

CHAPTER 2

Project Description

2.1 Project Overview

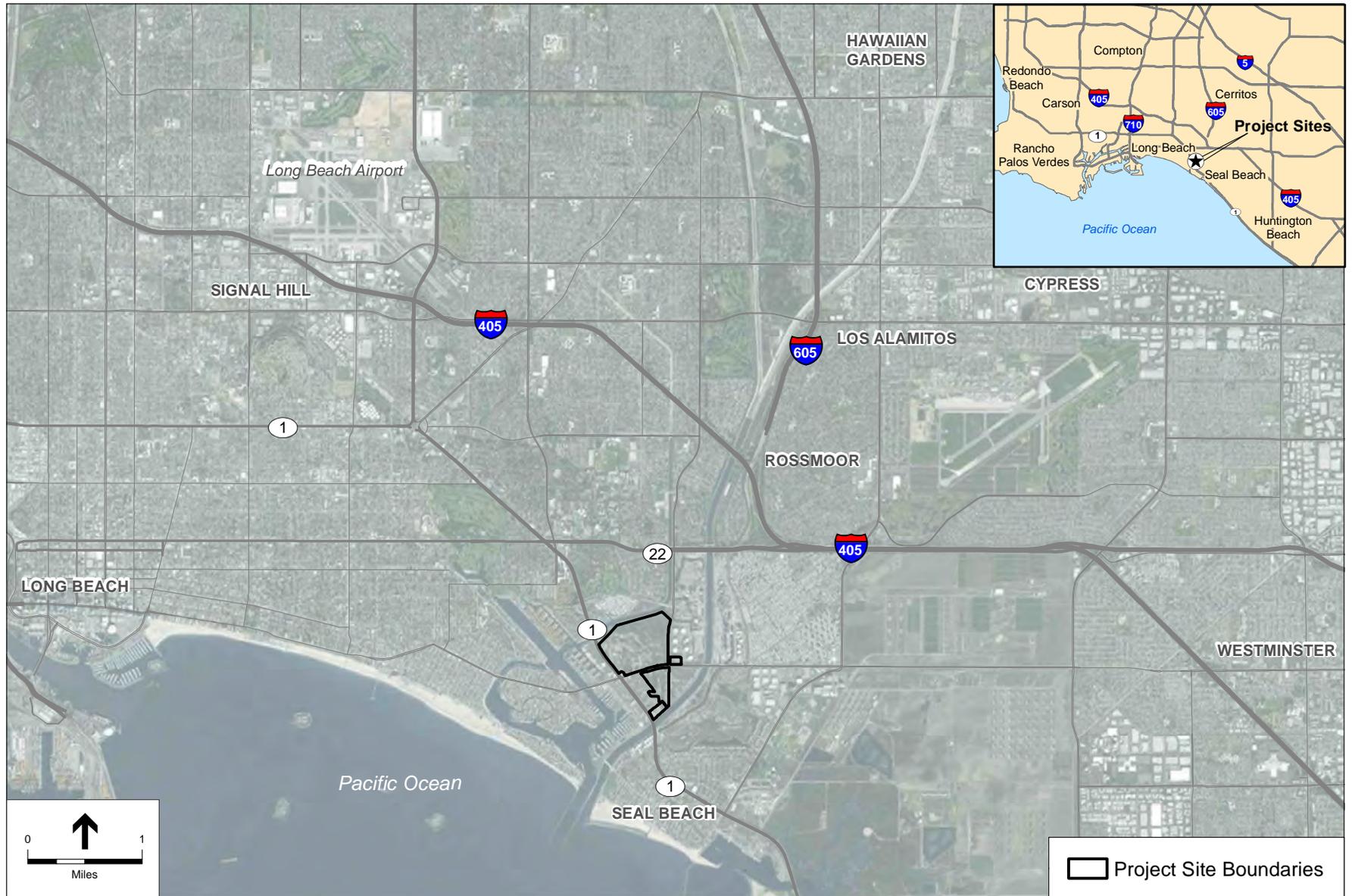
Beach Oil Minerals Partners (BOMP, the Applicant) proposes to consolidate their existing oil operations and implement a wetlands habitat restoration project (proposed project) that would provide new public access opportunities to a portion of the Los Cerritos wetlands. The proposed project would occur on four individual sites, which together comprise the project site. These individual sites, which are described in detail below, are commonly known as the Synergy Oil Field site, the City Property site, the Pumpkin Patch site, and the Los Cerritos Wetlands Authority (LCWA) site. Existing oil operations on the Synergy Oil Field and City Property sites would be phased out over time, and new oil production facilities would be constructed and operated on the Pumpkin Patch and LCWA sites. The northern portion of the Synergy Oil Field site would be remediated, if necessary, and restored to a natural wetland area that will be operated as a wetlands mitigation bank.² Oil operations on the southern portion of the Synergy Oil Field site and on the City Property site would continue for a fixed period of time of up to 40 years, but would ultimately be phased out as new operations are established on the Pumpkin Patch and LCWA sites. The proposed project also includes the construction of a new office building and storage structure on the Pumpkin Patch site to support the oil operations. Once the offices are relocated to the Pumpkin Patch site, the proposed project will relocate the existing office building on the Synergy Oil Field site to another location on the Synergy Oil Field site, repurpose it for use as a visitors center, construct a new parking area and perimeter trail to provide public access to this portion of the Los Cerritos Wetlands.

2.2 Project Location

2.2.1 Regional Location

The proposed project is located within the City of Long Beach (City), which is within the southeastern portion of Los Angeles County, California. The City is bounded by the Cities of Carson and Los Angeles, the neighborhood of Wilmington, and the Port of Los Angeles to the west; the Cities of Compton, Paramount, and Lakewood to the north; and the Cities of Hawaiian Gardens, Cypress, Los Alamitos, and Seal Beach to the east. The Pacific Ocean borders the City to the south. **Figure 2-1, Regional Location**, shows the regional location of the proposed project.

² Mitigation banking is the preservation, enhancement, restoration, or creation (PERC) of a wetland, stream, or habitat conservation area, which offsets, or compensates for, expected adverse impacts to similar nearby ecosystems. The approval and establishment of the mitigation bank, including the wetlands restoration plan that will be implemented, is subject to a separate regulatory process overseen by the interagency review team (IRT) consisting of State and federal resources agencies, and led by USACE.



SOURCE: ESRI

Long Beach Cerritos Wetland . 150712

Figure 2-1
Regional Location

Portions of the City that are adjacent to the coast, including the project site, are within the California Coastal Zone. This includes the Port of Long Beach, Downtown Shoreline, Bluff Community (Area A), Bixby Park/Bluff Park Community (Area B), Belmont Heights/Belmont Park Communities (Area C), Belmont Shore (Area D), Naples and Alamitos Peninsula Communities (Area E), Southeast Area Development and Improvement Plan (SEADIP), Waterland Communities, and the Strand (City of Long Beach 1980).

The proposed project is also located entirely within the existing SEADIP Planned Development District (Planned Development District 1 [PD-1]), which encompasses approximately 1,472 acres and consists of land south of 7th Street, east of Bellflower Boulevard, east of the Long Beach Marine Stadium and Alamitos Bay docks, south of Colorado Street, and north and west of Long Beach's southern boundary, in the southeast corner of the City. It borders the County of Orange to the east and south and the Pacific Ocean to the southwest. SEADIP/PD-1 is currently being reviewed and updated by the City as part of the proposed Southeast Area Specific Plan Update (SEASP). The SEASP, if approved, will serve as the zoning for the site, replacing the existing PD-1 zoning and including development standards (setbacks, densities, heights, buffers, etc.) and design guidelines.

Regional access to the area is provided by Interstate 405 (I-405) and Interstate 605 (I-605) as well as State Route 22 (SR-22) which terminates as 7th Street. Pacific Coast Highway (PCH) (SR-1) traverses the area from the northwest corner to the southeast corner. Locally, 2nd Street, Loynes Drive, and 7th Street all provide east/west connections across the area (City of Long Beach 2016).

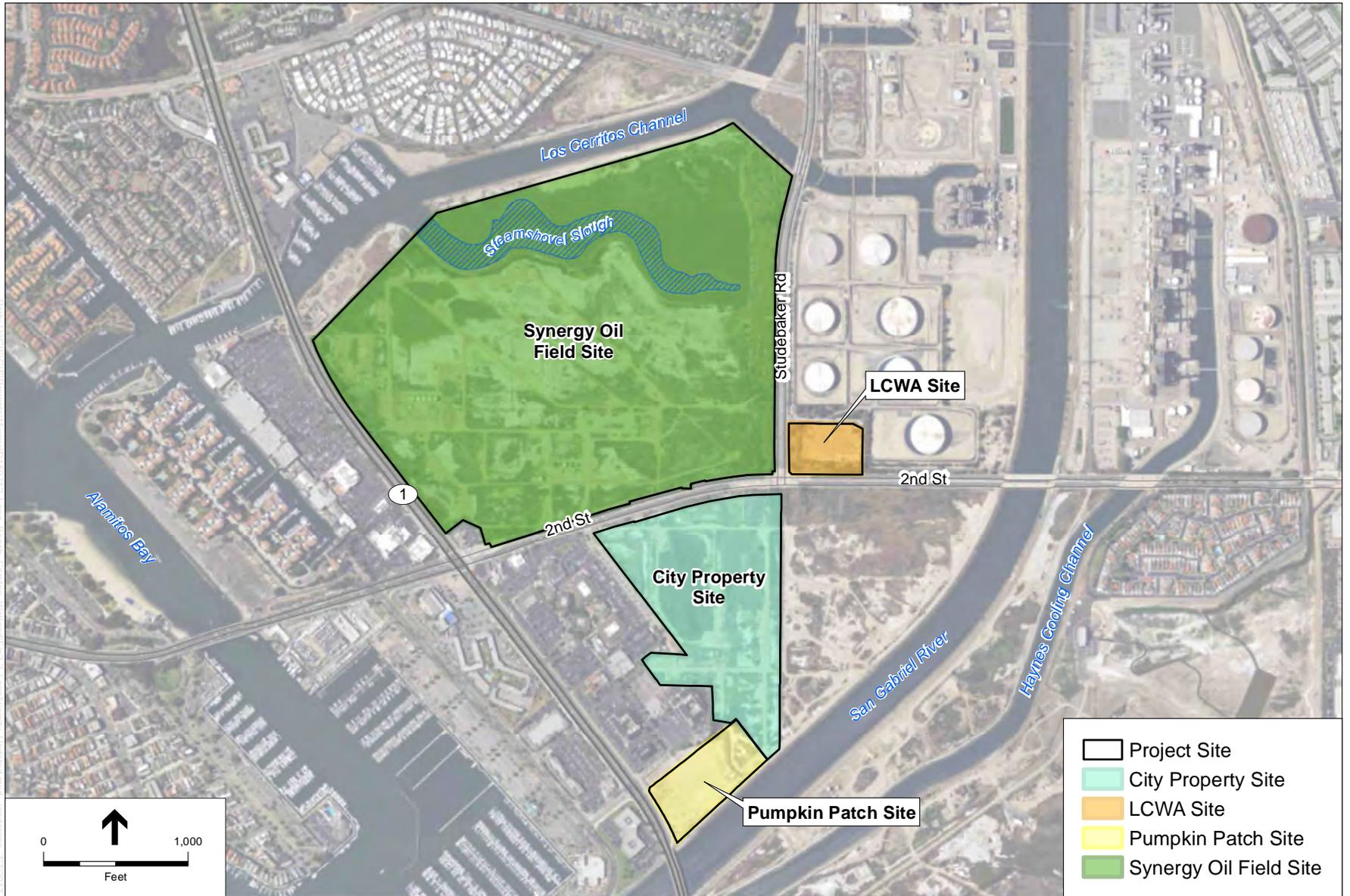
2.2.2 Project Vicinity

The proposed project site is generally bordered by the Los Cerritos Channel to the north, beyond which is a residential development; Studebaker Road to the east, beyond which are the AES Power Plant site and the San Gabriel River; the San Gabriel River to the southwest, beyond which are undeveloped areas; and PCH to the west, beyond which are commercial development and Alamitos Bay. **Figure 2-2, Project Site and Local Vicinity**, illustrates the project site relative to its immediate surroundings.

2.2.3 Project Site

The proposed project is composed of four individual sites. The four individual sites total approximately 195 acres. Each site's location and ownership is provided in more detail below.

- **Synergy Oil Field site:** The Synergy Oil Field site consists of an approximately 150-acre property located at 6433 East 2nd Street. The site is bounded by PCH to the west, 2nd Street to the south, Studebaker Road to the east, and the Los Cerritos Channel to the north. The site is owned by Los Cerritos Wetlands, LLC. (APNs: 7237-017-010, 7237-017-011, 7237-017-012, 7237-017-013, 7237-017-014, and 7237-017-019)
- **City Property site:** The City Property site is an approximately 33-acre site located at 2nd Street and Shopkeeper Road. The site is bounded by Shopkeeper Road to the west, 2nd Street to the north, undeveloped land to the east, and the San Gabriel River to the south. The site is owned by the City of Long Beach. LCW Oil Operations, LLC holds rights to operate oil production facilities on the City Property site subject to a surface use agreement and easement. (APNs: 7237-020-903 and 7237-020-904)



SOURCE: ESRI

Long Beach Cerritos Wetland . 150712

Figure 2-2
Project Site and Local Vicinity

- **Pumpkin Patch site:** The Pumpkin Patch site comprises an approximately 7-acre property located at 6701 PCH. The site is undeveloped except for an oil well and associated pipeline, and is used seasonally as a pumpkin patch and Christmas tree lot. The site is bounded by PCH to the west, the San Gabriel River to the south, the commercial-retail uses at the Marketplace to the north, and the undeveloped land associated with the City Property to the east. A Lyon Living affiliate owns the site. (APNs: 7237-010-043, 7237-010-044, and 7237-010-045)
- **Los Cerritos Wetlands Authority site:** The LCWA site consists of an approximately 5-acre parcel located at the northeast corner of Studebaker Road and 2nd Street. The site is bounded by 2nd Street to the south and Studebaker Road to the west and is adjacent to industrial development to the north and east. The site is owned by the LCWA. (APN: 7237-019-809)

2.3 Project Setting

2.3.1 History of the Los Cerritos Wetlands

Historically, as late as 1895, the Los Cerritos Wetlands covered approximately 2,400 acres and stretched approximately 2 miles inland from the coast. Over the past century, the wetlands have been used for farming (cattle and beets in the 1800s and early 1900s), oil production, landfills, burn dumps, and urban development, including residential and commercial uses.

In 1921, oil was discovered in the Long Beach Oil Field. Shortly thereafter, exploration of the Seal Beach Oil Field, including the project site, made oil extraction possible. During the first decades of the 20th Century, parts of the Alamitos Bay Wetlands (south of the project site) were filled for development or dredged to create marinas and harbors. The channelization of the lower San Gabriel River started in about 1932 and was completed by 1941. The channelization process created changes in the hydrological functioning in the San Gabriel River watershed, which likely altered the historic vegetation patterns in the Los Cerritos Wetlands area and increased barriers to wildlife movement in the area (LADPW 2006).

A comparison of the earliest aerial photographs of the project vicinity, which date back to the late 1920s to more recent aerial photographs, show a significant loss and fragmentation of coastal wetlands due to continued development through the years. Today, the only remnants of the historical Los Cerritos Wetlands occur in degraded patches. In addition, a majority of the wetlands complex that existed at Alamitos Bay has been irrevocably converted to other uses (mostly development and sub-tidal habitat).³

The Synergy Oil Field site is situated within the San Gabriel River watershed within a substantially modified complex of wetlands referenced as the Los Cerritos Wetlands complex (LCW complex), which has been subject to various anthropogenic disturbances including urban development, oil extraction, farming, landfills, and burn dumps in the past century (GLA 2016). Currently, only remnant wetlands exist throughout the entire wetland network that previously existed.

There are several waterways adjoining the project area, including the Los Cerritos Channel to the north, and the San Gabriel River to the south and southeast (refer to Figure 2-2). Additionally, the Haynes Cooling Channel (HCC) is located to the east of the site, and the Steamshovel Slough traverses the northeastern portion

³ Alamitos Bay is currently composed of the Marine Stadium, Long Beach Marina, and Alamitos Bay proper. A small bathing lagoon, Colorado Lagoon in Long Beach, has a tidal connection with Alamitos Bay and a small wildlife pond, Sims Pond, also has a tidal connection (RWQCB 2016).

of the Synergy Oil Field site. Historic maps indicate the Steamshovel Slough was relocated from the position shown on the 1916 topographic map, which includes extensive tidal channels to the current location adjacent to the active oil field as depicted on a topographic map from 1942 (GLA 2016).

2.3.2 Existing Land Management and Site Conditions

The project site is composed of four individual sites, as described above, and totals approximately 195 acres of developed and disturbed land. Since the early part of the 20th century, the majority of the land within the project vicinity was managed as oil fields and for other industrial uses.

Figure 2-3, Existing Oil Wells on the Project Site, depicts the locations of the various existing wells associated with mineral resource extraction activities and its status. **Table 2-1, Oil Wells by Site**, lists the wells on the individual sites, by site, the well number, their status and type, ownership, and API number. There are a total of 79 active, idle, or plugged oil wells present on three of the individual sites that comprise the project site: the Synergy Oil Field site, the City Property site, and the Pumpkin Patch site consisting of 34 active wells, 19 idle wells, and 26 plugged wells. Three of the wells are not owned by Synergy Oil & Gas, LLC (two on the Synergy Oil Field site and one on the LCWA site); as previously mentioned, however, all three wells are plugged.

As listed in Table 2-1, the status of the wells include active, idle, and plugged. Active wells are currently in production. Idle wells are inactive for 24 months. Abandonment procedures for the proposed project are described below in the Well Plugging and Abandonment section in Section 2.5.1.1, Synergy Oil Field Site. Wells that have already been plugged, including those not owned by Synergy Oil & Gas, LLC, are not considered as a part of the proposed project and are not discussed further in this EIR. In total, there are 34 active wells and 19 idle wells (for a total of 53 wells).

2.3.2.1 Synergy Oil Field Site

The Synergy Oil Field site is an active oil field with oil production and wells, tank farms, and a network of roads, pipelines, and other oil field-related amenities including an office building. **Figure 2-4, Synergy Oil Field Site**, depicts the Synergy Oil Field site and its northern and southern components. The northern 76.52-acre area contains Steamshovel Slough, an area of tidally influenced southern coastal salt marsh, tidal channels, and mud flats that account for approximately 30 acres of the northern portion of the site. The Steamshovel Slough is a fairly pristine remnant of the historic tidal marsh of the Los Alamitos Bay (which is west of the project site). The Steamshovel Slough is approximately 1,950 feet long and is considered a historic or “ancient” marsh in that it has not been modified through dredging or filling. Steamshovel Slough contains no active oil operations and is separated from the oil operations areas by an earthen berm and varying expanses of open space.⁴

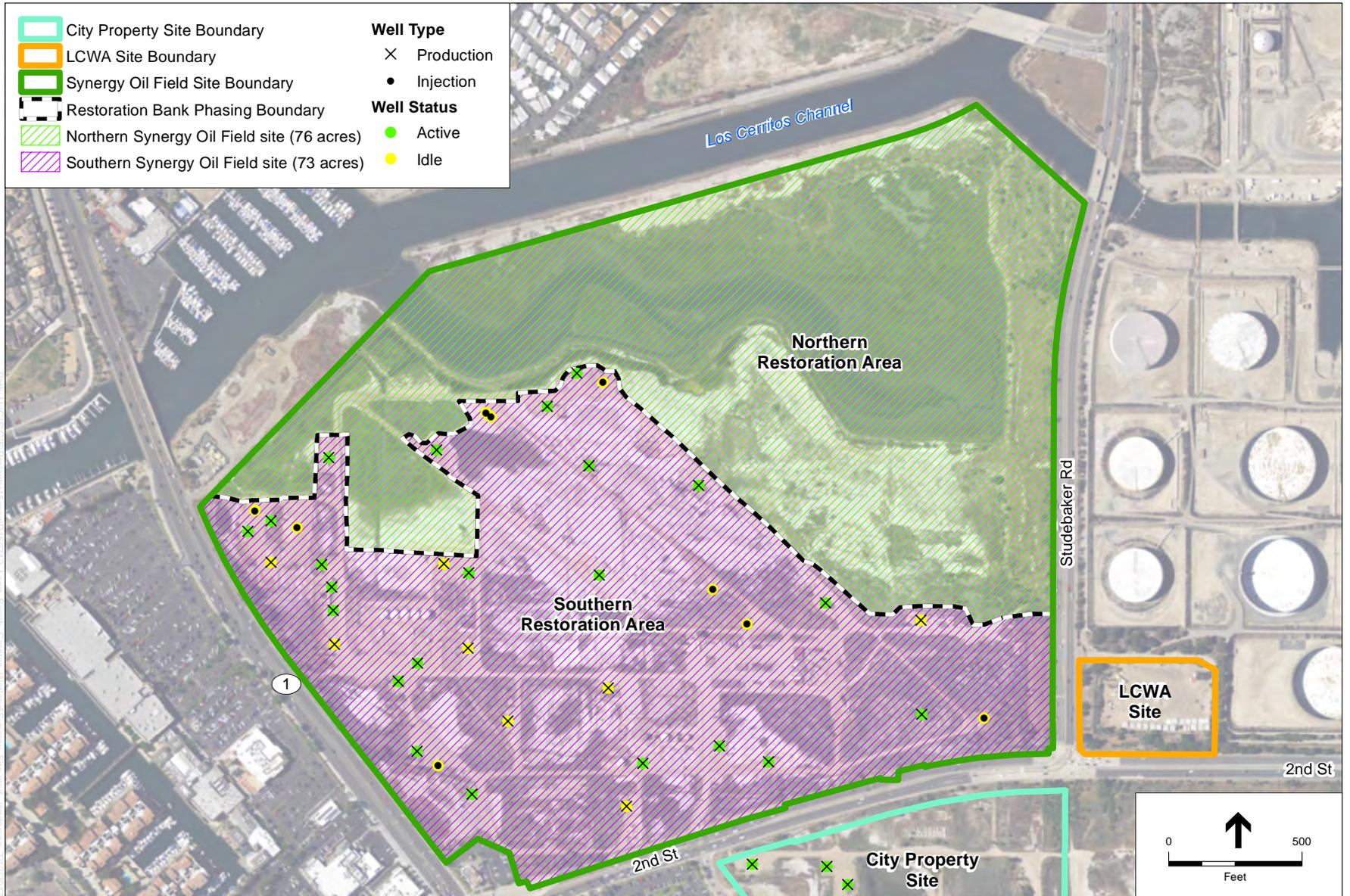
⁴ Raised bank is approximately 6 feet high



