DRAFT ENVIRONMENTAL IMPACT REPORT FOR THE TORREY CREST RESIDENTIAL SUBDIVISION PROJECT

VOLUME II - PART 2

SCH NO. 2022050126

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VOLUME II: APPENDICES TO THE ENVIRONMENTAL IMPACT REPORT

PART 1

Appendix A-1 **Notice of Preparation / Public Comments Received**

Appendix A-2 **Citizen Participation Program Report**

Appendix B **Community Character Study**
Prepared by CityPlace, February 2024

Appendix C **Biological Resources**

- **C-1** **Biological Assessment Letter Report**
  Prepared by BLUE Consulting Group, February 26, 2024
- **C-2** **Tree Survey**
  Prepared by Wisniewski & Associates, February 26, 2024
- **C-3** **Current Condition Tree Report**
  Prepared by Wisniewski & Associates, November 20, 2023

PART 2

Appendix D **Cultural Resources**

- **D-1** **Cultural Resources Study**
  Prepared by Cogstone Resource Management, Sept. 2022
- **D-2** **Assembly Bill 52 Consultation**
  Prepared by City of Encinitas

Appendix E **Geotechnical Investigations**

- **E-1** **Limited Geotechnical Report**
  Prepared by GEOCON, May 5, 2022
- **E-2** **Off-Site Descending Slope Consultation**
  Prepared by GEOCON, June 28, 2023

Appendix G **Preliminary Hydrology Report**
Prepared by Pasco Laret Suiter & Associates, February 2024

Appendix H-1 **Stormwater Intake Form & Priority Development Project Stormwater Quality Management Plan**
Prepared by Pasco Laret Suiter & Associates, February 26, 2024

Appendix H-2 **Storm Water Management Investigation**
Prepared by GEOCON, March 21, 2021

VOLUME II: APPENDICES TO THE ENVIRONMENTAL IMPACT REPORT

PART 3

Appendix F-1 **Phase I and Phase II Environmental Site Assessment**
Prepared by GEOCON, March 15, 2021

Appendix F-2 **Soil Remediation Plan/Community Health and Safety Plan**
Prepared by GEOCON, October 26, 2021

Appendix F-3 **County of San Diego Approval of Soil Remediation Plan/Community Health and Safety Plan**
Approved by County of San Diego, February 15, 2022

PART 4

Appendix I **Noise Study**
Prepared by Birdseye Planning Group, July 2021

Appendix J **Transportation Reports**

- **J-1** **Local Transportation Analysis**
  Prepared by LOS Engineering, October 9, 2023
- **J-2** **Vehicle Miles Traveled Analysis**
  Prepared by LOS Engineering, October 9, 2023

Appendix K-1 **Service Availability Letters**

- **K-1A** **Encinitas Fire Department**
- **K-1B** **Cardiff Sanitary District**
- **K-1C** **San Dieguito Water District**
- **K-1D** **Encinitas Union School District**
- **K-1E** **San Dieguito Union High School District**
- **K-1F** **EDCO**

Appendix K-2 **Hydraulic Modeling, San Dieguito Water District's Potable Water System**
Prepared by Dudek, September 21, 2022

Appendix L **Torrey Crest Schematic Building Design Set**
Prepared by JMZK Partners, February 26, 2024

Appendix M **Air Quality Report**
Prepared by Birdseye Planning Group, March 2022

Appendix N **Landscape Plan Sheets**
GMP Landscape Architect & Planning, February 26, 2024

Appendix O **Record of Survey**

Appendix P **Civil Plans**
Pasco Laret Suiter & Associates, February 26, 2024

D-1

Cultural Resources Assessment Report

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cogstone
PALEONTOLOGY - ARCHAEOLOGY - HISTORY

CULTURAL RESOURCES ASSESSMENT REPORT FOR THE MELBA ROAD AND ISLAND VIEW LANE RESIDENTIAL PROJECT, CITY OF ENCINITAS, SAN DIEGO COUNTY, CALIFORNIA

