in accordance with the NCCP/HCP. The Mitigation Plan shall explain how bulbs will be collected from the Project impact area and translocated to a mitigation site with appropriate habitat for intermediate mariposa lily. Collection of bulbs shall occur during an appropriate time of year to maximize success during translocation. The Mitigation Plan shall be implemented as approved and meet the required performance criteria. The Mitigation Plan shall be developed in coordination with USFWS, CDFW, and the NCCP non-profit corporation and approved by USFWS.

Native oak trees within the Project site that primarily occur in coast live oak areas (Figure 4) with a minimum diameter at breast height of 8 inches, or 12 inches for multi-trunked trees, are protected by the County of Orange Tree Preservation Ordinance (Article 2, Sec. 7-9-69). The ordinance requires avoidance or tree replacement on-site, off-site, or through payment of a fee if impacts would occur. However, this ordinance has not been published in the County's current Comprehensive Zoning Code and may not officially adopted. Therefore, coordination with the County is recommended to determine if the permit is required or to obtain it.

The Project as currently designed will impact 2.2 acres of sagebrush scrub in the Project site, which is a type of coastal sage scrub habitat. Direct impacts to scrub habitat may impact coastal California gnatcatcher, coastal cactus wren, and orange-throated whiptail that live in this habitat. Impacts shall be mitigated through the participation and contribution in the Central Coastal NCCP/HCP. Coastal California gnatcatcher, coastal cactus wren, and orange-throated whiptail are Target Species under the NCCP/HCP. The NCCP/HCP has allocated 138.34 acres of authorized coastal sage scrub take to occur within the Bowerman Landfill boundary (County of Orange Integrated Waste Management Department 2006). It is recommended that the client have discussions with OCWR to determine if additional coastal sage scrub take credit would be required to implement this Project and impact 2.2 acres of sagebrush scrub. If additional take credit is required, an amendment (major or minor) to the NCCP/HCP may be required to ensure coastal sage scrub take is authorized under the NCCP/HCP.

In addition, the following Construction Minimization Measures required by the NCCP/HCP shall be followed:

- Impacts to coastal sage scrub habitat shall occur outside the breeding and nesting season of the coastal California gnatcatcher (February 15 through July 15) to the extent practicable.
- A pre-construction survey shall be conducted within the Project site to determine the presence/absence of coastal California gnatcatcher and coastal cactus wren prior to clearing or grading activities. The survey shall include a 100-foot buffer around the grading limits. Any coastal California gnatcatcher or coastal cactus wren observations shall be recorded and marked on the construction/grading plans.
- All coastal sage scrub habitat outside of the Project impact area shall be fenced or marked with materials prior to the commencement of grading. No construction access, parking, or storage of equipment or materials will be allowed within these areas.
- A qualified biologist shall conduct and document a pre-construction meeting to educate construction staff (including supervisors, equipment operators, and other site employees) on the conservation measures required for the Project.
- A qualified biologist shall monitor the clearing of coastal sage scrub and oak woodland. USFWS/CDFW shall be notified at least 7 calendar days (preferably 14 calendar days) prior to clearing habitat occupied by Target/Identified Species, if observed. The qualified biologist will ensure that clearing activities and earth-moving equipment do not harm coastal California gnatcatchers or coastal cactus wren. The biologist will also ensure that these activities do not harm other species that may occur, including western spadefoot, orange-throated whiptail, red-diamond rattlesnake, and coast patch-nosed snake.
- The access road shall be sprayed with water on occasion to reduce dust accumulation on the leaves of coastal sage scrub species, as overseen by the biological monitor.

Development activities that are addressed by the NCCP/HCP are considered fully mitigated under the NCCP Act and state and federal Endangered Species Acts for impacts to habitat occupied by listed species, Target Species, and other "Identified Species" and to "covered habitats" that these species are dependent upon or associated with. Species that have potential to occur at the Project site that

qualify as Target Species or Identified Species include coastal California gnatcatcher, coastal cactus wren, orange-throated whiptail, red-diamond rattlesnake, western spadefoot, and other nesting birds and common wildlife species. Adhering to the requirements of the NCCP policies and procedures ensures no further mitigation is necessary.

Raptors and other birds have the potential to nest in the Project site and surrounding areas. Mature trees that could support nesting raptors were found in the areas mapped as coast live oak in the Project site and eucalyptus along the proposed pipeline (Figure 4). All vegetated areas of the Project site have the potential to support other nesting birds. To protect raptors and other nesting birds, the following measures are recommended:



- Avoid ground-disturbing and vegetation removal activities during the nesting bird season (February 15 to September 15). If these activities must occur during the nesting season, a pre-construction nesting bird survey would be conducted by a qualified biologist on and within 300 feet of the Project construction area. The survey would be conducted no more than 10 days prior to initiation of ground-disturbance, vegetation clearing, or construction activities and repeated between delays of greater than 10 days during the nesting season.
- If an active nest is found, an appropriate no-disturbance buffer for the species would be developed by a qualified biologist. No ground-disturbing or vegetation removal activities would occur within the buffer until the nesting season has ended or the nest is vacated, and juveniles have fledged, as determined by the qualified biologist. At the discretion of a qualified biologist, encroachment into the buffer may occur for non-listed bird species.



Recommendations regarding jurisdictional areas are described in the jurisdictional delineation report (Tetra Tech 2023).

7.0 REFERENCES



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APPENDIX A: PHOTOGRAPHS

Photograph 1	
Location: Survey Area	
Notes: Coast live oak habitat in the survey area.	
Photograph 2	
Location: Survey Area	
Notes: Sagebrush scrub habitat in the survey area.	

Photograph 3	
Location: Survey Area	
Notes: The concrete channel at the toe of the slope within the survey area.	
Photograph 4	
Location: Proposed Pipeline	
Notes: Bee Canyon Access Road and structures associated with the landfill. This area is an example of the developed habitat along the proposed pipeline route.	

Photograph 5	
Location: Proposed Pipeline	
Notes: Vegetated pad within the disturbed areas of the proposed pipeline route.	
Photograph 6	
Location: Proposed Pipeline	
Notes: Sagebrush scrub habitat along Bee Canyon Access Road.	

Photograph 7	
Location: Proposed Pipeline	
Notes: Thin Eucalyptus grove habitat alongside Bee Canyon Access Road.	
Photograph 9	
Location: Survey Area	
Notes: An intermediate mariposa lily found onsite.	

Photograph 10	
Location: Survey Area	
Notes: Representative photo of the intermediate mariposa lily habitat onsite.	