SOURCE: ESRI; CA Department of Conservation

Long Beach Cerritos Wetland. 150712

Figure 2-3
Existing Oil Wells On The Project Site



SOURCE: ESRI; City of Long Beach 2015

Long Beach Cerritos Wetland . 150712

Figure 2-4
Synergy Oil Field Site

Table 2-1 Oil Wells by Site

Site	Well Number	API Number	Operator Number	Well Type	Well Status
Synergy Oil Field Site					
Synergy	1	037-06973	Synergy Oil & Gas, LLC	Production	Plugged
Synergy	2	037-06974	Synergy Oil & Gas, LLC	Production	Plugged
Synergy	4	037-06977	Synergy Oil & Gas, LLC	Production	Active
Synergy	5	037-06978	Synergy Oil & Gas, LLC	Wastewater Injection	Plugged
Synergy	6	037-06979	Synergy Oil & Gas, LLC	Production	Idle
Synergy	7	037-06980	Synergy Oil & Gas, LLC	Production	Active
Synergy	12	037-06985	Synergy Oil & Gas, LLC	Production	Active
Synergy	13	037-06986	Synergy Oil & Gas, LLC	Production	Active
Synergy	14	037-06987	Synergy Oil & Gas, LLC	Production	Active
Synergy	22	037-06995	Synergy Oil & Gas, LLC	Production	Active
Synergy	24	037-06997	Synergy Oil & Gas, LLC	Production	Idle
Synergy	26	037-06999	Synergy Oil & Gas, LLC	Wastewater Injection	Plugged
Synergy	28	037-07001	Synergy Oil & Gas, LLC	Production	Active
Synergy	30	037-07003	Synergy Oil & Gas, LLC	Production	Idle
Synergy	32	037-07005	Synergy Oil & Gas, LLC	Production	Idle
Synergy	33	037-07006	Synergy Oil & Gas, LLC	Production	Idle
Synergy	34	037-07007	Synergy Oil & Gas, LLC	Production	Active
Synergy	38	037-07011	Synergy Oil & Gas, LLC	Production	Active
Synergy	40	037-07013	Synergy Oil & Gas, LLC	Production	Idle
Synergy	41	037-07014	Synergy Oil & Gas, LLC	Wastewater Injection	Idle
Synergy	44	037-07017	Synergy Oil & Gas, LLC	Production	Plugged
Synergy	45	037-07018	Synergy Oil & Gas, LLC	Production	Active
Synergy	46	037-07019	Synergy Oil & Gas, LLC	Wastewater Injection	Idle
Synergy	47	037-07020	Conoco Inc.	Production	Plugged
Synergy	49	037-07022	Synergy Oil & Gas, LLC	Production	Active
Synergy	50	037-07023	Synergy Oil & Gas, LLC	Wastewater Injection	Idle
Synergy	51	037-07024	Synergy Oil & Gas, LLC	Production	Active
Synergy	52	037-07025	Synergy Oil & Gas, LLC	Production	Plugged
Synergy	53	037-06351	Synergy Oil & Gas, LLC	Wastewater Injection	Idle
Synergy	54	037-07126	Synergy Oil & Gas, LLC	Production	Active
Synergy	55	037-07127	Synergy Oil & Gas, LLC	Production	Active
Synergy	56	037-07128	Synergy Oil & Gas, LLC	Production	Active
Synergy	57	037-07129	Synergy Oil & Gas LLC	Production	Active
Synergy	58	037-07130	Synergy Oil & Gas, LLC	Wastewater Injection	Plugged
Synergy	59	037-07131	Synergy Oil & Gas, LLC	Production	Active
Synergy	60	037-07132	Synergy Oil & Gas, LLC	Wastewater Injection	Idle
Synergy	61	037-07133	Synergy Oil & Gas, LLC	Wastewater Injection	Idle
Synergy	62	037-07134	Synergy Oil & Gas, LLC	Production	Active
Synergy	65	037-07137	Synergy Oil & Gas, LLC	Wastewater Injection	Idle
Synergy	67	037-07139	Synergy Oil & Gas, LLC	Wastewater Injection	Plugged
Synergy	69	037-07141	Synergy Oil & Gas, LLC	Production	Active
Synergy	70	037-07142	Synergy Oil & Gas, LLC	Production	Idle
Synergy	72	037-07143	Conoco Inc.	Production	Plugged
Synergy	73	037-05601	Synergy Oil & Gas, LLC	Production, Wastewater Injection	Plugged
Synergy	74	037-07145	Synergy Oil & Gas, LLC	Production	Plugged

Table 2-1 Oil Wells by Site

Site	Well Number	API Number	Operator Number	Well Type	Well Status
Synergy	75	037-07146	Synergy Oil & Gas, LLC	Wastewater Injection	Idle
Synergy	76	037-07147	Synergy Oil & Gas, LLC	Production	Active
Synergy	77	037-07148	Synergy Oil & Gas, LLC	Production	Active
Synergy	78	037-07149	Synergy Oil & Gas, LLC	Wastewater Injection	Idle
Synergy	79	037-07150	Synergy Oil & Gas, LLC	Production	Plugged
Synergy	81	037-07151	Synergy Oil & Gas, LLC	Production	Active
Synergy	82	037-20684	Synergy Oil & Gas, LLC	Production	Idle
Total Number of Wells (Synergy Oil Field site)	52				22 Active 17 Idle 13 Plugged
City Property Site					
City Property	8	037-06981	Synergy Oil & Gas LLC	Production	Active
City Property	9	037-06982	Synergy Oil & Gas LLC	Production	Plugged
City Property	10	037-06983	Synergy Oil & Gas LLC	Production	Active
City Property	16	037-06989	Synergy Oil & Gas LLC	Production	Active
City Property	17	037-06990	Synergy Oil & Gas LLC	Production	Active
City Property	18	037-06991	Synergy Oil & Gas LLC	Production	Plugged
City Property	19	037-06992	Synergy Oil & Gas LLC	Production	Plugged
City Property	21	037-06994	Synergy Oil & Gas LLC	Production	Idle
City Property	25	037-06998	Synergy Oil & Gas LLC	Production	Active
City Property	27	037-7000	Synergy Oil & Gas LLC	Production, Wastewater Injection	Plugged
City Property	29	037-7002	Synergy Oil & Gas LLC	Production	Plugged
City Property	31	037-7004	Synergy Oil & Gas LLC	Production	Active
City Property	36	037-07009	Synergy Oil & Gas, LLC	Production	Active
City Property	37	037-7010	Synergy Oil & Gas LLC	Production	Plugged
City Property	39	037-7012	Synergy Oil & Gas LLC	Production	Active
City Property	42	037-7015	Synergy Oil & Gas LLC	Production	Active
City Property	43	037-7016	Synergy Oil & Gas LLC	Production	Active
City Property	48	037-7021	Synergy Oil & Gas LLC	Production	Plugged
City Property	64	037-7136	Synergy Oil & Gas LLC	Production	Active
City Property	66	037-7138	Synergy Oil & Gas LLC	Production	Plugged
City Property	68	037-7140	Synergy Oil & Gas LLC	Wastewater Injection	Plugged
City Property	80	037-7144	Synergy Oil & Gas LLC	Production	Idle
Total Number of Wells (City Property site)	22				11 Active 2 Idle 9 Plugged
Pumpkin Patch Site					
Pumpkin Patch	11	037-06984	Synergy Oil & Gas, LLC	Production	Active
Pumpkin Patch	20	037-06993	Synergy Oil & Gas, LLC	Production	Plugged
Total Number of Wells (Pumpkin Patch site)	2				1 Active 1 Plugged
LCWA Site					
LCWA	9	037-07998	SWEPI, LP	Production	Plugged
Total Number of Wells (LCWA site)	1				1 Plugged

SOURCE: Synergy Oil and Gas, 2017.

NOTE: Idle wells have regulatory approval for operation and are physically capable of active production, although they were not active at the time Table 2-2 was prepared. Currently, water produced during oil extraction operations is conveyed into the sewer system.

The southern and central portions of the Synergy Oil Field site, totaling 73.07 acres, are currently being operated as an active oil field and contain 39 wells. The Newport-Inglewood fault, an active fault, traverses the Synergy Oil Field site through its western portion in a northwest/southeast direction and, as such, the site is within the state-designated Alquist-Priolo Earthquake Fault Zone (**Figure 2-5, Newport-Inglewood Fault Zone**). Because of these geologic conditions at the Synergy Oil Field site, the oil operations are conducted on both sides of the fault. An existing one-story, wood office building is located on the southern portion of the site at the terminus of the existing entry road and houses the Synergy Oil offices. The entire Synergy Oil Field site is fenced and security gated as part of ongoing oil production operations.

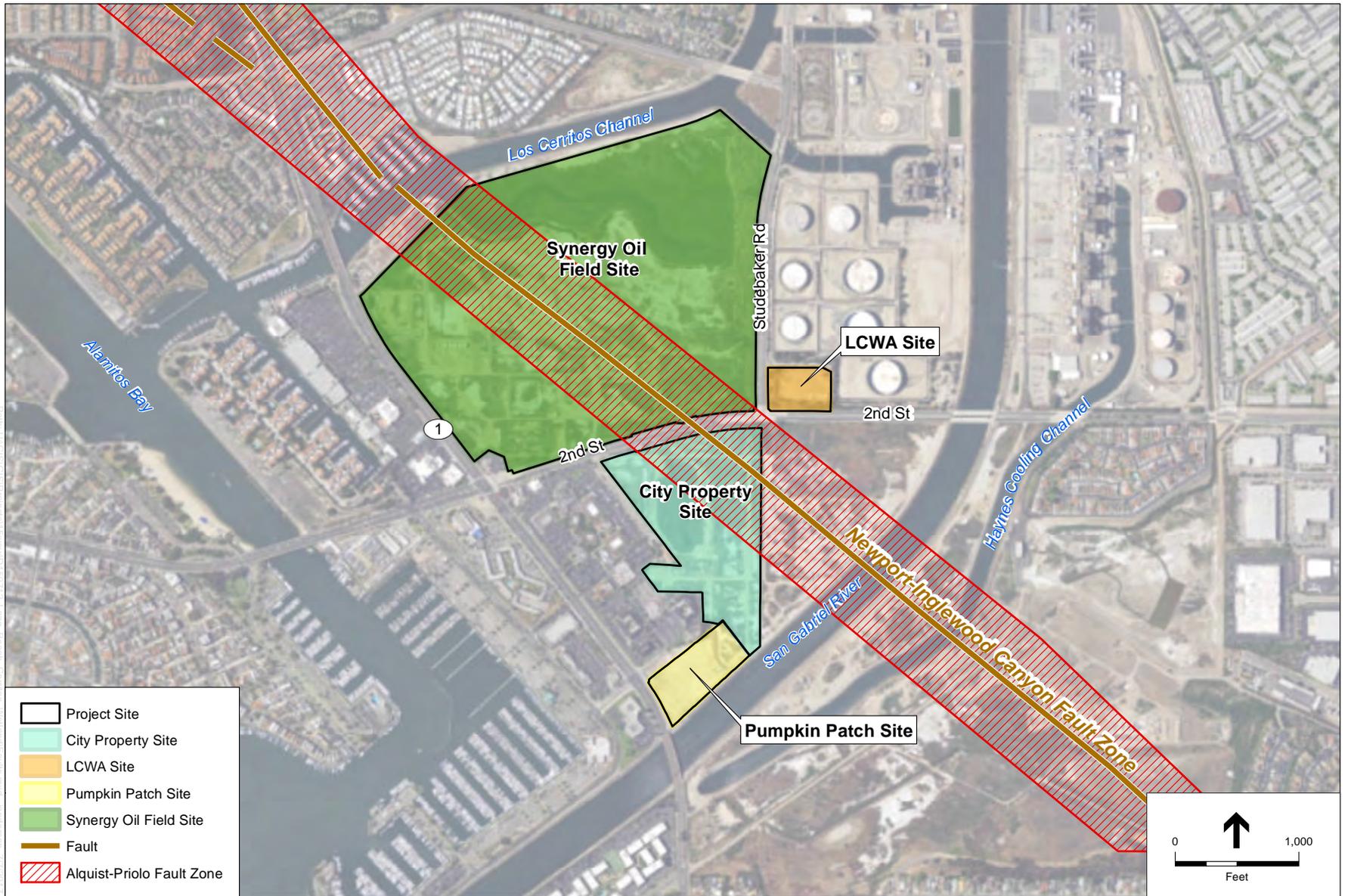
The southern portion of the Synergy Oil Field site contains the oil production facilities, which includes 52 oil wells, aboveground oil pipelines, a waste water disposal and vapor recovery area, two tank battery areas, two sheds, and numerous transformers. Of the 39 wells present on the site, 22 are active and 17 are idle. The southern portion of the site also contains the Bixby Ranch Field Office which is used by Synergy Oil as an office. The Bixby Ranch Field Office is directly accessed from a driveway located on 2nd Street. Two clusters of tank farms (one active and one inactive) are also located in the southern portion of the site near the Bixby Ranch Field Office building.

A narrow northeastern strip of the Synergy Oil Field site has a closed former landfill buried under about 25 feet of fill. In addition, previous vegetation disposal from flood control activities may extend onto the southwestern corner of this site.

A tide gate and series of pipes are used to restrict the tidal influence from interfering with oil operations in limited western portions of the oil field. Much of the central portion of the site contains oil facilities and is not subject to tidal influence, but supports salt marsh habitat and/or areas with non-native plant species. The southern portion of the site lacks tidal influence and contains all supporting oil facilities, including pipelines, tank farms, and numerous pads and roads. This area supports wetlands, vegetated and unvegetated flats, upland scrub, and non-native herbaceous vegetation.

The northern portion of the Synergy Oil Field site supports a variety of wetland flora and fauna, including one special-status plant: southern tarplant (*Centromadia parryi australis*) and two special-status animals including the Belding's savannah sparrow (*Passerculus sandwichensis*) and the wandering skipper butterfly (*Panoquina errans*). In addition to these species, Steamshovel Slough also supports two other special-status plants: wooly seablite (*Suaeda taxifolia*) and estuary seablite (*Suaeda esteroa*), one special-status insect: the mudflat tiger beetle (*Cicindela trifasciata sigmoidea*), as well as foraging areas for the federally and State-listed California least tern (*Sterna antillarum browni*) and California brown pelican (*Pelicanus occidentalis*), which have both been reported on site as they forage in the San Gabriel River and Los Alamitos Bay. Other portions of the northern 76.52-acre restoration area currently support upland vegetation, most of which consists of non-native herbaceous species including crystalline iceplant (*Mesembryanthemum crystallinum*), small-flowered iceplant (*Mesembryanthemum nodiflorum*), hottentot fig (*Carpobrotus edulis*), mustard (*Brassica geniculata*), red brome (*Bromus madritensis*), curly dock (*Rumex crispus*), and five-horn smotherweed (*Bassia hyssopifolia*).

The southern portion of the Synergy Oil Field site supports vegetation alliances often consistent with the presence of wetlands, along with areas of non-native herbaceous plants, goldenbush scrub, and non-native herbs. The southern portion of the site lacks tidal influence and contains all of the oil facilities. There are other areas that are disturbed or were developed during former oil operations, and are now unvegetated flats. Some of these unvegetated flats exhibit occasional ponding.



SOURCE: ESRI; City of Long Beach 2015; California Department of Conservation 2001

Long Beach Cerritos Wetland . 150712
Figure 2-5
 Newport-Inglewood Fault Zone

2.3.2.2 City Property Site

The City Property site is largely composed of areas that have been disturbed by former and current oil extraction activities, with small and noncontiguous areas of wetlands interspersed within the disturbed areas (**Figure 2-6, City Property Site**). A majority of the site is disturbed, and vegetation is generally sparse. Currently, there are 22 oil wells and associated oil production infrastructure, such as pipelines and tanks, operating on the site. Of those wells, 11 are active, 2 are idle, and 9 are plugged. To maintain the existing oil operations in accordance with the requirements of the LCWA, Long Beach Fire Department (LBFD), and the California Department of Conservation Department of Oil, Gas, and Geothermal Resources (DOGGR), vegetation is routinely cleared around the wells. Two oil storage tanks are located in the southwestern portion of the site. Aboveground pipelines and dirt access roads traverse the site, with vehicular access to the site via an existing driveway along Shopkeeper Road. The site contains a perimeter of trees and landscaping along the western and northern boundaries. An LCWA-owned property borders the City Property site to the east, and the San Gabriel River borders the site's southern boundary.

The Synergy Oil & Gas operations on the City Property site are conducted pursuant to a Surface Use Release Agreement and Grant of Easement (SURGE) between the City of Long Beach and LCW Oil Operations, LLC. The SURGE is an agreement between the City and oil operator regarding use of the City Property site for continued oil operations and access to its mineral rights. The SURGE also grants various easements to the oil operator to maintain various pipelines and oil facilities on the City Property site. **Figure 2-7, Existing Pipeline Easements**, depicts the location of the existing pipeline easements. Project implementation will require an amendment to the SURGE to include an easement for the construction, operation, and maintenance of the surface and subsurface pipeline corridor that will traverse the City Property site connecting the Pumpkin Patch site to the LCWA site. The amendment will also address the termination of the various pipeline easements after the existing oil operations on the City Property site are phased out. The project contemplates the eventual removal of all existing pipelines that currently support the 13 active and idle wells on the City Property site. At this time, it is not known when or which pipelines will be removed, as removal is dependent upon the 40-year phase-out of oil operations proposed by the project. **Figure 2-8, Post-Project (40+ Year) Pipeline and Easement Locations**, and **Figure 2-9, Post-Project (40+ Year) Pipeline and Easement Locations (Alternative Pipeline Route)**, depict the two potential easements for the pipeline corridor proposed by the project.

The Newport-Inglewood fault also traverses the City Property site diagonally through the northeast portion, and as such, the site is within the state-designated Alquist-Priolo Earthquake Fault Zone.

2.3.2.3 Pumpkin Patch Site

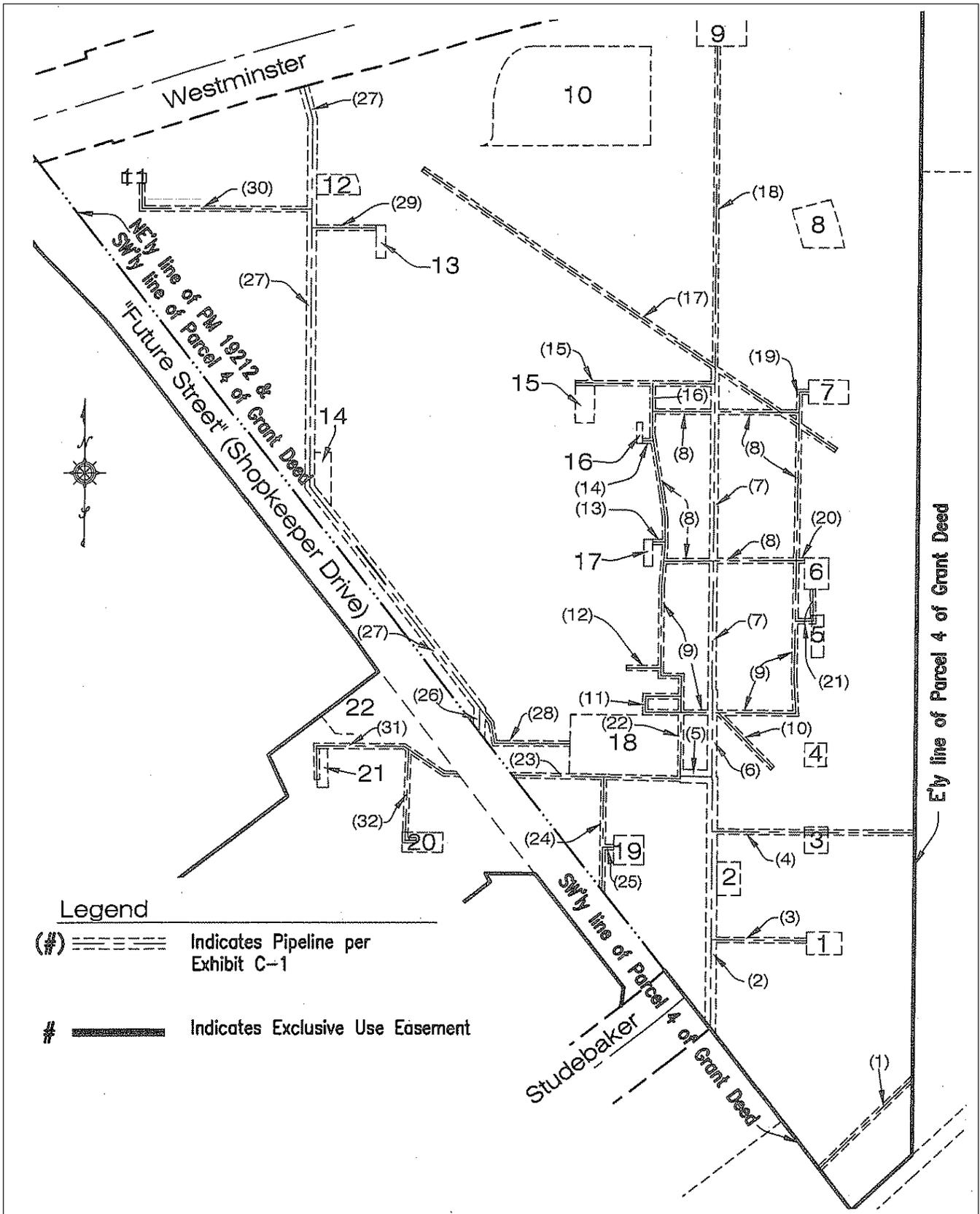
The Pumpkin Patch site is currently used seasonally for the sale of pumpkins and Christmas trees. The site is fenced and privately-maintained except when open for seasonal use. The western two-thirds of the Pumpkin Patch site was previously used as a landfill for household and construction waste.



SOURCE: ESRI; City of Long Beach 2015

Long Beach Cerritos Wetland . 150712

Figure 2-6
City Property Site



SOURCE: AEC, 2017b; ESA; Google Earth

Long Beach Cerritos Wetland . 150712

Figure 2-7
Existing Pipeline Easements



SOURCE: ESRI; City of Long Beach 2015

Long Beach Cerritos Wetland . 150712

Figure 2-8
 Post-Project (40+ Year) Pipeline and Easement Locations



SOURCE: ESRI; City of Long Beach 2015

Long Beach Cerritos Wetland . 150712

Figure 2-9
 Post-Project (40+ Year) Pipeline and Easement Locations
 (Alternative Pipeline Route)

The Pumpkin Patch site is composed of disturbed, sparsely vegetated land (**Figure 2-10, Pumpkin Patch Site**). The site is terraced into two levels. The upper terrace is located at the southwestern portion of the site, which borders PCH, and has been used for decades as a pumpkin patch in October leading up to Halloween, and then as a Christmas tree lot through December. The remainder of the upper level is used for parking during these months. The lower area in the northeast that borders the City Property site is not subject to commercial activities. This area contains two oil wells (one active, one plugged) surrounded by pickleweed mats and unvegetated flats. The San Gabriel River borders the Pumpkin Patch site along its southeastern edge.

The Pumpkin Patch site is approximately 1,000 feet southwest of the Newport-Inglewood Fault Zone and, thus, is not within a state-designated Alquist-Priolo Earthquake Fault Zone.