Prepared for:
BRG Consulting

Authors:
Sandy Duarte, BA, Shannon Lopez, MA

Principal Investigator for Archaeology:
Teresa Terry, M.A, RPA

Principal Investigator for Architectural History:
Shannon Lopez, MA

Date
Revised September 2022

Cogstone Project Number: 5297
Type of Study: Cultural Resources Assessment
Sites: None
USGS Quadrangle: Encinitas 7.5'
Area: 6.646 acres
Key Words: Cultural Resources Assessment, City of Encinitas, San Diego County, Kumeyaay/Ipai/Diegueño territory

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Federal Certifications WOSB, EDWOSB, SDB
State Certifications DBE, WBE, SBE, UDBE

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

SUMMARY OF FINDINGS

This study was conducted to determine the potential impacts to cultural resources during the Melba Road and Island View Lane Residential Project, City of Encinitas (City), San Diego County, California (Project). The City of Encinitas is the lead agency under the California Environmental Quality Act (CEQA). Due to the proximity of the Project to the coast, the Project requires a Coastal Developmental Permit from the California Coastal Commission (CCC).

The Project area is located on 6.646 acres within Assessor Parcel Numbers (APN) and their corresponding official addresses:

APN 259-180-09-00 (1240 Melba Road)
APN 259-180-10-00 (1240 Melba Road)
APN 159-180-16-00 (1220 Melba Road)
APN 259-180-33-00 (1230 Melba Road)
APN 259-181-02-00 (No assigned address)
APN 259-181-03-00 (1190 Island View Lane)
APN 259-181-04-00 (No assigned address)

The proposed Project area consists of six residences and various other structures that were constructed between 1938 and 1978. The existing structures will be demolished to facilitate construction of 31 lots with 30 single-family homes and one retention basin along with a new private road and associated utility, drainage, and stormwater treatment improvements.

Cogstone Resource Management, Inc. (Cogstone) requested a search of the California Historic Resources Information System (CHRIS) from the South Coast Information Center (SCIC), located at the campus of San Diego State University, on June 10, 2021, that included the Project area and a half-mile radius. Results of the records search indicated that two previous studies have been completed within the Project area while an additional 24 studies have been completed previously within a half-mile radius. The records search indicated that there are no previously recorded cultural resources within the Project area, but a total of four cultural resources have been previously documented within the half-mile radius. A Sacred Lands File search requested from the Native American Heritage Commission (NAHC) on June 10, 2021, indicated that they do not have a record of sacred lands or resources listed within the Project area. Cogstone assisted the City with Native American consultation. The Jamul Indian Village, Rincon Band of Luiseño Indians, San Pasqual Band of Mission Indians, and the Viejas Band of Kumeyaay Indians have determined that the Project area is within their Traditional Use Area (TUA) and have requested formal government-to-government consultation.

On July 1, 2021, Cogstone conducted a pedestrian and built environment survey of the Project area. No prehistoric cultural resources were observed during the survey. Fifteen built environment resources are located within the Project area comprising of thirteen historic-aged buildings and two roads, and Department of Parks and Recreation (DPR) 523 forms were prepared (Appendix D). The historic built environment resources were evaluated for listing on the National Register of Historic Places and the California Register of Historical Resources and are recommended not eligible. Demolition and renovation of the existing structures does not require any mitigation.

No further cultural resources work is recommended. In the event of an unanticipated discovery, all work must be suspended within 50 feet of the find until a qualified archaeologist evaluates it. In the unlikely event that human remains are encountered during project development, all work must cease near the find immediately.

In accordance with California Health and Safety Code Section 7050.5, the County Coroner must be notified if potentially human bone is discovered. The Coroner will then determine within two working days of being notified if the remains are subject to his or her authority. If the Coroner recognizes the remains to be Native American, he or she shall contact the NAHC by phone within 24 hours, in accordance with Public Resources Code Section 5097.98. The NAHC will then designate a Most Likely Descendant (MLD) with respect to the human remains. The MLD then has the opportunity to recommend to the property owner, or the person responsible for the excavation work, means for treating or disposing the human remains and associated grave goods with appropriate dignity. Work may not resume in the vicinity of the find until all requirements of the health and safety code have been met.

INTRODUCTION

PURPOSE OF STUDY

This study was conducted to determine the potential impacts to cultural resources during the Melba Road and Island View Lane Residential Project, City of Encinitas (City), San Diego County, California (Project; Figure 1). The City of Encinitas is the lead agency under the California Environmental Quality Act (CEQA). Due to the proximity of the Project to the coast, the Project requires a Coastal Developmental Permit from the California Coastal Commission (CCC).

