Wetland Delineation Preliminary Jurisdictional Determination

Wetland Delineation and Preliminary Jurisdiction Waters Determination

Prepared For:

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February 4, 2020

I declare that, to the best of my professional knowledge and belief, we have the specific qualifications based on education, training, and experience to assess wetland delineation and preliminary jurisdictional waters determinations consistent with USACE, USFWS, Ca DFWS, and CA RWQCB standards.

I declare that this wetland delineation was prepared in accordance with the USACE Wetland Delineation Manual (1987) and the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (Version 2.0) (2008), and consistent with Ground Zone Environmental Services, LLC (Ground Zone) Scope of Work for Consultant Services to Address California Environmental Quality Act (CEQA) Requirements for the Hercules Complex Project (Ground Zone, November 11, 2019). Ground Zone does not warrant the accuracy or veracity of information obtained through third party sources.

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1.0 INTRODUCTION

This report presents the results of a wetland delineation and a preliminary determination of jurisdiction for potentially regulated wetlands located along Highway 80 Northbound in the City of Hercules (Project or Site). The Project will construct a 100-unit 4-story hotel and s 6-story office building complex at the Site. The Site location is showed in **Figure 1** and the Site plan is shown in **Figure 2**.

This report provides background and site-specific information pertaining to the wetlands and aquatic habitats occurring within the study area. In addition, this report presents the results of our field investigation, and includes a discussion of the existing plant communities, soils, hydrology, and permitting implications of the proposed pipeline construction project.

The largest area of native vegetation present along the Project Site consists of a freshwater marsh along an historic ephemeral creek tributary to Refugio Creek in a depressed area at the northern perimeter of the site. Small amounts of disturbed native habitats are also present.

The hydrology at the Project Site is influenced primarily by runoff from the hills along Refugio Valley watershed and by urban runoff from impervious roadway surfaces. A majority of the runoff from this portion of the Refugio Valley is conveyed via realigned open channels and buried culverts to an unnamed ephemeral tributary to Refugio Creek running through the northern portion of the Project area.

Based on this delineation, the study area encompasses a total of 28,805 square feet of wetlands falling under the jurisdiction of the US Army Corps of Engineers (USACE) and meeting the parameter definition of a wetland. In addition, the study area includes a total of 7,074 square feet of jurisdictional, waters of the United States (US). The study area also encompasses 31,019 square feet of riparian habitats that potentially fall under the jurisdiction of the San Francisco Bay Regional Water Quality Control Board (SFBRWQCB).

2.0 METHODS AND LIMITATIONS

Wetland ecologist Tony Jones conducted a wetland delineation and a preliminary jurisdictional determination of the study area, during which time, he performed reconnaissance surveys in December and January 2019/2020, initially identifying potential wetlands. (He performed site-specific wetlands surveys on December 16 and December 26, 2019; January 1, and January 27, 2020. Based on the criteria used to define a wetland, Mr. Jones determined that the topography and the presence or absence of field indicators, (e.g., vegetation, hydrology, and soils), the limits of habitats meeting the three-parameter definition of a "wetland" were determined. The extent of potential wetlands located within the Project corridor was mapped in the field using 1" = 39' scale Google Earth satellite image of the site. Field sheets providing data on vegetation, soils, and hydrology were collected at 12 sample points throughout the study area and are presented in **Appendix A**.

The nomenclature used in this report conforms to that presented in Beidleman and Kozloff (2003) for plants, plant communities, and wetland communities. The wetland indicator status of plant species conforms to those provided in the State of California 2016 Wetland Plant List.

3.0 BACKGROUND INFORMATION

3.1 Project Description

Hercules Hotel Development LLC plans to construct a 100-unit 4-story hotel and s 6-story office building complex at the Site. The Site location is showed in **Figure 1** and the Site plan is shown in **Figure 2**.

3.2 Site Description

The subject property is located in the City of Hercules along the east side of Interstate Highway 80 (I-80) within the loop ramp to westbound Willow Avenue. The highway itself was constructed circa 1958 or during the window (1950-1958). Before this, the Property was part of open rolling hills with an intermittent channel/drainage swale, apparently the remnant of the historic tributary to Refugio Cree to the South.

Figure 1. Site Layout

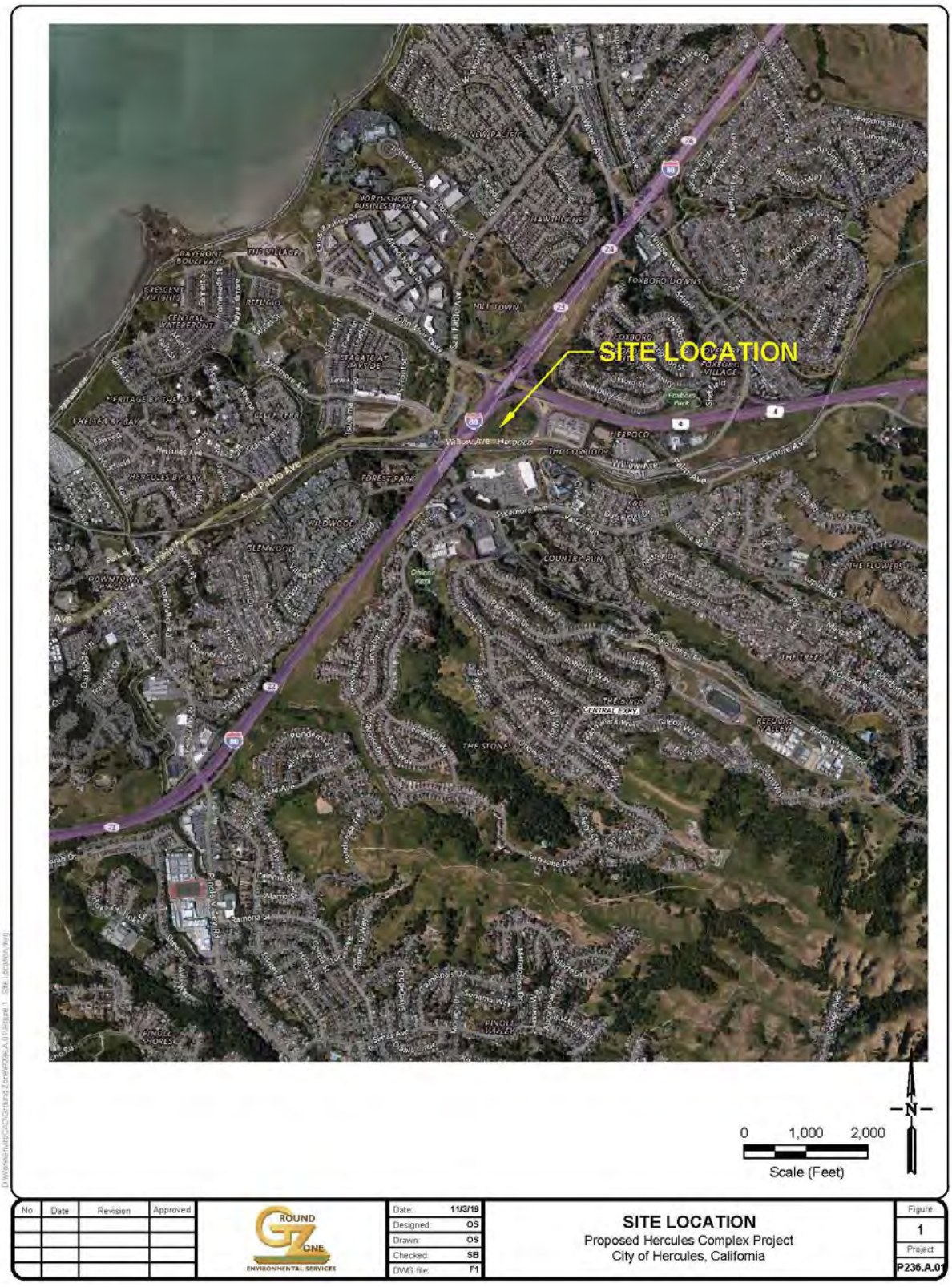
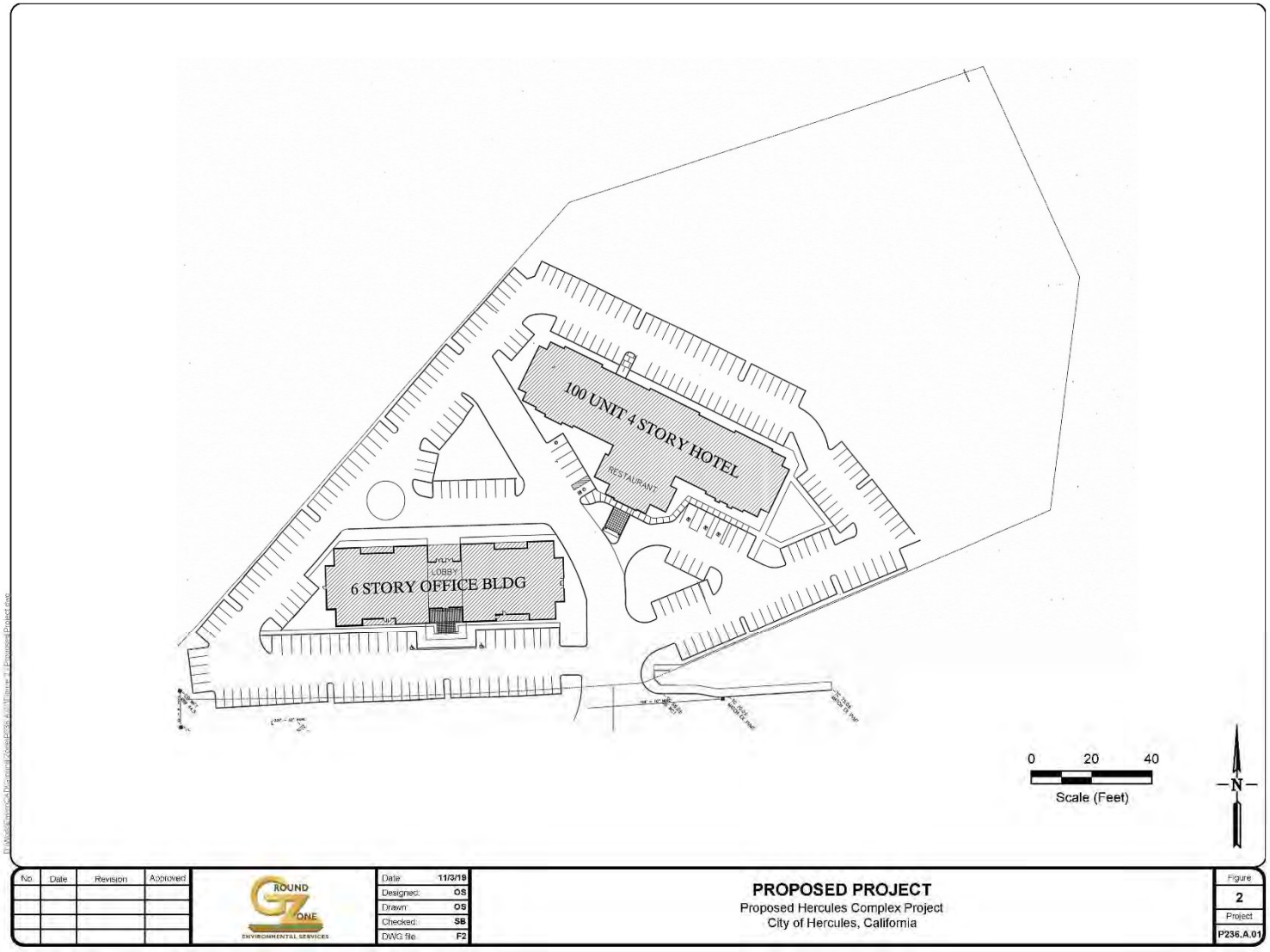


Figure 2. Site Plan



3.3 Physical Setting

The subject Site is located in the northeasterly portion of the San Francisco Bay area near the City of Richmond on San Pablo Bay and in the city limits of Hercules in Contra Costa County, California. This Site encompasses the location of the Hercules Hotel Complex property that included approximately 8.5 acres of rolling hill and drainage ditch waterway terrain within the Refugio Creek Valley. This low-lying valley trends in a westerly-easterly direction and is in the proximity where Refugio Creek discharges its intermittent flows into the San Pablo Bay.

2.1.1 Topography

The United States Geological Survey (USGS) 2018 *7.5-Minute Topographic Quadrangle Map* of *Mare Island*, California is shown in **Figure 3**. The average elevation of the Project area is approximately 65 ft. above mean sea level (AMSL).

The regional drainage is moderately sloped from east to west with a topographic flow direction to the west, as indicated in the Project's *GeoCheck Report* (Environmental Data Resources [EDR] 2019) (see **Appendix B**).

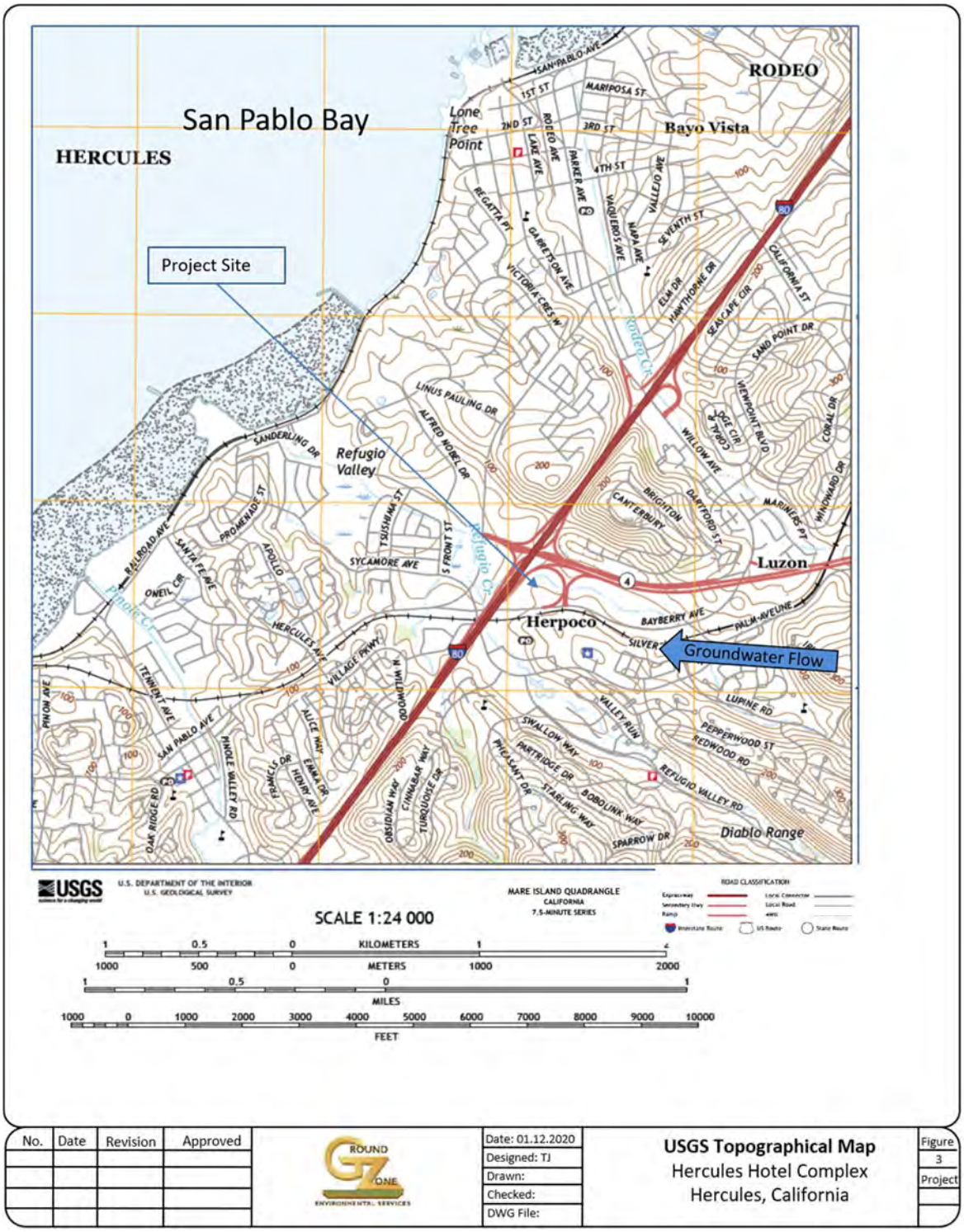
2.1.2 Regional Geology

The Site is located within the Refugio Creek Valley a land feature sloping easterly to westerly covered mostly by exposed Quaternary aged alluvium, estuarine sediments, and manmade artificial fill materials. Older Tertiary aged bedrock underlies these younger sediments and consists of sandstones and shale - both being low to intermediate grade metamorphic units. Bedrock located to the north is composed of Briones Sandstone and Hercules Shale. These sandstones are mostly massive and indurated by heat, and therefore lacking significant fracturing. Shale consists of closely fractured siltstone and claystone with interbedded lenses of sandstone with local fracturing.

The bedrock underlying the valley is overlain by highly plastic silty clays mixed with varying amounts of organics and sand lenses. These materials represent a portion of the bay muds also exposed at the surface on tidal flats located to the north and are between 10 to 40 feet thick. Across the Site materials exposed at the surface are composed of alluvium and manmade fill of unknown thickness. Alluvium consists mostly of fine-grained clay and silt with varying amounts of clayey sand and minor lenses of well sorted sands and gravels. At the surface these materials are soft or loose but become more compact and denser with increasing depth.

The *Radius Map Report with GeoCheck* (EDR 2019) also provided geologic information in the general area of the Project corridor, which was identified as a stratified sequence of the Cenozoic era, quaternary system and series.

Figure 3 USGS Topographical Map



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USGS Topographical Map
Hercules Hotel Complex
Hercules, California

Figure
3
Project

3.4 Geology and Hydrogeology

3.4.1 Local Geology and Soils

The subsurface soils in the Project area generally consist of marine and non-marine continental sedimentary rocks. Pleistocene-Holocene-aged alluvium consists of unconsolidated and semi consolidated fine-grained sediments. The unconsolidated sediments consist of clays, silts, and sands, with a thickness ranging up to 1,000 feet or more. These sediments are semi-continuous throughout the Bay and are usually referred to as "Old Bay Mud." Younger, fine-grained alluvial and estuarine deposits (Young Bay Mud) overlay the Old Bay Mud. The younger, fine-grained alluvium is typically a mixture of interbedded stiff clays, silts, gravel, and sands derived from the hills or deposited during the formation of the San Francisco Bay.

The *Radius Map Report with GeoCheck* (EDR 2019) (**Appendix B**) provided native soil composition information in the general area of the Project corridor, which was identified as Sehorn clay comprised of Class D very slow infiltrating soils with high water table; the soils are clay from 0-25 inches, silty clay from 25 to 35 inches, and unweathered bedrock at 38 inches.

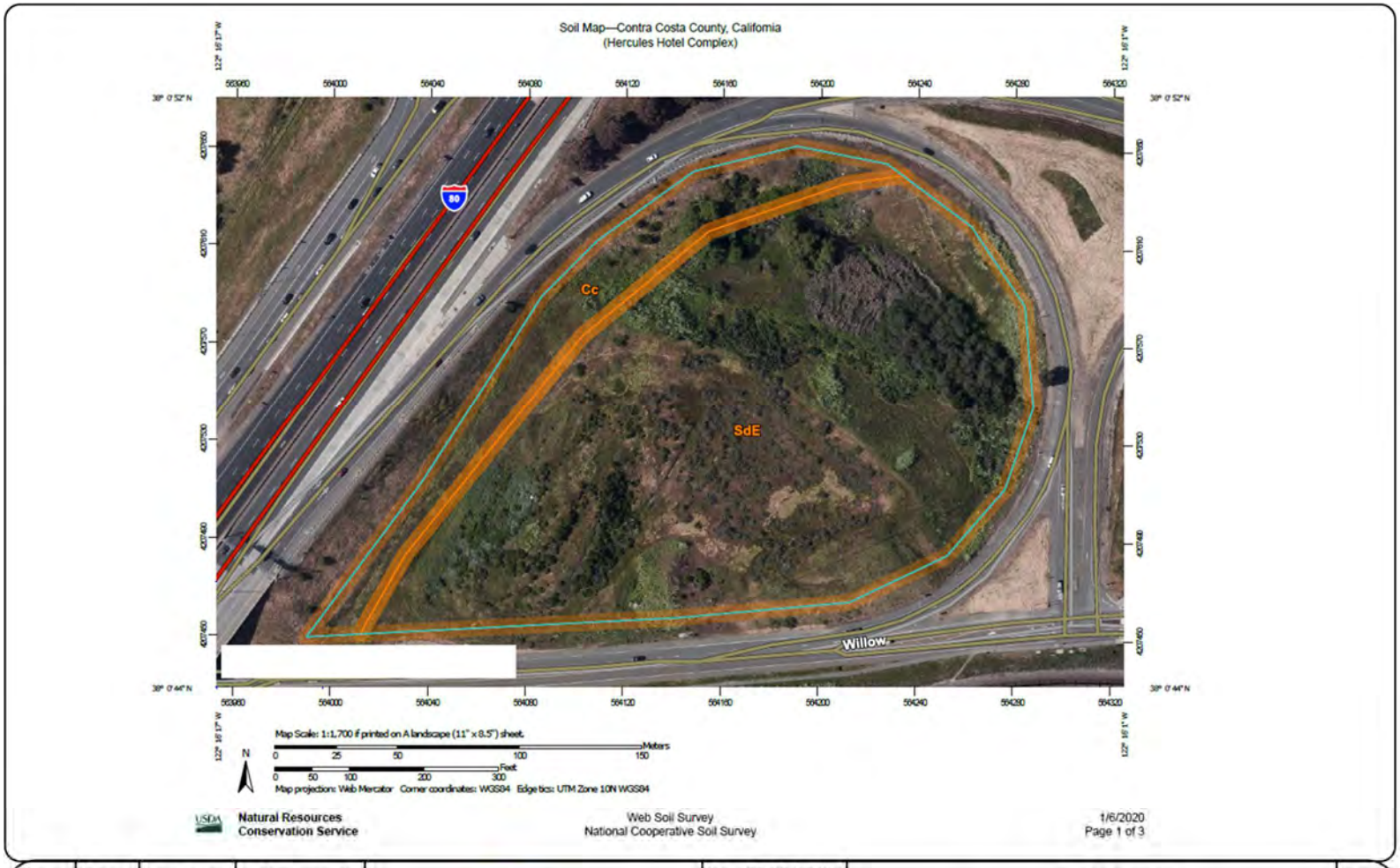
The other major soil type identified was Clear Lake clay comprised of clay from 0 to 59 inches with very slow infiltration rates, high water table, and poorly drained. The last soil type identified is Tierra loam, also Class D and moderately well drained with loam from 0 to 25 inches, clay from 25 to 59 inches, and silty clay loam from 59 to 70 inches.

Natural Resources Conservation Service's (NRCS) accessed January 6, 2020 Web Soil Survey confirms soil type as Clear Lake clay with 0 to 15 percent slopes, covers 1.5 acres of the Site or 15.5 percent; and Sehorn clay with 15 to 30 percent slopes covering 8 acres of the Site or 84.5% of the site. (NRCS 2020). NRCS Web Soil Survey is provided in **Appendix C**.

Clear Lake Clay: The Clear Lake series consists of very deep, poorly drained soils that formed in fine textured alluvium derived from mixed rock sources. Clear Lake soils are in flood basins, flood plains and in swales of drainageways with low to very low permeability. The water table is at depths of 4 to 10 feet in the late summer and in some areas is very near the surface during wet months of winter. Some areas are artificially drained.

Sehorn Clay: The Sehorn series consists of moderately deep, well-drained soil on foothills. These soils formed in residuum weathered from calcareous sandstone and shale. Slope ranges from 2 to 75 percent. See **Figure 4** for Site soil classification.

Figure 4 Soil Classification



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3.4.2 Surface and Groundwater Hydrology

Hydrology and hydrogeology located across and beneath the property is mainly a function of climatic fluctuations within the Refugio Creek watershed area and tidal fluctuations of the San Francisco Bay. The Project area is located within the San Pablo Creek-Frontal San Pablo Bay Estuaries watershed and the Pinole Creek-Frontal San Pablo Bay Estuaries subwatershed. The Site receives 19.36 inches of rain per year on average (Caltrans 2020).

The tributary to Refugio Creek provides significant seasonal flows to the main stem of Refugio creek, draining approximately 653 acres of the total 3,116-acre Refugio Creek watershed, or ~21%. Three figures are provided in **Appendix D** fand include the Contra Costa County Watershed Atlas showing the Refugio Creek watershed and the drainage through the Project site. The creek passing through the Project Site is a natural open channel, fed by an underground conveyance and discharging through an underground conveyance to the main stem of Refugio Creek.
Intermittent flows within the Refugio Creek channel located along the northerly side of the Refugio Valley are directed in a westerly direction from elevated terrain located to the east. Most of these waters are emptied into San Pablo Bay to the west of the Site but small portions do infiltrate into the subsurface thus adding to underlying ground water resources. During the winter season portions of surface water flows pond in low lying depressions, artificial surface dikes, drainage ditches, and channels through the valley. Past measurements of ground water depth and gradient indicate that its direction of flow generally follows the topography of the surrounding highland features and floor of the valley westerly (Geosolutions 2003).

Underlying bedrock appears to have both a low primary permeability and highly variable secondary permeability that is due mostly to fractures. Across the Site and within the valley area, ground water in the bedrock arrives mostly after infiltrating through overlying alluvium that has been placed by erosional processes. In elevated terrain located to the east of the site, ground water enters the subsurface through the mantle of regolith located across the ground surface. Overall ground water migrate in a westerly direction towards and into the bay. Within limits of the Refugio Creek valley the ground water becomes increasingly brackish to saline from south to north and east to west with the highest concentration being near to the San Pablo Bay (Geosolutions 2003).

The East Bay Plain sub-basin is a northwest trending alluvial plain bounded on the north by the San Pablo Bay, on the east by Franciscan Basement rock, on the south by the Niles Cone Groundwater Basin, and on the west by the San Francisco Bay (DWR 2004). The East Bay Plain sub-basin extends beneath the San Francisco Bay to the west (DWR 2004).

The East Bay Plain sub-basin aquifer system consists of unconsolidated sediments from of Quaternary age (DWR 2004). Deposits include the early-Pleistocene Santa Clara Formation, the late-Pleistocene Alameda Formation, the early-Holocene Temescal Formation, and Artificial Fill (DWR 2004). The Santa Clara Formation consists of alluvial fan deposits inter-fingered with lake, swamp, river channel, and floodplain deposits (DWR 2004). The Alameda Formation includes a sequence of alluvial fan deposits bounded by mud deposits on the top and bottom of

the formation (DWR 2004). The Temescal Formation is an alluvial deposit consisting primarily of silts and clays with some gravel layers (DWR 2004). Artificial Fill is found mostly along the bay front and wetlands areas and is derived primarily from dredging, as well as quarrying, construction, demolition debris, and municipal waste (DWR 2004).