2.3.2.4 LCWA Site

In 2007, the State Coastal Conservancy designated LCWA to accept an Offer of Dedication for the 5-acre LCWA site that had been recorded by Southern California Edison in settlement of litigation. The LCWA is a governmental entity that was developed by a joint powers agreement between the State Coastal Conservancy, the Rivers and Mountains Conservancy, and the Cities of Long Beach and Seal Beach. Currently, the LCWA now owns and manages approximately 175 acres of land within the LCW complex intended for conservation and restoration. The LCWA site is currently undeveloped and is used on a temporary lease basis for equipment storage and staging. The LCWA site reportedly received about 20 feet of fill on the entire site prior to 1973 in addition to a former waste cement and asphalt debris pit located generally in the central-western portion of this site.

The LCWA site is mostly disturbed with vegetation around the entire boundary of the site; refer to **Figure 2-11, Los Cerritos Wetlands Authority (LCWA) Site**. The vegetation around the perimeter of the site consists of non-native trees, with Aleppo pine (*Pinus halepensis*) being the most common tree on site. The center of the site is used as a temporary storage yard. As shown in Figure 2-2, the LCWA site is bordered by the Plains All American Pipeline property, which includes pipelines and a tank farm to the north and east. Access to the site is provided from a dirt access road and driveway from Studebaker Road. The site currently contains piles of wooden pallets and other industrial-manufacturing items, and a dirt access road forms a circular track around the center of the site.

The LCWA site is approximately 200 feet northeast of the Newport-Inglewood Fault Zone and, thus, is not within a state-designated Alquist-Priolo Earthquake Fault Zone.

2.3.3 Land Use and Zoning Designations

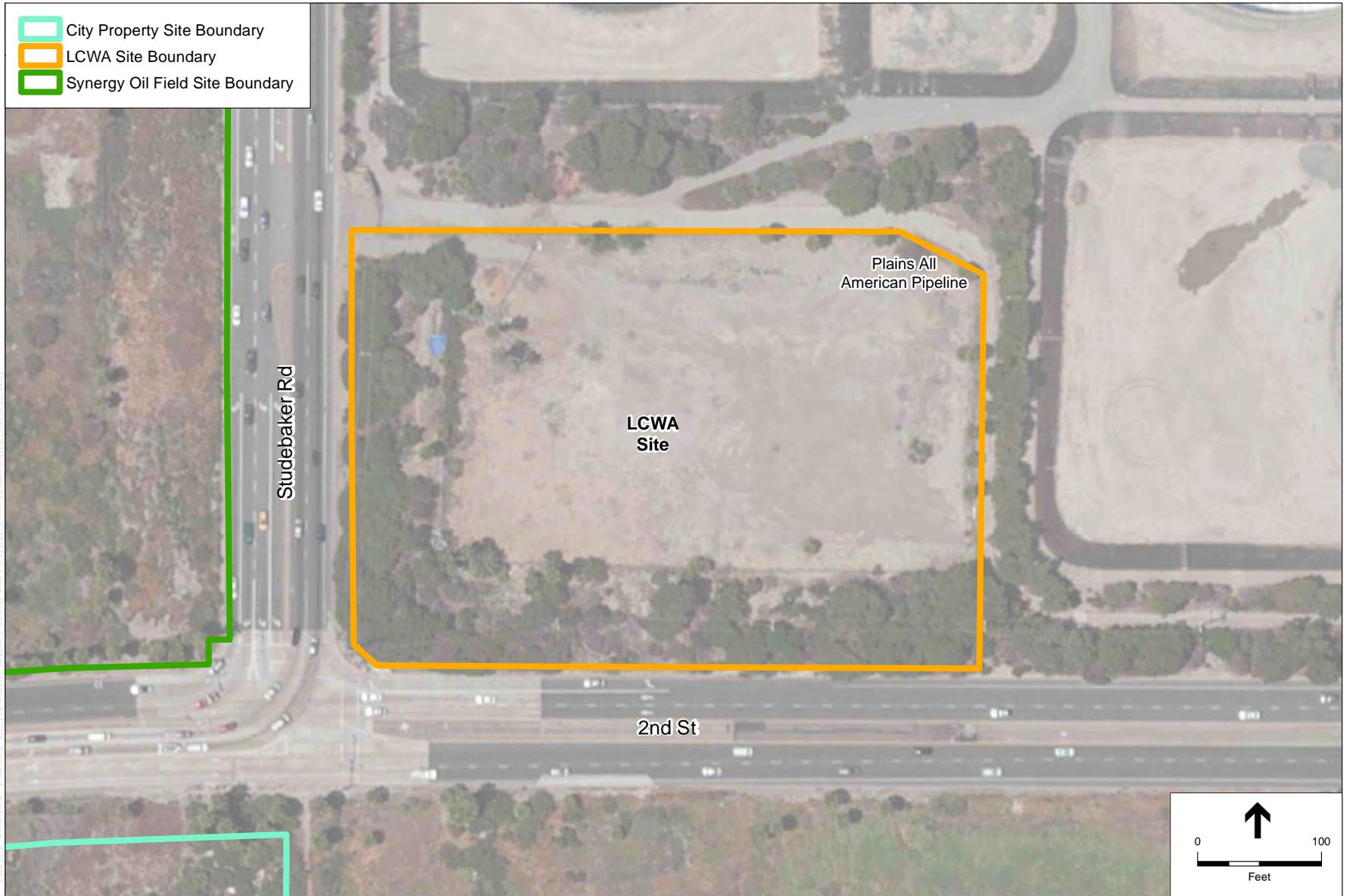
According to the City of Long Beach General Plan Land Use Designations map, and as shown in **Figure 2-12, General Plan Land Use Designations**, the Synergy Oil Field site and City Property site are not assigned a specific General Plan Land Use District (LUD); however, the Pumpkin Patch site and LCWA site are designated as LUD No. 7, Mixed Uses.



SOURCE: ESRI; City of Long Beach 2015

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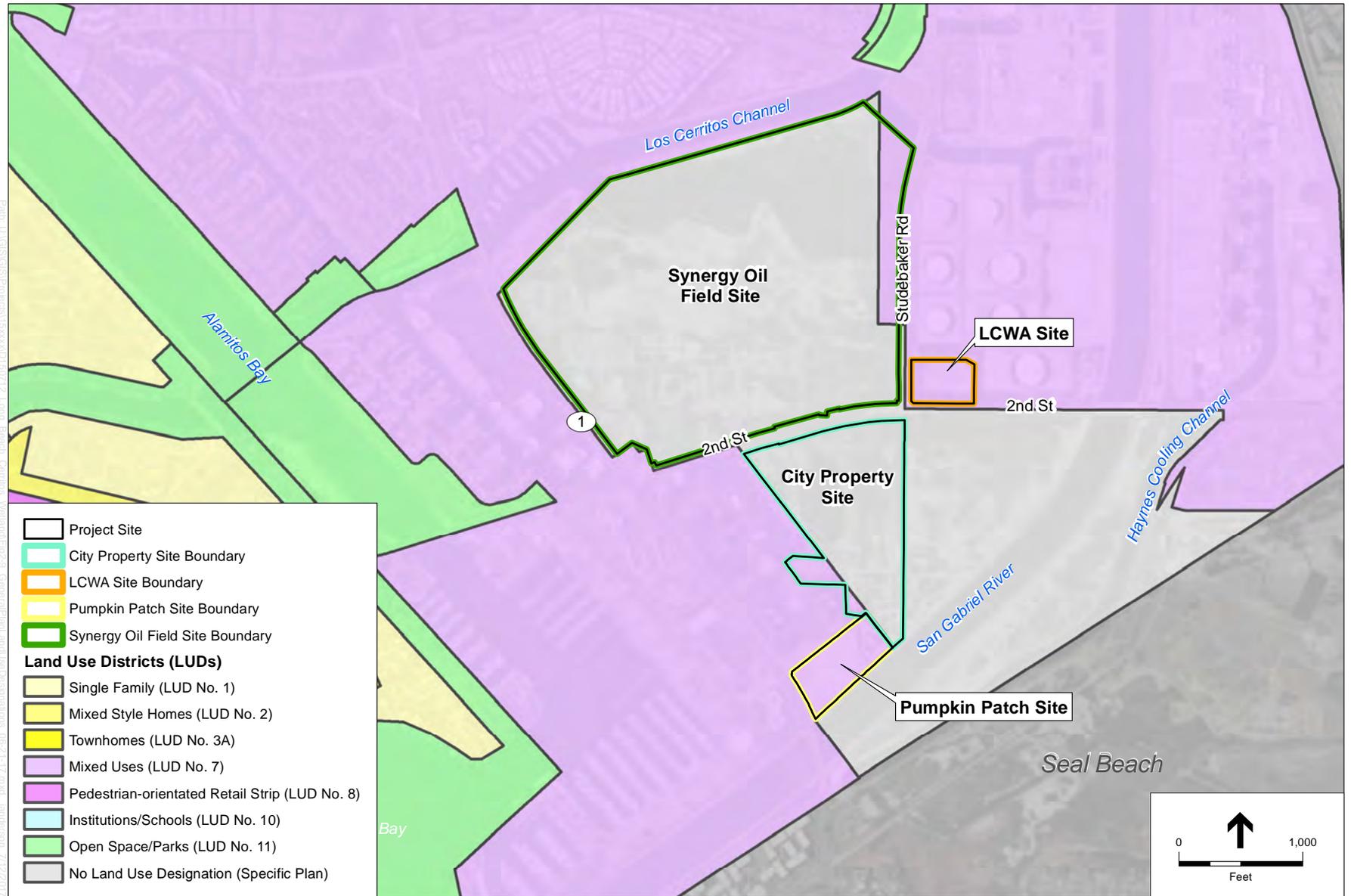
Figure 2-10
Pumpkin Patch Site



SOURCE: ESRI; City of Long Beach 2015

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Figure 2-11
Los Cerritos Wetlands Authority (LCWA) Site



SOURCE: ESRI; City of Long Beach 2015

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Figure 2-12

General Plan Land Use Designations

As shown in **Figure 2-13, Zoning Designations (Planned Development District 1: SEADIP)**, all four individual sites have a zoning designation of PD-1 (SEADIP) Subareas (11a, 19, 25, and 33). Allowable uses that are permitted to be developed on each site under the SEADIP are described below:

- **Synergy Oil Field Site: Subareas 11a and 33**
 - Subarea 11a: Residential (stacked flats and townhouses), maximum density of approximately 15.3 units per acre, 767 units.
 - Subarea 33: Wetland (96.1 acres have been devoted entirely for wetland purposes. An additional 2-acres shall be devoted as least tern nesting site).⁵
- **City Property Site: Subarea 25**
 - Business Park (Office Commercial and Light Industrial); restaurants, and hotel.
- **Pumpkin Patch Site: Subarea 25**
 - Business Park (Office Commercial and Light Industrial); restaurants, and hotel.
- **LCWA Site: Subarea 19**
 - Industrial (this area is fully developed in accordance with the provisions of the MG zone⁶). Commercial storage/self-storage shall be allowed by Conditional Use Permit (Section 21.52.219.5).

2.4 Project Objectives

The project objectives are identified below to describe the underlying purpose of the proposed project and to guide the selection of potential project alternatives. These project objectives represent a combination of both the Lead Agency and the Applicant's intent and purpose in moving forward with the project.

- Restore historic tidal connection to a greater portion of the degraded Los Cerritos Wetlands through establishing a wetlands mitigation bank that will result in restoration and creation of a self-sustaining 76.52-acre restored coastal wetlands habitat, including habitat for special-status plant and animal species.
- Restore tidal salt marsh habitat and associated subtidal, intertidal, transitional, and upland habitats, taking into consideration potential sea level rise due to climate change.
- Provide public access and education opportunities through construction of a trail and interpretive facility, and future conveyance of privately owned property into public ownership through a land exchange.
- Reduce the footprint of oil production operations on both privately owned and City-owned portions of the Los Cerritos Wetlands to less than 10 acres of property with minimal habitat impacts.

⁵ SEADIP (PD-1) provides only an indefinite boundary between Subarea 11a and Subarea 33. The plan also contemplates development of 11a to be contingent upon wetlands preservation in Subarea 33. To date, 11a has not been developed beyond the existing oil operations that pre-date the adoption of PD-1.

⁶ The reference to the MG zone is in the Subarea 19 text from SEADIP. This zoning code reference has been superseded and replaced with IG zoning for general industrial uses



SOURCE: City of Long Beach, 2003

Long Beach Cerritos Wetland . 150712

Figure 2-13
 Zoning Designations
 (Planned Development District 1 SEADIP)

- Improve the efficiency of oil production operations through the eventual phase out of early-20th-century oil production equipment and replacement with more efficient and modern equipment and operations that will utilize the latest technology and operational advancements related to safety, energy, and production efficiency and concentrate production on a smaller footprint.
- Protect coastal dependent energy development by optimizing oil and gas production from the oil reserves within the City’s jurisdiction that will help fund the costs of wetlands restoration and continue to provide a source of revenue to the City of Long Beach as well as short-term and long-term employment opportunities.
- Provide environmental clean-up of old landfills on private property proposed for oil production and wetlands protection, and contaminated soils on the oil field site.
- Assist the Los Cerritos Wetlands Authority in accomplishing its purpose “to provide for a comprehensive program of acquisition, protection, conservation, restoration, maintenance and operation and environmental enhancement of the Los Cerritos Wetlands area consistent with the goals of flood protection, habitat protection and restoration, and improved water supply, water quality, groundwater recharge, and water conservation” by providing for the eventual transfer through a land exchange of an approximately 156-acre, privately owned oil field into the authority’s ownership, the construction of a new visitors/interpretive center, and new public access trail.
- Help implement the Los Cerritos Wetlands Conceptual Restoration Plan by relocating existing oil production activities and making available the former oil field for wetlands restoration and future transfer of the property from private ownership to LCWA stewardship.
- Enhance gateway entry points to the City over existing industrial conditions and improve pedestrian walkability.
- Help achieve the Statewide goal of sustainability by reducing reliance on foreign oil and interstate natural gas pipelines by developing locally sourced and consumed resources using energy-efficient technology.
- Reduce energy use environmental impacts, efficiently use project-sourced natural gas, and increase project reliability/safety with a microgrid that integrates multiple on-site energy sources with high-efficiency controls on energy-using equipment.

2.5 Project Characteristics

As described above, the project site consists of the Synergy Oil Field site, City Property site, Pumpkin Patch site, and LCWA site. The proposed project would phase out, over time, the existing oil production facilities from the Synergy Oil Field site and City Property site and establish two new oil production sites on the LCWA site and Pumpkin Patch site. In addition, the proposed project would implement a wetlands habitat restoration project that would remediate, if necessary, and restore 76.52-acres of the northern portion of the Synergy Oil Field site. Revegetation of the southern 73.07 acres of the Synergy Oil Field site would occur as oil equipment, wells, and related facilities are removed over time. New public access opportunities would be provided through the relocation and renovation of the Bixby Field Office building into a visitors center and construction of a new perimeter access trail.

A majority of the construction activities contemplated by the proposed project would occur over the first 4 years, with the drilling of new oil wells occurring over a period of approximately 8 to 11 years, and full production of the two new operating areas anticipated to be within 11 years, with phase out of the existing wells occurring over a 40-year period with 50 percent of the existing wells phased out in the first 20 years and

the remaining approximately 26 wells phased out over the next 20 years. The following eight project activities could occur within a given year:

- Demolition and Remediation
- Well Plugging and Abandonment
- Grading
- Site Improvement Work and Restoration Activities
- Construction of Non-Oil Facilities
- Construction of Oil Facilities
- Well Drilling
- Operations

The phasing and actions necessary to implement the proposed project are described in greater detail below.

2.5.1 Project Activities by Site

The proposed project would include a number of activities at each site, some temporary activities occurring simultaneously, and other activities occurring over the course of several years. The information in the sections below describes the project activities by site and by year, including what would occur on each site during that year, including demolition or removal activities, construction activities, well plugging and abandonment activities, and long-term operational activities.

2.5.1.1 Synergy Oil Field Site

Year 1

Activities conducted during Year 1 include demolition and remediation, grading, site work and restoration, and operations, as discussed below.

Demolition and Remediation

During Year 1, approximately 95 percent of aboveground pipelines and all tanks would be removed from the Synergy Oil Field site. For all work, construction vehicles would be limited to access roads and designated equipment storage locations and waste disposal bins, and equipment and contractor facilities would be located in areas clear of vegetation, water ways or other sensitive areas. The removal methods for the pipelines and tanks are described in the following sections.

Pipeline Removal

Pipelines to be demolished would be identified and marked in the field and permanently isolated with blind flanges⁷ from sections of the system that would continue operating. Approximately 66,000 linear feet of pipelines and racks are located throughout the project site and would be removed; many of these pipelines occur in wetland areas.

⁷ Blind pipe flanges are used to seal the end of piping systems or pressure vessel openings. They are commonly used for testing the flow of gas or liquid through a pipe or vessel.

Before commencing pipeline removal work, pipe coatings and/or insulation would be tested for asbestos. If asbestos is found, an asbestos remediation contractor would remove coating or insulation and remediate as required by DOGGR and Department of Toxic Substances Control (DTSC) regulatory requirements. Upon the commencement of removal work, any fluids within the pipelines would be flushed into vacuum trucks. For buried sections that would be removed, and low points, the pipelines would be cold tapped⁸ and the fluid removed by vacuum trucks. The areas where the pipes would be remediated would have spill prevention methods implemented (temporary containment, plastic sheeting, containers, etc.) to contain residual fluid.⁹

Once the pipelines are emptied of residual fluids, pipelines that are parallel to and accessible from access ways would be further cut into 20 to 40 feet sections for removal. Spill containment equipment would be placed at all the cut points, and the pipes would be capped prior to removal. Also, plastic tarps would be laid beneath the pipelines prior to removal to collect any pieces of the pipe that may be dislodged during the removal process to prevent them from falling into the wetlands. Where feasible, a backhoe or excavator would be used to lift and remove the pipe, and the pipe would be placed onto a flat-bed truck and then hauled to on-site storage bins. In areas where aboveground pipe is located near or within sensitive vegetation or habitat areas, and where use of a backhoe or excavator would not be feasible, the work area would be limited to contractor labor and hand tools and trucks and storage bins would not be allowed. The pipeline would then be cut into smaller segments for hauling and disposal as scrap metal. A work area approximately of 10 feet around the pipe to be removed would be required.

In areas where the aboveground pipelines do not parallel unpaved roadways, two options would be available for removal. The first option would require the aboveground pipeline to be manually cut into short sections (5 to 10 feet), and the second option would require removal by hand, backhoe, or excavator toward an access road or cleared work area. The pipeline would then be cut into smaller segments for hauling and disposal as scrap metal.

Subsurface geologic materials sometimes contain naturally occurring radioactive materials, referred to in the oil industry as Naturally Occurring Radioactive Material (NORM)¹⁰ (USGS 1999). The cited USGS study noted that the level of radioactivity in scale in California oil production sources tends to be at background or marginally detectable (i.e., imperceptible or trace levels). Although NORM is not anticipated to be encountered, all removed pipelines would be tested for NORM, and any NORM pipeline would be segregated from other materials for handling and disposal. Removal of pipelines could involve excavation of contaminated soil. If contaminated soil is encountered, the material would be tested and assessed to determine remediation options in compliance with applicable regulatory standards.

Storage Tank Removal

Aboveground storage tanks would be removed from service, cleaned, demolished, and the material disposed of required by DOGGR/DTSC regulations. Tanks to be removed would be permanently isolated from all facility piping using blind flanges. All instrumentation and appurtenances associated with the tanks would be removed and connections capped. A work area approximately 25 feet around each tank would be required for equipment

⁸ Cold Tapping is a method of tapping into a live pipeline, tubing, or well casing without the need to do any welding or hot work

⁹ Contractors would use spill prevention methods while isolating, cutting, and handling pipeline including the use of plastic sheeting, half barrels, and vacuum trucks.

¹⁰ NORM consists of materials, usually industrial wastes or by-products enriched with radioactive elements found in the environment.

and labor. Tanks would be drawn down to the lowest liquid level possible prior to removing the tank from service. Once the tank has been drawn down, residual crude oil would be removed by vacuum trucks for delivery to customers. After removal of residual crude oil, a contractor specializing in tank cleaning would degas and clean the tank. Spent cleaning material would be stored in temporary storage drums or tanks for disposal as hazardous material at a permitted facility. After degassing and cleaning, the tank would be ready for demolition. Although NORM is not anticipated to be encountered, all tank materials would be tested for NORM, and any NORM materials identified would be segregated from other materials for handling and disposal. Removal of tanks could involve excavation of contaminated soil. If contaminated soil is encountered, the material would be tested and assessed to determine remediation options in compliance with applicable regulatory standards.

During demolition, tracked excavators fitted with equipment for cutting the tank would be used. Most likely, the removal would start with the roof of the tank before moving to the side walls. The structural steel of the tank would be removed all the way to the tank foundation. Cut steel would be placed onto dump trucks, then within on-site storage bins, and ultimately the material would be hauled off as scrap metal. The Applicant and regulatory agencies would assess the foundation to determine whether demolition is required. A concrete slab or ring type foundation would be excavated and broken up by an excavator and placed into storage bins for disposal at a permitted site. Any liners would be removed and disposed of at a permitted facility. Removal of foundations could involve excavation of contaminated soil. If contaminated soil is encountered, and the material would be tested and assessed to determine remediation options in compliance with applicable regulatory standards.

There are two timeframes associated with demolition and remediation. The first period is expected to take approximately 6 months in Year 1; the second period is expected to take 6 months over the end of Year 2, concluding in Year 3.

Grading

Grading would occur in the northern portion of the Synergy Oil Field site as a part of wetland restoration activities. Grading would be needed on the site to alter the elevations to maximize tidal flows. Grading would occur in the transitional wetland areas, tidal channel, seawall berm area to remove portions of the existing berm, to remove existing roads, and to construct the new perimeter trail. Grading on the southern portion of the site would be “incidental” such as pad leveling and compaction for the visitors center, construction of the parking lot for the visitors center, and removal of contaminated soils, but no major excavation, or cut or fill is contemplated. Grading around the perimeter of the Synergy Oil Field site would also construct new sidewalk improvements along the frontages of PCH, Studebaker Road, and 2nd Street.

Grading would last approximately 9 months, initiating in Year 1 and concluding in Year 2.

Site Improvement Work and Restoration Activities

As a part of the proposed project, a Restoration Plan for the northern portion of the site was prepared and is contained as Appendix C2 to this EIR. The Restoration Plan provides a framework for a phased wetland restoration on the northern portion of the Synergy Oil Field site. The Restoration Plan would be reviewed and approved by the Interagency Review Team (IRT) in connection with the approval by the IRT of a wetlands mitigation bank on the northern portion of the site. The restoration would focus on reestablishment of historic tidal salt marsh and related habitats, including sub-tidal, wetland-upland transitions, and uplands. Restoration design considers potential sea level rise and is based on the appropriateness of habitat for the location. In

addition, the restoration design emphasizes reestablishment of ecosystem processes in order to create self-sustaining saltmarsh habitats. Refer to **Figure 2-14, Synergy Oil Field Site Restoration Plan**.