PROJECT LOCATION AND DESCRIPTION

The Project area is located on 6.646 acres within Assessor Parcel Numbers (APN) and their corresponding official addresses:

APN 259-180-09-00 (1240 Melba Road)
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APN 259-181-03-00 (1190 Island View Lane)
APN 259-181-04-00 (No assigned address)

Encinitas is surrounded by the cities of Carlsbad to the north and Solana Beach to the south, the unincorporated community of Olivenhain to the east, and the Pacific Ocean to the west. The Project area is located north of Melba Road, south of Oak Crest Middle School, east of Balour Drive, and west of Crest Drive within Section 14 of Township 13 South, Range 4 West on the Encinitas USGS 7.5-minute topographic quadrangle map, San Bernardino Baseline and Meridian (Figures 2 and 3).

The proposed Project area currently consists of six residences and various other structures constructed between 1938 and 1978. The existing structures will be demolished to facilitate construction of 31 lots with 30 single-family homes and one retention basin along with a new private road and associated utility, drainage, and stormwater treatment improvements.

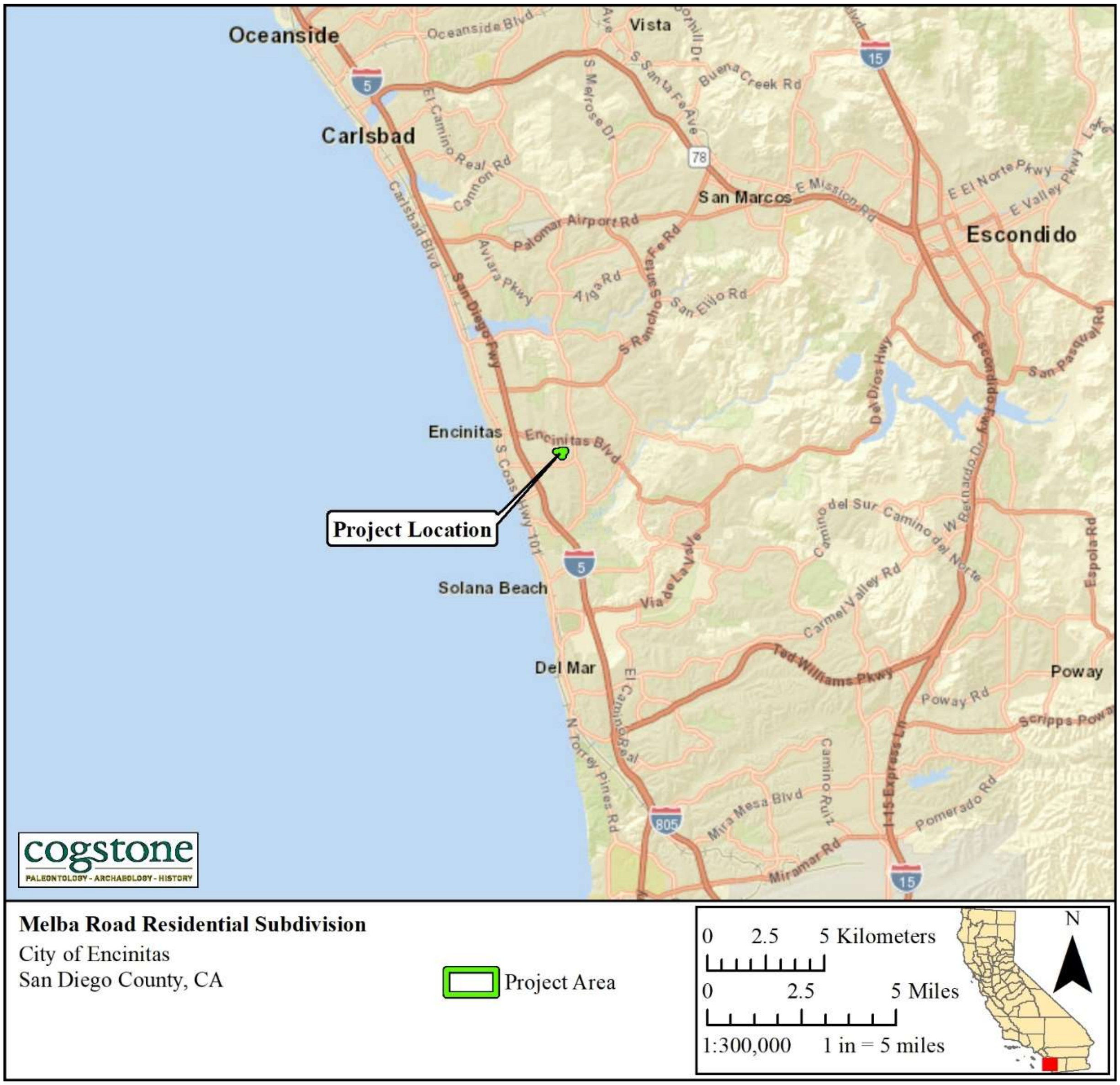

Figure 1. Project vicinity map

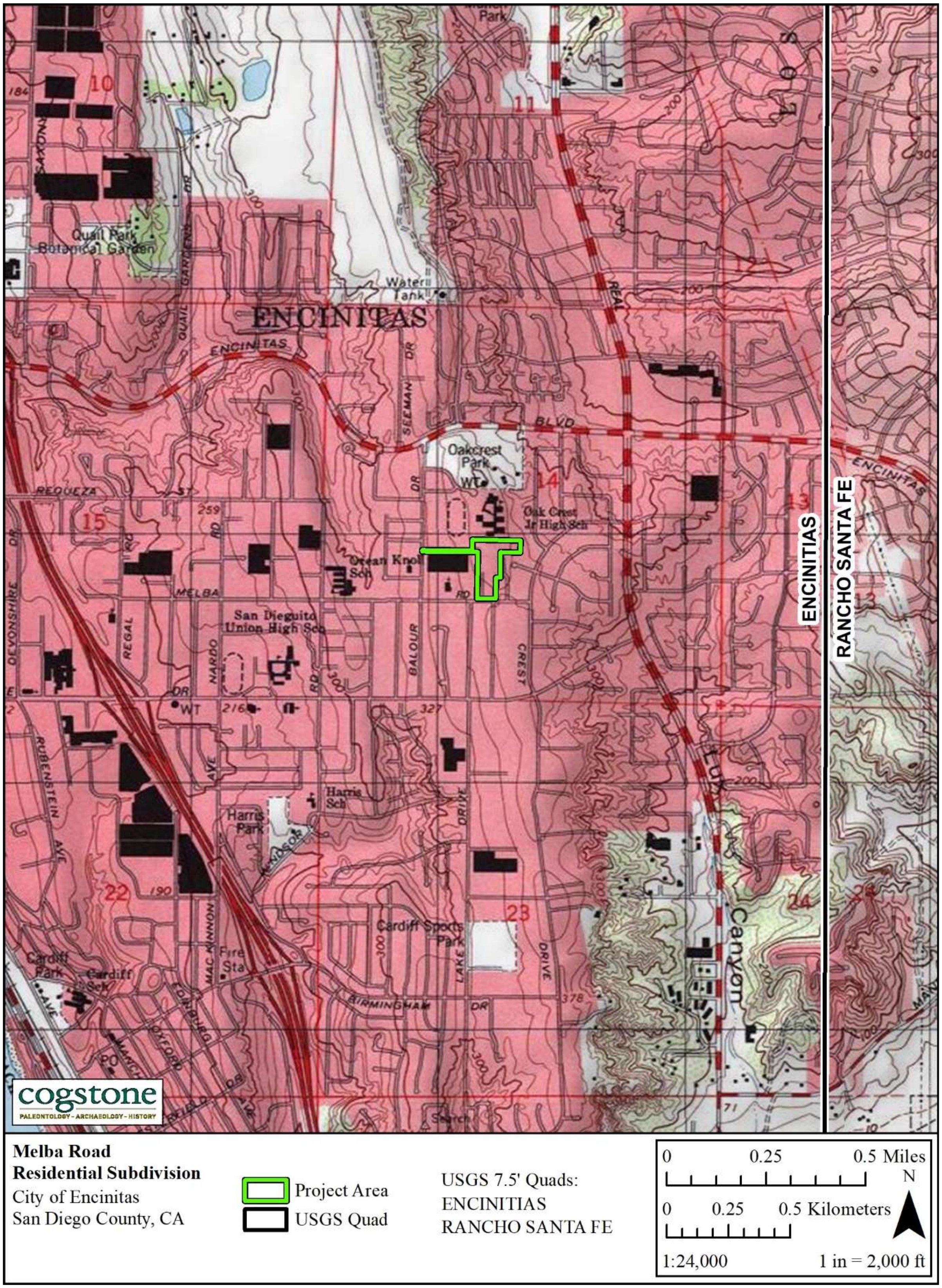

Figure 2. Project location

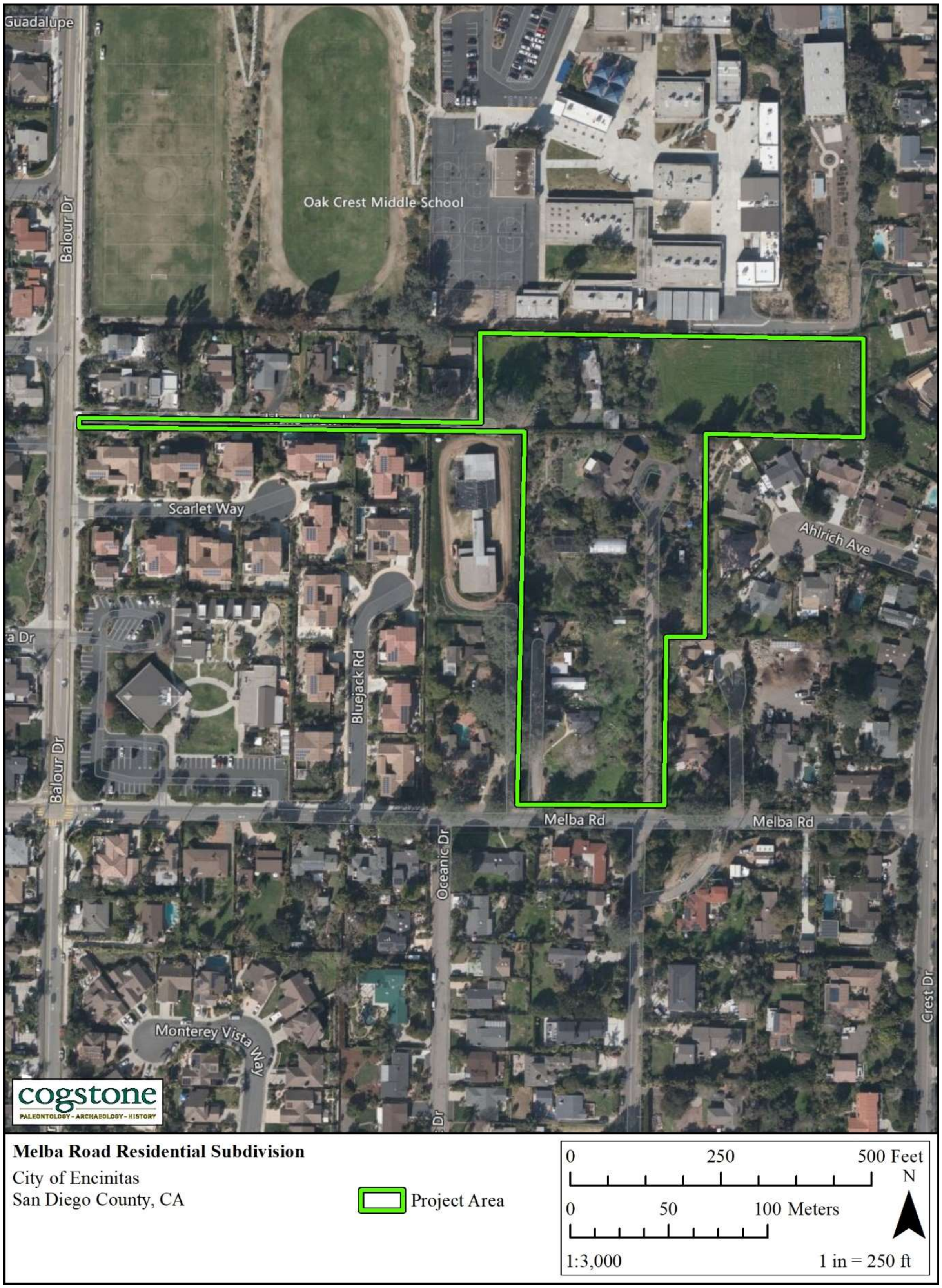

Figure 3. Project aerial map

PROJECT PERSONNEL

Cogstone Resource Management, Inc. (Cogstone) conducted the cultural resources study. Resumes of key personnel are provided in Appendix A.