The depth to groundwater near the Project area ranges from approximately 3.75 ft to 10.2 ft below ground surface (bgs), and shallow groundwater flow direction is typically to the northwest (SWRCB 2018). Regional groundwater flows are estimated to be west-northwest toward the San Pablo Bay located approximately 1.5 miles west of the Project area. The Radius Map Report with GeoCheck (EDR 2019) identified no monitoring wells, federal USGS wells, public water supply wells, or state wells within 1 mile of the Project area.

It is important to note that groundwater flow direction can be influenced locally and regionally by the presence of local wetland features, surface topography, recharge and discharge areas, horizontal and vertical inconsistencies in the types and location of subsurface soils, and proximity to water pumping wells. Additionally, the depth and gradient of the Project area's water table can change seasonally in response to variation in precipitation and recharge, and over time, in response to urban development such as stormwater controls, impervious surfaces, pumping wells, dewatering, seawater intrusion barrier projects near the coast, and other factors.

3.5 Plant Communities

According to the Biological Assessment performed in January 2020, the Project Site includes a mosaic of several vegetation communities, including Non-native Annual Grassland, Native Perennial Grassland, Willow Riparian Woodland, Emergent Wetland, and coyote brush scrub (Ground Zone 2020)(See **Figure 5** below, excerpted from the Biological Assessment).

Non-native Annual Grassland. As a result of disturbance and undocumented soil deposition activities on the site, much of the vegetative cover (observed December 16, 2019) contained areas of non-native annual grassland with species including ripgut brome (*Bromus diandrus*), wild-oat (*Avena fatua*), annual fescue (*Vulpia myuros*) intergrading with disturbed areas, dominated by other introduced weedy forbs such as black mustard (Brassica nigra), wild radish (*Raphanus sativus*), and perennial pepperweed *(Lepidium latifolium*). During observations on December 16, 2019, these grasslands were seen to have been graded and seeded with what was assumed to be erosion control grass seed mix.

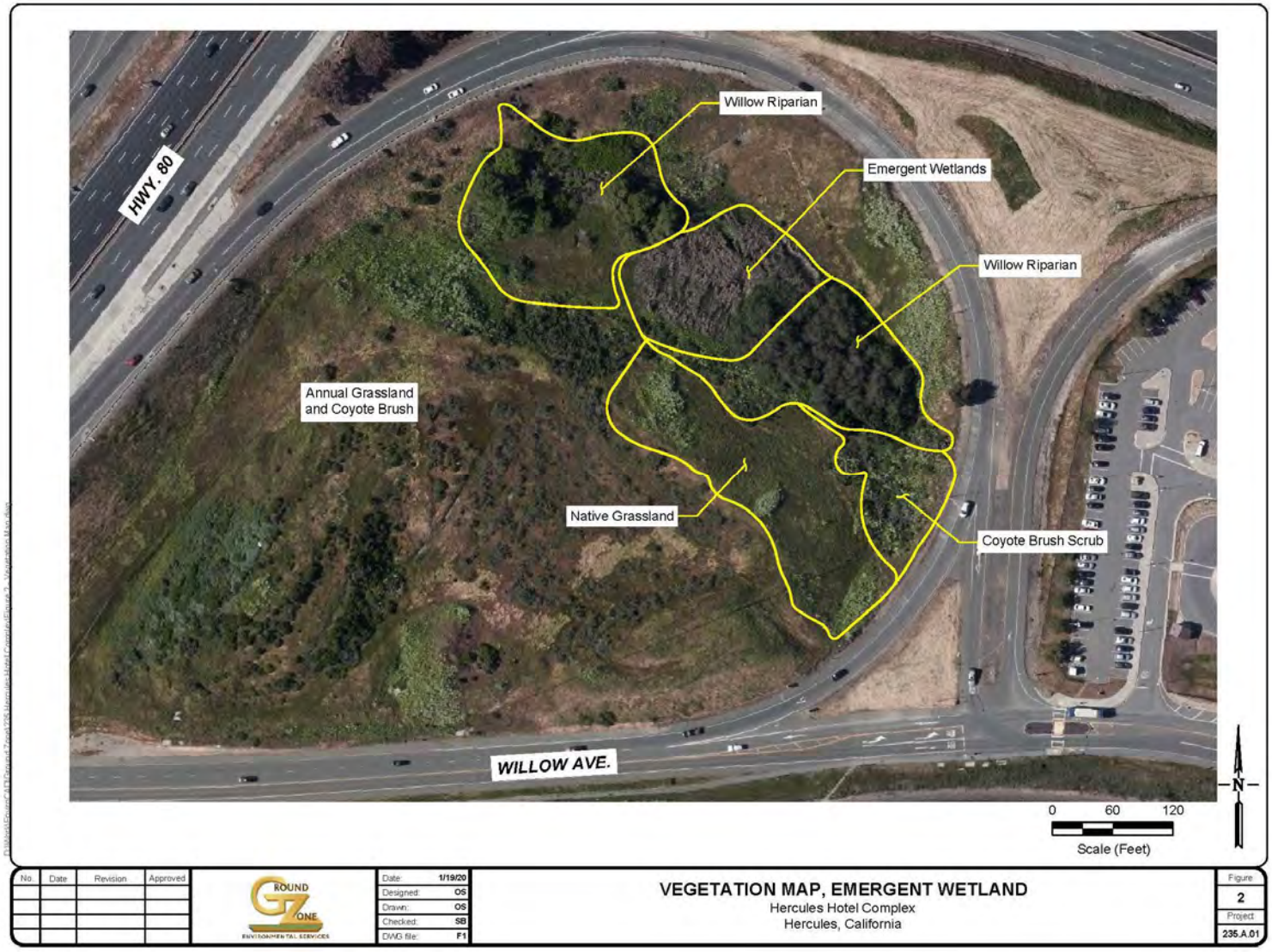
Native Grassland. Portions of the Site have vegetative cover almost exclusively consisting of native creeping wild-rye (*Leymus triticoides*), a rhizomatous species that spreads through expansion of the plants by its spreading roots. On the Project site, in most areas where wild-rye was seen growing, there were no other plant species observed. Native creeping wild-rye usually grows under moist soil conditions, and appeared to be located preferentially on the cooler north facing slopes of the site.

Coyote brush scrub. Coyote brush scrub habitat was dominated by Coyote brush (*Baccharis pilularis*) with scattered Poison Oak (*Rhus diversiloba*). Since that time, most of the Coyote Brush habitat had been scraped clear of vegetation and planted with an erosion control seed mix.

Willow riparian woodland. An unnamed tributary to Refugio Creek flows through the northern portion of the Site from a culvert at the southeast portion of the site, exiting through a culvert that is piped to drain beneath I-80 to the northwest. The stream channel supports a willow riparian plant community dominated by large willow trees, patches of mulefat (*Baccharis viminea*), stinging nettle (*Urtica dioica*), watercress (Nasturtium officinale), poison hemlock (Conium *maculatum*) and teasel (*Dipsacus fullonum*). Where deeper pools were present during observations in 2014, much of the water surface was covered in small floating plants including duckweed (*Lemna sp*.) and water fern (*Azolla sp*).

Emergent wetland (cattail marsh). Within the northern portion of the site, adjacent the unnamed tributary of Refugio Creek, elevations are low, forming a basin that includes open water (during years of higher rainfall) grading into freshwater cattail marsh wetlands dominated by non-native plants, including: narrow-leaf cattail *(typha angustifolia*) and wild teasel (*dipsacus fullonum*) at the margins.

Figure 5 Vegetative Communities



4.0 HISTORICAL LAND USE

This section provides a summary of historical land use associated with the Site. This section includes a review of historic directory listings, government agency files, as well as an EDR database report. A summary of findings for each source is presented below.

4.1 Historic Aerial Photographs

Historical Site uses can frequently be ascertained from a review of aerial photographs. Aerial photographs of the Project area and surrounding area were provided by EDR for the years 2016, 2012, 2009, 2005, 1998, 1993, 1982, 1974, 1968, 1963, 1958, 1950, 1946, and 1939, and are summarized below in **Table 1**. The EDR 2019 Aerial Photo Decade Package is included in **Appendix E**.

Table 1 – Summary of Historic Aerial Photograph Findings	
Photo Year	**Land Use description**
1939	The Site and vicinity is generally undeveloped. The Site straddles Willow Road to the south and San Pablo Avenue is in place a few hundred yards to the west. The Site is open space grassy area rolling hills with an apparent depression with areas of higher order vegetation and ponding at the northeast perimeter.
1946	No change from 1939.
1950	No change from 1939.
1958	The depressional area to the northeast is now channelized across the Site with a culvert passing below the newly construction Highway 80 to the West. Highway 4 is also constructed to the North. Small buildings appear to the East and South of the Project Site at a distance of a quarter mile. No other development is apparent.
1963	No change from 1958.
1968	Few additional buildings are scattered throughout a quarter mile radius of the site. No other land use change is apparent.
1974	No major change from 1968.
1982	A major residential and commercial development appears to the South within a quarter mile and a major commercial transportation hub appears to the east. To the north within a quarter mile, a refining operation appears.
1993	Additional major residential and commercial developments appear in every direction around the Site within a quarter mile. Industrial uses to the North have expanded greatly.
1998	No major change from 1993.
2005	Commercial and industrial uses have expended in the North and residential and commercial uses have expended in the North, South, and West.
2009	Large paved transportation use has appeared immediately to the East of the site.
2012	No major change from 2009.
2016	No change from 2009.

A review of the available historic aerial maps indicates that the Site has remained undeveloped since 1939. The Site vicinity has transformed dramatically from undeveloped minor arterial corridor, to fully developed, residential, commercial, and industrial uses along two major freeway corridors. The Site remains undeveloped with remnants of a waterway at the Northern perimeter, a tributary to Refugio Creek to the South.

4.2 Historic Topographical Maps

A historical topographic map report was prepared by EDR and included a search of a collection of public and private topographic maps. Maps dated 1902, 1914, 1916, 1947/1948, 1949/1950, 1951/1952, 1959, 1968, 1980, 2012 were provided for review by EDR and summarized below. **Table 2** summarizes the findings of the historic topo map review. The EDR 2019 Historical Topographic Map Report is included as **Appendix F**.

Table 2 – Summary of Historic Topographical Map Findings	
Photo Year	**Land Use description**
1902	The undeveloped Site located in the middle of Refugio Valley slightly elevated on rolling hills from the valley south limit, appears to drain north to northwest and straddle an intermittent tributary of Refugio Creek to the South and lies within a depressed area at the foot of a hill to the Northeast, aligning a roadway just North of the site. RR appears along at the southern perimeter of the site.
1914	Few changes from 1902. The roadway north of the Site no longer appears and the tributary is located a few hundred feet north of the site.
1916	No change from 1914.
1947, 1948	The Site appears to drain to an independent tributary to Refugio Cree across historic San Pablo Avenue to the West.
1949,1950	Independent tributary no longer depicted within Site limits
1951,1952	No change from 1950.
1959	The tributary has been rerouted to pass through the Site through its historic intermittent path. Highways 80 and 4 have been constructed directly to the north and west of the site. Heavy commercial/industrial development appears a mile to the north and southwest of the site.
1968	No change from 1959.
1980	Additional residential and commercial development appears to east, south north, and west of the site.
2012	Development now surrounds the Project Site in all direction up to within 1/8 mile of site.

The historic topographical maps indicate that the Project Site was has been undeveloped from 1902 through 2012 as open space hillside and depressed waterway (intermittent tributary to Refugio Creek) along the norther perimeter.

5.0 Field Survey

A Site surveys were conducted on December 16, 2019, December 26, 2019, January 1, 2020, and January 27, 2020. In general, the Site is characterized by open space land use and freeway corridor, as the Site is sandwiched between Willow Avenue to the south, Interstate 80 to the West, Highway 4 to the North and Interstate 80 offramp from North to East. The Site is comprised of natural and artificial fill hills and a relatively natural drainage depression from East to West fed by a 6 foot corrugated steel pipe at the eastern perimeter of the site, discharging to a 6 foot corrugated steel pipe at the northwestern perimeter of the Site which eventually discharges to Refugio Creek on the West side of Interstate 80. Evidence of fill from historic freeway construction and one concrete foundation from historic pile demolition. Also identified on Site are several drainage vents or wells recently installed apparently to help drain the site. An apparent freshwater wetland associated with the drainage tributary dominates the northern ¼ of

the Project area with woody canopy and wetland vegetation.

The field sheets and photographs data collected at the Site are presented in **Appendix A**.

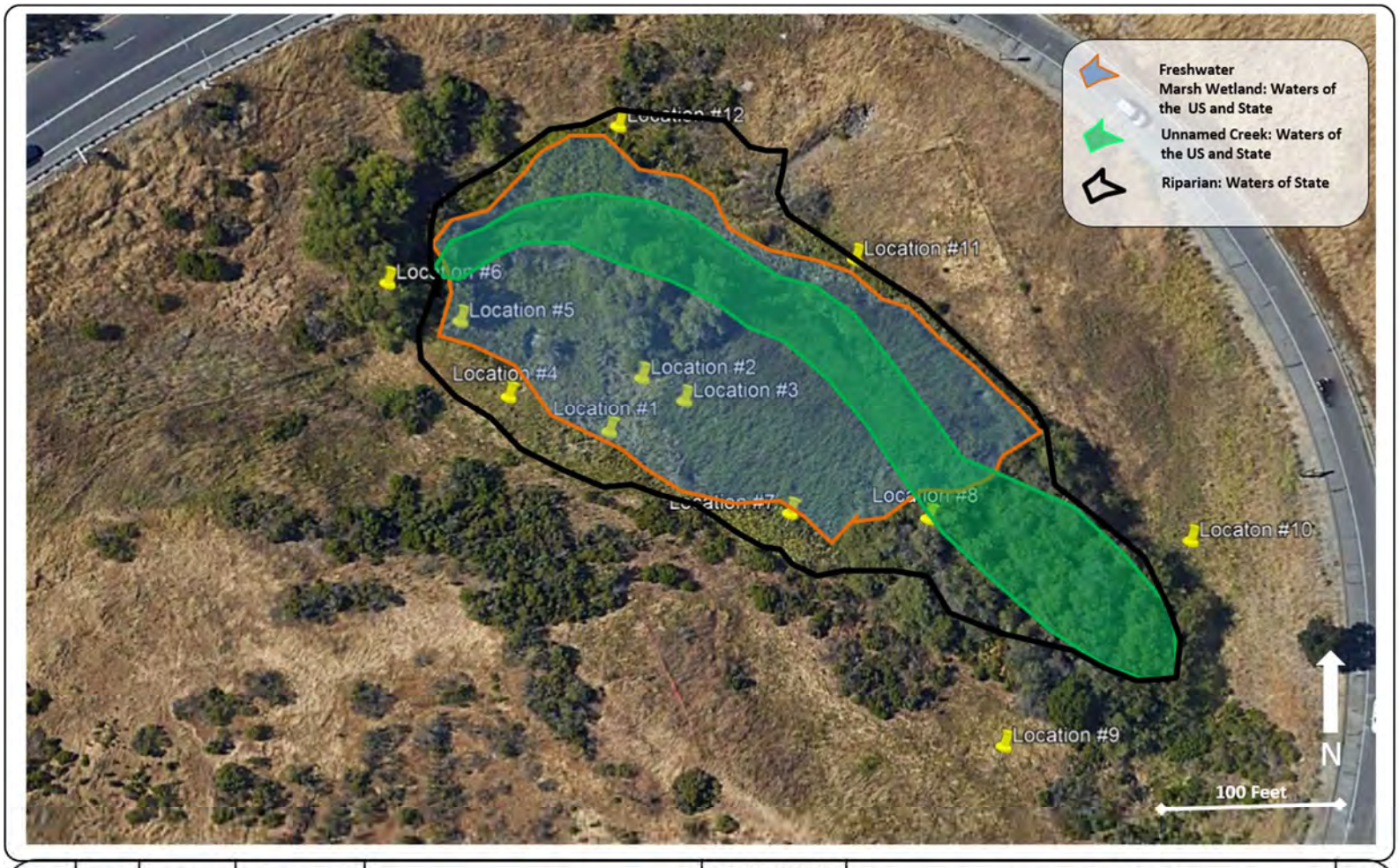
6.0 RESULTS

Table 3 summarizes the areas delineated for potential jurisdictional waters. **Figure 6** is a plots of these areas.

Table 3: Areas of Potential Jurisdictional Waters

Water Body	Jurisdiction	Area Delineated (sqft)
Unnamed creek (up to mean high water mark)	Waters of the US; Waters of the State; CA Fish and Wildlife	7,074
Cattail marsh wetland	Waters of the US; Waters of the State	28,805
Riparian Area	Waters of the State	31.019

Figure 6 Delineated Wetlands



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6.1 Jurisdictional Waters of the US

Waters of the US include:

1) All waters that are currently used, or were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters that are subject to the ebb and flow of tide;
2) All interstate waters, including interstate wetlands;
3) All other waters, such as interstate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, wetlands, sloughs, prairie potholes, vernal pools, wet meadows, playa lakes, or natural ponds, whose use, degradation, or destruction could affect interstate or foreign commerce;
4) Tributaries of the above;
5) Territorial seas; and
6) Wetlands adjacent to waters defined above.

Based on the agencies' interpretation of the statute, implementing regulations and relevant caselaw, the following waters are protected by the Clean Water Act (CWA):

1. Traditional navigable waters
2. Interstate waters
3. Wetlands adjacent to either traditional navigable waters or interstate waters
4. Non-navigable tributaries to traditional navigable waters that are relatively permanent, meaning they contain water at least seasonally
5. Wetlands that directly abut relatively permanent waters

In addition, the following waters are protected by the CWA if a fact-specific analysis determines they have a "significant nexus" to a traditional navigable water or interstate water:

- Tributaries to traditional navigable waters or interstate waters
- Wetlands adjacent to jurisdictional tributaries to traditional navigable waters or interstate waters
- Waters that fall under the "other waters" category of the regulations. The guidance divides these waters into two categories, those that are physically proximate to other jurisdictional waters and those that are not and discusses how each category should be evaluated.

The following aquatic areas are generally NOT protected by the CWA as waters of the US:

- Wet areas that are not tributaries or open waters and do not meet the agencies' regulatory definition of "wetlands"
- Waters excluded from coverage under the CWA by existing regulations
- Waters that lack a "significant nexus" where one is required for a water to be protected by the CWA

- Artificially irrigated areas that would revert to upland should irrigation cease
- Artificial lakes or ponds created by excavating and/or diking dry land and used exclusively for such purposes as stock watering, irrigation, settling basins, or rice growing
- Artificial reflecting pools or swimming pools created by excavating and/or diking dry land
- Small ornamental waters created by excavating and/or diking dry land for primarily aesthetic reasons
- Water-filled depressions created incidental to construction activity
- Groundwater drained through subsurface drainage systems and
- Erosional features (gullies and rills), and swales and ditches that are not tributaries or wetlands

Based on the above definition of Waters of the US, the unnamed tributary to Refugio Creek is a Waters of the US.

Based on three field visits and review of historic aerial photographs and topographical maps, the creek does not appear to be tidally influenced or directly involved with interstate commerce; the creek is not and has never been navigable; it is not an interstate water; it is not a territorial sea; and because Refugio Creek to the south also does not qualify as any of the above, the unnamed tributary does not qualify as a tributary of a jurisdictional water by these parameters.

However, our analysis finds that the unnamed tributary to Refugio Creek and Refugio Creek, and the associated wetland, are "other waters." Refugio Creek and its tributary at the Site are seasonal intermittent streams that appear in historic topo maps since the early 1900s. While the tributary that passes through the Site appears to have been artificially diverted to pass through the Project Site in 1956 when Interstate 80 and the Highway 4 offramps were constructed just east of the Project site, the current path has been in place since 1956 and has continued to flow seasonally for nearly 64 years supporting native plants and state and federally protected wildlife at the site. The tributary to Refugio Creek provides significant seasonal flows to the main stem of Refugio creek, draining approximately 653 acres of the total 3,116-acre Refugio Creek watershed, or ~21%. **Appendix D** show the Refugio Creek watershed and the drainage through the Project site.

Refugio Creek discharges to the Carquinez Strait and San Pablo Bay, both are navigable waters of the San Francisco Bay. As a first order tributary to the San Francisco Bay, Refugio Creek is a Waters of the US. As a principle tributary to Refugio Creek, the unnamed creek passing through the Project Site qualifies as "other waters." And because the unnamed creek is a natural channel supporting federally protected wildlife at least seasonally, the creek also qualifies as "other waters."

Wetlands and Other Waters of the US

Wetlands are defined as "those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions" (§404

Clean Water Act). Indicators of all three wetlands parameters (hydric soils, hydrophytic vegetation, wetlands hydrology) must be present, or would normally be present, for a significant portion of the growing season, for a Site to be classified as a jurisdictional wetland (Environmental Laboratory, 1987). Wetlands generally include swamps, bogs, vernal pools, seeps, marshes, and similar areas. However, a formal wetland delineation following the federal method and a subsequent verification by a USACE representative is the only way to determine the extent of USACE jurisdiction over potential wetlands and waters. Following the submission of the completed preliminary wetland delineation map and report, formal USACE verification usually takes approximately 30 days.

HydrophyticVegetation
Hydrophytic vegetation includes those plant species that possess physiological features or reproductive adaptations that allow them to persist in soils that are subject to prolonged inundation and anaerobic soil conditions. Plant species are classified by their probability of being associated with wetlands or uplands. Obligate (OBL) species almost always (>99 percent of the time) occur in wetlands. Facultative Wetland (FACW) species occur in wetlands 67 to 99 percent of the time. Facultative (FAC) species have a probability of 33 to 66 percent occurrence in wetlands. Facultative Upland (FACU) and Obligate Upland (UPL) species occur in wetlands from one to 33 percent and less than one percent of the time, respectively. For a sample point to meet this criterion, more than 50 percent of the dominant plant species in each of the strata must be considered OBL.

All plant species within the study area were identified and their corresponding wetland indicator status was recorded (See **Appendix A** for a summary of plant species identified). The wetland indicator status of each species was obtained from the National List of Plant Species that Occur in Wetlands, Region 0, California (Reed, 1988). Dominant plant species were determined using the "50/20 Rule." Dominant wetland indicator species occurring within the freshwater marsh delineated at the Project Site include narrow-leaved cattail (OBL), wild teasel (FAC), marsh baccharis (FACW/OBL). arroyo willow (FACW), and water cress (OBL).

Dominant wetland plants were found to exist in Locations 1, 2, 3, 5, 7, 8, 10, 11, and 12.

Hydric Soils
Hydric soils include non-draining organic soils, mineral soils with a high water table, ponded soils, and flooded soils. Characteristic field indicators of hydric soils include the presence of a histic epipedon, the presence of sulfidic material, the presence of an aquic or peraquic moisture regime, reducing soil conditions, soil color (including gleyed soils or soils with a low matrix chroma, with or without bright mottles), iron or manganese concretions, and soils listed as hydric by the USDA.

Hydric soils were found to exist in Locations 1, 2, 3, and 5.

Wetland Hydrology
In order for the hydrology parameter to be met, a Site must be seasonally inundated or saturated to within 12 inches of the soil surface for at least 12.5 percent of the growing season; areas

inundated or saturated to within 12 inches of the soil surface for 5 to 12.5 percent of the growing season may or may not meet the wetland hydrology parameter (Environmental Laboratory, 1987). Site-specific considerations regarding hydrology were based on the topographic position of each sample point, the presence of surface or ground water, the presence of strong wetland indicator species, evidence of hydric soils, and the presence of water-borne sediment at the soil surface. The more low-lying areas adjacent to water bodies or creeks were frequently presumed to be inundated or saturated to within 12 inches of the soil surface. Based on the average frost-free period for the study area, which lasts from 275 to 330 days, a particular Site would need to be inundated or saturated to within 12 inches of the soil surface for 34 to 41 consecutive days during the growing season (i.e., 0.125 x 275; 0.125 x 330).

Wetland hydrology was found to exist in Locations 1, 2, 3, and 5.

All three USACE wetland parameters were found to exist for Locations 1, 2, 3, and 5. See **Figure 6** for a map of waters of the US delineated at the Project site.

6.2 Jurisdictional Waters of the State of California

Waters of the State of California:

The Water Code defines "waters of the state" broadly to include "any surface water or groundwater including saline waters, within the boundaries of the state." "Waters of the state" includes all "waters of the U.S."

According to this definition of "waters of the state" the unnamed tributary to Refugio Creek passing through the Project site, the riparia corridor up to the ordinary high water mark, and the associated wetland vegetated area, are waters of the state (See **Figure 6** for a map of waters of the state delineated at the Project site.

State Wetland Definition:
The Water Boards define an area as wetland as follows: An area is wetland if, under normal circumstances, (1) the area has continuous or recurrent saturation of the upper substrate caused by groundwater, or shallow surface water, or both; (2) the duration of such saturation is sufficient to cause anaerobic conditions in the upper substrate; and (3) the area's vegetation is dominated by hydrophytes or the area lacks vegetation.

The following wetlands are waters of the state:
1. Natural wetlands,
2. Wetlands created by modification of a surface water of the state, and
3. Artificial wetlands that meet any of the following criteria:
    a) Approved by an agency as compensatory mitigation for impacts to other waters of the state, except where the approving agency explicitly identifies the mitigation as being of limited duration;
    b) Specifically identified in a water quality control plan as a wetland or other water of the state;

c) Resulted from historic human activity, is not subject to ongoing operation and maintenance, and has become a relatively permanent part of the natural landscape; or
d) Greater than or equal to one acre in size, unless the artificial wetland was constructed, and is currently used and maintained, primarily for one or more of the following purposes (i.e., the following artificial wetlands are not waters of the state unless they also satisfy the criteria set forth in 2, 3a, or 3b):
    i. Industrial or municipal wastewater treatment or disposal,
    ii. ii. Settling of sediment,
    iii. Detention, retention, infiltration, or treatment of stormwater runoff and other
    iv. pollutants or runoff subject to regulation under a municipal, construction, or industrial stormwater permitting program,
    v. Treatment of surface waters,
    vi. Agricultural crop irrigation or stock watering,
    vii. Fire suppression,
    viii. Industrial processing or cooling,
    ix. Active surface mining – even if the Site is managed for interim wetlands functions and values,
    x. Log storage,
    xi. Treatment, storage, or distribution of recycled water, or
    xii. Maximizing groundwater recharge (this does not include wetlands that have incidental groundwater recharge benefits); or
    xiii. Fields flooded for rice growing. 5 70

All artificial wetlands that are less than an acre in size and do not satisfy the criteria set forth in 2, 3.a, 3.b, or 3.c are not waters of the state. If an aquatic feature meets the wetland definition, the burden is on the applicant to demonstrate that the wetland is not a water of the state.