Restoration/Construction Activities

Southern Portion of the Synergy Oil Field Site (73.07 acres)

Once the aboveground pipelines and tanks are removed from the southern portion of the Synergy Oil Field site, all unvegetated disturbed pads surrounding the pipelines and tanks would be revegetated with a native upland seed mix composed of coyote bush, golden bush, western ragweed, and bush sunflower. The native shrub cover would enhance the appearance of the oil field, help suppress the invasion of non-native species, while also providing erosion control and enhance habitat for common species and perhaps foraging for some sensitive birds. The site would be replanted from October to April.

Northern Portion of the Synergy Oil Field Site (76.52 acres)

According to the proposed Restoration Plan under review of the IRT, the goal of the wetland restoration is to expand tidal connection areas south of Steamshovel Slough to provide the conditions necessary for the reestablishment of coastal salt marsh habitat and associated hydrologic, biogeochemical and habitat functions. In order to expand tidal flow into areas where it is currently lacking, it would be necessary to:

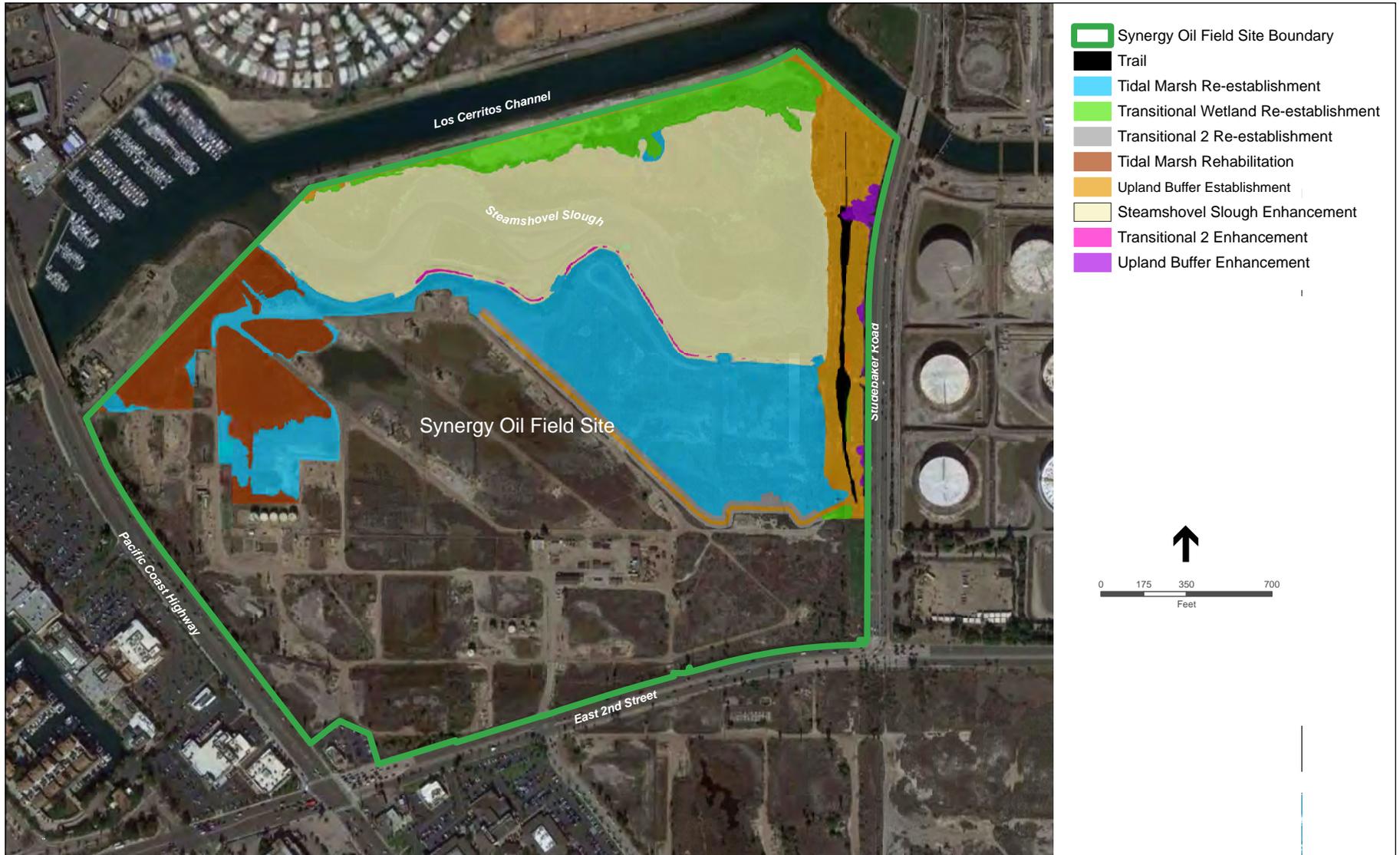
- Construct a new barrier consisting of sheet piles and earthen berms along the southern limits of the northern 76.52-acre restoration area of the Synergy Oil Field site;
- Establish tidal channels, by means of grading, to convey tidal water to areas that currently lack tidal flows;
- Remove segments of the existing berm and roads that currently separate Steamshovel Slough from non-tidal portions of the northern 76.52-acre restoration area of the Synergy Oil Field site; and
- Lower the areas along the northern edge of Steamshovel Slough from current elevations ranging from between 7.5 to 10.5 feet to elevations ranging between 5.1 to 6.1 feet, creating additional habitat that supports a diversity of high marsh species.

The earthwork necessary to complete each of these tasks would be accomplished through standard earthmoving equipment including excavators, bulldozers, front-end loaders and trucks for hauling material. It is anticipated that earthwork would be balanced on site. Staging areas would be located in upland areas and to the extent feasible, access would be provided through upland areas. Removal of the berm segments with an excavator would be staged from adjacent upland areas to the extent feasible, considering safety and logistics (refer to Appendix C2).

The tasks set forth below follow the sequence that would be implemented to complete the restoration.

Installation of Sheet Pile and Earthen Berm Barriers

In order to prevent tidal water spillover to the southern portion of the site with active oil operations, a combination of sheet pile walls and earthen berms would be constructed along the perimeter of the southern edge of the 76.52-acre restoration area as depicted **Figure 2-15, Synergy Oil Field Site Restoration Area Work Plan**. Following installation of the sheet pile wall, it would be necessary to construct temporary earthen ramps over the sheet pile to provide equipment access to the three areas where breaches would be made. Temporary berms would be constructed immediately around the breached areas that would be removed after the final grading is complete, allowing tidal flows into the completed restoration areas. Once equipment has vacated the restoration areas, the access ramps would then be removed using an excavator that would be staged on adjacent roads or staging areas.

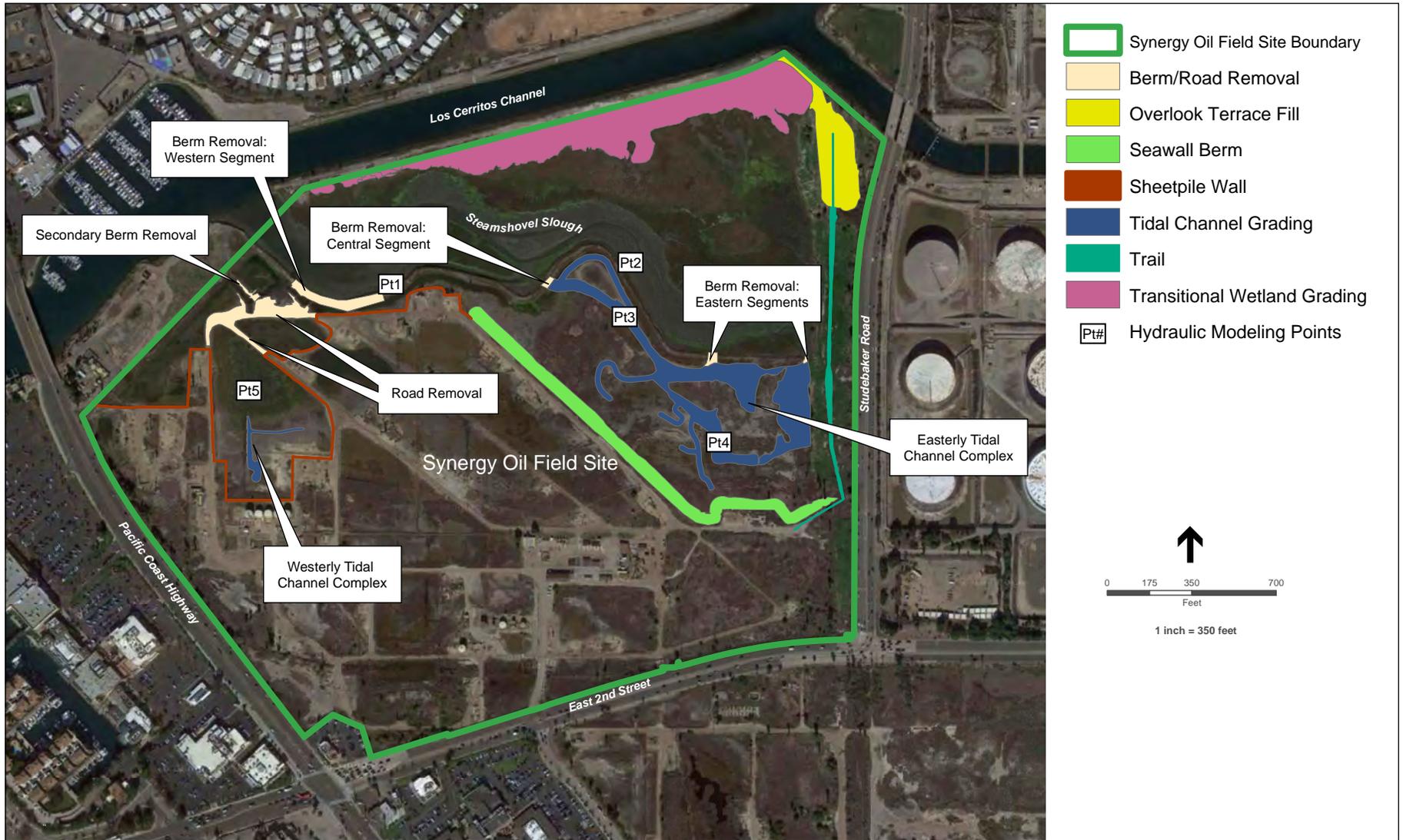


SOURCE: Glenn Lukos Associates

Long Beach Cerritos Wetland . 150712

Figure 2-14

Synergy Oil Field Site Restoration Plan



Establish Tidal Channels and Final Elevations

Tidal channels would be graded in areas that connect the breached berm segments below with the restored areas, as depicted in **Figure 2-16, Synergy Oil Field Site Grading Tidal Channel**. These areas are referred to the western tidal channel complex and the eastern tidal channel complex. Both complexes of tidal channels would expand tidal influence and convert areas from non-tidal areas to tidal wetlands. Grading for the tidal channels would require a balancing of temporary impacts to existing resources, which in most instances are moderately to substantially degraded, with maximizing the long-term functions of the areas receiving tidal exchange. To the extent feasible, tidal channels would avoid existing areas of pickleweed mats, Parish's glasswort patches and saltgrass flats and would be located in unvegetated flats. In some areas it would not be possible to fully avoid existing vegetation while establishing the necessary elevations for the tidal channels.

As shown in **Figure 2-16a, Synergy Oil Field Site Eastern Tidal Complex**, the eastern tidal channel complex would substantially expand areas subject to tidal exchange. In this area, the tidal channels would be located to the maximum extent feasible within areas that are currently unvegetated. The tidal channel elevations would range from 0.5 foot at the berm breach to approximately 1.0 foot at the upper ends of the channels. Portions of the area that would be fed by the tidal channel complex would be lowered from elevations ranging from 3.5 to 11 feet to 1.5 to 4.0 feet.

Removal of Existing Berm Segments and Lower Elevation Road Segments

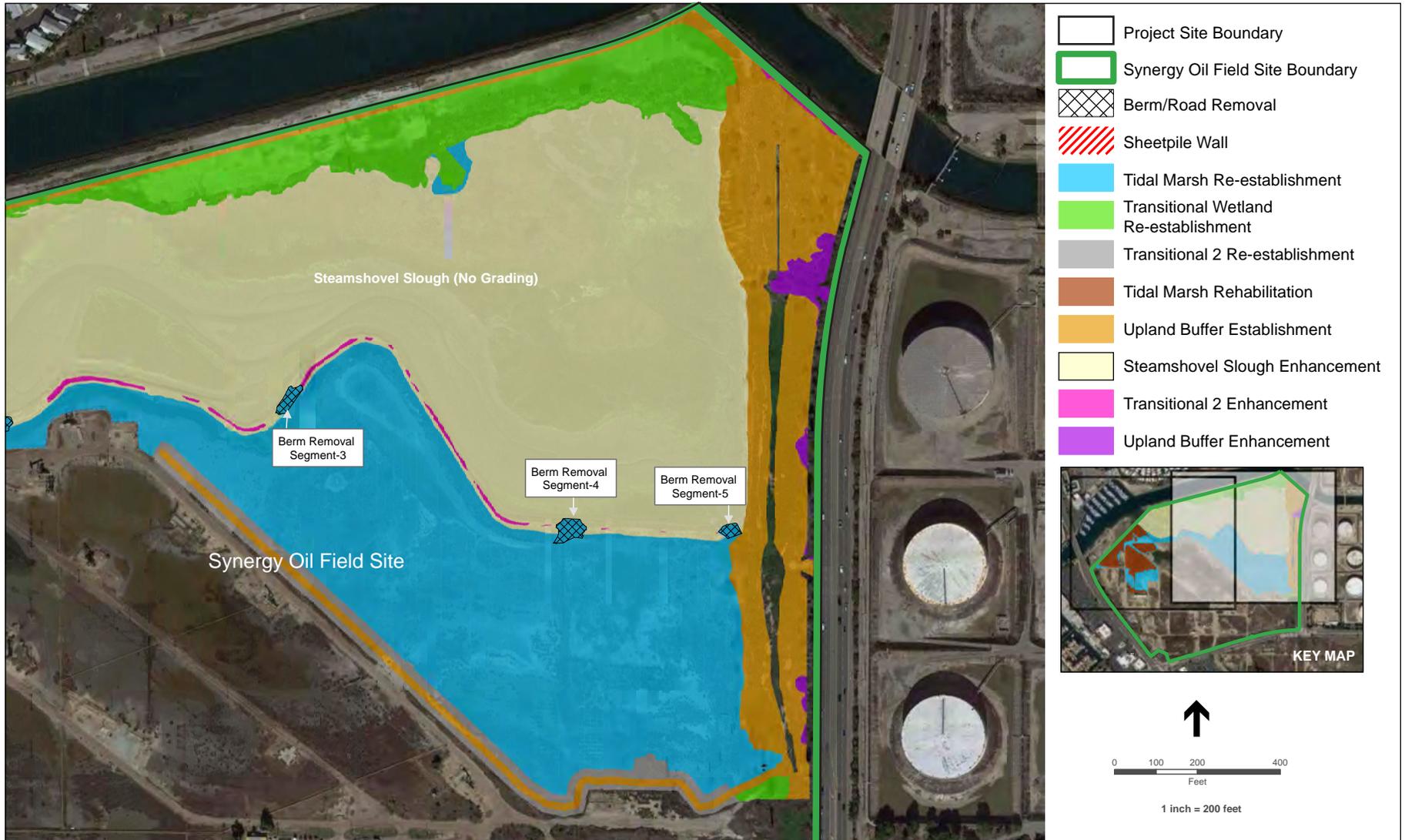
The existing berm that separates the southern edge of Steamshovel Slough from the southern portion of the Synergy Oil Field site would be lowered/breached at three locations to allow aboveground discharge of tidal waters to the areas of the northern 76.52-acre restoration area that currently lack tidal exchange. The largest segment, or the western breach, would be removed near the western boundary of the site and consists of an approximately 440-foot-long segment that ranges in elevation from 6.1 to 6.7 feet. Upon removal, the final elevation of the segment would range from 0.5 to 1.5 feet, ensuring unrestricted tidal exchange. Refer to **Figure 2-16b, Synergy Oil Field Site Western Tidal Complex**.

A smaller secondary berm that currently exhibits ranges in elevations from 4.4 to 4.8 feet would also be lowered to elevations of 1.5 to 2.0 feet and an existing pipe that currently carries tidal flows to areas south of the secondary berm would be removed, creating an open connection between two tidal channels currently connected by pipe.

Three road segments and a disturbed upland area immediately south of the berm segments described above would be lowered to allow tidal connection from the area of the lowered 440-foot-long berm segment and areas to the south. Currently, the roads are at elevations ranging from 2.6 to 3.6 feet and would be lowered to elevations ranging from 0.4 to 0.8 foot. An additional berm segment, referred to as the central breach, would be breached and would provide direct tidal connection to the eastern portion of the northern 76.52-acre restoration area. This segment is approximately 50 feet long and currently at an elevation of approximately 6.5 feet. This area would be lowered to approximately 0.5 foot.

Finally, near the easternmost segment, or eastern breach, of the berm two small segments would be breached to provide an additional tidal connection. Current elevations are approximately 6.6 and 5.7 feet respectively and final elevations would be at about 1.0 foot.



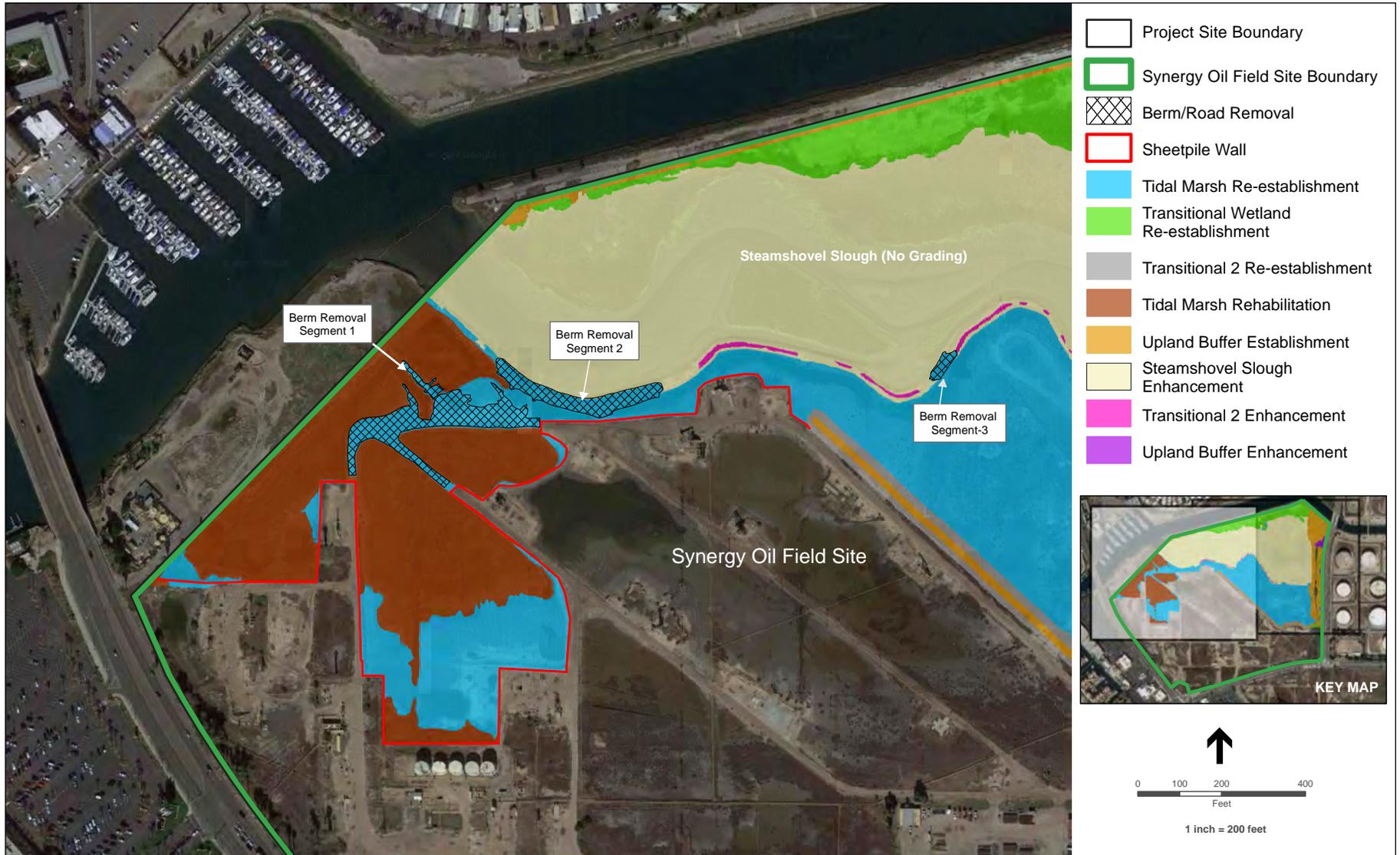


SOURCE: Glenn Lukos Associates

Long Beach Cerritos Wetland . 150712

Figure 2-16a

Synergy Oil Field Site Eastern Tidal Complex



SOURCE: Glenn Lukos Associates

Long Beach Cerritos Wetland . 150712

Figure 2-16b

Synergy Oil Field Site Western Tidal Complex

High Marsh and Transitional Wetland Grading

High marsh and transitional wetland grading would occur along the northern edge of Steamshovel Slough to lower the elevation of upland areas that range from 8 to 10 feet to approximately 5.1 to 6.1 feet. This area would support a mix of high marsh species such as Parish's glasswort, shoregrass, saltgrass, Pacific pickleweed, and alkali heath, which occur in localized patches at elevations of up to 9 feet (and above). Grading of the transitional wetland would be designed to avoid a number of individuals or patches of estuary seablite that occurs along the bluff edge at elevations ranging from 3 to 5 feet.