- Desireé Martinez served as the QA/QC for this Project. Ms. Martinez has an M.A. in Anthropology (Archaeology) from Harvard University, Cambridge and has over 24 years of experience in southern California archaeology.

- Teresa Terry served as the Task Manager and Principal Investigator for Archaeology, wrote sections and reviewed this report. Ms. Terry has an M.A. in Anthropology (Archaeology) from California State University (CSU), Fullerton and has over 18 years of experience in southern California archaeology.

- Shannon Lopez conducted outreach to the local historical societies and drafted the historic sections of this report. Ms. Lopez has an M.A. in History (emphasis in Architecture) from CSU, Fullerton and over four years of experience in architectural history research and reporting.

- Sandy Duarte completed the additional sources consulted section and co-authored this report. Mrs. Duarte holds a B.A. in Anthropology from the University of California (UC) Santa Barbara, and has more than 18 years of experience in California archaeology.

- Logan Freeberg conducted the archaeological and paleontological record searches and prepared the maps for the report. Mr. Freeberg has a certificate in Geographic Information Systems (GIS) from CSU Fullerton and a B.A. in Anthropology from UC Santa Barbara and has more than 19 years of experience in southern California archaeology.

REGULATORY ENVIRONMENT

CALIFORNIA ENVIRONMENTAL QUALITY ACT

CEQA states that: It is the policy of the state that public agencies should not approve projects as proposed if there are feasible alternatives or feasible mitigation measures available which would substantially lessen the significant environmental effects of such projects, and that the procedures required are intended to assist public agencies in systematically identifying both the significant effects of proposed project and the feasible alternatives or feasible mitigation measures which will avoid or substantially lessen such significant effects.

CEQA declares that it is state policy to: "take all action necessary to provide the people of this state with...historic environmental qualities." It further states that public or private projects financed or approved by the state are subject to environmental review by the state. All such projects, unless entitled to an exemption, may proceed only after this requirement has been satisfied. CEQA requires detailed studies that analyze the environmental effects of a proposed project. In the event that a project is determined to have a potential significant environmental effect, the act requires that alternative plans and mitigation measures be considered.

TRIBAL CULTURAL RESOURCES

As of 2015, CEQA established that "[a] project with an effect that may cause a substantial adverse change in the significance of a tribal cultural resource is a project that may have a significant effect on the environment" (Pub. Resources Code, § 21084.2). In order to be considered a "tribal cultural resource," a resource must be either:

(1) listed, or determined to be eligible for listing, on the national, state, or local register of historic resources, or

(2) a resource that the lead agency chooses, in its discretion, to treat as a tribal cultural resource.

To help determine whether a project may have such an effect, the lead agency must consult with any California Native American tribe that requests consultation and is traditionally and culturally affiliated with the geographic area of a proposed project. If a lead agency determines that a project may cause a substantial adverse change to tribal cultural resources, the lead agency must consider measures to mitigate that impact. Public Resources Code §20184.3 (b)(2) provides examples of mitigation measures that lead agencies may consider avoiding or minimize impacts to tribal cultural resources.

PUBLIC RESOURCES CODE

Section 5097.5: No person shall knowingly and willfully excavate upon, or remove, destroy, injure or deface any historic or prehistoric ruins, burial grounds, archaeological or vertebrate paleontological site, including fossilized footprints, inscriptions made by human agency, or any other archaeological, paleontological or historical feature, situated on public lands (lands under state, county, city, district or public authority jurisdiction, or the jurisdiction of a public corporation), except with the express permission of the public agency having jurisdiction over such lands. Violation of this section is a misdemeanor. As used in this section, "public lands" means lands owned by, or under the jurisdiction of, the state, or any city, county, district, authority, or public corporation, or any agency thereof.