Under the State's definition of wetland, the freshwater marsh along the norther portion of the Project Site fits the definition of a wetland. Based on field surveys in December 2019 and January 2020, and on a review of historic aerial photography and topographical maps, the area has recurrent seasonal saturation in the upper substrate caused by groundwater and/or surface flow, the duration of this saturation extends throughout the winter and spring months, and the area delineated as state wetlands (See **Figure 6**) is dominated by hydrophytes or lacks vegetation.

7.0 PERMITTING IMPLICATIONS

In general, riparian areas, wetlands, waters of the US, and special-status species and communities are considered sensitive biological resources and typically fall under the jurisdiction of several regulatory agencies. Impacts to these habitats may require federal, state, and/or local permits or agreements. The permits required vary depending upon the location of the Project and the type and extent of impacts. However, prior to the issuance of any permit for actions that would result in impacts to wetlands, waters, or special-status species or communities, notification to each of the following agencies is appropriate:

- USACE
- San Francisco RWQCB
- California Department of Fish and Wildlife (CDFW)

An overview of the jurisdiction, application requirements, and required permits for each of the above-listed agencies is provided below.

US Army Corps of Engineers

Section 404 of the Clean Water Act (CWA) of 1972 regulates activities that result in the discharge of dredged or fill material into waters of the US, including wetlands. The primary intent of the CWA is to authorize the EPA to regulate water quality through the restriction of pollution discharges. The USACE has the principal authority to regulate discharges of dredged or fill material into waters of the US. However, EPA has oversight authority over the USACE and retains veto power over the USACE's decision to issue permits.

Regional Water Quality Control Board

Pursuant to Section 401 of the Clean Water Act and EPA 404(b)(1) Guidelines, an applicant for a federal permit to conduct any activity, which may result in discharge into navigable waters, must provide a certification from the RWQCB that such discharge will comply with the state water quality standards (Cal. Code Regs. tit. 23, §§3830 et seq.). The RWQCB has a policy of no net-loss of wetlands in effect and typically requires mitigation for all impacts to wetlands before it will issue a water quality certification or waiver thereof.

Under the Porter-Cologne Water Quality Control Act (Cal. Water Code §§13000-14920), the RWQCB is authorized to regulate the discharge of waste that could affect the quality of the state's waters. "Waste" is broadly defined by the Porter-Cologne Act to include "sewage and any and all other waste substances, liquid, solid, gaseous, or radioactive, associated with human habitation, or of human or animal origin, or from any producing, manufacturing, or processing operation of whatever nature…." (Cal. Water Code §13050). Concentrated silt or sediment associated with human habitation and harmful to the aquatic environment is "waste" under this section. In addition, the California Attorney General has interpreted this definition to include extraction of sand, gravel, or other minerals from a streambed, because it may cause an increase in turbidity and silt in the waters of the stream downstream from the operations. Therefore, even if a Project does not require a federal permit (i.e., a Nationwide Permit from the USACE), it may

require review and approval by the RWQCB.

When reviewing applications, the RWQCB focuses on ensuring that projects do not adversely affect the "beneficial uses" associated with waters of the state. Generally, the RWQCB defines beneficial uses to include all of the resources, services and qualities of aquatic ecosystems and underground aquifers that benefit the state of California. Numerous beneficial uses have been identified, including agricultural supply, wildlife habitat, recreation, groundwater recharge, and municipal and domestic water supply. In most cases, the RWQCB seeks to protect these beneficial uses by requiring the integration water quality control measures into projects that will result in discharge into waters of the State. For most construction projects, RWQCB requires the use of construction and post-construction Best Management Practices (BMPs). In many cases, proper use of BMPs, including detention ponds, grassy swales, sand filters, modified roof drains, and other features, will speed Project approval from the RWQCB. Development setbacks from creeks are also favored by the RWQCB, as they often lead to less creek-related impacts in the future. Proper integration of these and other features into Project design will greatly decrease the necessary negotiation with RWQCB and will speed the Project approval process.

California Department of Fish and Wildlife

The CDFW exercises jurisdiction over wetland and riparian resources associated with rivers, streams, and lakes under California Fish and Game Code Sections 1600 to 1607. The CDFG has the authority to regulate work that will 1) divert, obstruct, or change the natural flow of the bed, channel, or bank of any river, stream, or lake; 2) use materials from a streambed; or 3) result in the disposal or deposition of debris, waste or other material containing crumbled, flaked, or jurisdiction is usually bounded by the top-of-bank or the outermost edges of riparian vegetation.

Because the wetlands along the northern part of the Project Site are associated with a natural water course historically present with seasonal flows since 1965, and supports aquatic wildlife protected by the State Endangered Species Act, it is presumed to fall under the jurisdiction of the CDFG. If the Project plans to disturb this unnamed tributary to Refugio Creek, a Streambed Alteration Agreement will be required. We recommend that notification be submitted to CDFG as part of the permitting process.

8.0 FINDINGS and CONCLUSION

The study area supports wetlands and other waters of the United States that are presumed to fall under the jurisdiction of the USACE, pursuant to the Clean Water Act. In addition, the "non-wetland" riparian habitats not meeting the federal definition of a wetland may be regulated by the RWQCB, pursuant to the Porter-Cologne Act.

These conclusions must be regarded as preliminary, and as such, must be confirmed in consultation with each agency before commencing any work that would impact aquatic habitats on site.

9.0 LIMITATIONS

Information for this assessment was obtained from sources listed in the reference section of this report. This information, to the extent it was relied on to form our opinion, is assumed to be correct and complete. Ground Zone is not responsible for the quality or content of information from these sources.

Any opinions and/or recommendations presented apply to Site conditions existing at the time of performance of services. We are unable to report on, or accurately predict, generally unforeseeable events which may impact the Site following performance of services, whether occurring naturally or caused by external forces. Therefore, we cannot assume responsibility for such events or their impact. We also cannot assume responsibility for changes in environmental standards, practices, or regulations.

The information and opinions rendered in this report are exclusively for use by Hercules Hotel Development LLC. Ground Zone will not distribute or publish this report without consent except as required by law or court order. The information and opinions expressed in this report are given in response to a limited assignment and should be considered and implemented only in light of that assignment. The services provided by Ground Zone in completing this Project were consistent with the standard for the profession. No other warranty, expressed or implied, is made.

Any party other than Hercules Hotel Development LLC. shall not use this report without receiving prior authorization from Ground Zone. Unauthorized use of this report will relieve Ground Zone of any liability resulting from its use.

Because Hercules Hotel Development LLC is the current and historic real property owner at the Site, inquiry into the terms of and conditions of the its real property ownership or chain of title is outside the scope of this wetland delineation report.

10.0 REFERENCES

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Appendix A – Field Sheets and Plant Summary Table

	Wetland Delineation Plant Survey				
Location Number	**Scientific Plant Name**	**Plant Common Name**	**Native or Non-native**	**Indicator Status**	**Photo**
1	*Elymus triticoides (50%)*	Creeping wild rye	native	UPL	
	Dipsacus fullonum (20%)	Wild teasel	Non-native	FAC	
	Conium maculatum (5%)	poison hemlock	Non-native	FACW/FAC	
2	*Dipsacus fullonum (80%)*	Wild teasel	Non-native	FAC	
	Typha angustifolia (5%)	Narrow-leaved Cattail	Non-native	OBL	
3	*Typha angustifolia (80%)*	Narrow-leaved Cattail	Non-native	OBL	
	Dipsacus fullonum (10%)	wild teasel	Non-native	FAC	
	Conium maculatum (10%)	Poison hemlock	Non-native	FACW/FAC	

4	*Elymus triticoides (50%)*	Creeping wild rye	native	UPL	
5	*Baccharis glutinosa (60%)*	Marsh Baccharis	Native	FACW/OBL	

6	*Elymus triticoides (15%)*	Creeping wild rye	native	UPL	
7	*Raphanus sativus (20%)*	Wild radish	Non-native	UPL	
	Conium maculatum (50%)	Poison hemlock	Non-native	FACW/FAC	

8	*Baccharis glutinosa (80%)*	Marsh Baccharis	Native	FACW/OBL	
	Salix lasiolepis (85%)	Arroyo willow	Native	FACW	
9	*Elymus triticoides (100%)*	Creeping wild rye	Native	UPL	

10	*Conium maculatum (40%)*	Poison hemlock	Non-native	FACW/FAC	
	Dipsacus fullonum (10%)	wild teasel	Non-native	FAC	
11	*Dipsacus fullonum (30%)*	wild teasel	Non-native	FAC	
	Cirsium vulgare (60%)	Bull Thistle	Non-native	FACU	

12	*Conium maculatum (20%)*	poison hemlock	Non-native	FACW/FAC	
	Salix lasiolepis (10%)	Arroyo willow	Native	FACW	
Open Water Creek	*Nasturtium officinale*	Water cress	Native	OBL	 
	Salix lasiolepis	Arroyo willow	Native	FACW	
	Typha angustifolia (80%)	Narrow-leaved Cattail	Non-native	OBL	

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Hercules Hotel complex City/County: Hercules/Contra Costa Sampling Date: 12/26/19

Applicant/Owner: Hercules Hotel Development LLC State: CA Sampling Point: 01

Investigator(s): Tony Jones Section, Township, Range: —

Landform (hillslope, terrace, etc.): hillslope depression Local relief (concave, convex, none): Concave Slope (%): 0-5

Subregion (LRR): C Lat: 38.013695 Long: -122.268781 Datum: WGS 84

Soil Map Unit Name: Sehorn Clay NWI classification: ______

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? No Are "Normal Circumstances" present? Yes ✓ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? No (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✓ No ____	Is the Sampled Area within a Wetland? Yes ✓ No ____
Hydric Soil Present?	Yes ✓ No ____	
Wetland Hydrology Present?	Yes ✓ No ____	

Remarks:

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: 1X1 yds)			
1.			
2. None			
3.			
4.			
= Total Cover	0		
Sapling/Shrub Stratum (Plot size: 1X1 yds)			
1.			
2.			
3. None			
4.			
5.			
= Total Cover	0		
Herb Stratum (Plot size: 1X1 yd)			
1. Elymus triticoides	50	Y	UPL
2. Dipsacus fullonum	20	No	FAC
3. Conium maculatum	5	No	FACW
4.			
5.			
6.			
7.			
8.			
= Total Cover	75		
Woody Vine Stratum (Plot size: 1X1 yds)			
1.			
2. None			
= Total Cover	0		

% Bare Ground in Herb Stratum ______ % Cover of Biotic Crust ______

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species		x 1 =
FACW species	5	x 2 = 10
FAC species	20	x 3 = 60
FACU species		x 4 =
UPL species	50	x 5 = 250
Column Totals:	75 (A)	320 (B)

Prevalence Index = B/A = 3.3

Hydrophytic Vegetation Indicators:

- ✗ Dominance Test is >50%
- ✓ Prevalence Index is ≤3.0[1]
- ✓ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✓ No ____

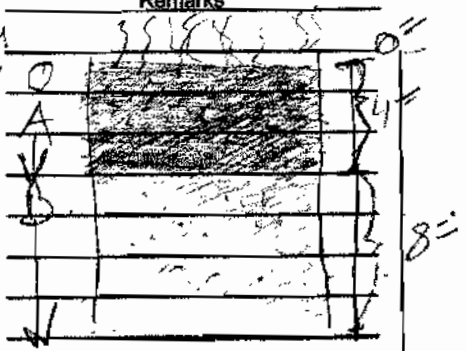
Remarks: * This location difficult to assess plants in this season. We suspect hydrophytic plants would dominate.

SOIL

Sampling Point: 01

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-4"	black	100	7.5YR 2.5/1	0	—	—	clay loam	
4"-12"	very dark greyish brown	90	2.5Y 3/2	10	C	M	silty clay	



[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- X Histosol (A1)
- X Histic Epipedon (A2)
- X Black Histic (A3)
- X Hydrogen Sulfide (A4)
- X Stratified Layers (A5) (LRR C)
- X 1 cm Muck (A9) (LRR D)
- X Depleted Below Dark Surface (A11)
- X Thick Dark Surface (A12)
- X Sandy Mucky Mineral (S1)
- X Sandy Gleyed Matrix (S4)
- X Sandy Redox (S5)
- X Stripped Matrix (S6)
- ? X Loamy Mucky Mineral (F1)
- X Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ✓ Redox Dark Surface (F6)
- X Depleted Dark Surface (F7)
- X Redox Depressions (F8)
- X Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- X 1 cm Muck (A9) (LRR C)
- X 2 cm Muck (A10) (LRR B)
- X Reduced Vertic (F18)
- X Red Parent Material (TF2)
- X Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present): N/A

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ✓ No _____

Remarks: acidity: A Horizon = 7.6
B Horizon = 7.5

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- X Surface Water (A1)
- ✓ High Water Table (A2)
- ✓ Saturation (A3)
- X Water Marks (B1) (Nonriverine)
- ✓ Sediment Deposits (B2) (Nonriverine)
- X Drift Deposits (B3) (Nonriverine)
- X Surface Soil Cracks (B6)
- ✓ Inundation Visible on Aerial Imagery (B7)
- X Water-Stained Leaves (B9)
- X Salt Crust (B11)
- X Biotic Crust (B12)
- ✓ Aquatic Invertebrates (B13)
- X Hydrogen Sulfide Odor (C1)
- X Oxidized Rhizospheres along Living Roots (C3)
- X Presence of Reduced Iron (C4)
- X Recent Iron Reduction in Tilled Soils (C6)
- ✓ Thin Muck Surface (C7)
- _____ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- _____ Water Marks (B1) (Riverine)
- _____ Sediment Deposits (B2) (Riverine)
- _____ Drift Deposits (B3) (Riverine)
- _____ Drainage Patterns (B10)
- _____ Dry-Season Water Table (C2)
- _____ Crayfish Burrows (C8)
- ✓ Saturation Visible on Aerial Imagery (C9)
- _____ Shallow Aquitard (D3)
- _____ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No ✓ Depth (inches): _____

Water Table Present? Yes ✓ No _____ Depth (inches): 3"-5"

Saturation Present? (includes capillary fringe) Yes ✓ No _____ Depth (inches): 1"-3"

Wetland Hydrology Present? Yes ✓ No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

aerial photos, drone photos,

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Hercules Hotel complex City/County: Hercules/Contra Costa Sampling Date: 12/26/19
Applicant/Owner: Hercules Hotel Development LLC State: CA Sampling Point: 02
Investigator(s): Tony Semes Section, Township, Range: —
Landform (hillslope, terrace, etc.): Hill Slope depression Local relief (concave, convex, none): concave Slope (%): 0-5
Subregion (LRR): C Lat: 38.013769 Long: -122.169730 Datum: WGS-84
Soil Map Unit Name: Sehorn Clay NWI classification: —
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ____ (If no, explain in Remarks.)
Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? no Are "Normal Circumstances" present? Yes ✓ No ____
Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? no (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✓	No ____	Is the Sampled Area within a Wetland? Yes ✓ No ____
Hydric Soil Present?	Yes ✓	No ____	
Wetland Hydrology Present?	Yes ✓	No ____	

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 1X1 yrd)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3. None			
4.			
	0	= Total Cover	

Sapling/Shrub Stratum (Plot size: 1X1 yrd)			
1.			
2.			
3. None			
4.			
5.			
	0	= Total Cover	

Herb Stratum (Plot size: 1X1 yrd)			
1. Distichlis spicata	80	Y	FAC
2. Typha angustifolia	5	N	OBL
3.			
4.			
5.			
6.			
7.			
8.			
		= Total Cover	

Woody Vine Stratum (Plot size: 1X1 yrd)			
1.			
2. None			
	0	= Total Cover	

% Bare Ground in Herb Stratum 10 % Cover of Biotic Crust 85

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)
Total Number of Dominant Species Across All Strata: 1 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	10	x 1 =	5
FACW species		x 2 =	
FAC species	80	x 3 =	240
FACU species		x 4 =	
UPL species		x 5 =	
Column Totals:	90 (A)		245 (B)

Prevalence Index = B/A = 2.6

Hydrophytic Vegetation Indicators:
✓ Dominance Test is >50%
✓ Prevalence Index is ≤3.0[1]
___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✓ No ____

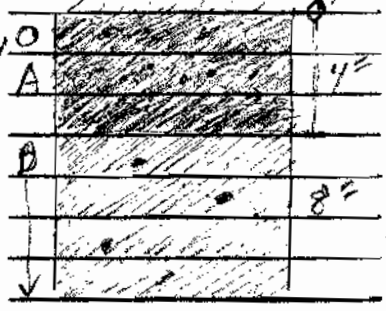
Remarks:

SOIL

Sampling Point: 02

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-4"	Black	100	10YR 2/1	0	—	—	clay	
4"-12"	Black	99	5Y 2.5/2	1	C	M	Silty Clay	



[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ✓ Histosol (A1)
- ✓ Histic Epipedon (A2)
- ✓ Black Histic (A3)
- ✓ Hydrogen Sulfide (A4)
- ✓ Stratified Layers (A5) (LRR C)
- ✓ 1 cm Muck (A9) (LRR D)
- ✓ Depleted Below Dark Surface (A11)
- ✓ Thick Dark Surface (A12)
- ✓ Sandy Mucky Mineral (S1)
- ✓ Sandy Gleyed Matrix (S4)
- ✓ Sandy Redox (S5)
- ✓ Stripped Matrix (S6)
- ✓ Loamy Mucky Mineral (F1)
- ✓ Loamy Gleyed Matrix (F2)
- ✓ Depleted Matrix (F3)
- ✓ Redox Dark Surface (F6)
- ✓ Depleted Dark Surface (F7)
- ✓ Redox Depressions (F8)
- ✓ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ✓ 1 cm Muck (A9) (LRR C)
- ✓ 2 cm Muck (A10) (LRR B)
- ✓ Reduced Vertic (F18)
- ✓ Red Parent Material (TF2)
- ✓ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: N/A

Depth (inches): _____

Hydric Soil Present? Yes ✓ No _____

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ✓ Surface Water (A1)
- ✓ High Water Table (A2)
- ✓ Saturation (A3)
- ✓ Water Marks (B1) (Nonriverine)
- ✓ Sediment Deposits (B2) (Nonriverine)
- ✓ Drift Deposits (B3) (Nonriverine)
- ✓ Surface Soil Cracks (B6)
- ✓ Inundation Visible on Aerial Imagery (B7)
- ✓ Water-Stained Leaves (B9)
- ✓ Salt Crust (B11)
- ✓ Biotic Crust (B12)
- ✓ Aquatic Invertebrates (B13)
- ✓ Hydrogen Sulfide Odor (C1)
- ✓ Oxidized Rhizospheres along Living Roots (C3)
- ✓ Presence of Reduced Iron (C4)
- ✓ Recent Iron Reduction in Tilled Soils (C6)
- ✓ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (Riverine)
- ___ Sediment Deposits (B2) (Riverine)
- ___ Drift Deposits (B3) (Riverine)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ✓ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No ✓ Depth (inches): _____

Water Table Present? Yes ✓ No ___ Depth (inches): 6"

Saturation Present? (includes capillary fringe) Yes ✓ No ___ Depth (inches): 2"

Wetland Hydrology Present? Yes ✓ No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Hercules Hotel Complex City/County: Hercules/Contra Costa Sampling Date: ____

Applicant/Owner: Hercules Hotel Development LLC State: CA Sampling Point: 03

Investigator(s): Tony Senes Section, Township, Range: ____

Landform (hillslope, terraca, etc.): hillslope depression Local relief (concave, convex, none): concave Slope (%): 0-5

Subregion (LRR): C Lat: 38.013690 Long: -122.268635 Datum: WGS 84

Soil Map Unit Name: Sehorn clay NWI classification: ____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? No Are "Normal Circumstances" present? Yes ✓ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? No (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✓	No ____	**Is the Sampled Area within a Wetland?** Yes ✓ No ____
Hydric Soil Present?	Yes ____	No ✓	
Wetland Hydrology Present?	Yes ✓	No ____	

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 3'x3')	Absolute % Cover	Dominant Species?	Indicator Status
1. none			
2.			
3.			
4.			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot size: 3x3')			
1. none			
2.			
3.			
4.			
5.			
	0	= Total Cover	
Herb Stratum (Plot size: 3'x3')			
1. Typha domingensis (Southern cattail)	70	YES	OBL
2. Distichlis spicata	10	NO	FAC
3. Conium maculatum	10	NO	FACW
4.			
5.			
6.			
7.			
8.			
	95	= Total Cover	
Woody Vine Stratum (Plot size: 3'x3')			
1. none			
2.			
	0	= Total Cover	

% Bare Ground in Herb Stratum ____ % Cover of Biotic Crust ____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	70	x 1 =	70
FACW species	10	x 2 =	20
FAC species	10	x 3 =	30
FACU species		x 4 =	
UPL species		x 5 =	
Column Totals:	90 (A)		120 (B)

Prevalence Index = B/A = 2

Hydrophytic Vegetation Indicators:

✓ Dominance Test is >50%

✓ Prevalence Index is ≤3.0[1]

✓ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet) Indirect evidence of lack of other species

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✓ No ____

Remarks:

SOIL

Sampling Point: 03

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-8"	Very Dark Gray	100	10YR 3/1	0	---	---	clay	A 0-2"
8-12"	Very Dark Gray	99	2.5Y 3/1	1	C	M	Silty Clay	8"
								B 24"
								C

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- X Histosol (A1)
- X Histic Epipedon (A2)
- ✓ Black Histic (A3)
- X Hydrogen Sulfide (A4)
- X Stratified Layers (A5) **(LRR C)**
- X 1 cm Muck (A9) **(LRR D)**
- X Depleted Below Dark Surface (A11)
- X Thick Dark Surface (A12)
- X Sandy Mucky Mineral (S1)
- X Sandy Gleyed Matrix (S4)
- X Sandy Redox (S5)
- X Stripped Matrix (S6)
- X Loamy Mucky Mineral (F1)
- X Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- X Redox Dark Surface (F6)
- X Depleted Dark Surface (F7)
- X Redox Depressions (F8)
- X Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- X 1 cm Muck (A9) **(LRR C)**
- X 2 cm Muck (A10) **(LRR B)**
- X Reduced Vertic (F18)
- X Red Parent Material (TF2)
- X Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: N/A

Depth (Inches): _____

Hydric Soil Present? Yes ✓ No _____

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- X Surface Water (A1)
- ✓ High Water Table (A2)
- ✓ Saturation (A3)
- X Water Marks (B1) **(Nonriverine)**
- X Sediment Deposits (B2) **(Nonriverine)**
- X Drift Deposits (B3) **(Nonriverine)**
- X Surface Soil Cracks (B8)
- ✓ Inundation Visible on Aerial Imagery (B7)
- X Water-Stained Leaves (B9)
- X Salt Crust (B11)
- X Biotic Crust (B12)
- X Aquatic Invertebrates (B13)
- X Hydrogen Sulfide Odor (C1)
- X Oxidized Rhizospheres along Living Roots (C3)
- X Presence of Reduced Iron (C4)
- X Recent Iron Reduction in Tilled Soils (C6)
- X Thin Muck Surface (C7)
- X Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- X Water Marks (B1) **(Riverine)**
- X Sediment Deposits (B2) **(Riverine)**
- X Drift Deposits (B3) **(Riverine)**
- X Drainage Patterns (B10)
- X Dry-Season Water Table (C2)
- X Crayfish Burrows (C8)
- ✓ Saturation Visible on Aerial Imagery (C9)
- X Shallow Aquitard (D3)
- X FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No ✓ Depth (inches): _____

Water Table Present? Yes ✓ No _____ Depth (inches): 6"

Saturation Present? (Includes capillary fringe) Yes ✓ No _____ Depth (inches): 2"

Wetland Hydrology Present? Yes ✓ No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Hercules Hotel Complex City/County: Hercules/Contra Costa Sampling Date: _____

Applicant/Owner: Hercules Hotel Development LLC State: CA Sampling Point: 04

Investigator(s): Tony Seves Section, Township, Range: _____

Landform (hillslope, terrace, etc.): hillside depression Local relief (concave, convex, none): Concave Slope (%): 0-5

Subregion (LRR): C Lat: 37.913739 Long: -122.268492 Datum: WGS-84

Soil Map Unit Name: Schorn Clay NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? No Are "Normal Circumstances" present? Yes ✓ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? No (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____	No ✓	Is the Sampled Area within a Wetland?	Yes _____ No ✓
Hydric Soil Present?	Yes _____	No ✓		
Wetland Hydrology Present?	Yes _____	No ✓		

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 1X1 yd)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3. None			
4.			
	0	= Total Cover	

Sapling/Shrub Stratum (Plot size: 1X1 yd)			
1.			
2.			
3. None			
4.			
5.			
	0	= Total Cover	

Herb Stratum (Plot size: 1X1 yd)			
1. Elymus triticoides	50	Y	UPL
2. Wild grass	50	N	UPL
3.			
4.			
5.			
6.			
7.			
8.			
	100	= Total Cover	

Woody Vine Stratum (Plot size: 1X1)			
1.			
2. None			
	0	= Total Cover	

% Bare Ground in Herb Stratum 0 % Cover of Biotic Crust 100

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species	x 1 =	
FACW species	x 2 =	
FAC species	x 3 =	
FACU species	x 4 =	
UPL species 100	x 5 =	500
Column Totals: 100 (A)		500 (B)

Prevalence Index = B/A = 5

Hydrophytic Vegetation Indicators:

- X Dominance Test is >50%
- X Prevalence Index is ≤3.0[1]
- ___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes _____ No ✓

Remarks:

SOIL

Sampling Point: DP1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-8"	Very Dark Gray	99	10YR 3/1	1	C	M	Silty Clay	O
8-12"	(Very Dark Gray Brown	70	10YR 3/2	5	C	M	Silty Clay	A
	Black Brown	30	10YR 3/3	1	C	M	Silty Clay	2"
								B
								6"

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- X Histosol (A1)
- X Histic Epipedon (A2)
- X Black Histic (A3)
- X Hydrogen Sulfide (A4)
- X Stratified Layers (A5) (LRR C)
- X 1 cm Muck (A9) (LRR D)
- X Depleted Below Dark Surface (A11)
- X Thick Dark Surface (A12)
- X Sandy Mucky Mineral (S1)
- X Sandy Gleyed Matrix (S4)
- X Sandy Redox (S5)
- X Stripped Matrix (S6)
- X Loamy Mucky Mineral (F1)
- X Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- X Redox Dark Surface (F6)
- X Depleted Dark Surface (F7)
- X Redox Depressions (F8)
- X Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- X 1 cm Muck (A9) (LRR C)
- X 2 cm Muck (A10) (LRR B)
- X Reduced Vertic (F18)
- X Red Parent Material (TF2)
- X Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No ✓