Planting

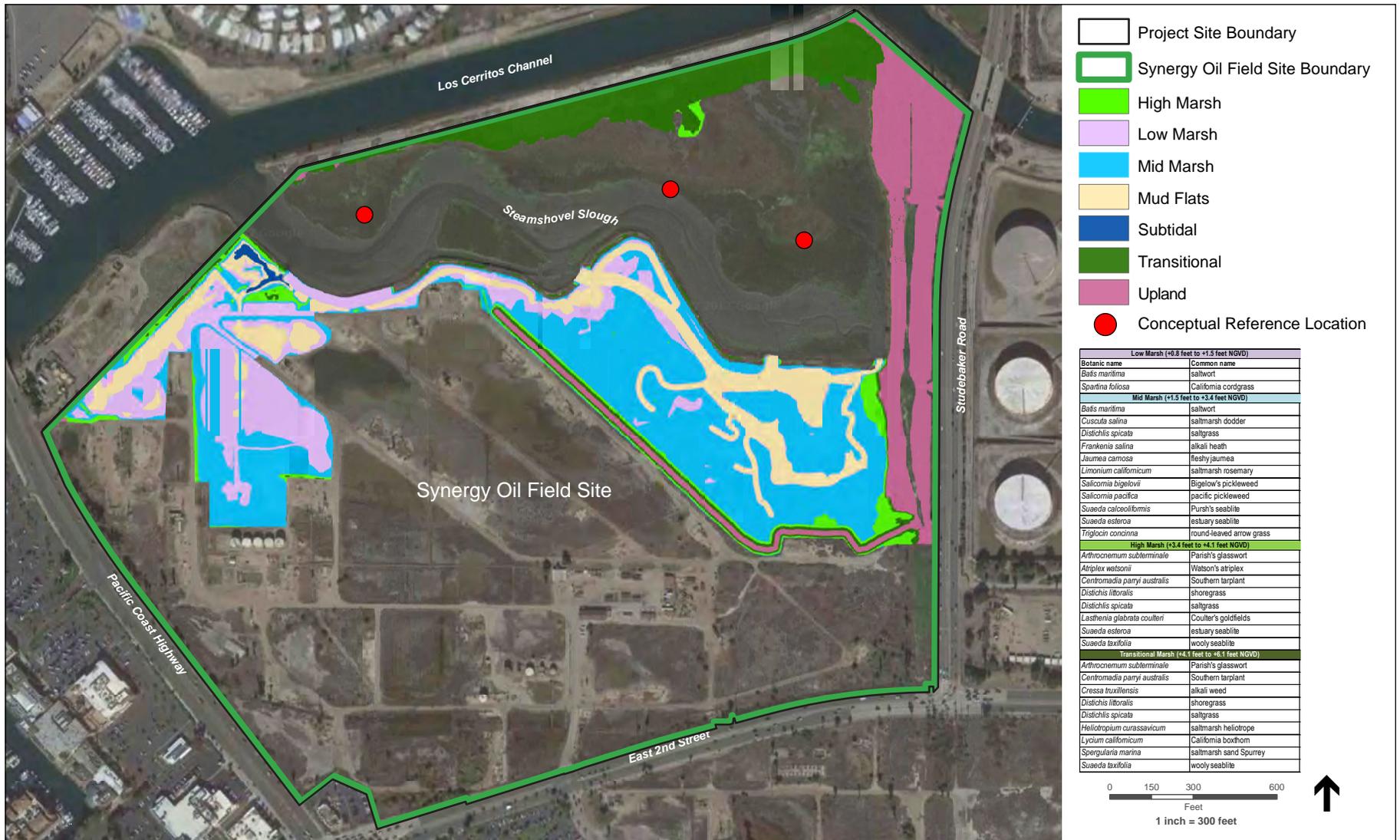
Upon completion of the construction activities described above, the salt marsh areas shown in **Figure 2-17, Synergy Oil Field Site Planting Plan**, would be planted with native salt marsh species. The planting areas would be based on current sea levels and with sea level rise there would be an upward shift in vegetation with larger areas inundated such that over time, subtidal and low marsh areas would expand, and mid marsh and high marsh areas would likely decrease.

Irrigation

Supplemental irrigation would be used to establish the plants at the upland buffer areas and would be temporary in nature. Buffer areas would initially be supported by a short-term automatic irrigation system as well as rainfall. The buffer areas would be irrigated as long as necessary to establish the root systems in the native soils, potentially lasting as long as two or three summers. The main irrigation line would be installed below-grade and lateral lines would be installed above-grade for ease of removal and inspection. Lateral lines may be abandoned in place after project construction.

The critical period for irrigation is during the first winter and early spring following planting. During this time, roots are not well established and unseasonable drought can cause high mortality. During dry periods after plant installation, the buffer areas would be regularly inspected and watering during the summer dry season would occur as frequently as required.

After the initial plant establishment period, water would be applied infrequently and only as required to prevent mortality of plants and seedlings. The irrigation methods employed would attempt to mimic wet rainfall years by incorporated evenly spaced, infrequent, deep applications of water. When the plantings are sufficiently established and no longer require supplemental irrigation below-grade irrigation lines would be cut and capped and above-grade irrigation lines would be removed from the site.



SOURCE: Glenn Lukos Associates

Long Beach Cerritos Wetland . 150712
Figure 2-17
 Synergy Oil Field Site Planting Plan

Synergy Oil Field Site Mitigation and Monitoring Program

Maintenance of the northern 76.52-acre restoration area would take place as set forth in the restoration plan. As described above, a 5-year restoration mitigation and monitoring program¹¹ would be established during Year 2 for the mitigation bank. It would include maintenance guidelines that are specifically tailored for tidal wetland establishment within the northern 76.52-acre restoration area. This program would address potential problems that could arise from erosion, vandalism, competition from weeds and invasive species, unacceptable levels of disease and predation, and irrigation.

General maintenance tasks include plant inspection, weed control, trash and debris removal, adjusting irrigation water volume and frequency, maintenance of the irrigation system, pest control, and plant replacement, as described further below.

Plant Inspection

For a period of 120 days following the completion of plant installation, twice monthly inspection, once at high tide and once at low tide, would occur to document the condition of plantings at high and low tide and to identify any efforts necessary to ensure the health and survival of the plant materials. Following the 120-day establishment period, site inspections would occur on a monthly basis for 5 years.

Weed Control

The 76.52-acre restoration area contains non-native species, which would be eradicated either during initial site grading or prior to site preparation. If grading precedes planting by more than a few months in these areas, it would be necessary to eradicate all undesirable exotic plants that have become established prior to planting and seeding of the mitigation site. If necessary, a “grow and kill” cycle would be established to eradicate these plants. Initial eradication would be performed by hand, by the use of herbicides (the aquatic formulation of glyphosate would be used), or by other approved methods as determined by the Intergovernmental Review Team.

Trash and Debris Removal

The Steamshovel Slough is inundated by tidal waters carrying trash and debris of human origin conveyed through the Los Cerritos Channel. Removal of such trash and floating debris would be a main focus of maintenance within the tidal wetlands within the northern 76.52-acre restoration area. All areas of the site would be kept clean and free of weeds, litter, trash, and debris by daily routine maintenance, manual removal weeds, inorganic litter, trash, and debris, and disposal as permitted by law. Driftwood and other natural woody debris would be left in place in the revegetation areas.

Irrigation Water Volume and Frequency

As described above under irrigation would be necessary to adequately establish new plant materials along the upland buffer areas. Irrigation water would be applied in such a way as to encourage deep root growth. Once irrigated, soil would be allowed to dry down approximately 50 to 60 percent of field capacity for the next irrigation cycle. Wetting of the full root zone and drying of the soil between irrigation events is essential to the maintenance of the plants and would promote the deep root zone that would support the vegetation in the years

¹¹ Restoration mitigation and monitoring plan is separate from the Draft EIR mitigation and monitoring plan that will be prepared for this project.

after establishment. The irrigation system may need to be on for as long as 6 to 8 hours at the time in order to complete water penetration to the lower soil horizons. Soil moisture would be monitored during this time.

Pest Control

Plants would be monitored for signs for disease, insect and/or predator damage, and treated as necessary. Excessive foraging by predators may necessitate protective screening around plants. The use of chemical pesticides would be strictly prohibited within the 76.52-acre restoration area. Pesticides would potentially include insecticides, fungicides, rodenticides, germicides, nematocides, bactericides, inhibitors, fumigants, defoliants, desiccants, and soil sterilants. Any substance or mixture of substances intended for preventing, repelling, mitigating, or destroying insects, diseases, rodents, or nematodes and any substance or mixture of substances intended for use as a plant regulator, defoliant or desiccant would be considered a pesticide.

Plant Replacement

Replacement of dead/dying plants with appropriate species, size, and spacing as specified for the plants being replaced would occur if recommended. Plants would be replaced with purchased inventory and/or on-site sources. Any areas where inadequate seed establishment has taken place would be reseeded on an annual basis between November 1 and March 31 to take advantage of the winter rainy season. These areas would be reseeded with site appropriate species.

Maintenance Schedule

The maintenance and monitoring program would begin with the construction process and continue for the 5 years following the completion of the plant installation. All maintenance during the 5-year maintenance and monitoring program would be carried out by the Applicant. General maintenance duties include: plant inspection, weed control, trash and debris removal, irrigation, pest control (as necessary) and plant replacement (as required).

All site work and restoration as explained above is expected to last approximately 1 year, initiating in Year 1 and concluding in Year 2.

Operations

Two existing wells would be used on a temporary basis as test wells to confirm understanding of the reservoir characteristics. It is unknown at this time which of the 53 existing wells would be used.

The site would continue to function as an operating oil field on the southern portion, with a wetlands mitigation bank (established in Year 1) on the northern portion and the visitors center and a public trail available for public use (following in Years 2 and 3).

Year 2

Grading as described above would conclude in Year 2, as would site work and restoration (though the monitoring would continue). Operations as described above would be ongoing. Demolition and remediation as described above would be initiated again in Year 2. This work would be associated with removal of the second tank farm on the Synergy Oil Field site. The tank removal and any remediation would take place as described above.

Year 3

Demolition and remediation as identified above would conclude in Year 3. Operations would continue as explained above. Construction of non-oil facilities would be initiated, as explained below.

Construction of Non-Oil Facilities

Visitors Center

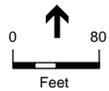
The existing one-story Bixby Ranch Field Office building on the Synergy Oil Field site would be relocated in its entirety within the project site to a 1.42-acre disturbed area approximately 427 feet southwest of its current location. The building is being relocated so to place the structure outside of the Alquist-Priolo Earthquake Fault Zone, which traverses the Synergy Oil Field site. The structure would also be raised to address potential impacts from sea-level rise. Improvements to the Bixby Ranch Field Office building, a resource eligible for listing in the California Register of Historical Resources and a historical resource for the purposes of CEQA, would only consist of the following activities to rehabilitate the primary (west) elevation and the south elevation in a manner consistent with historic photographs by the:

- Replacement of non-period vinyl windows with period appropriate wood windows within the existing window openings;
- Removal of the metal fabricated sign from the south elevation;
- Relocation of the utility pole, air conditioners on pads, and electrical conduit on the south elevation to the rear elevation;
- Replacement and/or addition of downspouts;
- Removal of the satellite dish from the roof;
- Replacement or rehabilitation of the roof and exterior walls in a way that preserves the size, color, and pattern of the original roofing material and exterior wall cladding;
- Removal of the paint that covers up the restoration period sign on the framed board above the porch and entry on the primary elevation;
- Reconstruction of the porch, stairs flanked by piers, and walkway leading to the entry on the primary elevation in a way compatible with the massing, size, scale, and architectural features of the original; and
- Construction of the Americans with Disabilities Act (ADA) ramp, stair, and landing on the rear elevation.

Parking Lot

Vehicular access to the visitors center would be provided by an existing driveway leading from 2nd Street. The entry road would be paved, and landscaping (such as, trees lining the entry road) would lead from the 2nd Street entrance to a paved surface parking lot as shown in **Figure 2-18, Visitors Center**.

The surface parking lot would be constructed adjacent to the visitors enter to provide approximately 50 parking spaces for employees and visitors.



SOURCE: Urban Arena

Long Beach Cerritos Wetland . 150712

Figure 2-18
Visitors Center

Studebaker Trail and Overlook Terrace

As shown in Figure 2-18, a 10-foot-wide, pedestrian-only trail (Studebaker Trail) of decomposed granite would be constructed beginning at the relocated visitors center parking lot and traveling north parallel to Studebaker Road along the eastern perimeter of the restored wetlands area (Studebaker Trail). The trail would travel approximately 169 feet north of the proposed parking lot to the overlook terrace that would contain green areas and picnic facilities. The overlook terrace would be constructed in the area formerly occupied by the Bixby Ranch Field Office building. The trail would then continue west on an existing oil field road to Studebaker Road, where it would turn north and travel parallel to Studebaker Road to the Los Cerritos Channel.

This trail would not be open to the public until the oil operations, including the use of the office, storage yard, and storage tanks, are vacated and/or removed from the Synergy Oil Field site and relocated to Pumpkin Patch site (i.e., completion of Year 3 as described below). Once opened, the Studebaker Trail could be restricted to docent-led use only.

Bikeway Improvements

The project would also provide Class II bikeways to portions of Studebaker Road, PCH, and 2nd Street adjacent to the Synergy Oil Field site. Additionally, sidewalk improvements at the Synergy Oil Field site, City Property site, and Pumpkin Patch site would be implemented in accordance with the City standards. All construction for these improvements would occur within the existing right-of-way.

Construction of all non-oil facilities as explained above would take approximately 2 years, and conclude in Year 4.

Year 4

In Year 4, construction of non-oil facilities would conclude and operations would continue. Well plugging and abandonment may begin in Year 4 and is explained below.

Well Plugging and Abandonment

Over a 40-year period, the 39 oil wells and associated oil production infrastructure at the Synergy Oil Field site would be phased out. Plugging and abandonment of these wells would be performed in compliance with 14 CCR Chapter 4, Development, Regulation, and Conservation of Oil and Gas Resources, Subchapter 1, which indicates that wells to be abandoned would be plugged and abandoned by placing cement in the well casing at certain intervals as described in 14 CCR 1723. The purpose of the cement is to seal the well casing and prevent fluid from migrating between underground rock layers. The remaining sections of the well would be filled with drilling mud to prevent the migration of fluids as required by the abandonment guidelines established by the DOGGR.

The phase out of these wells is dependent upon establishment of a New Occupancy Date. The well plugging and abandonment phase out is outlined as follows:

- Upon issuance of a certificate of occupancy of the new office building on the Pumpkin Patch site, the New Occupancy Date is established. Within 20 years from the New Occupancy Date, 50 percent of the wells would be removed and abandoned per the DOGGR regulations. The balance of the wells, if not previously abandoned, would be removed and abandoned on or before the 40-year anniversary of the New Occupancy Date.

- Additionally, if an oil well produces less than one full barrel of oil per day for a period of 18 consecutive months, the well would immediately be plugged and abandoned.

In addition to the well plugging and abandonment process described above, the Applicant has committed as a project design feature that once building permits are obtained for the office building on the Pumpkin Patch site, the Applicant would reduce existing oil production by 75 percent from the 53 wells.

Year 24

Consistent with the well removal phasing schedule, half of all wells would be removed within 20 years from establishment of the New Occupancy Date, which is estimated to be 4 years after the start of construction. At this time, it is not known which wells would be removed.

Year 44 and Beyond

Consistent with the well removal phasing schedule, all remaining wells would be removed within 40 years from establishment of the New Occupancy Date. Operation of the visitors center and related maintenance and restoration activities would continue for the life of the project.

Table 2-2, Synergy Oil Field Site Activities, depicts the activities that are described above and that would occur on the Synergy Oil Field site over the life of the proposed project.

Table 2-2 Synergy Oil Field Site Activities

Quarter	Year 1				Year 2				Year 3				Year 4				Year 24	Year 44
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4		
Demolition and Remediation ^a	■							■										
Well Plugging and Abandonment																	■	
Grading ^b			■															
Site Improvement Work and Restoration Activities ^c				■														
Construction of Non-Oil Facilities ^d									■				■					
Operations ^e	■																	

- a. Remove tank farm #1 and pipelines, remediating as needed; Remove tank farm #2 after LCWA tanks are operating.
- b. Install berm and sheetpile wall (restoration area); elevate building pad for visitors center; grade public access trail
- c. Complete plant installation; install sidewalks, bicycle trails, and fencing along site perimeter; improve parking area and public access trail; revegetate previously disturbed areas
- d. Relocate existing Bixby Ranch office building and repurpose for use as visitor center; complete public access trail
- e. Reduce future oil production potential by 75% at receipt of building permits; conduct well workover operations; reduce existing wells by 50% at 20 years and the balance at 40 years

2.5.1.2 City Property Site

Year 1

Activities conducted during Year 1 include demolition and remediation (as needed), grading, and site work and restoration, as described below.

Demolition and Remediation

Similar to the Synergy Oil Field site, approximately 95 percent of oil production infrastructure, including the aboveground pipelines and tanks and removal of all instrumentational appurtenances associated with the tank

farms, would be removed from the City Property site during Year 1 of the proposed project. **Figure 2-19, Pipeline Removal from City Property**, depicts the 95 percent removal of the pipelines on the City property. The remaining 5 percent of existing pipeline would remain to support the remaining wells on site. The description provided above for the activities associated with the removal of pipelines and tanks at the Synergy Oil Field site would be the same for the City Property site. Remediation would occur as needed and as determined based on results of ongoing site investigations. Demolition and remediation (if needed) would take up to 6 months and conclude during Year 1.

Grading

Grading would be limited to the installation of the utility corridor and enhancement of those existing access roadways. It is estimated that approximately 4,030 cubic yards of soil would be graded on site during construction. In addition, approximately 800 cubic yards of gravel-type material would be brought on site to provide for pipeline containment for the aboveground pipeline. This material would likely be hauled to the project site from a supplier in Anaheim or Santa Ana. As described further below under Construction of Oil Facilities, up to approximately 125 cubic yards of soil would be excavated during the jack and boring associated with construction of the pipeline corridor. This material would be leveled on site. It is anticipated that grading would take up to 6 months and conclude in Year 1.

Site Improvement Work and Restoration Activities

Primary vehicle access to the City Property site would continue to be from Shopkeeper Road via an existing driveway. Sidewalks and Class II bikeways along 2nd Street, adjacent to the City Property site would be constructed in accordance with City requirements. All construction for these improvements would occur within the existing right-of-way.

As areas are disturbed for the utility corridor they would be revegetated, pipeline and other oil infrastructure would be removed, and the previously disturbed areas would be revegetated. It is anticipated that all site work would take up to 6 months and would conclude during Year 1.

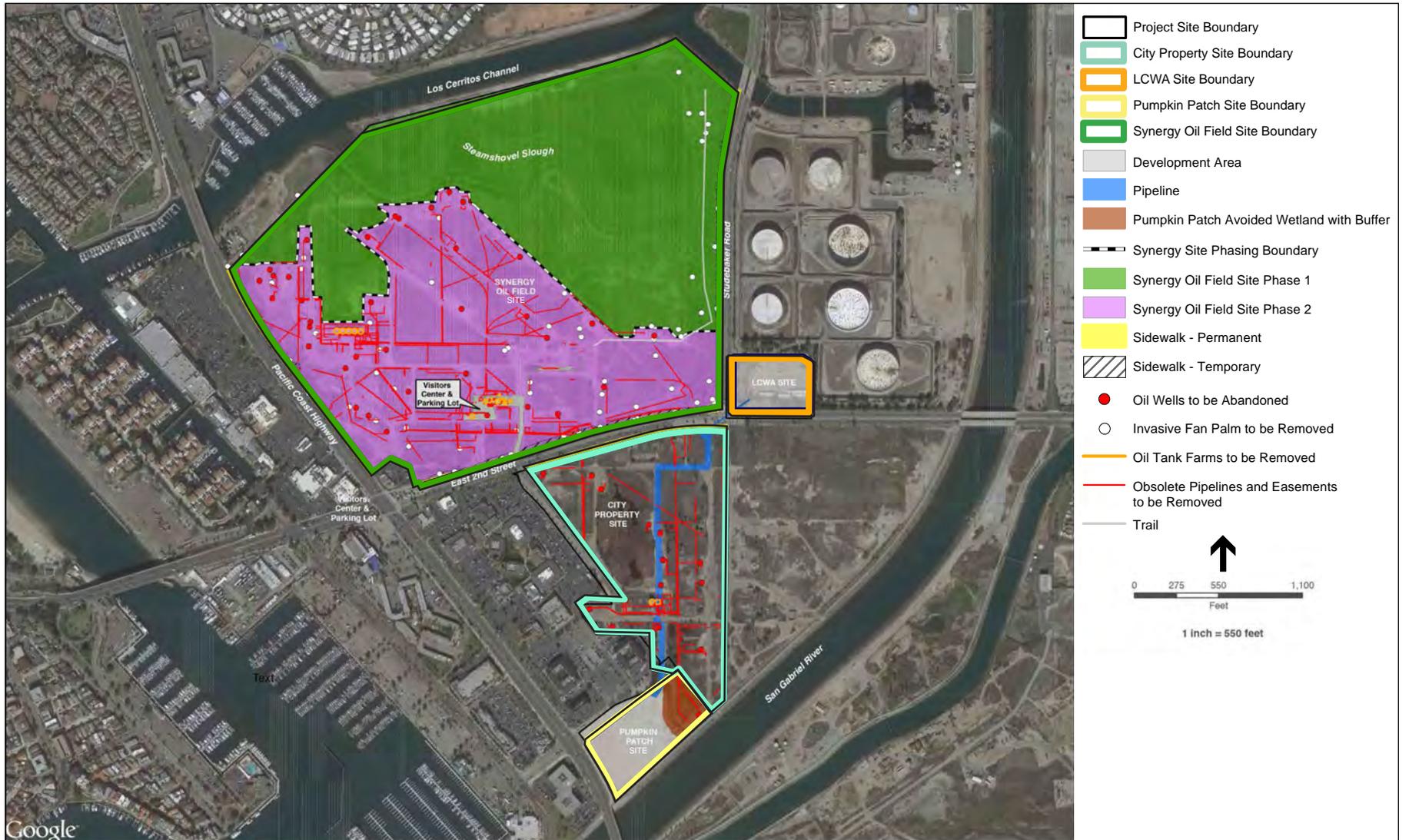
Year 2

Activities conducted during Year 2 include construction of oil facilities and the start of operations, as described below.

Construction of Oil Facilities

Two existing wells would be used on a temporary basis as test wells to confirm understanding of the reservoir characteristics. It is unknown at this time which of the 11 active or 2 idle existing wells would be used.

The project involves the construction of an approximately 2,200-foot aboveground pipeline system and utility corridor through the City Property site connecting the Pumpkin Patch site to the LCWA site, as shown in **Figure 2-20, Aboveground Pipeline Corridor and Utility Corridor**.



SOURCE: Glenn Lukos Associates

Long Beach Cerritos Wetland . 150712
Figure 2-19
 Pipeline Removal from City Property



SOURCE: Los Cerrito Wetlands Oil Consolidation & Restoration Project

Long Beach Cerritos Wetland . 150712

Figure 2-20
 Aboveground Pipeline Corridor and Utility Corridor

A 42-inch cased bored crossing¹² is proposed to extend beneath the intersection of Studebaker Road and 2nd Street. Jack and bore construction generally would involve digging the sending and receiving pits, setting up a boring machine and inserting an auger in casing. The boring machine pushes the auger and casing through the ground simultaneously while the machine turns a cutting head through the ground. The auger (drill for boring holes) carries debris back to the machine, and dirt and debris would be removed. There are two options for the cased bored crossing: (1) the 42-inch cased bored crossing would travel diagonally from the southwest corner of the LCWA site, cross under 2nd Street, to the northeast corner of the City Property site, “day lighting” once it reaches the City Property site, or (2) the 42-inch cased bored crossing would initiate at the southwest corner of the LCWA site, cross under Studebaker Road perpendicularly, “day light” at the southeast corner of the Synergy Oil Field site, cross under 2nd Street perpendicularly, and “day light” again at the northeast corner of the City Property site. Intersection or lane closures are not anticipated during construction of the boring.