CALIFORNIA REGISTER OF HISTORICAL RESOURCES

The California Register of Historical Resources (CRHR) is a listing of all properties considered to be significant historical resources in the state. The California Register includes all properties listed or determined eligible for listing on the National Register, including properties evaluated under Section 106, and State Historical Landmarks No. 770 and above. The California Register statute specifically provides that historical resources listed, determined eligible for listing on the California Register by the State Historical Resources Commission, or resources that meet the California Register criteria are resources which must be given consideration under CEQA (see above). Other resources, such as resources listed on local registers of historic resources or in local surveys, may be listed if they are determined by the State Historic Resources Commission to be significant in accordance with criteria and procedures to be adopted by the Commission and are nominated; their listing in the California Register is not automatic.

Resources eligible for listing include buildings, sites, structures, objects, or historic districts that retain historical integrity and are historically significant at the local, state or national level under one or more of the following four criteria:

1) It is associated with events that have made a significant contribution to the broad patterns of local or regional history, or the cultural heritage of California or the United States;
2) It is associated with the lives of persons important to local, California, or national history;
3) It embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of a master or possesses high artistic values; or
4) It has yielded, or has the potential to yield, information important to the prehistory or history of the local area, California, or the nation.

In addition to having significance, resources must have integrity for the period of significance. The period of significance is the date or span of time within which significant events transpired, or significant individuals made their important contributions. Integrity is the authenticity of a historical resource's physical identity as evidenced by the survival of characteristics or historic fabric that existed during the resource's period of significance.

Alterations to a resource or changes in its use over time may have historical, cultural, or architectural significance. Simply, resources must retain enough of their historic character or appearance to be recognizable as historical resources and to convey the reasons for their significance. A resource that has lost its historic character or appearance may still have sufficient integrity for the California Register, if, under Criterion 4, it maintains the potential to yield significant scientific or historical information or specific data.

NATIVE AMERICAN HUMAN REMAINS

Sites that may contain human remains important to Native Americans must be identified and treated in a sensitive manner, consistent with state law (i.e., Health and Safety Code §7050.5 and Public Resources Code §5097.98).

In the event that human remains are encountered during project development and in accordance with the Health and Safety Code Section 7050.5, the County Coroner must be notified if potentially human bone is discovered. The Coroner will then determine within two working days of being notified if the remains are subject to his or her authority. If the Coroner recognizes the remains to be Native American, he or she shall contact the Native American Heritage Commission (NAHC) by phone within 24 hours, in accordance with Public Resources Code Section 5097.98. The NAHC will then designate a Most Likely Descendant (MLD) with respect to the human remains. The MLD then has the opportunity to recommend to the property owner or the person responsible for the excavation work means for treating or disposing, with appropriate dignity, the human remains and associated grave goods.

CALIFORNIA ADMINISTRATIVE CODE, TITLE 14, SECTION 4307

This section states that “No person shall remove, injure, deface or destroy any object of paleontological, archeological or historical interest or value.”

CITY OF ENCINITAS GENERAL PLAN

The Resource Management Element addresses the importance of cultural resource preservation and lists the following goal and policies.

> **Goal 7: The City will make every effort to ensure significant scientific and cultural resources in the Planning Area are preserved for future generations.**
>
> Policy 7.1: Require that paleontological, historical and archaeological resources in the planning area are documented, preserved or salvaged if threatened by new development.
>
> Policy 7.2: Conduct a survey to identify historic structures and archaeological/cultural sites throughout the community and ensure that every action is taken to ensure their preservation.
>
> Policy 7.3: The City will pursue the development of a historic resources program to assist in

the identification, preservation, and restoration of those buildings, structures, and places within the City that have historic significance.

PUBLIC RESOURCES CODE
Section 30.34.050: Cultural/Natural Resources Overlay Zone, of the City's Municipal Code (Chapter 30.34, Special Purpose Overlay Zones) includes regulations that apply to areas within the Special Study Overlay Zone where site-specific analysis indicate the presence of sensitive cultural, historic, and biological resources, including sensitive habitats. For parcels containing archaeological or historic sites, the Municipal Code requires a site resource survey and impact analysis to determine the significance of, and possible mitigation for, sensitive resources.

BACKGROUND

ENVIRONMENTAL SETTING

The Project area is in the Old Encinitas neighborhood in the City of Encinitas within the County of San Diego and is approximately 1.5 miles east of the Pacific Ocean and 2 miles southeast of Escondido Creek. The Project area is entirely developed and currently consists of six residences constructed between 1938 and 1978.