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- X Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- X Water Marks (B1) (Nonriverine)
- X Sediment Deposits (B2) (Nonriverine)
- X Drift Deposits (B3) (Nonriverine)
- X Surface Soil Cracks (B6)
- X Inundation Visible on Aerial Imagery (B7)
- X Water-Stained Leaves (B9)
- X Salt Crust (B11)
- X Biotic Crust (B12)
- X Aquatic Invertebrates (B13)
- X Hydrogen Sulfide Odor (C1)
- X Oxidized Rhizospheres along Living Roots (C3)
- X Presence of Reduced Iron (C4)
- X Recent Iron Reduction in Tilled Soils (C6)
- X Thin Muck Surface (C7)
- X Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- X Water Marks (B1) (Riverine)
- X Sediment Deposits (B2) (Riverine)
- X Drift Deposits (B3) (Riverine)
- X Drainage Patterns (B10)
- X Dry-Season Water Table (C2)
- X Crayfish Burrows (C8)
- X Saturation Visible on Aerial Imagery (C9)
- X Shallow Aquitard (D3)
- X FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No ✓ Depth (inches): _____

Water Table Present? Yes _____ No ✓ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No ✓ Depth (inches): _____

Wetland Hydrology Present? Yes _____ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Hercules Hotel complex City/County: Hercules/Contra Costa Sampling Date: _____

Applicant/Owner: Hercules Hotel Development LLC State: CA Sampling Point: 05

Investigator(s): Tony Sones Section, Township, Range: _____

Landform (hillslope, terrace, etc.): hillside depression Local relief (concave, convex, none): concave Slope (%): 0-5

Subregion (LRR): C Lat: 38.017540 Long: -121.764042 Datum: WGS 84

Soil Map Unit Name: Sehorn Clay NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? N/o Are "Normal Circumstances" present? Yes ✓ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? No (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✓	No _____	**Is the Sampled Area within a Wetland?** Yes ✓ No _____
Hydric Soil Present?	Yes ✓	No _____	
Wetland Hydrology Present?	Yes ✓	No _____	

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 1X1 yds)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3. None			
4.			
	0	= Total Cover	

Sapling/Shrub Stratum (Plot size: 1X1 yds)			
1.			
2.			
3. None			
4.			
5.			
	0	= Total Cover	

Herb Stratum (Plot size: 1X1 yds)			
1. Bromus glutinosa	60	Y	OBL
2. Unk grass	15	N	OBL
3.			
4.			
5.			
6.			
7.			
8.			
	100	= Total Cover	

Woody Vine Stratum (Plot size: 1X1 yds)			
1.			
2. None			
	0	= Total Cover	

% Bare Ground in Herb Stratum 25% % Cover of Biotic Crust 75

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	60	x 1 =	60
FACW species		x 2 =	
FAC species		x 3 =	
FACU species		x 4 =	
UPL species	15	x 5 =	75
Column Totals:	75 (A)		75 (B)

Prevalence Index = B/A = 1

Hydrophytic Vegetation Indicators:

✓ Dominance Test is >50%

✓ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✓ No _____

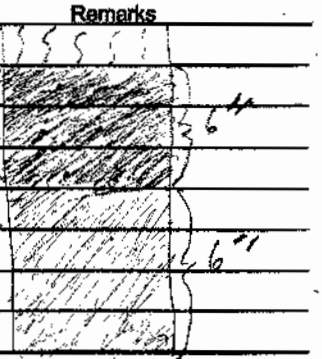
Remarks:

SOIL

Sampling Point: 05

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-6"	Very Dark Gray	99	10YR 3/1	1	C	M	Clay loam	A
6-12"	Dark Gray/Dk Brn	99	10YR 4/2	1	C	M	Clay loam	A
								B



[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- X Histosol (A1)
- X Histic Epipedon (A2)
- X Black Histic (A3)
- X Hydrogen Sulfide (A4)
- X Stratified Layers (A5) (LRR C)
- X 1 cm Muck (A9) (LRR D)
- X Depleted Below Dark Surface (A11)
- X Thick Dark Surface (A12)
- X Sandy Mucky Mineral (S1)
- X Sandy Gleyed Matrix (S4)
- X Sandy Redox (S5)
- X Stripped Matrix (S6)
- X Loamy Mucky Mineral (F1)
- X Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- X Redox Dark Surface (F6)
- X Depleted Dark Surface (F7)
- X Redox Depressions (F8)
- X Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- X 1 cm Muck (A9) (LRR C)
- X 2 cm Muck (A10) (LRR B)
- X Reduced Vertic (F18)
- X Red Parent Material (TF2)
- X Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: N/A

Depth (Inches): _____

Hydric Soil Present? Yes ✓ No _____

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- X Surface Water (A1)
- ✓ High Water Table (A2)
- ✓ Saturation (A3)
- X Water Marks (B1) (Nonriverine)
- X Sediment Deposits (B2) (Nonriverine)
- X Drift Deposits (B3) (Nonriverine)
- X Surface Soil Cracks (B6)
- ✓ Inundation Visible on Aerial Imagery (B7)
- X Water-Stained Leaves (B9)
- X Salt Crust (B11)
- X Biotic Crust (B12)
- X Aquatic Invertebrates (B13)
- X Hydrogen Sulfide Odor (C1)
- X Oxidized Rhizospheres along Living Roots (C3)
- X Presence of Reduced Iron (C4)
- X Recent Iron Reduction in Tilled Soils (C6)
- X Thin Muck Surface (C7)
- X Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- X Water Marks (B1) (Riverine)
- X Sediment Deposits (B2) (Riverine)
- X Drift Deposits (B3) (Riverine)
- X Drainage Patterns (B10)
- X Dry-Season Water Table (C2)
- X Crayfish Burrows (C8)
- ✓ Saturation Visible on Aerial Imagery (C9)
- X Shallow Aquitard (D3)
- X FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No ✓ Depth (Inches): _____

Water Table Present? Yes _____ No ✓ Depth (Inches): _____

Saturation Present? (Includes capillary fringe) Yes ✓ No _____ Depth (Inches): 10"

Wetland Hydrology Present? Yes ✓ No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Hercules Hotel complex City/County: Hercules/Contra Costa Sampling Date: _____

Applicant/Owner: Hercules Hotel Development LLC State: CA Sampling Point: 06

Investigator(s): Tony Senes Section, Township, Range: _____

Landform (hillslope, terrace, etc.): Hillside depression Local relief (concave, convex, none): Concave Slope (%): 0-5

Subregion (LRR): C Lat: 38.013899 Long: -122.269235 Datum: WGS84

Soil Map Unit Name: Clear Lake Clay NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? N/O Are "Normal Circumstances" present? Yes ✓ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? N/O (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____	No ✓	Is the Sampled Area within a Wetland? Yes _____ No ✓
Hydric Soil Present?	Yes _____	No ✓	
Wetland Hydrology Present?	Yes _____	No ✓	

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 1X1 yd)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2. None			
3.			
4.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 1X1 yd)			
1.			
2.			
3. None			
4.			
5.			
	0 = Total Cover		
Herb Stratum (Plot size: 1X1 yd)			
1. Elymus triticoides	15	N	UPL
2. Mid. Monnagrass	60	Y	UPL
3.			
4.			
5.			
6.			
7.			
8.			
	= Total Cover		
Woody Vine Stratum (Plot size: 1X1 yd)			
1.			
2. None			
	0 = Total Cover		

% Bare Ground in Herb Stratum 25 % Cover of Biotic Crust 75

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species	x 1 =	
FACW species	x 2 =	
FAC species	x 3 =	
FACU species	x 4 =	
UPL species 75	x 5 =	375
Column Totals: 75 (A)		375 (B)

Prevalence Index = B/A = 5

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

X Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes _____ No ✓

Remarks:

SOIL

Sampling Point: 06

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-5"	VDGB	100	10YR 3/2	0	---	---	Silty Clay	0"
5-12"	Dark Brown	100	10YR 3/3	0	---	---	Silty Clay	A 5"
								B 7"

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- X Histosol (A1)
- X Histic Epipedon (A2)
- X Black Histic (A3)
- X Hydrogen Sulfide (A4)
- X Stratified Layers (A5) **(LRR C)**
- X 1 cm Muck (A9) **(LRR D)**
- X Depleted Below Dark Surface (A11)
- X Thick Dark Surface (A12)
- X Sandy Mucky Mineral (S1)
- X Sandy Gleyed Matrix (S4)
- X Sandy Redox (S5)
- X Stripped Matrix (S6)
- X Loamy Mucky Mineral (F1)
- X Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- X Redox Dark Surface (F6)
- X Depleted Dark Surface (F7)
- X Redox Depressions (F8)
- X Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- X 1 cm Muck (A9) **(LRR C)**
- X 2 cm Muck (A10) **(LRR B)**
- X Reduced Vertic (F18)
- X Red Parent Material (TF2)
- X Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- X Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- X Water Marks (B1) **(Nonriverine)**
- X Sediment Deposits (B2) **(Nonriverine)**
- X Drift Deposits (B3) **(Nonriverine)**
- X Surface Soil Cracks (B8)
- X Inundation Visible on Aerial Imagery (B7)
- X Water-Stained Leaves (B9)
- X Salt Crust (B11)
- X Biotic Crust (B12)
- X Aquatic Invertebrates (B13)
- X Hydrogen Sulfide Odor (C1)
- X Oxidized Rhizospheres along Living Roots (C3)
- X Presence of Reduced Iron (C4)
- X Recent Iron Reduction in Tilled Soils (C6)
- X Thin Muck Surface (C7)
- X Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- X Water Marks (B1) **(Riverine)**
- X Sediment Deposits (B2) **(Riverine)**
- X Drift Deposits (B3) **(Riverine)**
- X Drainage Patterns (B10)
- X Dry-Season Water Table (C2)
- X Crayfish Burrows (C8)
- X Saturation Visible on Aerial Imagery (C9)
- X Shallow Aquitard (D3)
- X FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No _____ Depth (inches): _____

Water Table Present? Yes _____ No _____ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No _____ Depth (inches): _____

Wetland Hydrology Present? Yes _____ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Hercules Hotel Complex City/County: Hercules/Contra Costa Sampling Date: _____

Applicant/Owner: Hercules Hotel Development LLC State: CA Sampling Point: 07

Investigator(s): Tony Jones Section, Township, Range: _____

Landform (hillslope, terrace, etc.): hillside depression Local relief (concave, convex, none): Concave Slope (%): 0-5

Subregion (LRR): C Lat: 38.013585 Long: -122.268471 Datum: WGS84

Soil Map Unit Name: Sehorn clay NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? No Are "Normal Circumstances" present? Yes ✓ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? No (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✓	No _____	Is the Sampled Area within a Wetland? Yes _____ No ✓
Hydric Soil Present?	Yes _____	No ✓	
Wetland Hydrology Present?	Yes _____	No ✓	

Remarks:

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: 1X1 yd)			
1. _____			
2. None			
3. _____			
4. _____			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 1X1 yd)			
1. _____			
2. None			
3. _____			
4. _____			
5. _____			
	0 = Total Cover		
Herb Stratum (Plot size: _____)			
1. Raphanus Sativus	20	No	UPL
2. Centum maculatum	50	Y	FACW
3. _____			
4. _____			
5. _____			
6. _____			
7. _____			
8. _____			
	70 = Total Cover		
Woody Vine Stratum (Plot size: 1X1 yd)			
1. _____			
2. None			
	0 = Total Cover		

% Bare Ground in Herb Stratum 30 % Cover of Biotic Crust 70

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species	x 1 =	
FACW species 70	x 2 =	140
FAC species	x 3 =	
FACU species	x 4 =	
UPL species 20	x 5 =	100
Column Totals: 90	(A)	240 (B)

Prevalence Index = B/A = 2.4

Hydrophytic Vegetation Indicators:

✓ Dominance Test is >50%

✓ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✓ No _____

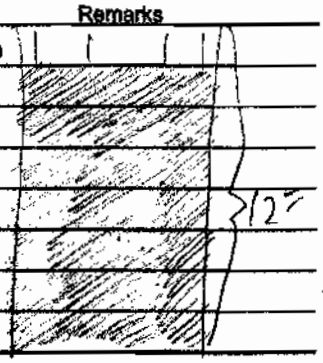
Remarks:

SOIL

Sampling Point: 07

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (Inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-12"	10YR 3/1	100					Silty Clay	



[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- X Histosol (A1)
- X Histic Epipedon (A2)
- X Black Histic (A3)
- X Hydrogen Sulfide (A4)
- X Stratified Layers (A5) **(LRR C)**
- X 1 cm Muck (A9) **(LRR D)**
- X Depleted Below Dark Surface (A11)
- X Thick Dark Surface (A12)
- X Sandy Mucky Mineral (S1)
- X Sandy Gleyed Matrix (S4)
- X Sandy Redox (S5)
- X Stripped Matrix (S6)
- X Loamy Mucky Mineral (F1)
- X Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- X Redox Dark Surface (F6)
- X Depleted Dark Surface (F7)
- X Redox Depressions (F8)
- X Vernel Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- X 1 cm Muck (A9) **(LRR C)**
- X 2 cm Muck (A10) **(LRR B)**
- X Reduced Vertic (F18)
- X Red Parent Material (TF2)
- X Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: N/A

Depth (inches): _____

Hydric Soil Present? Yes _____ No X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- X Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- X Water Marks (B1) **(Nonriverine)**
- X Sediment Deposits (B2) **(Nonriverine)**
- X Drift Deposits (B3) **(Nonriverine)**
- X Surface Soil Cracks (B6)
- X Inundation Visible on Aerial Imagery (B7)
- X Water-Stained Leaves (B9)
- X Salt Crust (B11)
- X Biotic Crust (B12)
- X Aquatic Invertebrates (B13)
- X Hydrogen Sulfide Odor (C1)
- X Oxidized Rhizospheres along Living Roots (C3)
- X Presence of Reduced Iron (C4)
- X Recent Iron Reduction in Tilled Soils (C6)
- X Thin Muck Surface (C7)
- X Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- X Water Marks (B1) **(Riverine)**
- X Sediment Deposits (B2) **(Riverine)**
- X Drift Deposits (B3) **(Riverine)**
- X Drainage Patterns (B10)
- X Dry-Season Water Table (C2)
- X Crayfish Burrows (C8)
- X Saturation Visible on Aerial Imagery (C9)
- X Shallow Aquitard (D3)
- X FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No X Depth (inches): _____

Water Table Present? Yes _____ No X Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No X Depth (inches): _____

Wetland Hydrology Present? Yes _____ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Hercules Hotel complex City/County: Hercules/Contra Costa Sampling Date: _____

Applicant/Owner: Hercules Hotel Development LLC State: CA Sampling Point: 28

Investigator(s): Tony Sones Section, Township, Range: _____

Landform (hillslope, terrace, etc.): hillside depression Local relief (concave, convex, none): concave Slope (%): 0-5

Subregion (LRR): C Lat: 38.013577 Long: -122.268234 Datum: WGS 84

Soil Map Unit Name: Sehorn Clay NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No _____ (If no, explain in Remarks.) ✓

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? no Are "Normal Circumstances" present? Yes _____ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? no (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✓	No _____	Is the Sampled Area within a Wetland? Yes _____ No ✓
Hydric Soil Present?	Yes _____	No ✓	
Wetland Hydrology Present?	Yes _____	No ✓	

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 1X1 yrd)	Absolute % Cover	Dominant Species?	Indicator Status
1. Salix lasiolepis	85	✓	FACW
2.			
3.			
4.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size: 1X1 yrd)			
1.			
2.			
3. none			
4.			
5.			
	= Total Cover		
Herb Stratum (Plot size: 1X1 yrd)			
1.			
2.			
3.			
4.			
5. none			
6.			
7.			
8.			
	= Total Cover		
Woody Vine Stratum (Plot size: 1X1 yrds)			
1. Baccharis glutinosa	80	✓	OBL
2.			
	80 = Total Cover		

% Bare Ground in Herb Stratum 20 % Cover of Biotic Crust 80

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	80	x 1 =	80
FACW species	85	x 2 =	170
FAC species		x 3 =	
FACU species		x 4 =	
UPL species		x 5 =	
Column Totals:	165 (A)		250 (B)

Prevalence Index = B/A = 1.5

Hydrophytic Vegetation Indicators:

- ✓ Dominance Test is >50%
- ✓ Prevalence Index is ≤3.0[1]
- ___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✓ No _____

Remarks:

SOIL

Sampling Point: 08

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
3-5"	10YR 3/2	100	10YR 3/1	0	—	—	Silty Clay	A 2"
5-12"	10YR 3/2	99	10YR 3/1	1	C	M	Silty Clay	5"
								B

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ✓ Histosol (A1)
- X Histic Epipedon (A2)
- ✓ Black Histic (A3)
- X Hydrogen Sulfide (A4)
- X Stratified Layers (A5) (LRR C)
- X 1 cm Muck (A9) (LRR D)
- X Depleted Below Dark Surface (A11)
- X Thick Dark Surface (A12)
- X Sandy Mucky Mineral (S1)
- X Sandy Gleyed Matrix (S4)
- X Sandy Redox (S5)
- X Stripped Matrix (S6)
- X Loamy Mucky Mineral (F1)
- X Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ✓ Redox Dark Surface (F6)
- X Depleted Dark Surface (F7)
- X Redox Depressions (F8)
- X Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ✓ 1 cm Muck (A9) (LRR C)
- ✓ 2 cm Muck (A10) (LRR B)
- X Reduced Vertic (F18)
- ✓ Red Parent Material (TF2)
- X Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: 00/A

Depth (inches): _____

Hydric Soil Present? Yes _____ No ✓

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ✓ Surface Water (A1)
- ✓ High Water Table (A2)
- X Saturation (A3)
- ✓ Water Marks (B1) (Nonriverine)
- X Sediment Deposits (B2) (Nonriverine)
- X Drift Deposits (B3) (Nonriverine)
- X Surface Soil Cracks (B6)
- X Inundation Visible on Aerial Imagery (B7)
- X Water-Stained Leaves (B9)
- X Salt Crust (B11)
- X Biotic Crust (B12)
- X Aquatic Invertebrates (B13)
- X Hydrogen Sulfide Odor (C1)
- X Oxidized Rhizospheres along Living Roots (C3)
- X Presence of Reduced Iron (C4)
- X Recent Iron Reduction in Tilled Soils (C6)
- X Thin Muck Surface (C7)
- X Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ✓ Water Marks (B1) (Riverine)
- X Sediment Deposits (B2) (Riverine)
- X Drift Deposits (B3) (Riverine)
- X Drainage Patterns (B10)
- X Dry-Season Water Table (C2)
- X Crayfish Burrows (C8)
- X Saturation Visible on Aerial Imagery (C9)
- X Shallow Aquitard (D3)
- X FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No ✓ Depth (inches): _____

Water Table Present? Yes _____ No ✓ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No ✓ Depth (inches): _____

Wetland Hydrology Present? Yes _____ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Hercules Hotel complex City/County: Hercules/Contra Costa Sampling Date: ____

Applicant/Owner: Hercules Hotel Development LLC State: CA Sampling Point: 09

Investigator(s): Tony Sones Section, Township, Range: ____

Landform (hillslope, terrace, etc.): hillside depression Local relief (concave, convex, none): concave Slope (%): 0-5

Subregion (LRR): C Lat: 38.019275 Long: -122.262107 Datum: WGS84

Soil Map Unit Name: Sehorn Clay NWI classification: ____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? No Are "Normal Circumstances" present? Yes ✓ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? No (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____	No ✓	**Is the Sampled Area within a Wetland?** Yes ____ No ✓
Hydric Soil Present?	Yes ____	No ✓	
Wetland Hydrology Present?	Yes ____	No ✓	

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 1X1 yrd)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2. none			
3.			
4.			
	0	= Total Cover	

Sapling/Shrub Stratum (Plot size: 1X1 yrd)			
1.			
2. Alone			
3.			
4.			
5.			
		= Total Cover	

Herb Stratum (Plot size: 1X1 yrd)			
1. Elymus triticoides	100	Y	UPL
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	100	= Total Cover	

Woody Vine Stratum (Plot size: 1X1)			
1. None			
2.			
	0	= Total Cover	

% Bare Ground in Herb Stratum 0 % Cover of Biotic Crust 100

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ____	x 1 = ____
FACW species ____	x 2 = ____
FAC species ____	x 3 = ____
FACU species ____	x 4 = ____
UPL species 100	x 5 = 500
Column Totals: 100 (A)	500 (B)

Prevalence Index = B/A = 5

Hydrophytic Vegetation Indicators:

- X Dominance Test is >50%
- X Prevalence Index is ≤3.0[1]
- ___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ____ No ✓

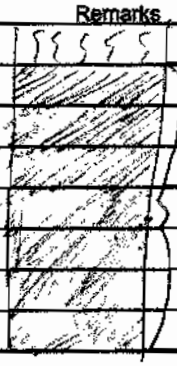
Remarks:

SOIL

Sampling Point: 09

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-12"	Black	100	10YR 2/1	0	—	—	Silty clay	O A



[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- X Histosol (A1)
- X Histic Epipedon (A2)
- X Black Histic (A3)
- X Hydrogen Sulfide (A4)
- X Stratified Layers (A5) (LRR C)
- X 1 cm Muck (A9) (LRR D)
- X Depleted Below Dark Surface (A11)
- X Thick Dark Surface (A12)
- X Sandy Mucky Mineral (B1)
- X Sandy Gleyed Matrix (S4)
- X Sandy Redox (S5)
- X Stripped Matrix (S6)
- X Loamy Mucky Mineral (F1)
- X Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- X Redox Dark Surface (F6)
- X Depleted Dark Surface (F7)
- X Redox Depressions (F8)
- X Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- X 1 cm Muck (A9) (LRR C)
- X 2 cm Muck (A10) (LRR B)
- X Reduced Vertic (F16)
- X Red Parent Material (TF2)
- X Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (Inches): _____

Hydric Soil Present? Yes _____ No ✓

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- X Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- X Water Marks (B1) (Nonriverine)
- X Sediment Deposits (B2) (Nonriverine)
- X Drift Deposits (B3) (Nonriverine)
- X Surface Soil Cracks (B6)
- X Inundation Visible on Aerial Imagery (B7)
- X Water-Stained Leaves (B9)
- X Salt Crust (B11)
- X Biotic Crust (B12)
- X Aquatic Invertebrates (B13)
- X Hydrogen Sulfide Odor (C1)
- X Oxidized Rhizospheres along Living Roots (C3)
- X Presence of Reduced Iron (C4)
- X Recent Iron Reduction in Tilled Soils (C6)
- X Thin Muck Surface (C7)
- X Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- X Water Marks (B1) (Riverine)
- X Sediment Deposits (B2) (Riverine)
- X Drift Deposits (B3) (Riverine)
- X Drainage Patterns (B10)
- X Dry-Season Water Table (C2)
- X Crayfish Burrows (C8)
- X Saturation Visible on Aerial Imagery (C9)
- X Shallow Aquitard (D3)
- X FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No ✓ Depth (Inches): _____

Water Table Present? Yes _____ No ✓ Depth (Inches): _____

Saturation Present? (Includes capillary fringe) Yes _____ No ✓ Depth (Inches): _____

Wetland Hydrology Present? Yes _____ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Hercules Hotel complex City/County: Hercules/Contra Costa Sampling Date: _____

Applicant/Owner: Hercules Hotel Development LLC State: CA Sampling Point: 1D

Investigator(s): Tony Jones Section, Township, Range: _____

Landform (hillslope, terrace, etc.): willside depression Local relief (concave, convex, none): _____ Slope (%): 0-1

Subregion (LRR): C Lat: 38.012548 Long: -122.267786 Datum: WGS 84

Soil Map Unit Name: Sehorn Clay NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? No Are "Normal Circumstances" present? Yes ✓ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? No (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✓	No _____	Is the Sampled Area within a Wetland? Yes _____ No ✓
Hydric Soil Present?	Yes _____	No ✓	
Wetland Hydrology Present?	Yes _____	No ✓	

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 1X1 yrd)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2. None			
3.			
4.			
	_____ = Total Cover		
Sapling/Shrub Stratum (Plot size: 1X1 yrd)			
1.			
2.			
3. None			
4.			
5.			
	_____ = Total Cover		
Herb Stratum (Plot size: 1X1 yrd)			
1. Cotula coronopifolia	40	Y	FACW
2. Distichlis spicata	10	N	FAC
3.			
4.			
5.			
6.			
7.			
8.			
	_____ = Total Cover		
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	_____ = Total Cover		

% Bare Ground in Herb Stratum _____ % Cover of Biotic Crust _____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species	x 1 =	
FACW species 40	x 2 = 80	
FAC species 10	x 3 = 30	
FACU species	x 4 =	
UPL species	x 5 =	
Column Totals: 50 (A)	110 (B)	

Prevalence Index = B/A = 2.48

Hydrophytic Vegetation Indicators:

✓ Dominance Test is >50%

✓ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✓ No _____

Remarks:

SOIL

Sampling Point: 10

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-6"	VDR	100	10YR 3/2	0	—	—	Silty Clay	O
6-12"	VDGB	100	10YR 2/2	0	—	—	clay	A 6"
								B 6"

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- X Histosol (A1)
- X Histic Epipedon (A2)
- X Black Histic (A3)
- X Hydrogen Sulfide (A4)
- X Stratified Layers (A5) (LRR C)
- X 1 cm Muck (A9) (LRR D)
- X Depleted Below Dark Surface (A11)
- X Thick Dark Surface (A12)
- X Sandy Mucky Mineral (S1)
- X Sandy Gleyed Matrix (S4)
- X Sandy Redox (S5)
- X Stripped Matrix (S6)
- X Loamy Mucky Mineral (F1)
- X Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- X Redox Dark Surface (F6)
- X Depleted Dark Surface (F7)
- X Redox Depressions (F8)
- X Vernel Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- X 1 cm Muck (A9) (LRR C)
- X 2 cm Muck (A10) (LRR B)
- X Reduced Vertic (F16)
- X Red Parent Material (TF2)
- X Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: N/A