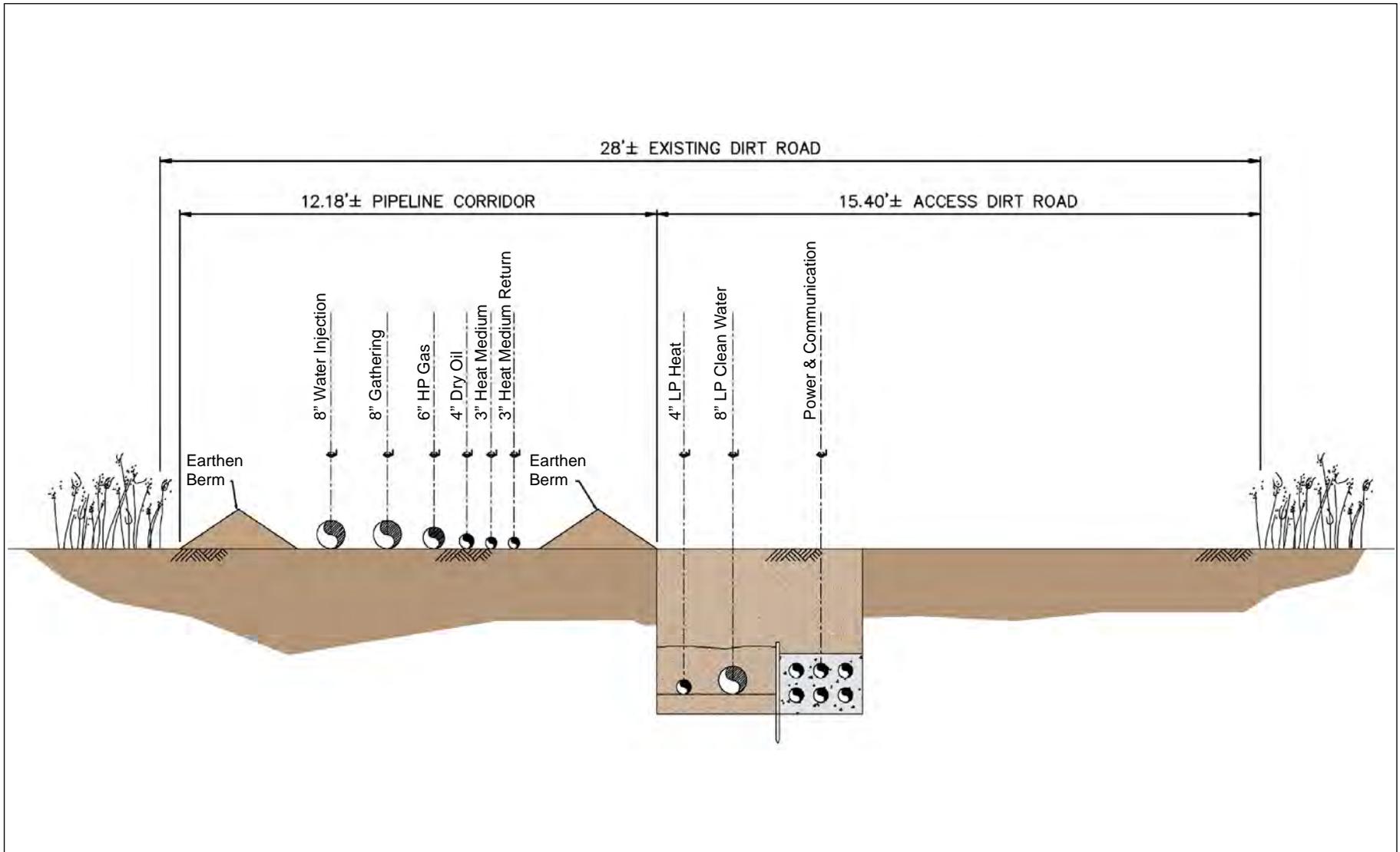
Once the cased bored crossing reaches the northeastern corner of the City Property site, the utility bundle would be separated into a combination of an aboveground pipeline corridor and underground utility corridor. As shown in **Figure 2-21, Utility Bundle**, the aboveground pipeline corridor would include an 8-inch-diameter water injection line, an 8-inch-diameter gathering line, a 6-inch-diameter high-pressure gas line, a 4-inch-diameter dry-oil line, a 3-inch-diameter heat-medium line,¹³ and a 3-inch-diameter return line. The underground utility corridor would include a 4-inch-diameter low-pressure (LP) gas line, an 8-inch-diameter LP clean-water line, and six smaller lines for electricity and communication.

The proposed pipeline corridor width required for the aboveground pipelines would be approximately 12.5 feet, which includes all pipelines and the containment system. The pipeline would be contained within an earthen berm on both sides. The height of the containment berms would be up to approximately 18 inches. Expansion loops or U-shaped bends in the pipeline alignment would be constructed to accommodate potential fault displacement and thermal expansion. Figure 2-21 depicts the approximate location of the expansion loops. The expansion loops are constructed of the same material as the pipeline, and would be approximately 10 feet in height and 10 feet wide, and can be laid either horizontally or vertically. Approximately two expansion loops would be required.

The proposed pipeline corridor width required for the buried pipelines and utility corridor would be approximately 5.5 feet. The underground utility corridor would be constructed to a depth of approximately 5 feet below ground surface. In the unlikely chance that an adverse event occurs, such as an earthquake, pressure transmitters would be able to detect a pressure imbalance, and shut-off valves located on the Pumpkin Patch and LCWA sites would shut down the flow.

¹² Jack and bore is a method of horizontal boring. Construction crews drill a hole underground horizontally between two points without disturbing the surface.

¹³ The purpose of the heat medium line is to transfer waste heat from the gas turbine exhaust to heat the system that produces the water and oil mixture. The use of this heat medium is part of increasing the gas turbines’ total efficiency and making the system a co-generation system.



To insulate the carbon steel from corrosion, all lines would have a baked-on external epoxy coating (fusion-bonded epoxy), which would protect the outside from corrosion. Field welds would have an epoxy coating at each seam. All lines with corrosive material (wet gas, oil gathering, and water lines) would have an internal epoxy coating. Welded field connections would be joined with a specially designed welding insert ensuring the corrosive fluid does not come in contact with bare carbon steel. All coatings would be visually inspected prior to installation and after any field welds.

Further, distributed strain- and temperature-sensing fiber optic lines would be installed to detect leaks. This technology would be able to detect leaks immediately after they occur, and would also detect any soil disturbances in the line. All main lines of concern would have a fiber optic line installed. Non-critical surrounding pipelines would take advantage of this common leak detection system, so all lines would be covered in the area. Additional fiber optic lines could be installed to provide more coverage, as needed. Additionally, seismic accelerometers at both the Pumpkin Patch and LCWA sites would be installed. If both sense a seismic event, valves would shut according to a timed sequence to prevent pressure surges.

Construction of the oil facilities (pipeline) would take up to 6 months and conclude in Year 2.

Operations

Operation of the pipeline is expected to start in Year 2 and last through the life of the project. The pipeline connecting the Pumpkin Patch site and LCWA site is subject to federal regulations (49 CFR Part 192 and 49 CFR Part 195) that mandate hydrostatic testing of new, cathodically¹⁴ protected pipelines prior to placing the pipeline into operation. This test involves filling a test section of the pipeline with fresh water and increasing pressure to a predetermined level. Such tests are designed to prove that the pipe, fittings, and weld sections would maintain mechanical integrity under pressure without failure or leakage.

Additionally, the connecting pipeline would be inspected in accordance with City of Long Beach and Federal Department of Transportation requirements and state and federal regulations to help ensure the ongoing integrity of the pipeline. Other inspection and maintenance of the connecting pipeline may include the use of pigs, which are devices inserted into the pipeline. Pigs would be used as needed to clean and/or inspect the connecting pipeline and “smart pigs” would be used to detect corrosion or other damage that has affected the wall thickness or shape of the pipe. Also, emergency isolation valves and shutdown instrumentation would be regularly tested for set points and functionality.

Operation and maintenance activities would continue through the life of the project.

Year 3

Operations of oil facilities as described above would continue through Year 3.

Year 4

Well plugging and abandonment could potentially occur starting in Year 4, as described further below.

¹⁴ A technique for protecting metal structures, such as pipelines, from electrolytic corrosion by making the structure the cathode in a cell, either by applying an electromotive force directly or by putting it into contact with a more electropositive metal.

Well Plugging and Abandonment

The well plugging and abandonment schedule on the City Property is consistent with the well plugging and abandonment schedule as explained above under the Synergy Oil Field site. There are 11 active and 2 idle wells on the City Property site. As described above in the Synergy Oil Field site section, well plugging and abandonment activities in the City Property site would occur over a 40-year period.

Once the well is plugged and abandoned, the unvegetated disturbed pad surrounding it would be revegetated with a native upland seed mix comprising coyote brush, goldenbush, western ragweed, and bush sunflower.

Year 24

Consistent with the well removal phasing schedule, half of all wells would be removed within 20 years from establishment of the New Occupancy Date, which is estimated to be 4 years after the start of construction. Because the plugging and abandonment of the 13 wells on the City Property site are premised upon the production activities of the existing wells that are currently operating on the Synergy Oil Field and City Property sites, at this time it is not known how many of the 13 wells on the City Property site would remain in operation by Year 22 and could range from 0 to all 13 continuing to operate. Operation of the pipeline would continue for the life of the project.

Year 44 and Beyond

Consistent with the well removal phasing schedule, all remaining wells would be removed within 40 years from establishment of the New Occupancy Date. Operation of the pipeline would continue for the life of the project.

Table 2-3, City Property Site Activities, depicts the activities that are described above and that would occur on the City Property site over the life of the proposed project.

Table 2-3 City Property Site Activities

Quarter	Year 1				Year 2				Year 3	Year 4	Year 24	Year 44	Beyond
	1	2	3	4	1	2	3	4					
Demolition and Remediation ^a													
Grading													
Site Improvement Work and Restoration Activities ^b													
Construction of Oil Facilities ^c													
Well Plugging and Abandonment													
Operations ^d													

NOTES:

- a. Remove pipeline and tank farm, and remediate as needed (consistent with the existing Surface Use Release Agreement and Grant of Easements (SURGE) agreement.
- b. Install sidewalk and bikeways; revegetate as needed
- c. Construction of Pipeline, including jack and bore under 2nd St and Studebaker Road.
- d. Operations of pipeline is limited to the maintenance of the pipeline only.

2.5.1.3 Pumpkin Patch Site

Year 1

Activities conducted during Year 1 include remediation (as needed) and grading, as described below.

Demolition and Remediation

Up to 95 percent of oil production infrastructure, including the aboveground pipelines and tanks, removal of all instrumentational appurtenances associated with the tank farms located in the eastern-most 2-acres of the Pumpkin Patch site. Pipeline removal would be consistent with the procedures described above, under the Synergy Oil Field site, Year 1, Demolition and Remediation section. Areas associated with the pipeline removal would be revegetated.

In addition to pipeline removal, it may be necessary to remove the buried landfill under the western two-thirds of the Pumpkin Patch site. Ongoing testing may indicate that contaminants in the landfill materials require removal in order to safely construct the proposed oil facilities. Should landfill removal be necessary, the landfill materials would be removed prior to construction of the buildings and oil production facilities on the site. If needed, this work would consist of the following phases: (1) removing the dry trash from the site and hauling it to a transfer station for disposal and (2) using excavation equipment with a dredging bucket, removing wet trash so the water would be allowed to drain within the confines of the excavation. Any residual water brought to the surface would be contained for transfer to an on-site liquid retention Baker-type tank; the collected water would be sampled and subsequently disposed at an approved off-site facility.

Analytical testing would be conducted on the materials to characterize the waste as hazardous (Class I), designated (Class II), or nonhazardous (Class III), and identify the appropriate disposal location. Designated and nonhazardous waste would be hauled to a Class II or III disposal facility or a transfer station, and hazardous waste would be hauled to a Class I facility, likely the Kettleman Hills Landfill. These facilities are described in Section 3.17, *Utilities and Service Systems*. In order to provide a conservative analysis, this analysis assumes that approximately 63,000 cubic yards of waste site would be removed and sent to the appropriate disposal facility, and approximately 45,000 cubic yards of clean dirt would be imported. This fill material would likely be obtained from a site within a 10- to 50-mile radius. Demolition and remediation activities are expected to last up to 6 months and conclude during Year 1.

Grading

Construction of the Pumpkin Patch site would commence with site clearing and grading of the 5 acres adjacent to PCH. As a part of construction and, if removal of the landfill is not necessary, approximately 21,000 cubic yards of soil would be graded and approximately 19,000 cubic yards of soil would be exported off site to a facility in Irwindale. No import is anticipated. The remaining 2,000 cubic yards of soil would stay on site. Should the landfill need to be removed, no additional grading (outside of what was identified for the landfill removal) would be needed. It is anticipated that grading would take up to 6 months and conclude during Year 1.

Year 2

Activities conducted during Year 2 include site work and restoration, and construction of oil facilities. These activities are described below.

Site Improvement Work and Restoration Activities

Development on the Pumpkin Patch site would occur on the western 5 acres of the site, closest to PCH. The remaining 2 acres on the eastern portion of the site would be retained as open space and used to provide a 100-foot buffer from the coastal wetland habitat area shown in **Figure 2-22, Pumpkin Patch Site Habitat Buffer Area**.



A 10-foot-high wall would be installed along the boundary of the 100-foot buffer, separating the oil operations area from the wetland habitat area. To ensure controlled access to the balance of the site and to minimize aesthetic impacts, an 18-foot-high perimeter screen wall would be constructed along Studebaker Road, PCH, and the San Gabriel River. Additional site work would also include the construction of a 47-space parking lot, and the establishment of utility connections.

Primary vehicular access to the Pumpkin Patch site would be provided on Studebaker Road. This existing driveway would be improved to accommodate service vehicles and allow for emergency access. For secondary access, an additional driveway on Studebaker Road would be constructed.

Sidewalks and Class II bikeways along PCH and Studebaker Road would be constructed in accordance with City requirements. All construction for these improvements would occur within the existing right-of-way. Additionally, a bikeshare station would be installed on PCH near the San Gabriel River.

It is anticipated that all site work would take up to 1 year and would conclude during Year 2.

Construction of Oil Facilities

Two existing wells would be used on a temporary basis as test wells to confirm understanding of the reservoir characteristics. It is unknown at this time which of the 53 existing active and idle wells would be used; it is possible that the existing well on the Pumpkin Patch could be used for testing purposes.

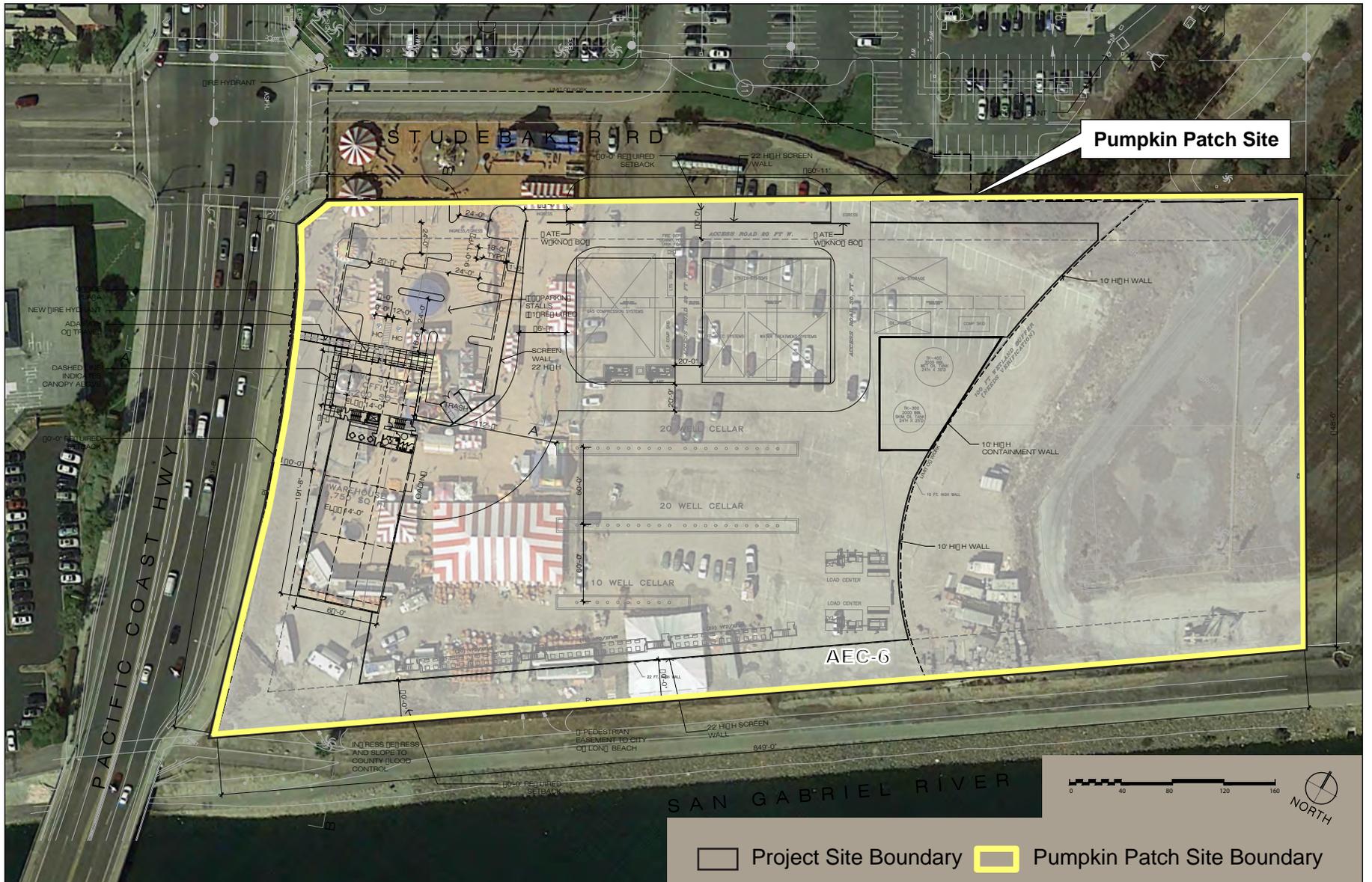
Oil facilities to be constructed on the Pumpkin Patch site include a tank storage area, well cellars, a water treatment system, and oil separation system.

Two tanks would be constructed on site: one 3,000-barrel “wet oil” tank (30 feet in diameter and 24 feet high) and one 2,000-barrel “skim oil” tank (25 feet in diameter and 24 feet high). Each tank would be fixed-roof and gas-blanketed. The fixed-roof, gas blanket design eliminates direct emissions from tanks by capturing tank vapors through a vapor recovery system. All tanks would be equipped with leak detection systems, overflow protection, instrumentation to monitor and control level, and instrumentation to monitor temperature and pressure. In addition to instrumented protection against over-pressurization, the tanks would also be provided with pressure relief valves. The tanks would also sit in secondary containment basins designed to hold the contents of the largest tank, plus a 25-year storm event.

Additionally, three well cellars would be constructed. All wells would be located in a large well cellar, known as a common well cellar. The proposed well cellars are shown in **Figure 2-23, Pumpkin Patch Site Plan**. Well cellars would be 8 feet deep and cement lined. Two of the well cellars would contain 20 wells and the third well cellar would contain 10 wells. As the cellars are below grade, the wellheads and all connecting piping would not be visible to passersby. Well cellars also serve as secondary containment systems as the site would be constructed to direct fluids to flow into the well cellar.

A water treatment system would be constructed on the Pumpkin Patch site, and used to remove oil particles, dissolved solids and/or suspended solids from the water prior to injection. These materials are removed to prevent the pores on the downhole perforations from becoming plugged. Corrosion and/or scale inhibitors, biocides, and/or oxygen scavengers may also be added to the water prior to injection.

Oil separation systems would also be constructed on the Pumpkin Patch site. These systems remove water and gas from the produced oil, allowing it to be accumulated for off-site transport.



SOURCE: Withee Malcolm Architects, LLP

Long Beach Cerritos Wetland . 150712

Figure 2-23
Pumpkin Patch Site Plan

Year 3

Construction of the oil facilities, as described above, would continue through the year. Construction of non-oil facilities and well drilling would be initiated in Year 3, as described below.

Construction of Non-Oil Facilities

A new office building and warehouse would be constructed on the Pumpkin Patch site. Additionally, perimeter landscaping would be provided and an entry monument would be installed at the corner of the site at PCH to enhance the entry into Long Beach.

As shown in Figure 2-23, the proposed office building would be 5,200 square feet (sf) and two stories (35 feet) high. An adjacent warehouse facility would be 9,750 sf and 20 feet high, and used primarily for storage.

Construction of the project includes an energy system microgrid. A microgrid would integrate multiple energy sources to maximize energy efficiency and environmental benefits. Microgrid controls manage the interaction of all the energy production/supply and energy-consuming equipment, helping ensure increased efficiency, cost control, environmental benefits, and reliability/safety. A microgrid and description is illustrated in **Figure 2-24, Example Microgrid**. Though most of the project's microgrid is located on the LCWA site (and described more fully under the LCWA site, Year 2, Construction of Non-Oil Facilities, below, some microgrid components are located on the Pumpkin Patch site. Specifically, a solar photovoltaic (PV) system would be installed, both on the rooftop of the office building and the warehouse. The system would produce approximately 160 kilowatts (kW) of electricity. Electric vehicle charging stations would also be installed in the office building parking lot.

Construction of the non-oil facilities would last approximately 6 months and conclude in Year 3.

Well Drilling

Following construction of the common well cellars, well drilling would commence. Up to 50 new oil production, water injection, and water source wells would be drilled.¹⁵ The specific oil production to water well ratio would be determined by the reservoir characteristics as drilling commences. To better access the mineral reserves deep below the area, all wells would be directionally drilled.¹⁶

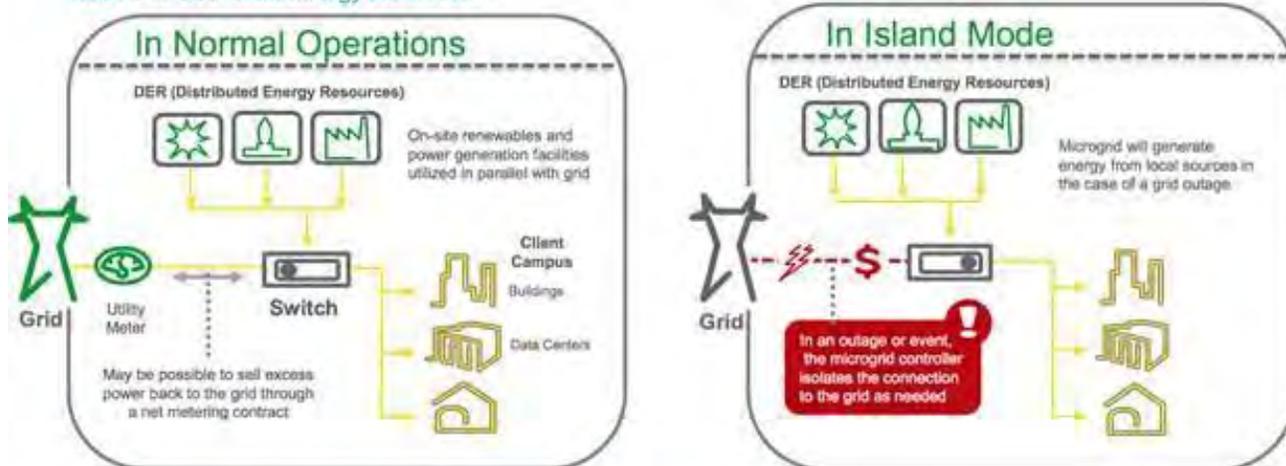
The drilling rig and its associated equipment would be brought to the sites on trucks and assembled over the well cellars. The drilling rig would consist of a 160-foot-high electric-powered drilling rig. In order to minimize noise and visual impacts during drilling, the drilling rig would be enclosed in a camouflaged sound abatement shell; an example is provided in **Figure 2-25, Example of Encased Drill Rig**. All worker safety lighting would be located inside the outer shell and would not be expected to be visible to outside observers. The only lighting expected to be visible on the exterior of the drilling rig shell would be a warning light for air traffic safety.

¹⁵ Oil production wells bring up oil, water, and gas from the production formation. Water injection wells inject sufficient quantities of water back in to the production formation to replace the volume of fluids extracted, which serves to prevent subsidence. The injected water is a mixture of water derived during the oil extraction process, and also water obtained from the source wells. Source wells are wells used to pump salt water from a deep reservoir.

¹⁶ Directionally drilled wells are wells drilled at multiple angles, not just vertically.

What is a Microgrid?

An integrated energy system consisting of interconnected loads and distributed energy resources...

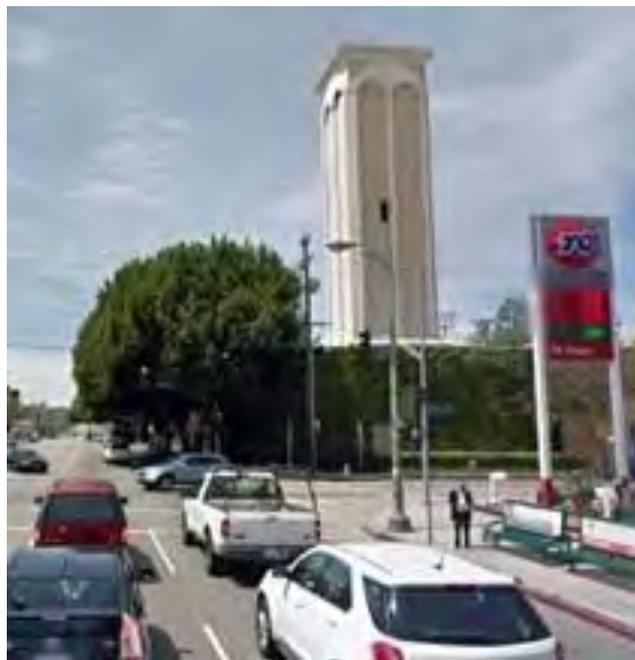


...which as an integrated system can be controlled as a single entity and operate in parallel with the grid or in an intentional islanded mode.

Long Beach Cerritos Wetland. 150712

SOURCE: NCA Real Estate, 2017

Figure 2-24
Example Microgrid



Long Beach Cerritos Wetland. 150712

SOURCE: NCA Real Estate, 2017

Figure 2-25
Example of Encased Drill Rig

To drill the well, each well would contain multiple intervals of casing concentrically placed within the previous casing run until the target depth is reached. The cemented-in-place steel casing would prevent the contamination of fresh water zones the borehole drilled through on its way to the desired production zone. The casing would restrict the migration of fluids and would serve as a barrier to prevent the transfer of fluids between underground layers. Given the local variability in subsurface conditions, the cement utilized would be carefully designed and laboratory tested in advance to ensure that all well design and regulatory requirements would be met. To ensure adequacy of the seal between the casing and the cement, a cement bond log would be run and the results would be continuously monitored.

The well borehole would be drilled using drilling fluid, also called drilling mud. Drilling muds are typically non-toxic and composed of a clay-water or polymer-water mix. Variable concentrations of additives would be mixed into the drilling mud as needed to prevent corrosion, increase mud weight, and prevent mud loss. Maintaining the appropriate mud characteristics is important as drilling muds help to maintain downhole pressure and work to prevent formation fluids (oil, water, and gas) from entering the well borehole and flowing uncontrolled to the surface.

Drilling muds would be mixed at the surface in tanks called mud tanks. Once mixed, the drilling mud would be pumped from the mud tanks down through the drill string where it sprays out of nozzles on the drill bit to keep the drill bit clean and cool. As the mud circulates up from the bottom of the hole, it would carry the cut up rock (cuttings) to the surface. The cuttings would then be filtered from the mud in shaker pits, stored in tanks, and transported for off-site disposal. The clean drilling mud would then be returned to the mud tanks for reuse.

All wells would be equipped with blowout prevention equipment (BOPE) systems. A BOPE system is a safety system used during drilling to prevent uncontrolled release of formation fluids, and allows for the shut off of flow to prevent spills and release of materials. The BOPE system is composed of a stack, actuation systems, a choke manifold, stop systems, and other equipment. The BOPE has an independent back up system (the accumulator) which can be activated in the event the rig loses power. The BOPE system would be designed to handle the maximum possible pressure expected at the wellhead.

BOPE specifications are set by the DOGGR. BOPE is required on all oil and gas wells in California and is dictated by maximum expected formation pressure and proximity to residences and/or commercial development. BOPEs would be tested in accordance with DOGGR specifications and witnessed as required in permits issued by DOGGR.

Once the desired depth is reached and the well is completed, the BOPE would be replaced by a wellhead and Christmas tree (piping on the wellhead), and production could begin. All equipment used would meet the American Petroleum Institute (API) standards, which are based on proven, sound engineering practices and safe materials.

It is estimated that 6 wells would be drilled per year for 8 years, concluding in Year 11.

Off-Site Improvements

Connection to Off-Site Pipelines

The produced oil would be transported to off-site refineries using one or both of two existing oil and gas shipping lines. Although the project would access these lines, no additional infrastructure or operations are

required to deliver the produced oil off site. The first line, the Crimson Pipeline, is a 6-inch-diameter line that travels northwest/southwest along the south side of PCH and would connect to the Pumpkin Patch site. The second line, the Plains All American Pipeline, is located just north of the LCWA site and would be connected by a new 8-inch-diameter line along Studebaker Road. Natural gas needed to power the up to four turbines and excess gas produced from the site would be transported via the active gas pipeline owned and operated by Southern California Gas Company or Long Beach Gas & Oil located at the intersection of 7th Street and Studebaker Road. As the connection points to all of these pipelines are off site, the project would also construct oil and gas pipelines that run from the LCWA site and the Pumpkin Patch site to the connection point for each of these existing pipelines. Given the location of these existing pipelines, it is anticipated that the pipeline connections would be constructed in existing rights-of-way or streets.

Off site, a 10-foot-wide sidewalk would be added along Studebaker Road. Segments of the pipeline traverse off site within the City's right-of-way through the intersection at 2nd Street and Studebaker Road (underground) and at the southern end prior to entering the Pumpkin Patch site.

Year 4

Construction of oil facilities as described above would conclude in Year 4. Well drilling as described above would continue through Year 4. Facility operations would be initiated in Year 4, as would the potential for well plugging and abandonment, as described below.

Operations

During operation of the microgrid, the PV solar system at the Pumpkin Patch site would provide a comparatively small but renewable portion of the needed energy. The electric vehicle charging stations would be a design feature of the project to promote internal energy capture as part of the microgrid system.

For operation of the oil processing facility, the project would be equipped with computerized control, monitoring, and communication systems. In general, these systems would be designed to monitor and control all process equipment that would operate within the facility. Primary operations would be conducted from the new office building located on the Pumpkin Patch site, as all oil operation administration activities would be transferred from the Synergy Oil Field site.¹⁷

The operator console in the new office building would be staffed 24 hours a day. The supervisory control and data acquisition (SCADA) system would provide the ability to control systems operation from the operations building and respond to alarms that are initiated when operating conditions fall outside established parameters. Upon detection of a process upset, the operator would have the capability to shut down the affected systems. The SCADA system would provide for a high degree of safety in the operation, allowing for quick and technically sound responses to abnormal conditions and simultaneously provide the basis for environmentally sensitive operating decisions. Equipment would typically be provided with independent automated shutdown instrumentation as well as remote indication with both pre-alarms and shutdowns, providing redundancy in safety systems. The SCADA system would have multiple levels of redundancy for critical operating components and applications, and has been designed to include cybersecurity measures. The building would be provided with an uninterruptible power supply and a diesel emergency generator to provide continuous power

¹⁷ Issuance of a Certificate of Occupancy by the City of Long Beach for the new office building on the Pumpkin Patch site establishes the New Occupancy Date.

in the event of an external power failure. It would also be equipped with gas and fire detection systems and a fire suppression system.

The oil processing facilities would be subject to the BOMP mechanical integrity requirements as well as federal regulation (29 CFR Section 1910.119), the Federal Occupational Safety & Health Administration (OSHA) process safety management of highly hazardous chemicals. The mechanical integrity requirements include regular internal, external, and non-destructive testing of tanks, vessels, and piping, and testing of relief devices with test records maintained both at the facilities and at the engineering office. In addition to the mechanical integrity requirements, normal preventative maintenance best practices would be performed for machinery and valves.

The project facilities would be protected by a firewater loop fed by a Long Beach Water Department (LBWD) water main. The main firewater loop line within the site would be continuously pressurized. The system would supply water to multiple hydrants, firewater monitors, and foam monitors located on the project site. Each fire hydrant would be equipped with a fire hose and nozzles. The local LBWD water main can provide adequate flow and pressure to the site with no additional need for firewater storage tank or pumps. The new office building would be provided with a sprinkler system in accordance with City requirements.

Throughout the life of the project, a 120-foot-tall workover rig may be utilized as required for well maintenance and workover operations to sustain production from the wells. The collapsible workover rig would be stored on site and would only be visible to the public when in use. Typical routine well maintenance activities include, but are not limited to, repair or replacement of wearable parts and maintenance of downhole components. Typical workover operations likely involve downhole repairs and may involve pulling tubing and/or replacing downhole pumping equipment. Workover operations would be limited to 50 hours per week during daylight hours.

Well Plugging and Abandonment

The one active oil well on the Pumpkin Patch site would be plugged and abandoned consistent with the well removal schedule and using the practices identified above under the Synergy Oil Field site, Year 2, Well Plugging and Abandonment. Once the well is plugged and abandoned, the unvegetated disturbed pad surrounding it would be revegetated with a native upland seed mix comprising coyote brush, goldenbush, western ragweed, and bush sunflower.

Year 11

Well drilling would conclude during Year 11. Facility operations would continue, as would the potential for plugging and abandonment of the last remaining well.

Year 24

Consistent with the well removal phasing schedule, half of all wells would be removed within 20 years from establishment of the New Occupancy Date. Facility operations would continue for the life of the project.

Year 44 and Beyond

Consistent with the well removal phasing schedule, all remaining wells would be removed within 40 years from establishment of the New Occupancy Date. Facility operations would continue for the life of the project.

Table 2-4, Pumpkin Patch Site Activities depicts the activities that are described above and that would occur on the Pumpkin Patch site over the life of the proposed project.

Table 2-4 Pumpkin Patch Site Activities

Quarter	Year 1				Year 2				Year 3				Year 4				Year 11	Year 24	Year 44	Beyond
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4				
Demolition and Remediation ^a	■																			
Grading			■																	
Site Improvement Work and Restoration Activities ^b					■															
Construction of Non-Oil Facilities ^c									■											
Construction of Oil facilities ^d							■				■									
Well Plugging and Abandonment													■							
Well Drilling ^e								■				■								
Operations ^f												■				■				

- a. Remove pipeline; remove landfill, if necessary.
- b. Revegetate previously disturbed areas; construct perimeter wall and parking area, improve site ingress/egress; install sidewalks/bikeways
- c. Construct office and warehouse; landscape; install entrance monument; energize facilities (includes solar and EV charging stations)
- d. Construct well cellars, tanks, water treatment facilities and oil separation facilities
- e. 6 wells per site are expected to be drilled annually; drilling is expected to conclude within 8+ years.
- f. Maintain oil processing facilities; conduct well workover operations as needed; also constitutes establishment of "Occupancy Date" associated with well plugging and abandonment.

2.5.1.4 LCWA Site

Year 1

Activities conducted during Year 1 include remediation, if needed, and grading, as described below.

Demolition and Remediation

No demolition is anticipated as the site has no existing structures. Remediation would occur as needed and as determined based on results of ongoing site investigations. To the extent that remediation is needed, it is anticipated that all work would conclude during Year 1.

Grading

Construction activities on the LCWA site would commence with site clearing and grading. It is estimated that approximately 7,969 cubic yards of soil would be graded and all material kept on site. It is anticipated that grading would take up to 6 months, and conclude during Year 1.

Year 2

Activities conducted during Year 2 include site work, construction of oil facilities, and construction of non-oil facilities, as described below.

Site Improvement Work and Restoration Activities

To ensure controlled access to the site and to minimize aesthetic impacts, a 10-foot perimeter screen wall would be constructed along Studebaker Road and Westminster Avenue (2nd Street). Perimeter landscaping would be provided and would consist of a mix of existing trees and newly planted vegetation. Site work would also include the establishment of utility connections.

Primary vehicular access to the LCWA site would be on Studebaker Road. This existing driveway would be relocated slightly to the south (to avoid an existing utility pole) and improved to accommodate service vehicles and allow for emergency access. For secondary access, a new driveway (right in/right out) off of Westminster Avenue would be constructed.

Sidewalks and Class II bikeways along the project's frontage of Studebaker Road and Westminster Avenue would be constructed in accordance with City requirements. All construction for these improvements would occur within the existing right-of-way along the parcel frontage.

It is anticipated that all site work would take up to 1 year and would conclude during Year 2.

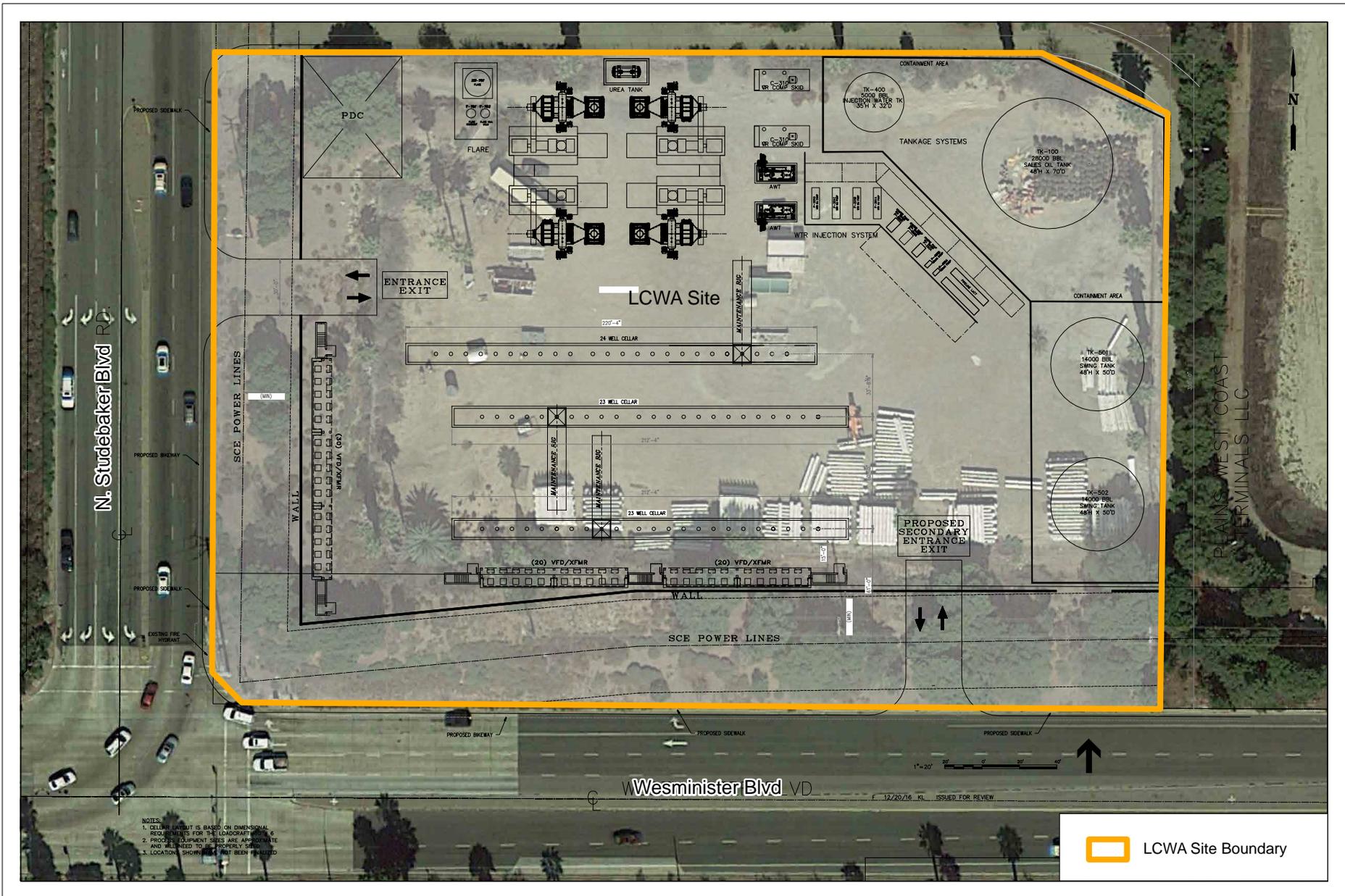
Construction of Oil Facilities

Development at the LCWA site would consist mainly of the construction of oil processing facilities, as shown in **Figure 2-26, Los Cerritos Wetlands Authority (LCWA) Site Plan**. Oil facilities to be constructed include an elevated pipe rack, tank storage, well cellars, and an emergency flaring system, including a 20- to 25-foot ground flare.

Four tanks would be constructed on site: one 28,000 barrel sales oil tank (up to 50 feet high and 70 feet in diameter), one 5,000-barrel injection water tank (approximately 35 feet high and 32 feet in diameter) and two multi-use or "swing" tanks (each 14,000 barrels and up to 50 feet high and 50 feet in diameter). Each tank would be fixed-roof and gas-blanketed. The fixed-roof, gas blanket design eliminates direct emissions from tanks by capturing tank vapors through a vapor recovery system. All tanks would be equipped with leak detection systems, overfill protection, instrumentation to monitor and control level, and instrumentation to monitor temperature and pressure. In addition to instrumented protection against over-pressurization, the tanks would also be provided with pressure relief valves. The tanks would also sit in secondary containment basins designed to hold the contents of the largest tank, plus a 25-year storm event.

Additionally, three well cellars would be constructed. All wells would be located in a large well cellar, known as a common well cellar. Well cellars would be 8 feet deep and cement lined. Two of the well cellars would contain 23 wells and the third well cellar would contain 24 wells, for a total of 70 wells. As the cellars are below grade, the wellheads and all connecting piping would not be visible to passersby. Well cellars also serve as secondary containment systems as the site would be constructed to direct fluids to flow into the well cellar.

Construction of the oil facilities would last up to 2.25 years beginning in Year 2 and concluding in Year 4.



SOURCE: SPEC Services, Inc.

Long Beach Cerritos Wetland . 150712

Figure 2-26

Los Cerritos Wetlands Authority (LCWA) Site Plan

Construction of Non-Oil Facilities

Construction of the project would include an energy system microgrid. Most of the microgrid equipment would be located on the LCWA site, although a small portion of the system would be located on the Pumpkin Patch site. The microgrid equipment on the LCWA site would include the SCE interconnection and turbines, plus all the equipment needed for use of the turbine waste heat, as explained below.

The natural gas produced during the oil extraction process would be used to power the facility. Up to four natural gas turbines with a heat recovery steam generator for cogeneration would be constructed. The turbine waste-heat-using equipment would be what would turn the turbines into a highly efficient and environmentally preferred cogeneration system (a.k.a., combined heat and power [CHP]). Instead of needing to install more energy-using equipment (e.g., boilers, chillers), the cogeneration system would capture and use turbine waste heat to process extracted liquids and gases.

The turbines would be self-contained in an all-steel full-length enclosure that would be weatherproof, insulated, sound attenuated, and assembled to mount on the generator base frame. The sides of the enclosure would consist mostly of doors supported by narrow panels to allow for access to the major components. The enclosure panels would be treated with fiberglass material for sound attenuation and thermal insulation. Weather stripping would be installed between all panels for sealing and sound attenuation. The enclosure would include a ventilation system, dust protection system, fire and gas detection and monitoring system, and a fire suppression system.

The enclosure ventilation system would be based on a push-pull concept, and would use a high-efficiency AC-motor-driven fan. The ventilation fan would provide airflow to ensure the internal air temperature would remain within acceptable limits. The enclosure would have a positive pressure to prevent the entry of potentially hazardous external atmospheres through the enclosure seams. A differential pressure switch would be provided to indicate an alarm when low pressures are detected.

For dust protection, the enclosure ventilation inlet would be equipped with a single-stage, disposable, barrier-filter unit and alarm switch. The ventilation exhaust opening would be equipped with backdraft dampers to prevent dust and moisture from entering the unit when not running.

Fire and gas monitoring and detection would be managed by a separate control system that would interface with the main unit control system and would consist of a control unit, a local operating network, and a number of sensors of different types that would detect the presence of combustible gas, excessive heat, or flame. The detection of combustible gas concentrations above established levels would generate an alarm or a package shutdown, as appropriate. The detection of fire or excessive heat would result in the immediate shutdown of the package and activation of the fire suppression system, using carbon dioxide as the extinguishing agent.

The main controller would be programmed to initiate when a hazardous condition is detected. For combustible gas, alarm and shutdown levels would be preset, and the corresponding commands would be sent to the control system to respectively display an alarm or shut the turbine down. If fire is detected, several actions would occur simultaneously. A shutdown command would be issued so that the control system would shut the turbine down. The package strobe lights, fire horn, and suppression system would be activated. Depending on the suppression system design, commands would be issued for primary release, extended release, and, if applicable, subsequent release. Shutdown commands would be transmitted to the control processor via the Ethernet interface as well as directly to the backup shutdown system.

The turbine system enclosure would be equipped with a CO₂ fire suppression system. On detection of fire, the detectors would transmit an electrical signal via the fire control panel to activate the fire suppression system. On receipt of this signal, the discharge valves would be activated, releasing the extinguishing agent into the enclosure. CO₂ pressure would actuate the pressure-trip-operated dampers that would close all vent openings. Additionally, CO₂ release control heads also would be provided with manual release levers.

Connections for the oil tank vent line, ventilation fan wiring, fire suppression systems, and the turbine air inlet and exhaust would be terminated outside of the enclosure.