Depth (inches): _____

Hydric Soil Present? Yes _____ No ✓

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- X Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- X Water Marks (B1) (Nonriverine)
- X Sediment Deposits (B2) (Nonriverine)
- X Drift Deposits (B3) (Nonriverine)
- X Surface Soil Cracks (B6)
- X Inundation Visible on Aerial Imagery (B7)
- X Water-Stained Leaves (B9)
- X Salt Crust (B11)
- X Biotic Crust (B12)
- X Aquatic Invertebrates (B13)
- X Hydrogen Sulfide Odor (C1)
- X Oxidized Rhizospheres along Living Roots (C3)
- X Presence of Reduced Iron (C4)
- X Recent Iron Reduction in Tilled Soils (C6)
- X Thin Muck Surface (C7)
- X Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- X Water Marks (B1) (Riverine)
- X Sediment Deposits (B2) (Riverine)
- X Drift Deposits (B3) (Riverine)
- X Drainage Patterns (B10)
- X Dry-Season Water Table (C2)
- X Crayfish Burrows (C8)
- X Saturation Visible on Aerial Imagery (C9)
- X Shallow Aquitard (D3)
- X FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No ✓ Depth (inches): _____

Water Table Present? Yes _____ No ✓ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No ✓ Depth (inches): _____

Wetland Hydrology Present? Yes _____ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Hercules Hotel Complex City/County: Hercules/Contra Costa Sampling Date: 11

Applicant/Owner: Hercules Hotel Development LLC State: CA Sampling Point: 11

Investigator(s): Tony Senes Section, Township, Range: —

Landform (hillslope, terrace, etc.): hillside depression Local relief (concave, convex, none): concave Slope (%): 05

Subregion (LRR): C Lat: 38.013929 Long: -122.268359 Datum: WGS 84

Soil Map Unit Name: Seaborn clay NWI classification: —

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? no Are "Normal Circumstances" present? Yes ✓ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? no (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____	No ✓	**Is the Sampled Area within a Wetland?** Yes ____ No ✓
Hydric Soil Present?	Yes ____	No ✓	
Wetland Hydrology Present?	Yes ____	No ✓	

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 1X1 yrds)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3. None			
4.			
	____ = Total Cover		

Sapling/Shrub Stratum (Plot size: 1X1 yrds)			
1.			
2.			
3. None			
4.			
5.			
	____ = Total Cover		

Herb Stratum (Plot size: 1X1 yrds)			
1. Dipsacus Fullonum	30%	N	FAC
2. Cirsium Vulgare	60%	Y	FACW
3.			
4.			
5.			
6.			
7.			
8.			
	____ = Total Cover		

Woody Vine Stratum (Plot size: ____)			
1.			
2.			
	____ = Total Cover		

% Bare Ground in Herb Stratum ____ % Cover of Biotic Crust ____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	
FACW species	0	x 2 =	
FAC species	30	x 3 =	90
FACU species	60	x 4 =	180
UPL species	0	x 5 =	
Column Totals:	90 (A)		270 (B)

Prevalence Index = B/A = 3.0

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

X Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ____ No ✓

Remarks:

SOIL

Sampling Point: 11

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-12	10YR 3/1	100	10YR 3/1	0	—	—	Silty Clay	O A A2

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- X Histosol (A1)
- X Histic Epipedon (A2)
- X Black Histic (A3)
- X Hydrogen Sulfide (A4)
- X Stratified Layers (A5) (**LRR C**)
- X 1 cm Muck (A9) (**LRR D**)
- X Depleted Below Dark Surface (A11)
- X Thick Dark Surface (A12)
- X Sandy Mucky Mineral (S1)
- X Sandy Gleyed Matrix (S4)
- X Sandy Redox (S5)
- X Stripped Matrix (S6)
- X Loamy Mucky Mineral (F1)
- X Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- X Redox Dark Surface (F6)
- X Depleted Dark Surface (F7)
- X Redox Depressions (F8)
- X Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- X 1 cm Muck (A9) (**LRR C**)
- X 2 cm Muck (A10) (**LRR B**)
- X Reduced Vertic (F18)
- X Red Parent Material (TF2)
- X Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: N/A

Depth (inches): _____

Hydric Soil Present? Yes _____ No ✓

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- X Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- X Water Marks (B1) (**Nonriverine**)
- X Sediment Deposits (B2) (**Nonriverine**)
- X Drift Deposits (B3) (**Nonriverine**)
- X Surface Soil Cracks (B6)
- X Inundation Visible on Aerial Imagery (B7)
- X Water-Stained Leaves (B9)
- X Salt Crust (B11)
- X Biotic Crust (B12)
- X Aquatic Invertebrates (B13)
- X Hydrogen Sulfide Odor (C1)
- X Oxidized Rhizospheres along Living Roots (C3)
- X Presence of Reduced Iron (C4)
- X Recent Iron Reduction in Tilled Soils (C6)
- X Thin Muck Surface (C7)
- X Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- X Water Marks (B1) (**Riverine**)
- X Sediment Deposits (B2) (**Riverine**)
- X Drift Deposits (B3) (**Riverine**)
- X Drainage Patterns (B10)
- X Dry-Season Water Table (C2)
- X Crayfish Burrows (C8)
- X Saturation Visible on Aerial Imagery (C9)
- X Shallow Aquitard (D3)
- X FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No ✓ Depth (inches): _____

Water Table Present? Yes _____ No ✓ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No ✓ Depth (inches): _____

Wetland Hydrology Present? Yes _____ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Hercules Hotel Complex City/County: Hercules/Contra Costa Sampling Date: _____

Applicant/Owner: Hercules Hotel Development LLC State: CA Sampling Point: 12

Investigator(s): Tony Sones Section, Township, Range: _____

Landform (hillslope, terrace, etc.): hillside depression Local relief (concave, convex, none): concave Slope (%): 0-5

Subregion (LRR): C Lat: 38.014125 Long: -122.268756 Datum: WGS-84

Soil Map Unit Name: Clear Lake clay NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? no Are "Normal Circumstances" present? Yes ✓ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? no (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✓	No _____	**Is the Sampled Area within a Wetland?** Yes _____ No ✓
Hydric Soil Present?	Yes _____	No ✓	
Wetland Hydrology Present?	Yes _____	No ✓	

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 1X1 yrd)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2. None			
3.			
4.			
	_____ = Total Cover		
Sapling/Shrub Stratum (Plot size: 1X1 yrd)			
1. Salix lasiolepis	10	yes	FACW
2.			
3.			
4.			
5.			
	_____ = Total Cover		
Herb Stratum (Plot size: 1X1 yrd)			
1. Conium maculatum	20%	yes	FACW
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	_____ = Total Cover		
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	_____ = Total Cover		

% Bare Ground in Herb Stratum _____ % Cover of Biotic Crust _____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	_____	x 1 =	_____
FACW species	30	x 2 =	60
FAC species	_____	x 3 =	_____
FACU species	_____	x 4 =	_____
UPL species	_____	x 5 =	_____
Column Totals:	30 (A)		60 (B)

Prevalence Index = B/A = 2

Hydrophytic Vegetation Indicators:

✓ Dominance Test is >50%

✓ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✓ No _____

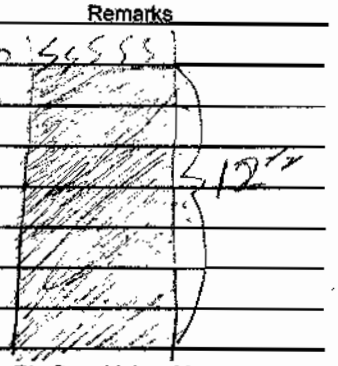
Remarks:

SOIL

Sampling Point: 12

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-12+	10YR 3/2	100	10YR 3/2	0	—	—	Clay	A



[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ✓ Histosol (A1)
- ✓ Histic Epipedon (A2)
- ✓ Black Histic (A3)
- ✓ Hydrogen Sulfide (A4)
- ✓ Stratified Layers (A5) (**LRR C**)
- ✓ 1 cm Muck (A9) (**LRR D**)
- ✓ Depleted Below Dark Surface (A11)
- ✓ Thick Dark Surface (A12)
- ✓ Sandy Mucky Mineral (S1)
- ✓ Sandy Gleyed Matrix (S4)
- ✓ Sandy Redox (S5)
- ✓ Stripped Matrix (S6)
- ✓ Loamy Mucky Mineral (F1)
- ✓ Loamy Gleyed Matrix (F2)
- ✓ Depleted Matrix (F3)
- ✓ Redox Dark Surface (F6)
- ✓ Depleted Dark Surface (F7)
- ✓ Redox Depressions (F8)
- ✓ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ✓ 1 cm Muck (A9) (**LRR C**)
- ✓ 2 cm Muck (A10) (**LRR B**)
- ✓ Reduced Vertic (F18)
- ✓ Red Parent Material (TF2)
- ✓ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: N/A

Depth (inches): _____

Hydric Soil Present? Yes _____ No ✓

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ✓ Surface Water (A1)
- ✓ High Water Table (A2)
- ✓ Saturation (A3)
- ✓ Water Marks (B1) (**Nonriverine**)
- ✓ Sediment Deposits (B2) (**Nonriverine**)
- ✓ Drift Deposits (B3) (**Nonriverine**)
- ✓ Surface Soil Cracks (B6)
- ✓ Inundation Visible on Aerial Imagery (B7)
- ✓ Water-Stained Leaves (B9)
- ✓ Salt Crust (B11)
- ✓ Biotic Crust (B12)
- ✓ Aquatic Invertebrates (B13)
- ✓ Hydrogen Sulfide Odor (C1)
- ✓ Oxidized Rhizospheres along Living Roots (C3)
- ✓ Presence of Reduced Iron (C4)
- ✓ Recent Iron Reduction in Tilled Soils (C6)
- ✓ Thin Muck Surface (C7)
- ✓ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ✓ Water Marks (B1) (**Riverine**)
- ✓ Sediment Deposits (B2) (**Riverine**)
- ✓ Drift Deposits (B3) (**Riverine**)
- ✓ Drainage Patterns (B10)
- ✓ Dry-Season Water Table (C2)
- ✓ Crayfish Burrows (C8)
- ✓ Saturation Visible on Aerial Imagery (C9)
- ✓ Shallow Aquitard (D3)
- ✓ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No ✓ Depth (inches): _____

Water Table Present? Yes _____ No ✓ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No ✓ Depth (inches): _____

Wetland Hydrology Present? Yes _____ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Appendix B – EDR Geocheck Report

Hercules Hotel Complex
Hyw 80 East and Hyw 4 To Martinez
Hercules, CA 94547

Inquiry Number: 5897647.2s
December 09, 2019

The EDR Radius Map™ Report with GeoCheck®

6 Armstrong Road, 4th floor
Shelton, CT 06484
Toll Free: 800.352.0050
www.edrnet.com

TABLE OF CONTENTS

Thank you for your business.
Please contact EDR at 1-800-352-0050
with any questions or comments.

EXECUTIVE SUMMARY

A search of available environmental records was conducted by Environmental Data Resources, Inc (EDR). The report was designed to assist parties seeking to meet the search requirements of EPA's Standards and Practices for All Appropriate Inquiries (40 CFR Part 312), the ASTM Standard Practice for Environmental Site Assessments (E 1527-13), the ASTM Standard Practice for Environmental Site Assessments for Forestland or Rural Property (E 2247-16), the ASTM Standard Practice for Limited Environmental Due Diligence: Transaction Screen Process (E 1528-14) or custom requirements developed for the evaluation of environmental risk associated with a parcel of real estate.

TARGET PROPERTY INFORMATION

ADDRESS

HYW 80 EAST AND HYW 4 TO MARTINEZ
HERCULES, CA 94547

COORDINATES

Latitude (North):	38.0131740 - 38° 0' 47.42''
Longitude (West):	122.2691080 - 122° 16' 8.78''
Universal Tranverse Mercator:	Zone 10
UTM X (Meters):	564160.9
UTM Y (Meters):	4207323.0
Elevation:	65 ft. above sea level

USGS TOPOGRAPHIC MAP ASSOCIATED WITH TARGET PROPERTY

Target Property Map:	5602140 MARE ISLAND, CA
Version Date:	2012
Northeast Map:	5602094 BENICIA, CA
Version Date:	2012
Southeast Map:	5640608 BRIONES VALLEY, CA
Version Date:	2012
Southwest Map:	5640624 RICHMOND, CA
Version Date:	2012

AERIAL PHOTOGRAPHY IN THIS REPORT

Portions of Photo from:	20140608
Source:	USDA

GEOCHECK ®- PHYSICAL SETTING SOURCE ADDENDUM

TARGET PROPERTY ADDRESS

HERCULES HOTEL COMPLEX
HYW 80 EAST AND HYW 4 TO MARTINEZ
HERCULES, CA 94547

TARGET PROPERTY COORDINATES

Latitude (North):	38.013174 - 38° 0' 47.43''
Longitude (West):	122.269108 - 122° 16' 8.79''
Universal Tranverse Mercator:	Zone 10
UTM X (Meters):	564160.9
UTM Y (Meters):	4207323.0
Elevation:	65 ft. above sea level

USGS TOPOGRAPHIC MAP

Target Property Map:	5602140 MARE ISLAND, CA
Version Date:	2012
Northeast Map:	5602094 BENICIA, CA
Version Date:	2012
Southeast Map:	5640608 BRIONES VALLEY, CA
Version Date:	2012
Southwest Map:	5640624 RICHMOND, CA
Version Date:	2012

EDR's GeoCheck Physical Setting Source Addendum is provided to assist the environmental professional in forming an opinion about the impact of potential contaminant migration.

Assessment of the impact of contaminant migration generally has two principle investigative components:

1. Groundwater flow direction, and
2. Groundwater flow velocity.

Groundwater flow direction may be impacted by surface topography, hydrology, hydrogeology, characteristics of the soil, and nearby wells. Groundwater flow velocity is generally impacted by the nature of the geologic strata.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

GROUNDWATER FLOW DIRECTION INFORMATION

Groundwater flow direction for a particular site is best determined by a qualified environmental professional using site-specific well data. If such data is not reasonably ascertainable, it may be necessary to rely on other sources of information, such as surface topographic information, hydrologic information, hydrogeologic data collected on nearby properties, and regional groundwater flow information (from deep aquifers).

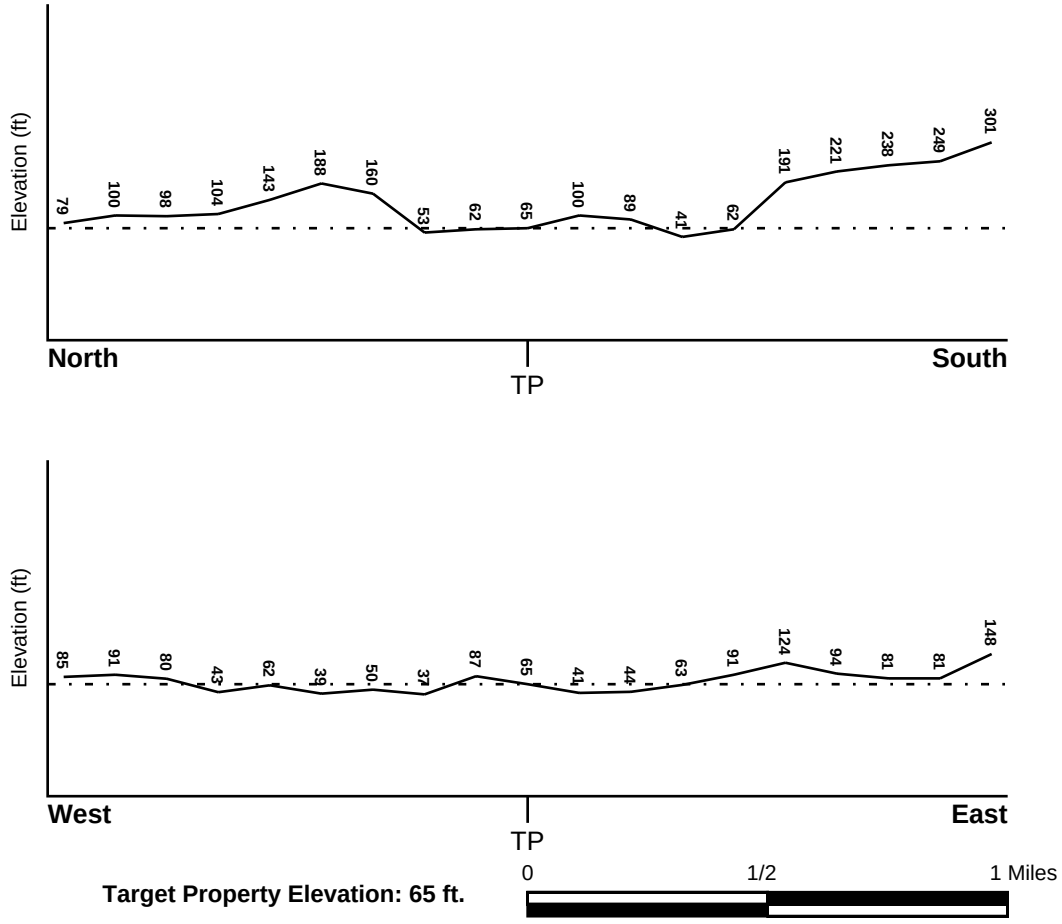
TOPOGRAPHIC INFORMATION

Surface topography may be indicative of the direction of surficial groundwater flow. This information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

TARGET PROPERTY TOPOGRAPHY

General Topographic Gradient: General NNW

SURROUNDING TOPOGRAPHY: ELEVATION PROFILES



Target Property Elevation: 65 ft.

Source: Topography has been determined from the USGS 7.5' Digital Elevation Model and should be evaluated on a relative (not an absolute) basis. Relative elevation information between sites of close proximity should be field verified.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

HYDROLOGIC INFORMATION

Surface water can act as a hydrologic barrier to groundwater flow. Such hydrologic information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

Refer to the Physical Setting Source Map following this summary for hydrologic information (major waterways and bodies of water).

FEMA FLOOD ZONE

Flood Plain Panel at Target Property	FEMA Source Type
06013C0044G	FEMA FIRM Flood data

Additional Panels in search area:	FEMA Source Type
06013C0043G	FEMA FIRM Flood data
06013C0232F	FEMA FIRM Flood data

NATIONAL WETLAND INVENTORY

NWI Quad at Target Property	NWI Electronic Data Coverage
MARE ISLAND	YES - refer to the Overview Map and Detail Map

HYDROGEOLOGIC INFORMATION

Hydrogeologic information obtained by installation of wells on a specific site can often be an indicator of groundwater flow direction in the immediate area. Such hydrogeologic information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

Site-Specific Hydrogeological Data*:

Search Radius:	1.25 miles
Status:	Not found

AQUIFLOW®

Search Radius: 1.000 Mile.

EDR has developed the AQUIFLOW Information System to provide data on the general direction of groundwater flow at specific points. EDR has reviewed reports submitted by environmental professionals to regulatory authorities at select sites and has extracted the date of the report, groundwater flow direction as determined hydrogeologically, and the depth to water table.

MAP ID	LOCATION FROM TP	GENERAL DIRECTION GROUNDWATER FLOW
Not Reported		

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

GROUNDWATER FLOW VELOCITY INFORMATION

Groundwater flow velocity information for a particular site is best determined by a qualified environmental professional using site specific geologic and soil strata data. If such data are not reasonably ascertainable, it may be necessary to rely on other sources of information, including geologic age identification, rock stratigraphic unit and soil characteristics data collected on nearby properties and regional soil information. In general, contaminant plumes move more quickly through sandy-gravelly types of soils than silty-clayey types of soils.

GEOLOGIC INFORMATION IN GENERAL AREA OF TARGET PROPERTY

Geologic information can be used by the environmental professional in forming an opinion about the relative speed at which contaminant migration may be occurring.

ROCK STRATIGRAPHIC UNIT

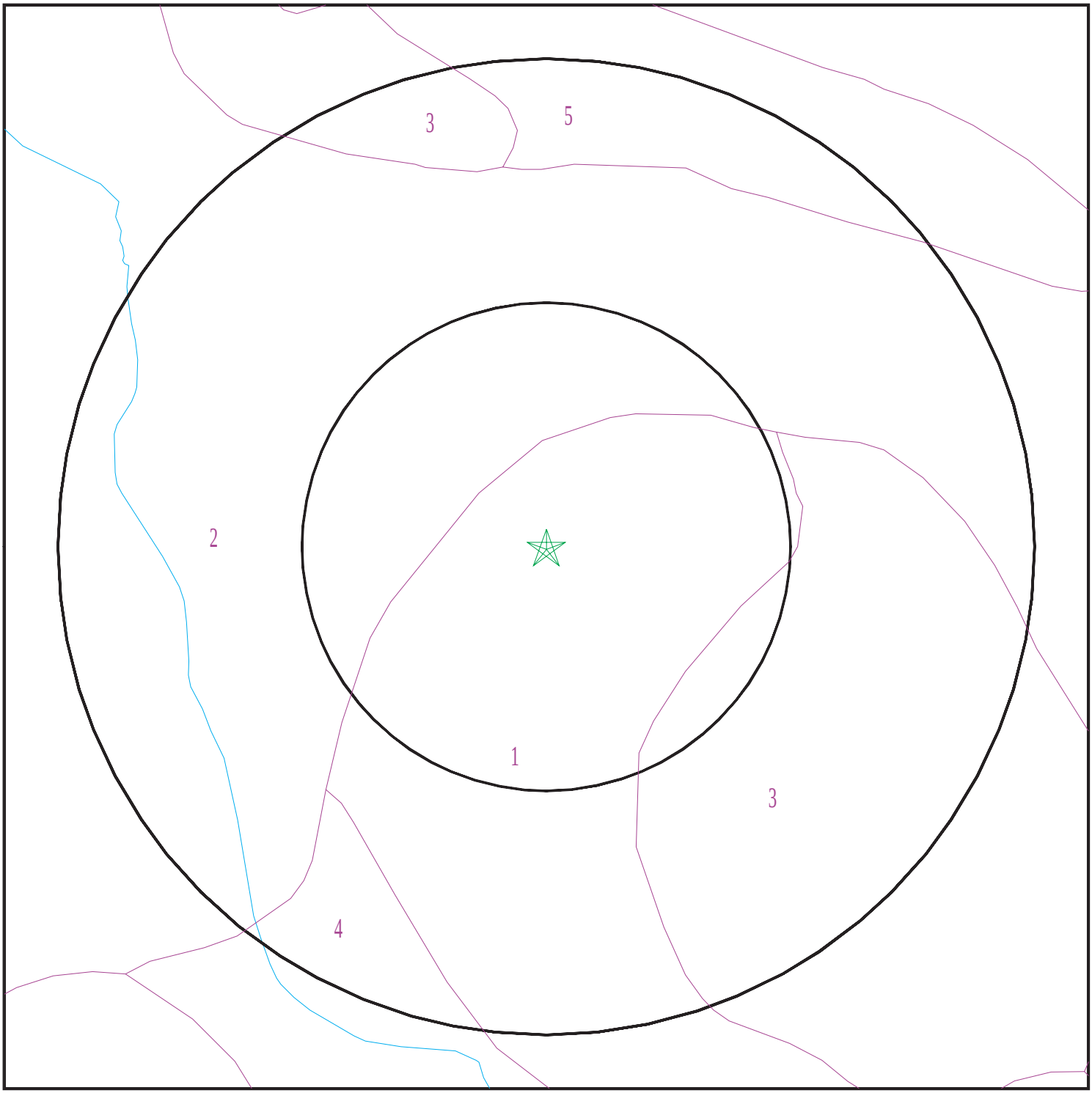
Era:	Cenozoic
System:	Tertiary
Series:	Miocene
Code:	Tm *(decoded above as Era, System & Series)*

GEOLOGIC AGE IDENTIFICATION

Category: Stratified Sequence

Geologic Age and Rock Stratigraphic Unit Source: P.G. Schruben, R.E. Arndt and W.J. Bawiec, Geology of the Conterminous U.S. at 1:2,500,000 Scale - a digital representation of the 1974 P.B. King and H.M. Beikman Map, USGS Digital Data Series DDS - 11 (1994).

SSURGO SOIL MAP - 5897647.2s



SITE NAME:	Hercules Hotel Complex	CLIENT:	Ground Zone
ADDRESS:	Hyw 80 East and Hyw 4 To Martinez Hercules CA 94547	CONTACT:	Sam Lea Brathwaite
LAT/LONG:	38.013174 / 122.269108	INQUIRY #:	5897647.2s
		DATE:	December 09, 2019 12:40 pm

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

DOMINANT SOIL COMPOSITION IN GENERAL AREA OF TARGET PROPERTY

The U.S. Department of Agriculture's (USDA) Soil Conservation Service (SCS) leads the National Cooperative Soil Survey (NCSS) and is responsible for collecting, storing, maintaining and distributing soil survey information for privately owned lands in the United States. A soil map in a soil survey is a representation of soil patterns in a landscape. The following information is based on Soil Conservation Service SSURGO data.

Soil Map ID: 1

Soil Component Name: SEHORN

Soil Surface Texture: clay

Hydrologic Group: Class D - Very slow infiltration rates. Soils are clayey, have a high water table, or are shallow to an impervious layer.

Soil Drainage Class: Well drained

Hydric Status: Not hydric

Corrosion Potential - Uncoated Steel: High

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	25 inches	clay	Silt-Clay Materials (more than 35 pct. passing No. 200), Clayey Soils.	Not reported	Max: 1.4 Min: 0	Max: 7.3 Min:
2	25 inches	35 inches	silty clay	Silt-Clay Materials (more than 35 pct. passing No. 200), Clayey Soils.	Not reported	Max: 1.4 Min: 0	Max: 7.3 Min:
3	35 inches	38 inches	unweathered bedrock	Silt-Clay Materials (more than 35 pct. passing No. 200), Clayey Soils.	Not reported	Max: 1.4 Min: 0	Max: 7.3 Min:

Soil Map ID: 2

Soil Component Name: CLEAR LAKE

Soil Surface Texture: clay

Hydrologic Group: Class D - Very slow infiltration rates. Soils are clayey, have a high water table, or are shallow to an impervious layer.

Soil Drainage Class: Poorly drained

Hydric Status: Partially hydric

Corrosion Potential - Uncoated Steel: High

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	29 inches	clay	Silt-Clay Materials (more than 35 pct. passing No. 200), Clayey Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit less than 50%), Lean Clay	Max: 1.4 Min: 0.42	Max: 8.4 Min: 7.4
2	29 inches	59 inches	clay	Silt-Clay Materials (more than 35 pct. passing No. 200), Clayey Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit less than 50%), Lean Clay	Max: 1.4 Min: 0.42	Max: 8.4 Min: 7.4

Soil Map ID: 3

Soil Component Name: TIERRA

Soil Surface Texture: loam

Hydrologic Group: Class D - Very slow infiltration rates. Soils are clayey, have a high water table, or are shallow to an impervious layer.

Soil Drainage Class: Moderately well drained

Hydric Status: Not hydric

Corrosion Potential - Uncoated Steel: High

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	25 inches	loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit less than 50%), Lean Clay	Max: 4 Min: 1.4	Max: 8.4 Min: 7.9
2	25 inches	59 inches	clay	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit less than 50%), Lean Clay	Max: 4 Min: 1.4	Max: 8.4 Min: 7.9
3	59 inches	70 inches	silty clay loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit less than 50%), Lean Clay	Max: 4 Min: 1.4	Max: 8.4 Min: 7.9

Soil Map ID: 4

Soil Component Name: CROPLEY

Soil Surface Texture: clay

Hydrologic Group: Class D - Very slow infiltration rates. Soils are clayey, have a high water table, or are shallow to an impervious layer.

Soil Drainage Class: Moderately well drained

Hydric Status: Partially hydric

Corrosion Potential - Uncoated Steel: High

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	24 inches	clay	Silt-Clay Materials (more than 35 pct. passing No. 200), Clayey Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit less than 50%), Lean Clay	Max: 1.4 Min: 0.42	Max: 8.4 Min: 6.6
2	24 inches	59 inches	clay	Silt-Clay Materials (more than 35 pct. passing No. 200), Clayey Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit less than 50%), Lean Clay	Max: 1.4 Min: 0.42	Max: 8.4 Min: 6.6

Soil Map ID: 5

Soil Component Name: LOS OSOS

Soil Surface Texture: clay loam

Hydrologic Group: Class C - Slow infiltration rates. Soils with layers impeding downward movement of water, or soils with moderately fine or fine textures.

Soil Drainage Class: Well drained

Hydric Status: Not hydric

Corrosion Potential - Uncoated Steel: High

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	9 inches	clay loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Clayey Soils.	Not reported	Max: 1.4 Min: 0	Max: Min:

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
2	9 inches	31 inches	clay	Silt-Clay Materials (more than 35 pct. passing No. 200), Clayey Soils.	Not reported	Max: 1.4 Min: 0	Max: Min:
3	31 inches	35 inches	weathered bedrock	Silt-Clay Materials (more than 35 pct. passing No. 200), Clayey Soils.	Not reported	Max: 1.4 Min: 0	Max: Min:

LOCAL / REGIONAL WATER AGENCY RECORDS

EDR Local/Regional Water Agency records provide water well information to assist the environmental professional in assessing sources that may impact ground water flow direction, and in forming an opinion about the impact of contaminant migration on nearby drinking water wells.

WELL SEARCH DISTANCE INFORMATION

DATABASE	SEARCH DISTANCE (miles)
Federal USGS	1.000
Federal FRDS PWS	Nearest PWS within 1 mile
State Database	1.000

FEDERAL USGS WELL INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
No Wells Found		

FEDERAL FRDS PUBLIC WATER SUPPLY SYSTEM INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
No PWS System Found		

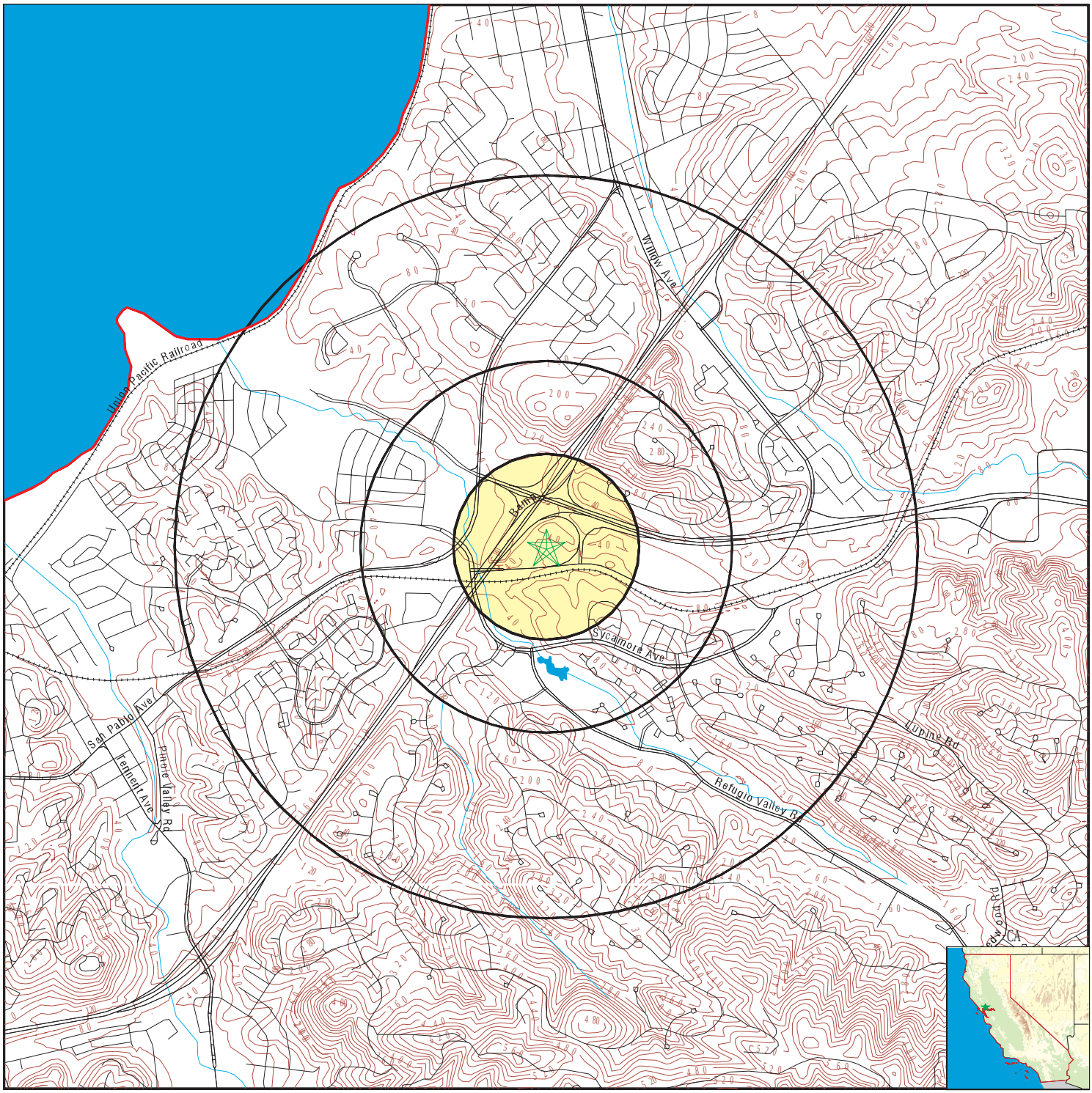
Note: PWS System location is not always the same as well location.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

STATE DATABASE WELL INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
No Wells Found		

PHYSICAL SETTING SOURCE MAP - 5897647.2s



- County Boundary
- Major Roads
- Contour Lines
- Earthquake Fault Lines
- Earthquake epicenter, Richter 5 or greater
- Water Wells
- Public Water Supply Wells
- Cluster of Multiple Icons
- Groundwater Flow Direction
- GI Indeterminate Groundwater Flow at Location
- GV Groundwater Flow Varies at Location
- HD Closest Hydrogeological Data
- Oil, gas or related wells

SITE NAME:	Hercules Hotel Complex	CLIENT:	Ground Zone
ADDRESS:	Hyw 80 East and Hyw 4 To Martinez Hercules CA 94547	CONTACT:	Sam Lea Brathwaite
LAT/LONG:	38.013174 / 122.269108	INQUIRY #:	5897647.2s
		DATE:	December 09, 2019 12:40 pm

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS
RADON

AREA RADON INFORMATION

State Database: CA Radon

Radon Test Results

Zipcode	Num Tests	> 4 pCi/L
94547	7	0

Federal EPA Radon Zone for CONTRA COSTA County: 2

Note: Zone 1 indoor average level > 4 pCi/L.
: Zone 2 indoor average level >= 2 pCi/L and <= 4 pCi/L.
: Zone 3 indoor average level < 2 pCi/L.

Federal Area Radon Information for Zip Code: 94547

Number of sites tested: 1

Area	Average Activity	% <4 pCi/L	% 4-20 pCi/L	% >20 pCi/L
Living Area - 1st Floor	1.000 pCi/L	100%	0%	0%
Living Area - 2nd Floor	0.300 pCi/L	100%	0%	0%
Basement	Not Reported	Not Reported	Not Reported	Not Reported

PHYSICAL SETTING SOURCE RECORDS SEARCHED

TOPOGRAPHIC INFORMATION

USGS 7.5' Digital Elevation Model (DEM)
Source: United States Geologic Survey
EDR acquired the USGS 7.5' Digital Elevation Model in 2002 and updated it in 2006. The 7.5 minute DEM corresponds to the USGS 1:24,000- and 1:25,000-scale topographic quadrangle maps. The DEM provides elevation data with consistent elevation units and projection.

Current USGS 7.5 Minute Topographic Map
Source: U.S. Geological Survey

HYDROLOGIC INFORMATION

Flood Zone Data: This data was obtained from the Federal Emergency Management Agency (FEMA). It depicts 100-year and 500-year flood zones as defined by FEMA. It includes the National Flood Hazard Layer (NFHL) which incorporates Flood Insurance Rate Map (FIRM) data and Q3 data from FEMA in areas not covered by NFHL.
Source: FEMA
Telephone: 877-336-2627
Date of Government Version: 2003, 2015

NWI: National Wetlands Inventory. This data, available in select counties across the country, was obtained by EDR in 2002, 2005 and 2010 from the U.S. Fish and Wildlife Service.

State Wetlands Data: Wetland Inventory
Source: Department of Fish and Wildlife
Telephone: 916-445-0411

HYDROGEOLOGIC INFORMATION

AQUIFLOW^{R} Information System
Source: EDR proprietary database of groundwater flow information
EDR has developed the AQUIFLOW Information System (AIS) to provide data on the general direction of groundwater flow at specific points. EDR has reviewed reports submitted to regulatory authorities at select sites and has extracted the date of the report, hydrogeologically determined groundwater flow direction and depth to water table information.

GEOLOGIC INFORMATION

Geologic Age and Rock Stratigraphic Unit
Source: P.G. Schruben, R.E. Arndt and W.J. Bawiec, Geology of the Conterminous U.S. at 1:2,500,000 Scale - A digital representation of the 1974 P.B. King and H.M. Beikman Map, USGS Digital Data Series DDS - 11 (1994).

STATSGO: State Soil Geographic Database
Source: Department of Agriculture, Natural Resources Conservation Service (NRCS)
The U.S. Department of Agriculture's (USDA) Natural Resources Conservation Service (NRCS) leads the national Conservation Soil Survey (NCSS) and is responsible for collecting, storing, maintaining and distributing soil survey information for privately owned lands in the United States. A soil map in a soil survey is a representation of soil patterns in a landscape. Soil maps for STATSGO are compiled by generalizing more detailed (SSURGO) soil survey maps.

SSURGO: Soil Survey Geographic Database
Source: Department of Agriculture, Natural Resources Conservation Service (NRCS)
Telephone: 800-672-5559
SSURGO is the most detailed level of mapping done by the Natural Resources Conservation Service, mapping scales generally range from 1:12,000 to 1:63,360. Field mapping methods using national standards are used to construct the soil maps in the Soil Survey Geographic (SSURGO) database. SSURGO digitizing duplicates the original soil survey maps. This level of mapping is designed for use by landowners, townships and county natural resource planning and management.

PHYSICAL SETTING SOURCE RECORDS SEARCHED

LOCAL / REGIONAL WATER AGENCY RECORDS

FEDERAL WATER WELLS

PWS: Public Water Systems
Source: EPA/Office of Drinking Water
Telephone: 202-564-3750
Public Water System data from the Federal Reporting Data System. A PWS is any water system which provides water to at least 25 people for at least 60 days annually. PWSs provide water from wells, rivers and other sources.

PWS ENF: Public Water Systems Violation and Enforcement Data
Source: EPA/Office of Drinking Water
Telephone: 202-564-3750
Violation and Enforcement data for Public Water Systems from the Safe Drinking Water Information System (SDWIS) after August 1995. Prior to August 1995, the data came from the Federal Reporting Data System (FRDS).

USGS Water Wells: USGS National Water Inventory System (NWIS)
This database contains descriptive information on sites where the USGS collects or has collected data on surface water and/or groundwater. The groundwater data includes information on wells, springs, and other sources of groundwater.

STATE RECORDS

Water Well Database
Source: Department of Water Resources
Telephone: 916-651-9648

California Drinking Water Quality Database
Source: Department of Public Health
Telephone: 916-324-2319
The database includes all drinking water compliance and special studies monitoring for the state of California since 1984. It consists of over 3,200,000 individual analyses along with well and water system information.

OTHER STATE DATABASE INFORMATION

California Oil and Gas Well Locations
Source: Department of Conservation
Telephone: 916-323-1779
Oil and Gas well locations in the state.

California Earthquake Fault Lines
Source: California Division of Mines and Geology
The fault lines displayed on EDR's Topographic map are digitized quaternary fault lines prepared in 1975 by the United State Geological Survey. Additional information (also from 1975) regarding activity at specific fault lines comes from California's Preliminary Fault Activity Map prepared by the California Division of Mines and Geology.

RADON

State Database: CA Radon
Source: Department of Public Health
Telephone: 916-210-8558
Radon Database for California

Area Radon Information
Source: USGS
Telephone: 703-356-4020
The National Radon Database has been developed by the U.S. Environmental Protection Agency (USEPA) and is a compilation of the EPA/State Residential Radon Survey and the National Residential Radon Survey. The study covers the years 1986 - 1992. Where necessary data has been supplemented by information collected at private sources such as universities and research institutions.

PHYSICAL SETTING SOURCE RECORDS SEARCHED

EPA Radon Zones
Source: EPA
Telephone: 703-356-4020
Sections 307 & 309 of IRAA directed EPA to list and identify areas of U.S. with the potential for elevated indoor radon levels.

OTHER

Airport Landing Facilities: Private and public use landing facilities
Source: Federal Aviation Administration, 800-457-6656

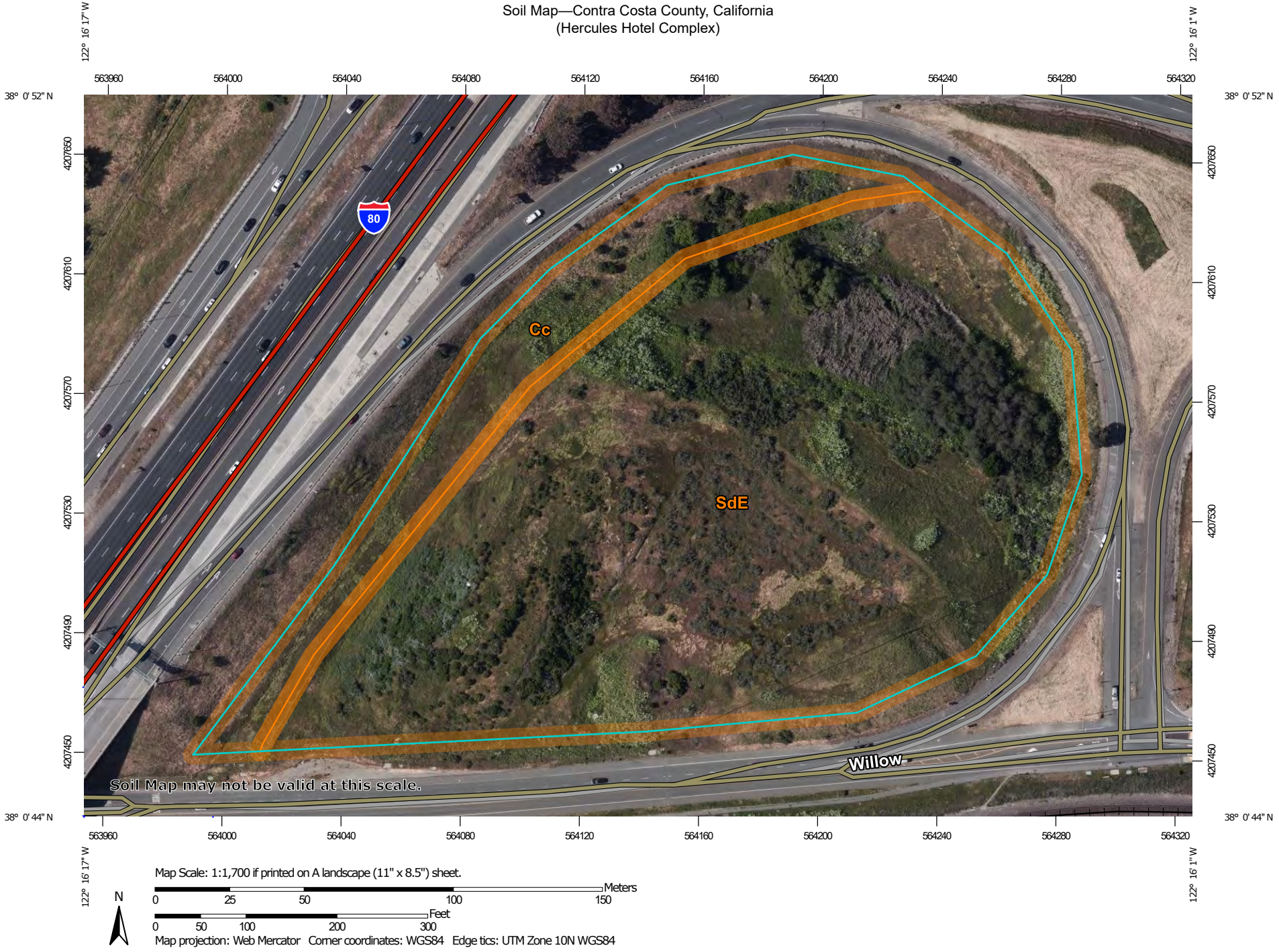
Epicenters: World earthquake epicenters, Richter 5 or greater
Source: Department of Commerce, National Oceanic and Atmospheric Administration

California Earthquake Fault Lines: The fault lines displayed on EDR's Topographic map are digitized quaternary fault lines, prepared in 1975 by the United State Geological Survey. Additional information (also from 1975) regarding activity at specific fault lines comes from California's Preliminary Fault Activity Map prepared by the California Division of Mines and Geology.

STREET AND ADDRESS INFORMATION

Appendix C – USGS Web Soil Survey

Soil Map—Contra Costa County, California
(Hercules Hotel Complex)



Map Scale: 1:1,700 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0 25 50 100 150

Feet: 0 50 100 200 300

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 10N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Contra Costa County, California
Survey Area Data: Version 16, Sep 17, 2019

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: May 1, 2019—May 31, 2019

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
Cc	Clear Lake clay, 0 to 15 percent slopes, MLRA 15	1.5	15.5%
SdE	Sehorn clay, 15 to 30 percent slopes	8.0	84.5%
Totals for Area of Interest		**9.5**	**100.0%**

Appendix D – Watershed Atlas

Refugio, Rodeo and Carquinez Area Watersheds

Refugio Creek, Rodeo Creek and the various drainages that flow into the Carquinez Strait are located in northwest Contra Costa County. Together, the watersheds encompass 16,348 acres of diverse landcover including pristine oak-covered hills, an interstate highway, ranches, heavy industry, towns and new residential development. The City of Hercules and the communities of Rodeo, Crockett and Port Costa are located in the watershed.

Refugio Creek Watershed Vital Statistics	
Watershed Size	3,116 acres
Length of Longest Branch of Creek	4.52 miles
Total Channel Length in Watershed	9.17 miles
Average Annual Rainfall	19 inches
Estimated Mean Daily Flow	4.2 cfs
Estimated 100-Year Flood Flow	N/A
Highest Elevation in Watershed	780 feet
Population (estimated)	15,400 people
Estimated Percent Impervious	50 %
Recognized Pollutants of Concern	N/A *

Rodeo Creek Watershed Vital Statistics	
Watershed Size	6,657 acres
Length of Longest Branch of Creek	8.35 miles
Total Channel Length in Watershed	31.64 miles
Average Annual Rainfall	21 inches
Estimated Mean Daily Flow	7.0 cfs
Estimated 100-Year Flood Flow	N/A
Highest Elevation in Watershed	1,100 feet
Population (estimated)	8,900 people
Estimated Percent Impervious	20 %
Recognized Pollutants of Concern	Diazinon**

*Refugio Creek has not been specifically identified in the State's 303(d) list of Impaired Water Bodies.
**Rodeo Creek is listed as an Impaired Water Body in the State's 303(d) list. Diazinon is the Pollutant of Concern.

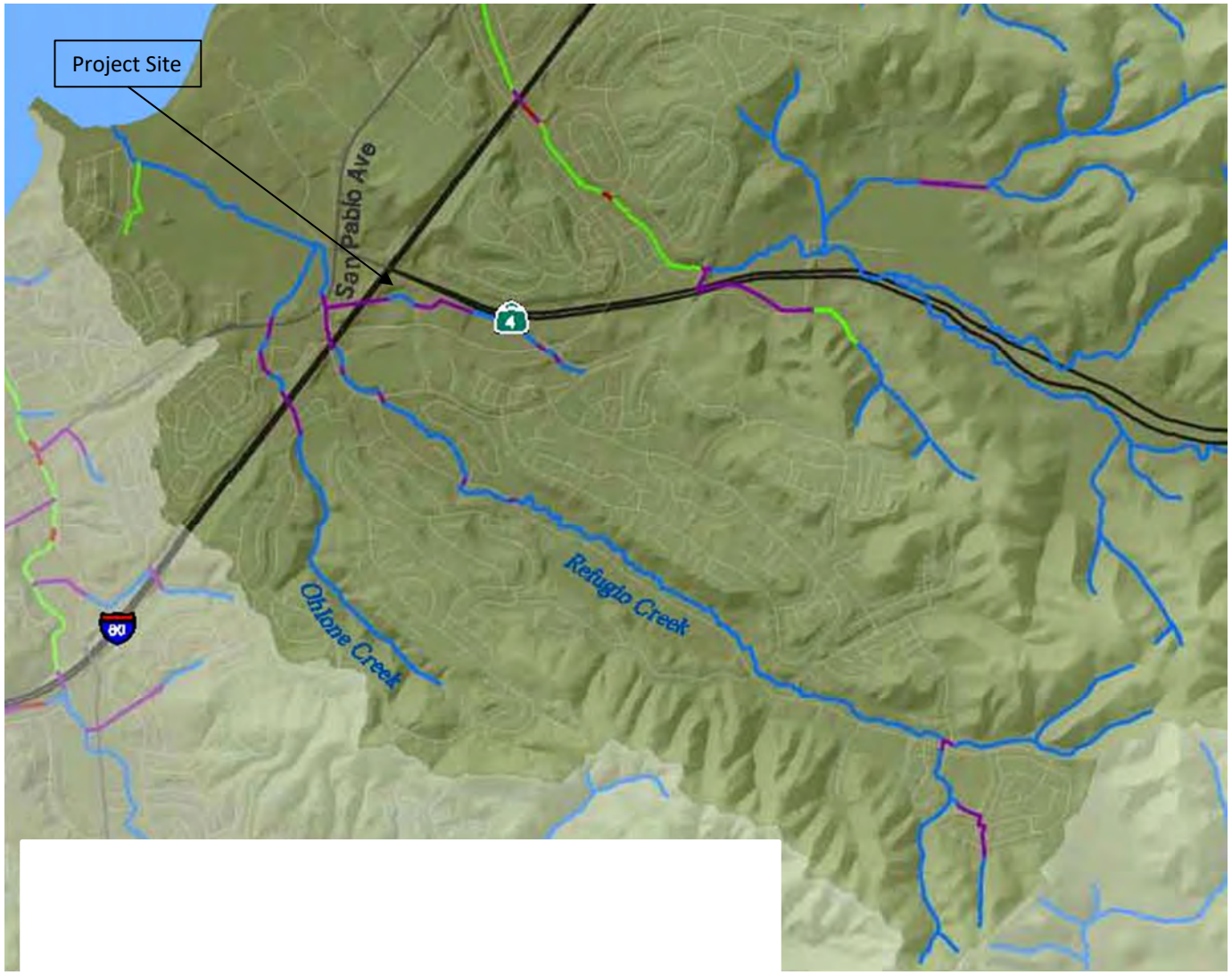
No.	Date	Revision	Approved

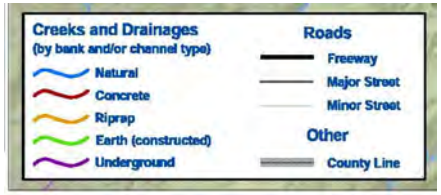
GROUND ZONE ENVIRONMENTAL SERVICES

Date: 02.02.2020
Designed: TJ
Drawn:
Checked:
DWG File:

Watershed Map
Hercules Hotel Complex
Hercules, California

Fig..
Project





No.	Date	Revision	Approved

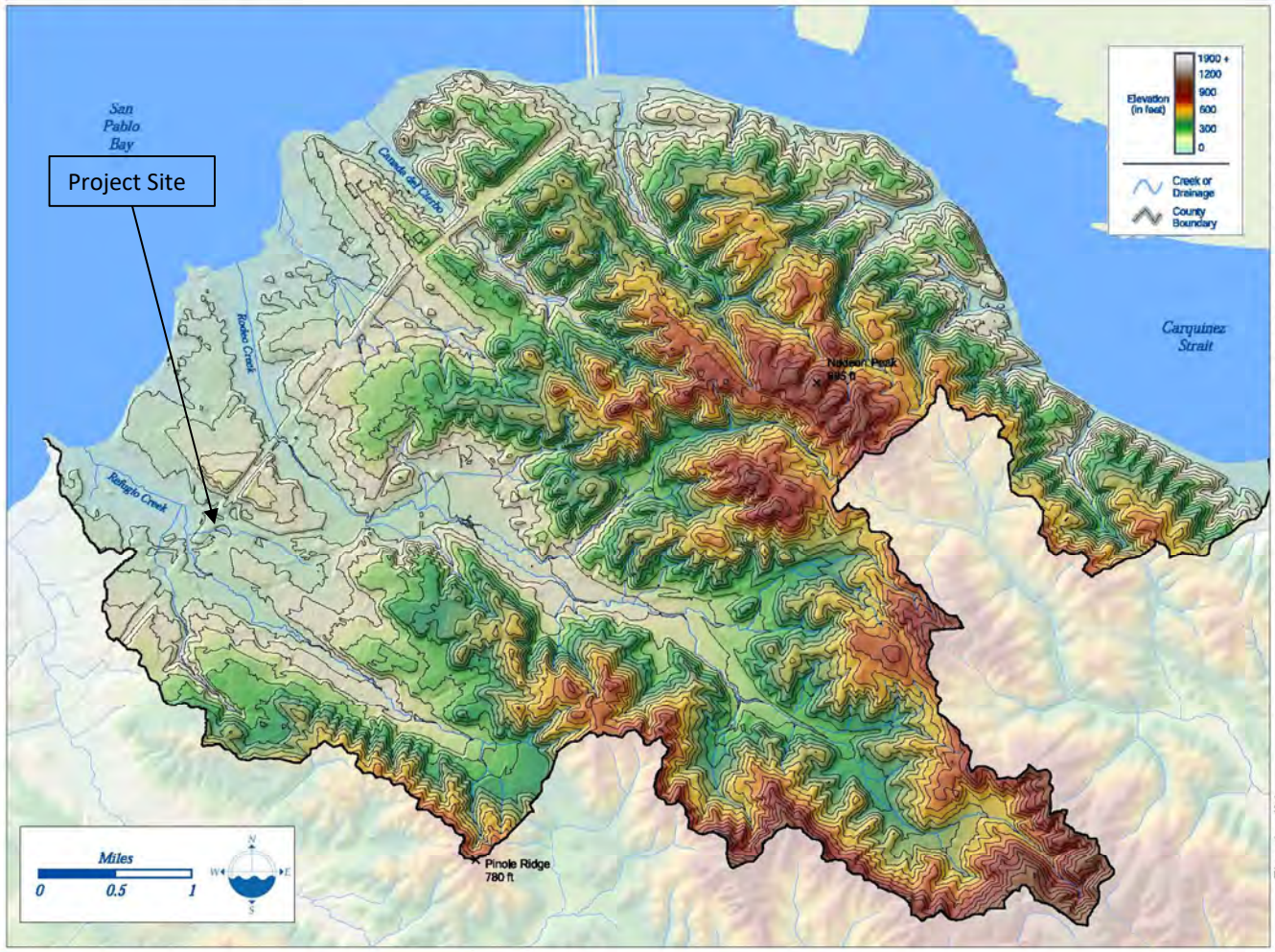
GROUND ZONE ENVIRONMENTAL SERVICES

Date:	02.02.2020
Designed:	TJ
Drawn:	
Checked:	
DWG File:	

Channel Condition
Hercules Hotel Complex
Hercules, California

Fig..	
Project	

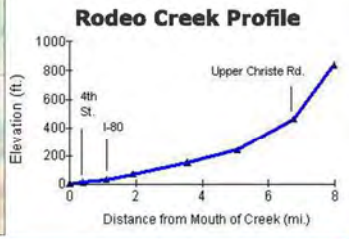
Topography and Hydrology



Refugio Creek (4.52 miles), Rodeo Creek (8.35 miles), Canada del Cierbo Creek (2.86 miles) and Edwards Creek (2.0 miles) trend north-west and resemble other West County drainages in that they juxtapose a rural upper watershed with an urbanized and/or industrialized lower watershed. However, these watersheds located at the northwest tip of Contra Costa County do not have flatland areas in their lower reaches characteristic of the watersheds of Pinole, San Pablo, and Wildcat Creeks.