Until sufficient quantities of natural gas are produced, additional power would be needed from an off-site source. Current projections are that supplementary electricity would be needed for the initial 7 years. Accordingly, a new SCE utility line connection from the existing substation on Studebaker Road, approximately 4,500 to 5,000 feet north of the LCWA site, would be established, as shown in Figure 2-11. This connection would either utilize the existing SCE utility poles along Studebaker Road or be underground.

In addition, natural gas could potentially be provided to the project site via existing sources (see Connection to Off-Site Pipelines section on page 2-56) until sufficient quantities are produced on site.

Construction of the non-oil facilities would last approximately 1 year, beginning in Year 2 and concluding in Year 3.

Year 3

Construction of the oil facilities as described above would continue through the year. Construction of non-oil facilities as described above would conclude in Year 3. Well drilling would be initiated, as would facility operations, as described below.

Well Drilling

Up to 70 new oil production, water injection, and water source wells would be drilled on the LCWA site. The specific oil production to water well ratio would be determined by the reservoir characteristics as drilling commences. Well drilling procedures would be identical to those described above under the Pumpkin Patch site, Year 3, Well Drilling, section. It is estimated that 6 wells would be drilled per year for up to 11 to 12 years, concluding in Year 14 or 15.

Operations

Prior to operations startup there would be a brief period of microgrid and turbine cogeneration system commissioning where the equipment is tested and operated as part of a commissioning process. Remaining turbine(s) and the balance of cogeneration equipment would be installed during the first year of operation to support the substantial increase in energy demand projected for the following years of operation.

As shown in Figure 2-24, the microgrid can handle an SCE grid blackout by switching into island mode (i.e., ability to self-power without relying on the grid) and there would be increased safety and reliability since operations would not be unexpectedly disrupted. The project would generate natural gas that could not currently be sold into the regional natural gas grid due to existing capacity limits. As described above under Construction of Non-Oil Facilities, the natural gas generated by the project would be used to power the four natural gas turbines. Instead of needing to install more energy-using equipment (e.g., boilers, chillers), the cogeneration system would capture and use turbine waste heat to process extracted liquids and gases. After an

initial operating period, current projections are that operations would produce extra natural gas beyond the amounts required for turbine operation. As the existing natural gas grid is planning an expansion, it is anticipated that excess natural gas produced on the site would be sold into the natural gas grid once the expansion is complete during operations.

For operation of the oil processing facility, the project would be equipped with computer controlled monitoring and communication systems. In general, these systems would be designed to monitor and control all process equipment that would operate within the facility. Primary operations would be conducted from the Pumpkin Patch site and are described above under Pumpkin Patch site, Year 3, Operations.

Throughout the life of the project, a 120-foot workover rig may be utilized as required for well maintenance and workover operations to sustain production from the wells. The collapsible workover rig would be stored on site and would only be visible to the public when in use. Typical routine well maintenance activities include, but are not limited to, repair or replacement of wearable parts and maintenance of downhole components. Typical workover operations likely involve downhole repairs and may involve pulling tubing and/or replacing downhole pumping equipment. Workover operations would be limited to 50 hours per week during daylight hours.

Year 4

Construction of oil facilities as described above would conclude in Year 4. Well drilling and operations, as described above, would continue through Year 4.

Year 14 and Beyond

Well drilling would conclude during Year 14 or Year 15, and facility operations would continue throughout the life of the project.

Table 2-5, Los Cerritos Wetlands Authority (LCWA) Site Activities, depicts the activities that are described above and that would occur on the LCWA site over the life of the proposed project.

Table 2-5 Los Cerritos Wetlands Authority (LCWA) Site Activities

Quarter	Year 1				Year 2				Year 3				Year 4				Year 14	Beyond
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4		
Demolition and Remediation ^a	■																	
Grading			■															
Site Improvement Work and Restoration Activities ^b				■														
Construction of Non-Oil Facilities ^c					■		■											
Construction of Oil facilities ^d						■				■								
Well Drilling ^e								■				■						
Operations ^f									■		■				■		■	

- a. Remediate as needed.
- b. Construct perimeter wall; improve site ingress/egress; establish utility connections; install sidewalks and bikeways
- c. Construct natural gas combustion system (including gas turbines and cogeneration facilities) and energize facilities.
- d. Construct well cellars, tanks, water treatment facilities, oil separation system.
- e. 6 wells per site are expected to be drilled annually; drilling is expected to last approximately up to 11 to 12 years.
- f. Maintain oil processing facilities and natural gas combustion system; conduct well workover operations as needed.

2.5.2 Construction Schedule and Workforce

Schedule

The project schedules for each site are provided above in Table 2-2, Table ES-, Table 2-4, and Table 2-5. In addition, **Figure 2-27, Project Activity: Demolition and Remediation**, through **Figure 2-33, Project Activity: Operations**, depict the project construction phases. Over the course of 4 years, demolition and remediation, grading, site improvement work and restoration, construction of oil facilities, and construction of non-oil facilities would occur.

Well drilling will be initiated in Year 3. Six wells per site (Pumpkin Patch and LCWA) per year would be drilled. Well drilling on the Pumpkin Patch is expected to take approximately 8 years; and well drilling on the LCWA site is expected to take approximately 11 years. Over the life of the life of the project, the wells may need to be redrilled/worked over. These activities would be restricted to 50 hours per week.

Beginning in Year 4, the existing wells would be plugged and abandoned on the Synergy Oil Field, City Property, and Pumpkin Patch sites. Within 20 years from establishment of the New Occupancy Date, half of all wells would be removed and abandoned. The balance of the wells would be removed and abandoned on or before the 40-year anniversary of the New Occupancy Date. Additionally, if an oil well produces less than one full barrel of oil per day for a period of 18 consecutive months, the well would be plugged and abandoned immediately.

Construction and Drilling Workforce

Between 110 and 160 workers would be required for construction activities per day. It is expected that most construction workers would meet on the Synergy Oil Field site and go to their respective construction sites on work buses. Approximately 40 to 60 personnel would be needed throughout the drilling process, which is expected to occur over a period of 8 to 12 years; drill rig workover operations would require substantially less.

2.5.3 Land Conveyances

To implement the proposed project, a land conveyance, or the general transfer of legal title of property from one entity to another, would occur. Specifically, the LCWA would convey in fee the LCWA site to the Applicant for the purpose of allowing the Applicant to drill approximately 70 oil wells on the LCWA site and to conduct oil production activities on the LCWA site.

Additionally, the Applicant would convey in fee, by metes and bounds description (general boundary), approximately 1.42 acres containing the relocated office building on the Synergy Oil Field site and public access improvements (Studebaker Trail and Outlook Terrace) and the northern 76.52-acre restoration area to the LCWA.

The Applicant also intends to record an offer to dedicate the remaining 73.07-acre southern portion of the Synergy Oil Field site to LCWA. Although the land will be offered to LCWA, LCWA may elect not to accept title until all oil operations have been plugged and abandoned and the site remediated, if necessary.

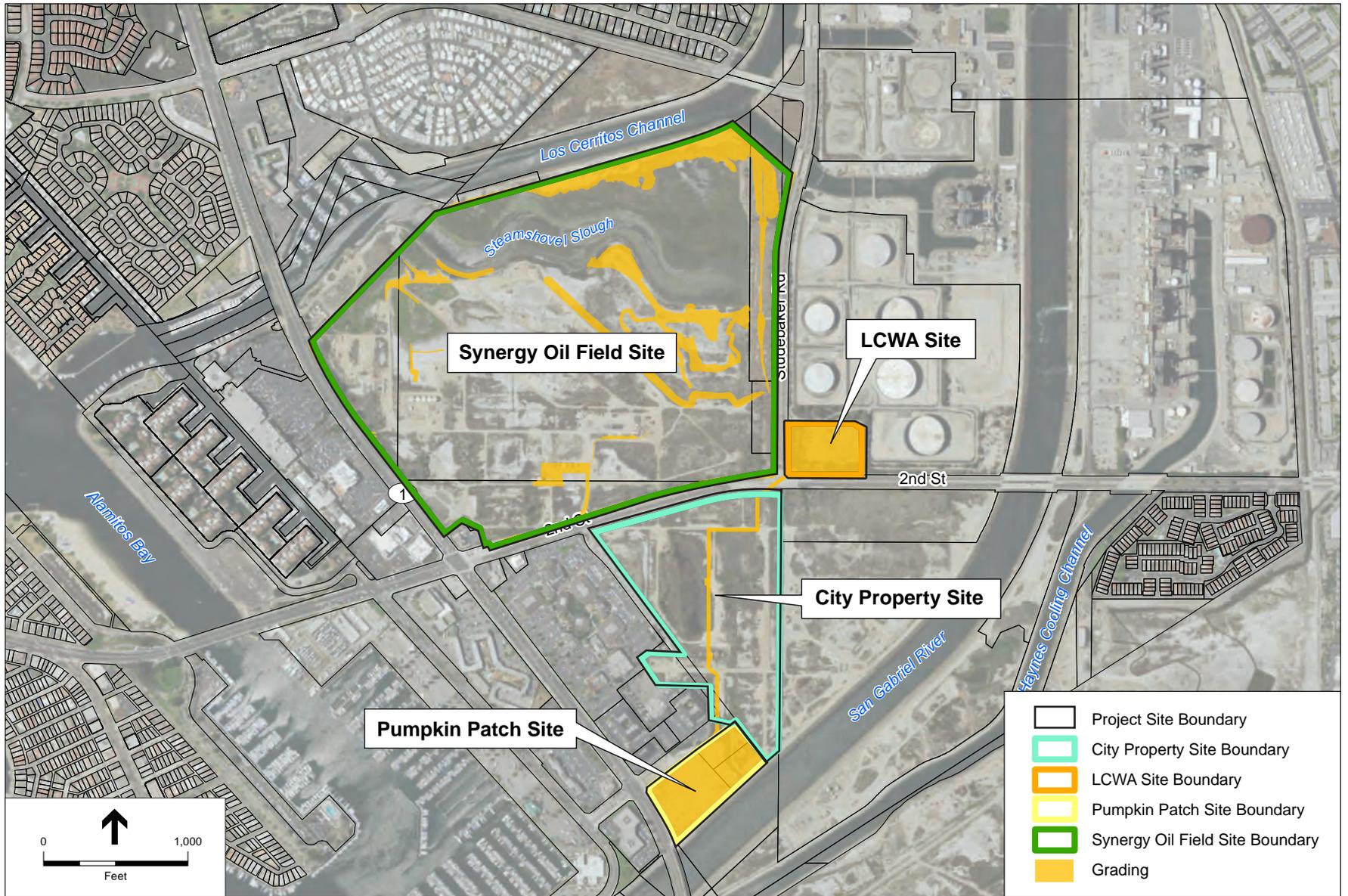


SOURCE: ESA, 2017

Long Beach Cerritos Wetland . 150712

Figure 2-27

Project Activity: Demolition and Remediation



SOURCE: ESA, 2017

Long Beach Cerritos Wetland . 150712

Figure 2-28

Project Activity: Grading



SOURCE: ESA, 2017

Long Beach Cerritos Wetland . 150712

Figure 2-29

Project Activity: Site Improvement Work and Restoration



SOURCE: ESA, 2017

Long Beach Cerritos Wetland . 150712

Figure 2-30

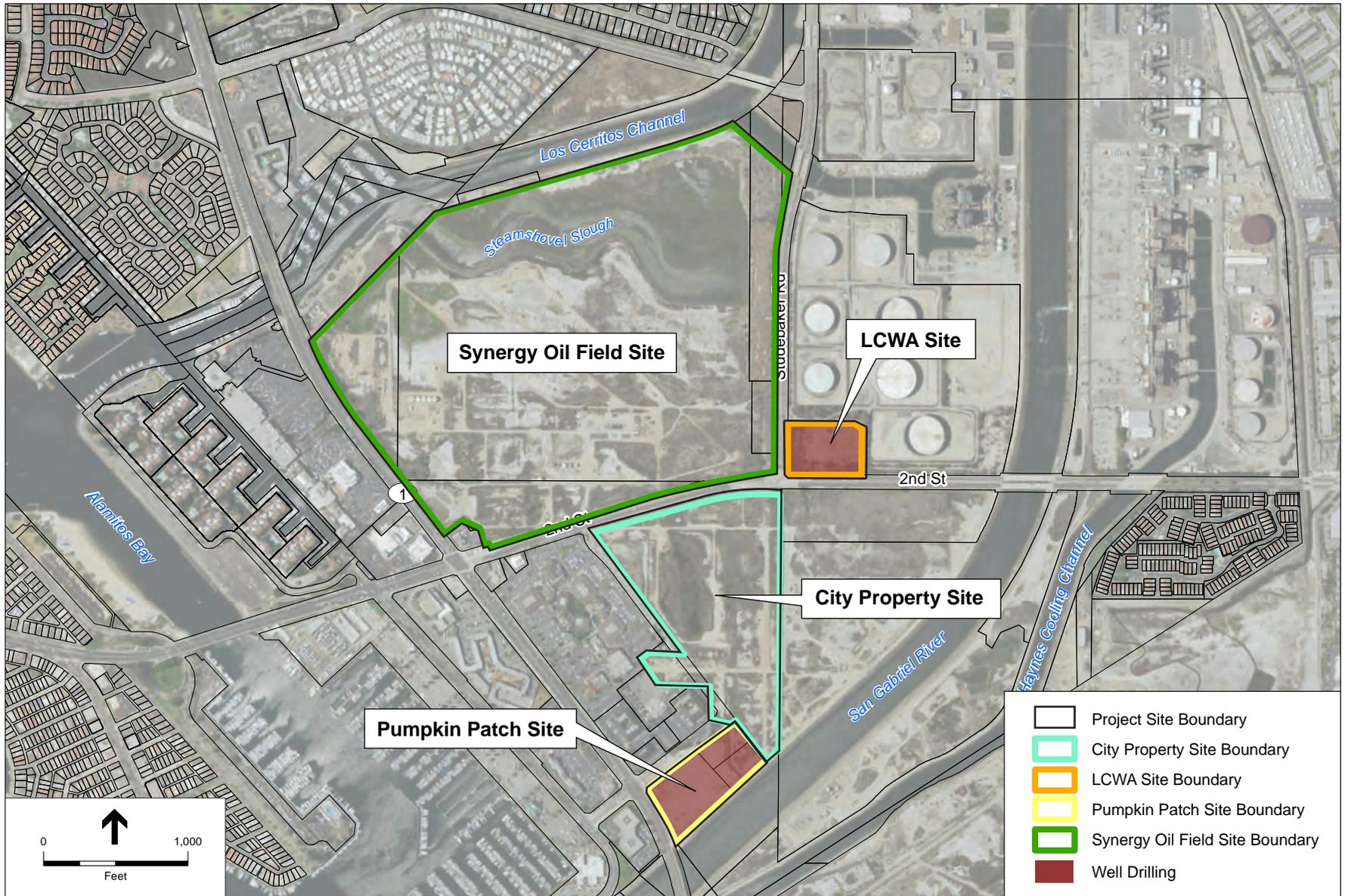
Project Activity: Construction of Non-Oil Facilities



SOURCE: ESA, 2017

Long Beach Cerritos Wetland . 150712

Figure 2-31
Project Activity: Construction of Oil Facilities

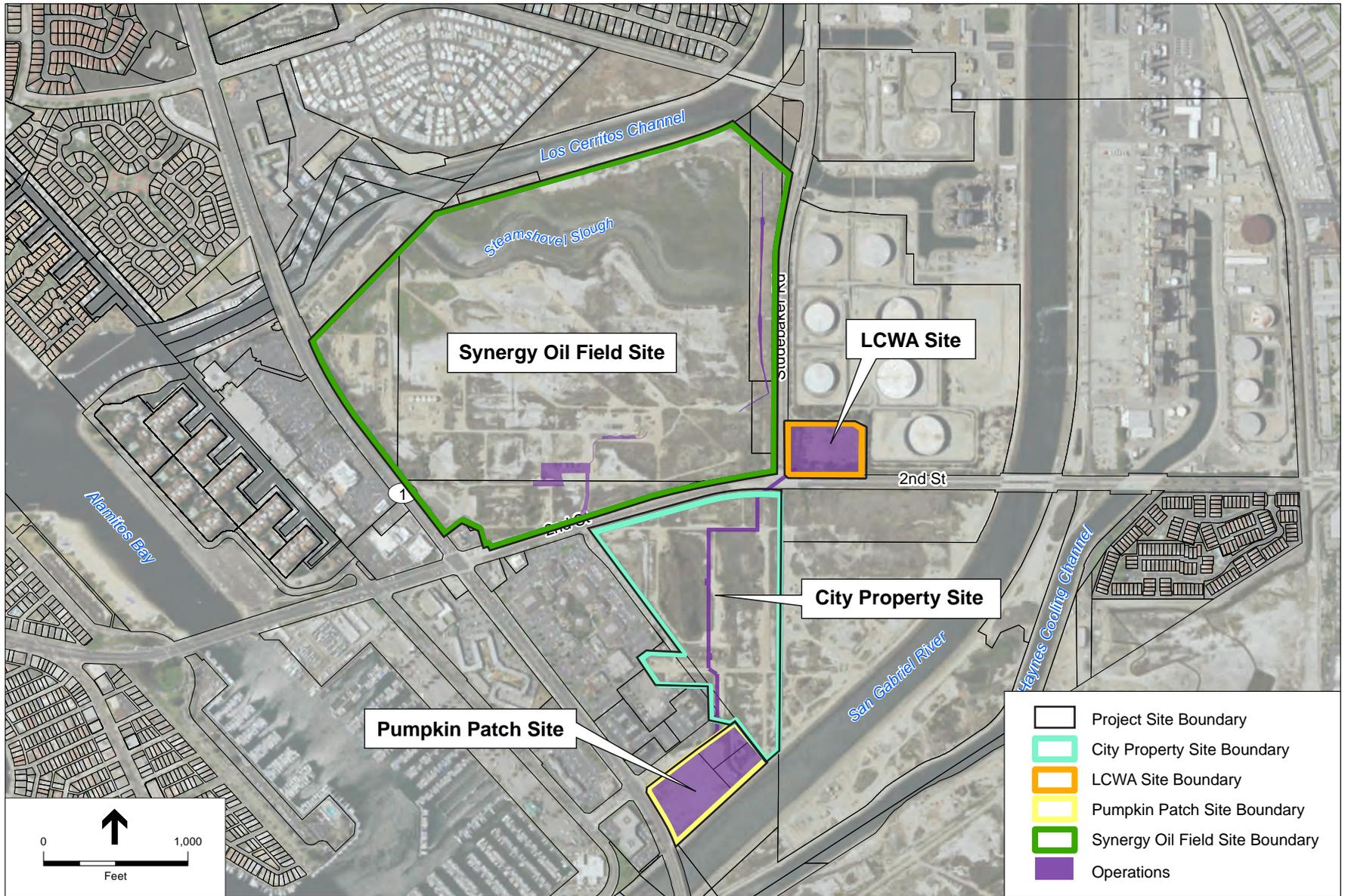


SOURCE: ESA, 2017

Long Beach Cerritos Wetland . 150712

Figure 2-32

Project Activity: Well Drilling



SOURCE: ESA, 2017

Long Beach Cerritos Wetland . 150712

Figure 2-33

Project Activity: Operations

2.6 Development Schedule

As described above in Section 2.5, *Project Characteristics*, it is anticipated that the proposed project would be implemented and phased over time, beginning in 2018 and completing construction in 2022.

2.7 Intended Use of the EIR and Project Approvals

This EIR is intended to be used by lead, responsible, and trustee agencies that may have review authority over the project. It is also intended to inform the public of the environmental effects of the proposed project.

Actions and approvals required from the City in association with the proposed project include:

- Certification of the Final EIR and adoption of the Mitigation Monitoring and Reporting Plan (MMRP);
- Approval of a Zoning Code amendment to SEADIP (PD-1) to allow for the following activities:
 - Oil production uses on the Synergy Oil Field site, City Property site, Pumpkin Patch site and the LCWA site;
 - Fair share contribution to the improvements of Studebaker Road and other circulation improvements in accordance with a City circulation improvement plan; and
 - The designation of the Synergy Oil Field site as open space and passive recreation uses upon completion of the wetlands restoration work.
 - Clarification of the allowable height for oil production and storage facilities.
- Amendment to the City's Oil Map to include the Pumpkin Patch site and LCWA site within mapped Oil Production Areas;
- Amendment to the Local Coastal Program to make corresponding changes to the approved land uses for the Pumpkin Patch and LCWA sites;
- Approval of Oil Drilling Permit;
- Approval of Oil Well Permits;
- Site Plan Review
- Approval of Building Permit(s);^{18,19}
- Approval of Grading Permits(s);
- Certificates of Compliance for the LCWA 5-acre parcel and the Synergy Oil Field site (northern restoration area);
- Local Coastal Development Permit for LCWA site and Pumpkin Patch site
- Development Agreement;
- Local Landmark Designation
- Certificate of Appropriateness

¹⁸ Certain oil and gas extraction and processing are exempt from zoning regulations as provided for in Subsection 21.10.030.B and are controlled by Long Beach Municipal Code Title 12.

¹⁹ Oil equipment such as workover rigs and related equipment are not buildings and are not subject to a specific height limit under the zoning code.

- Amendment of Surface Use Release Agreement and Grant of Easements (SURGE); and
- Approval of any necessary easements and/or encroachments permits.

Actions and approvals that may be required from other agencies for the proposed project include:

- California Coastal Commission
 - Local Coastal Program Amendment certification
 - Consolidated Coastal Development Permit
- LCWA
 - Approve Land Exchange Agreement with BOMP for the Conveyance of Land
- South Coast Air Quality Management District
 - Permits to Construct and Operate
 - Diesel Generator Permit
- Los Angeles Regional Water Quality Control Board
 - Section 401
 - National Pollutant Discharge Elimination System (NPDES)
 - Storm Water Pollution Prevention Plan (SWPPP)
- Division of Oil Gas and Geothermal Resources
 - Permits to Abandon Oil Wells²⁰
- U.S. Army Corps of Engineers (USACE)
 - Nationwide Permit for activities in the Steamshovel Slough

Discretionary approvals from these agencies are potentially required, but this does not necessarily represent a comprehensive list of all possible discretionary permits/approvals required. Other additional permits or approvals from responsible agencies may be required for the proposed project.

2.8 Technical, Economic, and Environmental Characteristics

The proposed project's technical characteristics are described above in Section 2.5, *Project Characteristics*. The site's environmental characteristics, including the environmental setting and anticipated environmental impacts, are described in Chapter 3, *Environmental Setting, Impacts, and Mitigation Measures*. The proposed project would bring economic benefits to the City including additional employment, as well as expanded open space and recreational opportunities. The proposed project would create up to 33 new permanent employment opportunities, in addition to the 15 existing oil-production employees. This includes the visitors center, which would generate 3 full-time employees and additional volunteers as needed. In addition, construction employees would also be needed during construction on the four individual sites that comprise the project site. The proposed project would require up to 160 construction workers but the number of employees on site would vary depending upon type of construction activity. In additional discussion of the economic characteristics of the proposed project is provided in Chapter 4, *Other CEQA Considerations*.

²⁰ If required.

2.9 References

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