The upper watershed of Rodeo Creek and its tributaries begin in private ranchland and East Bay Regional Park District property. An industrial area and the community of Rodeo are in the lower watershed. Two smaller drainages to the north of Rodeo, including Canada del Cierbo Creek and an unnamed creek, begin in undeveloped land on the east side of Interstate 80 before being diverted underground through refinery properties.

The shorter, steeper Carquinez drainages flow from south-east to north-west following the shape of the land. These drainages are mostly unnamed except for Bull Valley Creek (2 miles), which flows north through the town of Port Costa, first filling the reservoir located just south of town. The upper watersheds of these smaller drainages also begin in East Bay Regional Park land and ranchlands before reaching residential areas and industry located on the shores of the Carquinez Strait.



No.	Date	Revision	Approved

GROUND ZONE ENVIRONMENTAL SERVICES

Date: 02.02.2020	
Designed: TJ	
Drawn:	
Checked:	
DWG File:	

Elevation Contours
Hercules Hotel Complex
Hercules, California

Fig..
Project

Appendix E – Historic Aerial Photographs

Hercules Hotel Complex

Hyw 80 East and Hyw 4 To Martinez

Hercules, CA 94547

Inquiry Number: 5897647.8

December 09, 2019

The EDR Aerial Photo Decade Package

6 Armstrong Road, 4th floor
Shelton, CT 06484
Toll Free: 800.352.0050
www.edrnet.com

EDR Aerial Photo Decade Package

12/09/19

Site Name:

Hercules Hotel Complex
Hyw 80 East and Hyw 4 To Ma
Hercules, CA 94547
EDR Inquiry # 5897647.8

Client Name:

Ground Zone
1361 B Street
Hayward, CA 94540
Contact: Sam Lea Brathwaite

Environmental Data Resources, Inc. (EDR) Aerial Photo Decade Package is a screening tool designed to assist environmental professionals in evaluating potential liability on a target property resulting from past activities. EDR's professional researchers provide digitally reproduced historical aerial photographs, and when available, provide one photo per decade.

Search Results:

Year	Scale	Details	Source
2016	1"=500'	Flight Year: 2016	USDA/NAIP
2012	1"=500'	Flight Year: 2012	USDA/NAIP
2009	1"=500'	Flight Year: 2009	USDA/NAIP
2005	1"=500'	Flight Year: 2005	USDA/NAIP
1998	1"=500'	Flight Date: August 27, 1998	USDA
1993	1"=500'	Acquisition Date: July 06, 1993	USGS/DOQQ
1982	1"=500'	Flight Date: July 08, 1982	USDA
1974	1"=500'	Flight Date: April 30, 1974	USGS
1968	1"=500'	Flight Date: April 20, 1968	USGS
1963	1"=500'	Flight Date: July 17, 1963	EDR Proprietary Aerial Viewpoint
1958	1"=500'	Flight Date: July 25, 1958	USGS
1950	1"=500'	Flight Date: May 18, 1950	USDA
1946	1"=500'	Flight Date: September 06, 1946	USGS
1939	1"=500'	Flight Date: August 02, 1939	USDA

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INQUIRY #: 5897647.8
YEAR: 2016
= 500'
N
EDR


INQUIRY #: 5897647.8
YEAR: 2012
= 500'
N
EDR

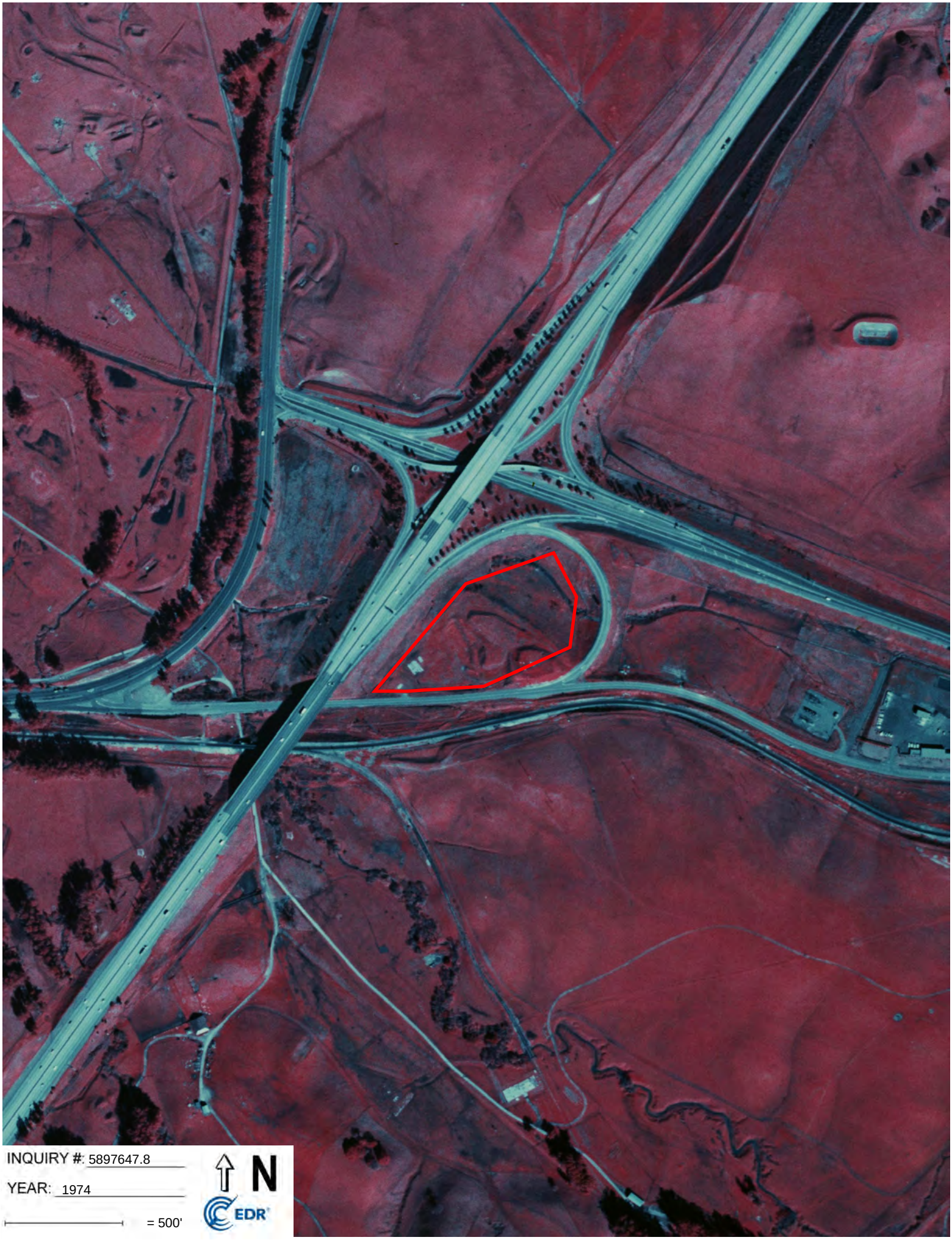

INQUIRY #: 5897647.8
YEAR: 2009
= 500'
N
EDR


INQUIRY #: 5897647.8
YEAR: 2005
= 500'
N
EDR


INQUIRY #: 5897647.8
YEAR: 1998
= 500'
N
EDR


INQUIRY #: 5897647.8
YEAR: 1993
= 500'
N
EDR


INQUIRY #: 5897647.8
YEAR: 1982
= 500'
N
EDR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YEAR: 1974
= 500'
N
EDR


INQUIRY #: 5897647.8
YEAR: 1968
= 500'
N
EDR


INQUIRY #: 5897647.8
YEAR: 1963
= 500'
N
EDR

INQUIRY #: 5897647.8

YEAR: 1958

= 500'

N

EDR


INQUIRY #: 5897647.8
YEAR: 1950
= 500'
N
EDR


INQUIRY #: 5897647.8
YEAR: 1946
= 500'
N
EDR


INQUIRY #: 5897647.8
YEAR: 1939
= 500'
N
EDR

Appendix F – Historic Topographical Maps

Hercules Hotel Complex

Hyw 80 East and Hyw 4 To Martinez

Hercules, CA 94547

Inquiry Number: 5897647.4

December 09, 2019

EDR Historical Topo Map Report

with QuadMatch™

6 Armstrong Road, 4th floor
Shelton, CT 06484
Toll Free: 800.352.0050
www.edrnet.com

EDR Historical Topo Map Report

12/09/19

Site Name:	Client Name:
Hercules Hotel Complex	Ground Zone
Hyw 80 East and Hyw 4 To Ma	1361 B Street
Hercules, CA 94547	Hayward, CA 94540
EDR Inquiry # 5897647.4	Contact: Sam Lea Brathwaite

EDR Topographic Map Library has been searched by EDR and maps covering the target property location as provided by Ground Zone were identified for the years listed below. EDR's Historical Topo Map Report is designed to assist professionals in evaluating potential liability on a target property resulting from past activities. EDRs Historical Topo Map Report includes a search of a collection of public and private color historical topographic maps, dating back to the late 1800s.

Search Results:

P.O.# NA

Project: 235.A.01

Coordinates:

Latitude:	38.013174 38° 0' 47" North
Longitude:	-122.269108 -122° 16' 9" West
UTM Zone:	Zone 10 North
UTM X Meters:	564159.31
UTM Y Meters:	4207528.73
Elevation:	65.18' above sea level

Maps Provided:

2012	1914
1980	1902
1968	
1959	
1951, 1952	
1949, 1950	
1947, 1948	
1916	

Topo Sheet Key

This EDR Topo Map Report is based upon the following USGS topographic map sheets.

2012 Source Sheets

Mare Island
2012
7.5-minute, 24000

Benicia
2012
7.5-minute, 24000

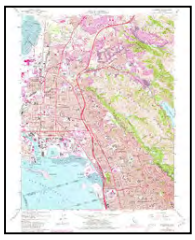
Richmond
2012
7.5-minute, 24000

Briones Valley
2012
7.5-minute, 24000

1980 Source Sheets

Mare Island
1980
7.5-minute, 24000
Aerial Photo Revised 1959

Benicia
1980
7.5-minute, 24000
Aerial Photo Revised 1979



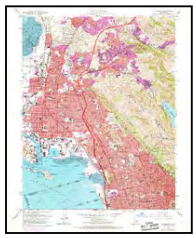
Richmond
1980
7.5-minute, 24000
Aerial Photo Revised 1979

1968 Source Sheets

Briones Valley
1968
7.5-minute, 24000
Aerial Photo Revised 1968

Mare Island
1968
7.5-minute, 24000
Aerial Photo Revised 1968

Benicia
1968
7.5-minute, 24000
Aerial Photo Revised 1968

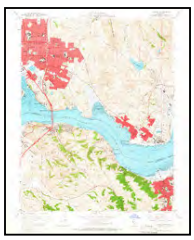


Richmond
1968
7.5-minute, 24000
Aerial Photo Revised 1968

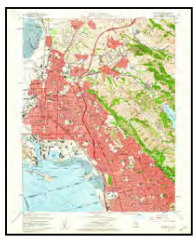
1959 Source Sheets

Mare Island
1959
7.5-minute, 24000
Aerial Photo Revised 1958

Briones Valley
1959
7.5-minute, 24000
Aerial Photo Revised 1958



Benicia
1959
7.5-minute, 24000
Aerial Photo Revised 1958



Richmond
1959
7.5-minute, 24000
Aerial Photo Revised 1958

Topo Sheet Key

This EDR Topo Map Report is based upon the following USGS topographic map sheets.

1951, 1952 Source Sheets

Mare Island
1951
7.5-minute, 24000
Aerial Photo Revised 1948

Benicia
1952
7.5-minute, 24000
Aerial Photo Revised 1948

1949, 1950 Source Sheets

Richmond
1949
7.5-minute, 24000
Aerial Photo Revised 1946

Briones Valley
1949
7.5-minute, 24000
Aerial Photo Revised 1946

Mare Island
1949
7.5-minute, 24000
Aerial Photo Revised 1948

Benicia
1950
7.5-minute, 24000
Aerial Photo Revised 1948

1947, 1948 Source Sheets

PORT CHICAGO
1947
15-minute, 50000

MARE ISLAND
1947
15-minute, 50000

CONCORD
1948
15-minute, 50000

SAN FRANCISCO
1948
15-minute, 50000

1916 Source Sheets

Mare Island
1916
15-minute, 62500

Topo Sheet Key

This EDR Topo Map Report is based upon the following USGS topographic map sheets.

1914 Source Sheets

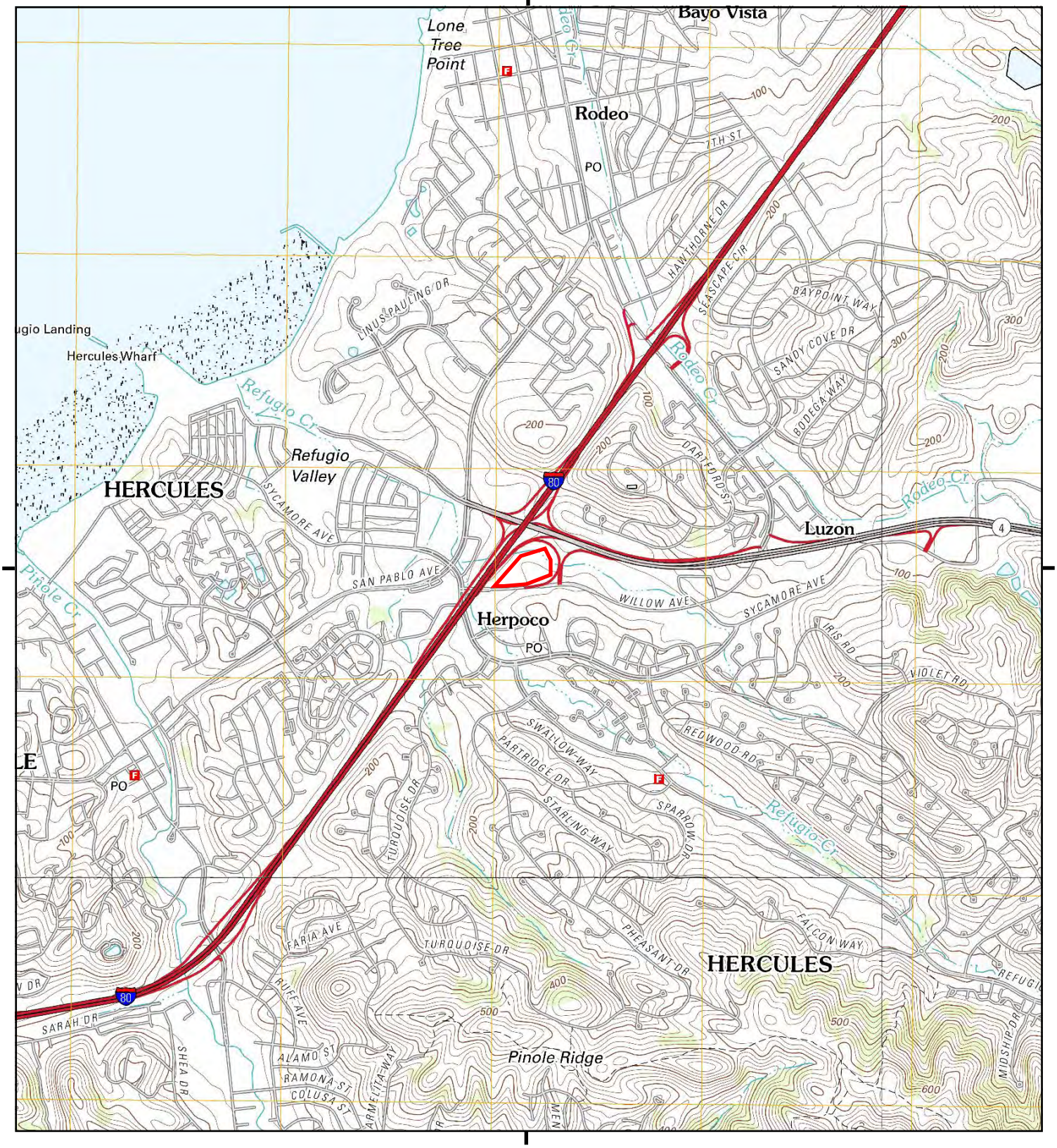
MARE ISLAND
1914
15-minute, 62500

1902 Source Sheets

Napa
1902
30-minute, 125000

Historical Topo Map

2012



This report includes information from the following map sheet(s).

0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

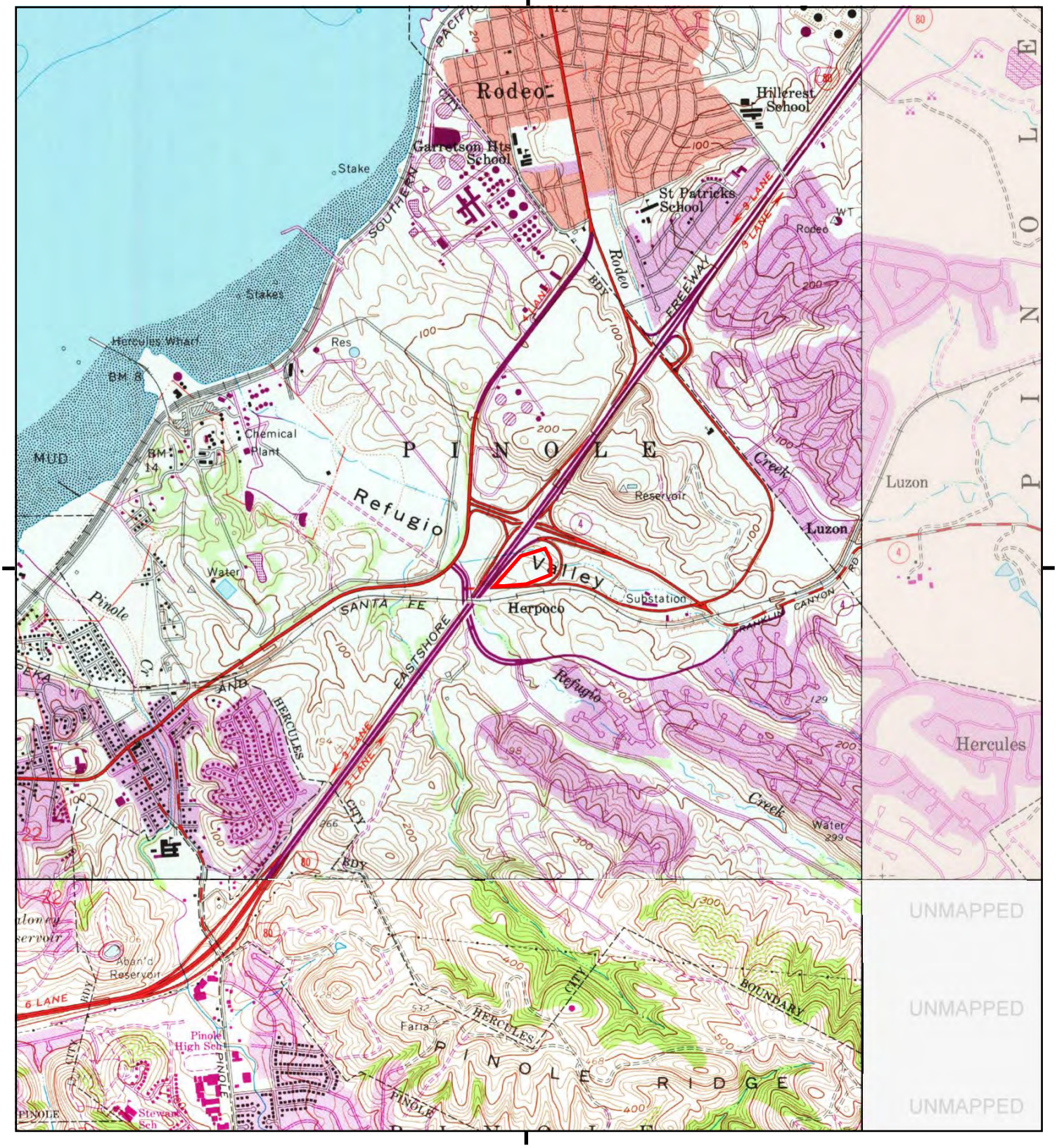
TP, Mare Island, 2012, 7.5-minute
NE, Benicia, 2012, 7.5-minute
SE, Briones Valley, 2012, 7.5-minute
SW, Richmond, 2012, 7.5-minute

SITE NAME: Hercules Hotel Complex
ADDRESS: Hyw 80 East and Hyw 4 To Martinez
Hercules, CA 94547
CLIENT: Ground Zone

N

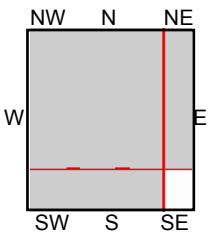
Historical Topo Map

1980



This report includes information from the following map sheet(s).

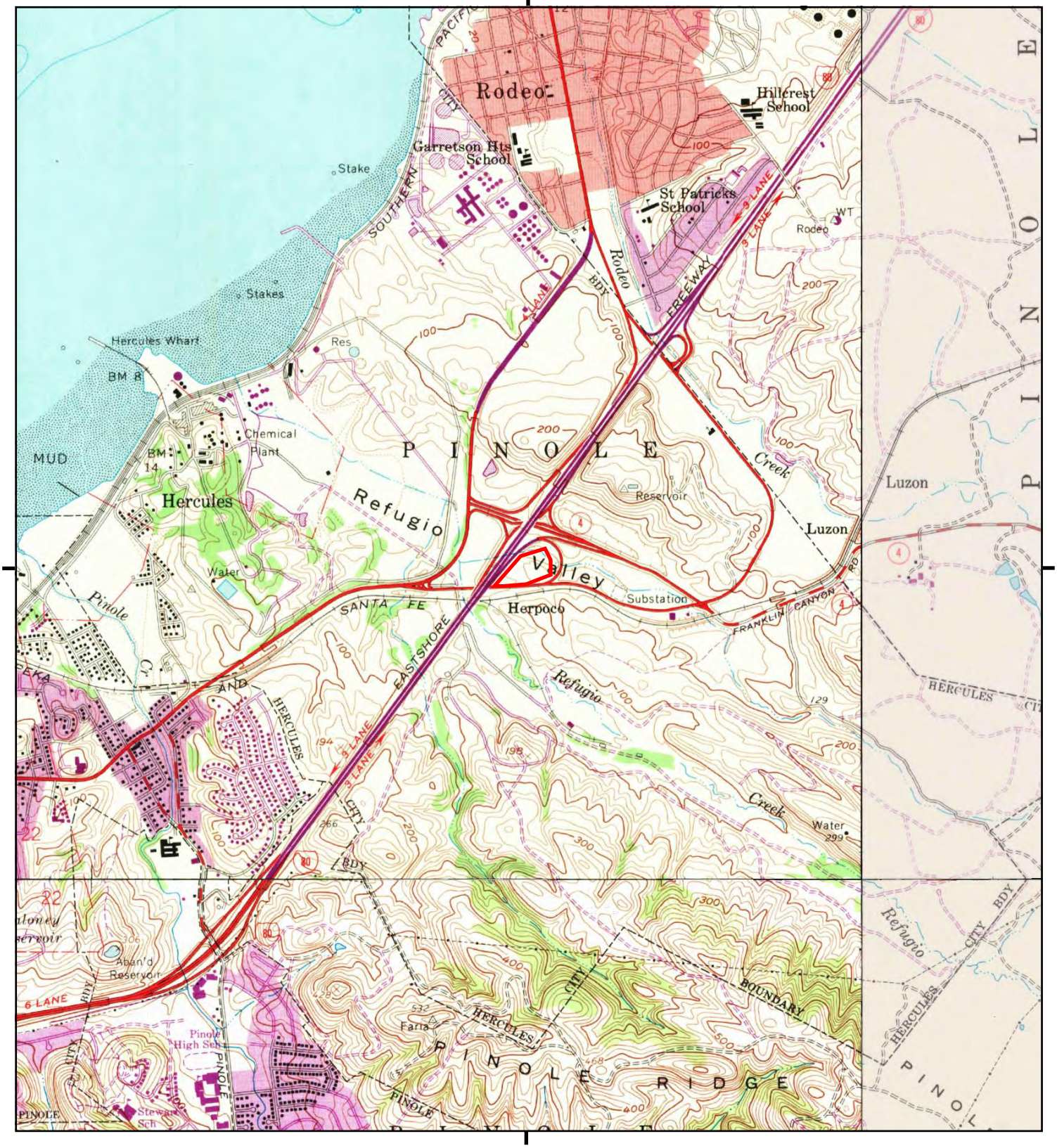
0 Miles 0.25 0.5 1 1.5



TP, Mare Island, 1980, 7.5-minute
NE, Benicia, 1980, 7.5-minute
SW, Richmond, 1980, 7.5-minute

SITE NAME: Hercules Hotel Complex
ADDRESS: Hyw 80 East and Hyw 4 To Martinez
Hercules, CA 94547
CLIENT: Ground Zone

N



This report includes information from the following map sheet(s).

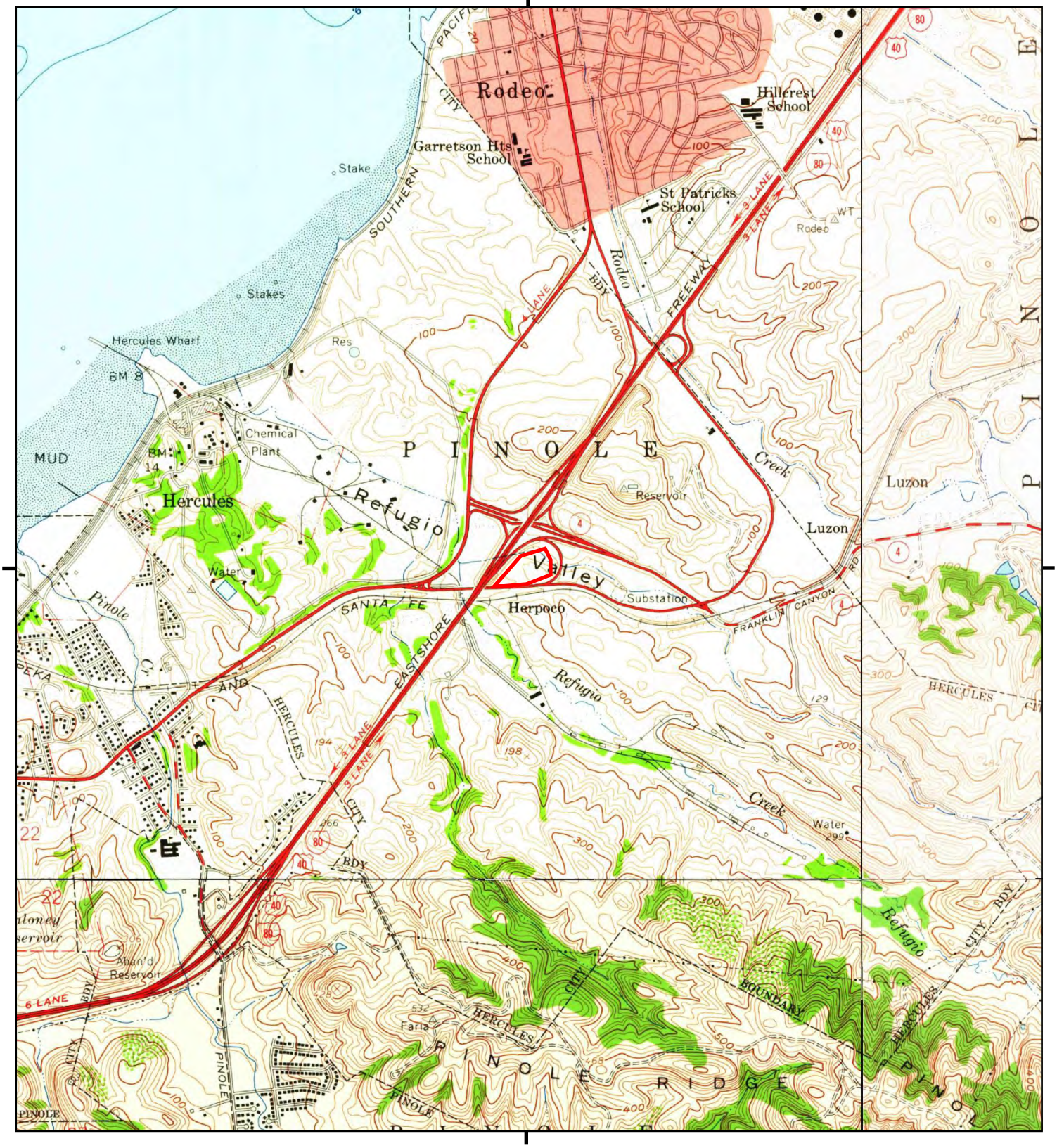
0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

TP, Mare Island, 1968, 7.5-minute
NE, Benicia, 1968, 7.5-minute
SE, Briones Valley, 1968, 7.5-minute
SW, Richmond, 1968, 7.5-minute

SITE NAME: Hercules Hotel Complex
ADDRESS: Hyw 80 East and Hyw 4 To Martinez
Hercules, CA 94547
CLIENT: Ground Zone

N



This report includes information from the following map sheet(s).

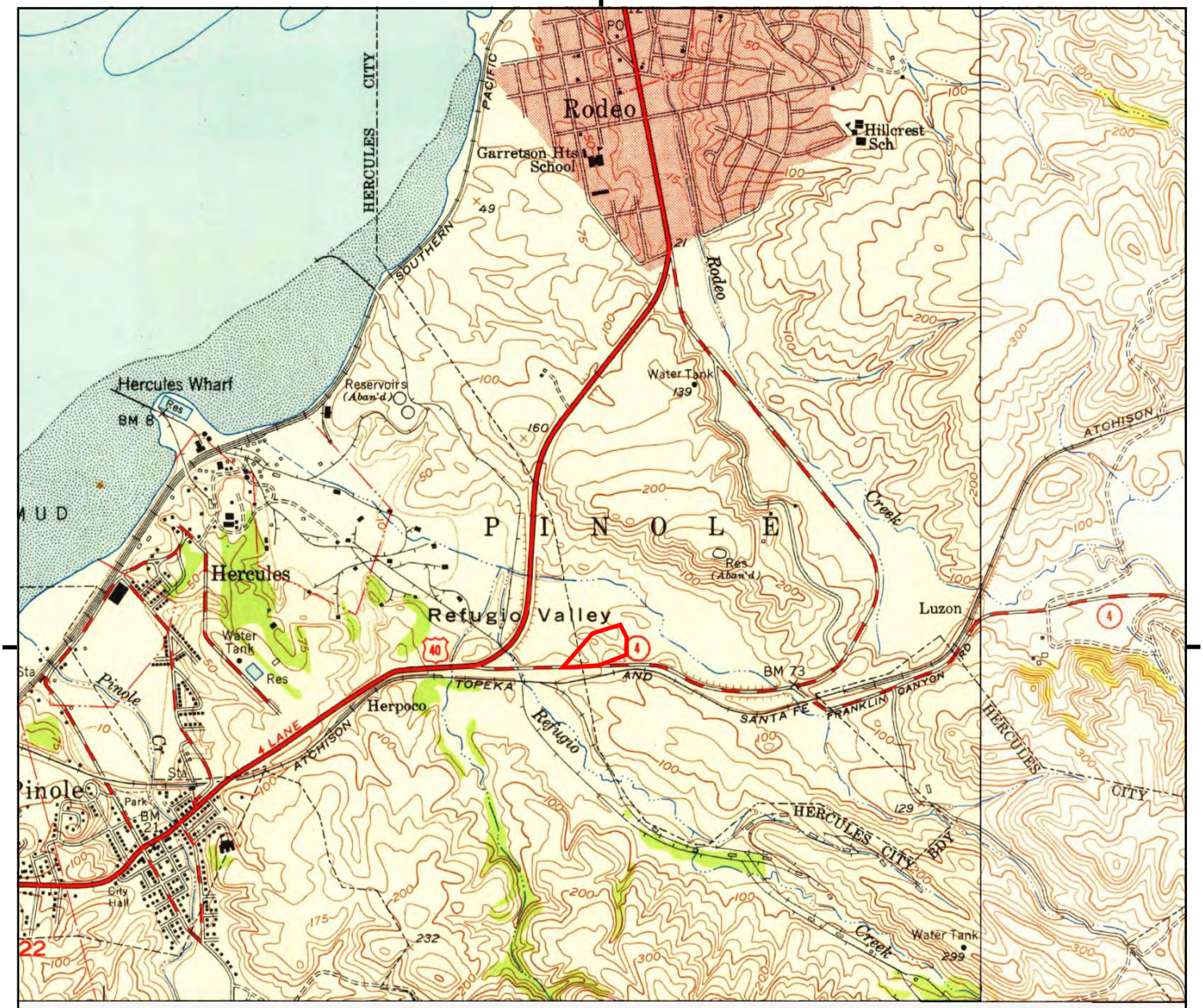
0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

TP, Mare Island, 1959, 7.5-minute
NE, Benicia, 1959, 7.5-minute
SE, Briones Valley, 1959, 7.5-minute
SW, Richmond, 1959, 7.5-minute

SITE NAME: Hercules Hotel Complex
ADDRESS: Hyw 80 East and Hyw 4 To Martinez
Hercules, CA 94547
CLIENT: Ground Zone

N



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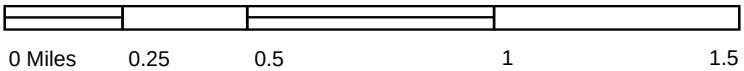
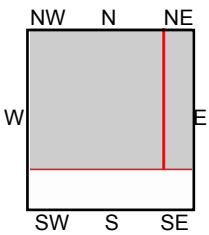
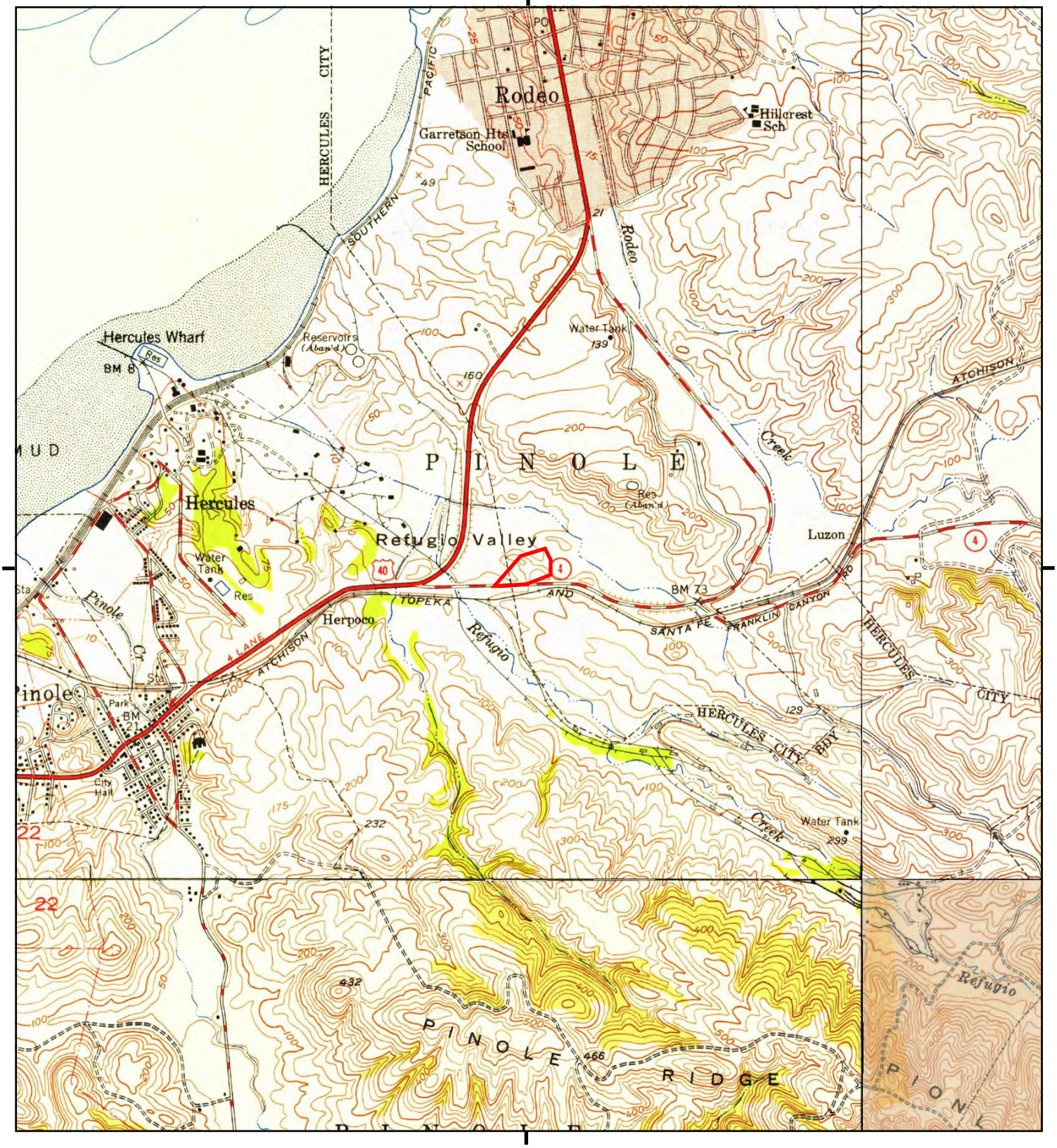




TP, Mare Island, 1951, 7.5-minute
NE, Benicia, 1952, 7.5-minute

SITE NAME: Hercules Hotel Complex
ADDRESS: Hyw 80 East and Hyw 4 To Martinez
Hercules, CA 94547
CLIENT: Ground Zone



This report includes information from the following map sheet(s).

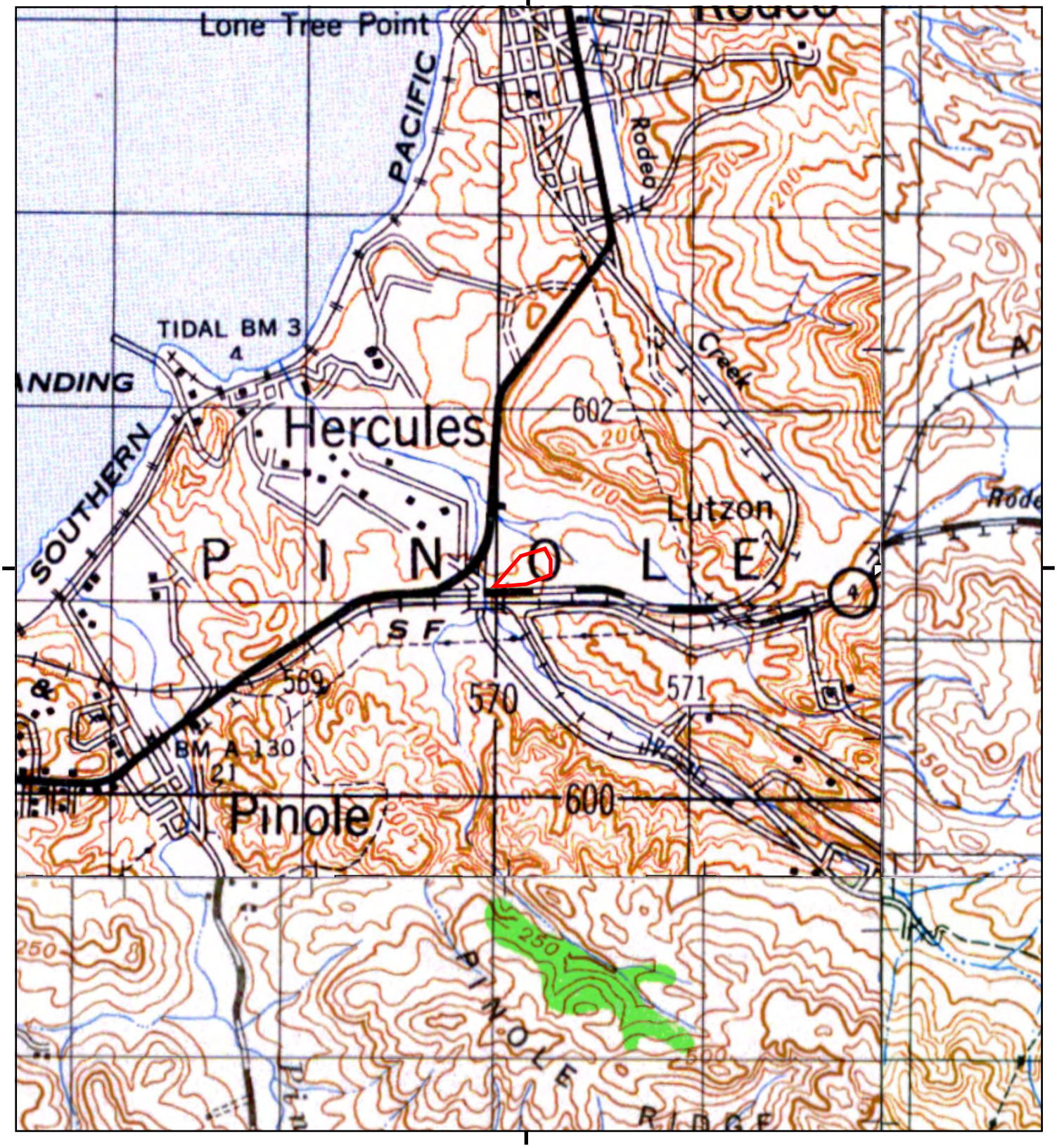
0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

TP, Mare Island, 1949, 7.5-minute
NE, Benicia, 1950, 7.5-minute
SE, Briones Valley, 1949, 7.5-minute
SW, Richmond, 1949, 7.5-minute

SITE NAME: Hercules Hotel Complex
ADDRESS: Hyw 80 East and Hyw 4 To Martinez
Hercules, CA 94547
CLIENT: Ground Zone

N



This report includes information from the following map sheet(s).

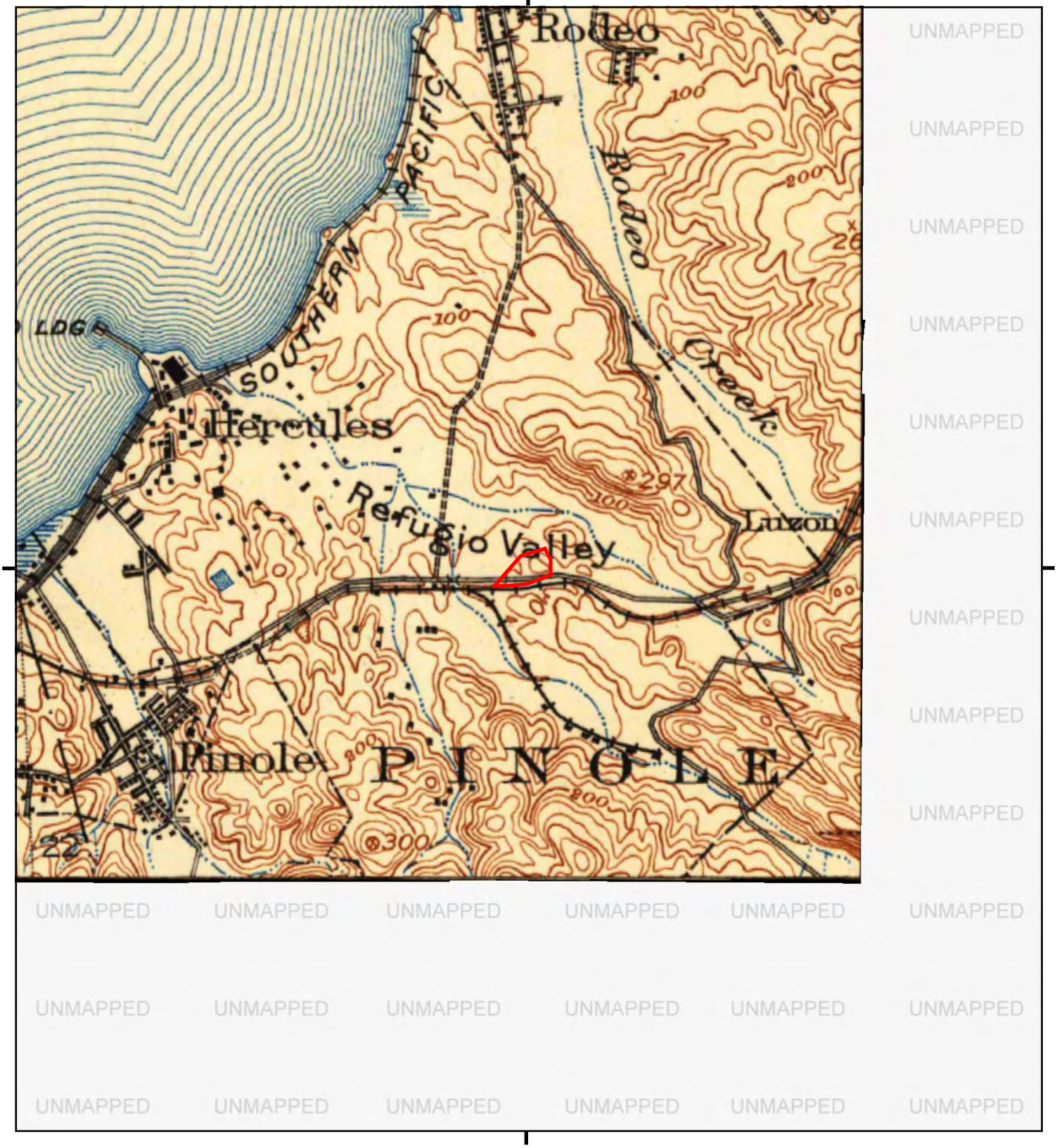
0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

TP, MARE ISLAND, 1947, 15-minute
NE, PORT CHICAGO, 1947, 15-minute
SE, CONCORD, 1948, 15-minute
SW, SAN FRANCISCO, 1948, 15-minute

SITE NAME: Hercules Hotel Complex
ADDRESS: Hyw 80 East and Hyw 4 To Martinez
Hercules, CA 94547
CLIENT: Ground Zone

N



This report includes information from the following map sheet(s).

0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

TP, Mare Island, 1916, 15-minute

SITE NAME: Hercules Hotel Complex
ADDRESS: Hyw 80 East and Hyw 4 To Martinez
Hercules, CA 94547
CLIENT: Ground Zone

N

This report includes information from the following map sheet(s).

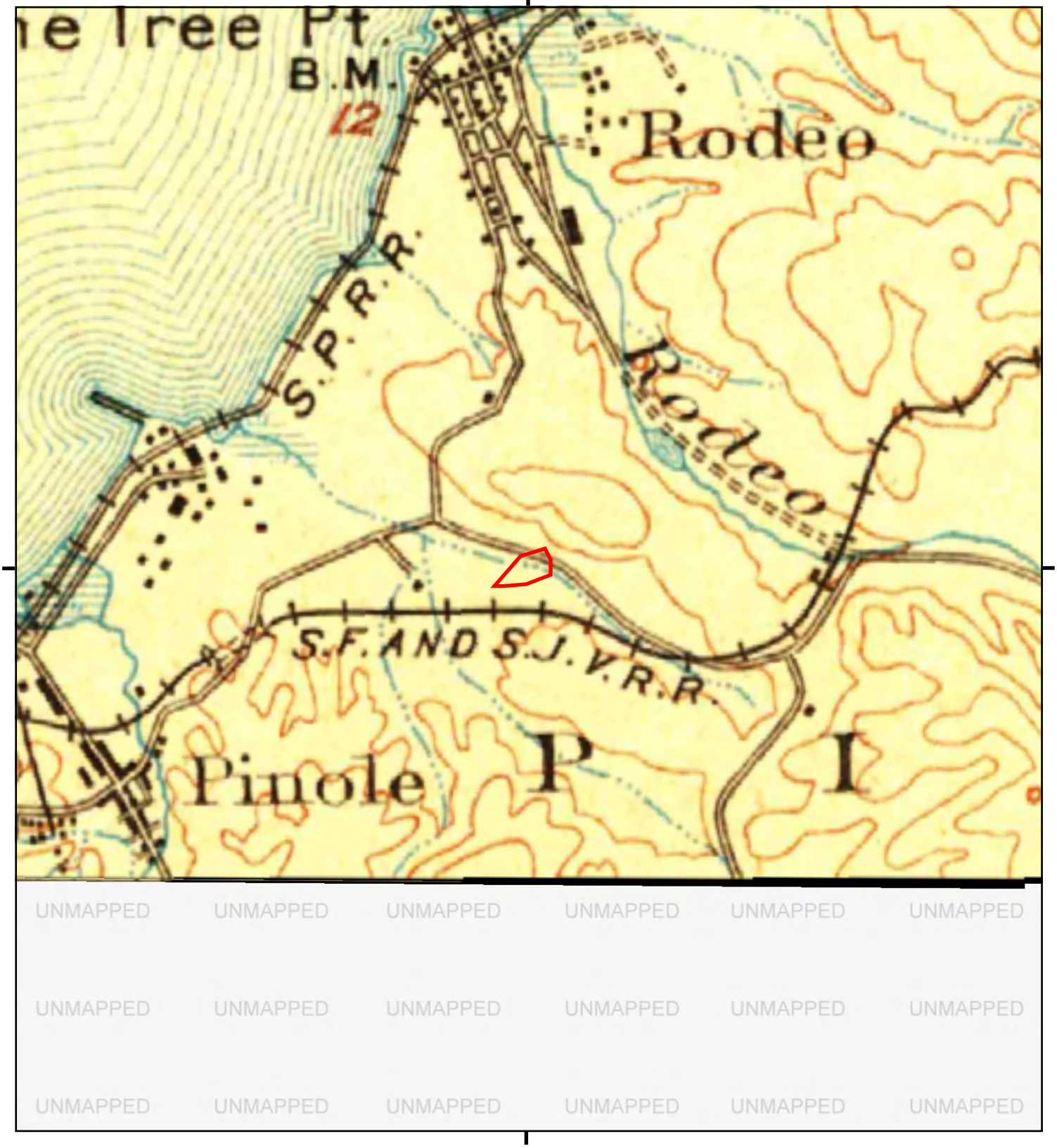
0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

TP, MARE ISLAND, 1914, 15-minute

SITE NAME: Hercules Hotel Complex
ADDRESS: Hyw 80 East and Hyw 4 To Martinez
Hercules, CA 94547
CLIENT: Ground Zone

N



This report includes information from the following map sheet(s).

0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

TP, Napa, 1902, 30-minute

SITE NAME: Hercules Hotel Complex
ADDRESS: Hyw 80 East and Hyw 4 To Martinez
Hercules, CA 94547
CLIENT: Ground Zone

N