The Project is located within the San Diego area of the Peninsular Ranges Geomorphic Province. The Peninsular Ranges are the result of the Pacific Plate and the North American Plate grinding past each other and forming north-south trending mountain ranges where the two plates collide along the San Andreas Fault Zone. The Peninsular Range Province extends from Mount San Jacinto in the north, to Baja California in the south. The City of Encinitas is in the Coastal Plain Region of the Peninsular Range Province. This region is bounded on the west by the Pacific Ocean and on the east by foothills of the Peninsular Ranges.

Today's Mediterranean-like climate is characterized by warm, dry summers and cool, moist winters, with rainfall predominantly falling between November and May, but climatic conditions in this region varied substantially during prehistoric times. Paleoclimatic data based on pollen from coastal sites indicate that there was a dramatic increase in both annual temperature and drought during the Mid-Holocene (between 8000 and 7000 ago), yet during this time the San Diego area experienced a mild, stable climate. Then during the Neoglacial/Neopluvial period (2000 to 4000 years ago), the San Diego coast experienced a more variable climate with frequent El Nino events and droughts causing a decline in coastal resources. Climate variability remained through the Medieval Climatic Anomaly (700 to 1,300 years ago) and the Little Ice Age (600 to 150 years ago) as both were represented by area specific and temporary sudden fluctuations in temperatures (Jones and Klar 2007). The Project area is within low-lying land, close to the ocean and to creeks, both of which would have offered people varied food and other resources in the past.

PREHISTORIC SETTING

Prehistoric cultural chronology for the San Diego region after approximately 12,000 years ago is divided into three broad temporal periods: Paleoindian (San Dieguito Complex), Archaic (La Jolla Complex/Encinitas Tradition), and Late Prehistoric. The sequence is based on syntheses by Rogers (1939, 1945, 1966); Wallace (1955, 1978); Moriarty (1966); Warren (1967, 1968) and True (1980), among others.

The three prehistoric periods defined for the prehistoric cultural chronology of the San Diego area are as follows:

- San Dieguito Complex. This period dates from 9,030 to 8,000 years B.P. Sites from this period have been identified in the past as part of the Western Lithic Co-Tradition or part of the Western Pluvial Lakes Tradition (Davis et al. 1969; Bedwell 1970). Occupants of most sites appear to have made use of coastal and inland resources. Artifacts include biface points and knives, scrapers, cobble tools, milling tools, and bone tools, used to process plants, shellfish, fish, bird, and small and large mammals.
- La Jolla Complex/Encinitas Tradition. This period dates from 8,600 to 1,300 years B.P. The Pauma Complex, located further inland, is similar to the La Jolla Complex but lacks shellfish (True 1980). Doughnut stones, discoidals, stone balls, plummets, Elko-eared points and stone, shell, and bone beads appear in this period and shellfish gathering decreases. Hunting tools initially consisted of the atlatl and dart but quickly advanced to bow and arrow. Most sites were in coastal areas.
- Late Prehistoric Cultures. The period dates from 1,300 years B.P. to historic contact. The cultures are divided into two groups: “San Luis Rey” (Shoshonean) in northern San Diego County and “Kumeyaay” (Yuman) in southern San Diego County. Sites from this period include ceramics although Cuyamaca sites generally associated with Yuman III pattern have more variety of type such as pipes and effigies. While use of other traditional tools continues, marked differences between the two groups include Cuyamaca clay-lined hearths and cemeteries separate from living areas.

ETHNOGRAPHY

The Project area is located within the historical territory of the Kumeyaay, which may have extended as far north as the San Luis Rey River. The Kumeyaay were historically referred to as the Diegueño after Mission San Diego de Alcalá was established. The Takic-speaking Luiseño and Cahuilla lived to the north, and other inhabitants who spoke a variety of distinct languages belonging to the Yuman language family were located to the east and to the south (Loumala 1978). The Kumeyaay can be divided into two regional groups separated by the San Diego River. The northern group is known as the Ipai and the southern group is known as the Tipai. The Project area lies within the traditional territory of the Ipai group of the Kumeyaay people just south of the traditional territory of the Luiseno (Figure 4).

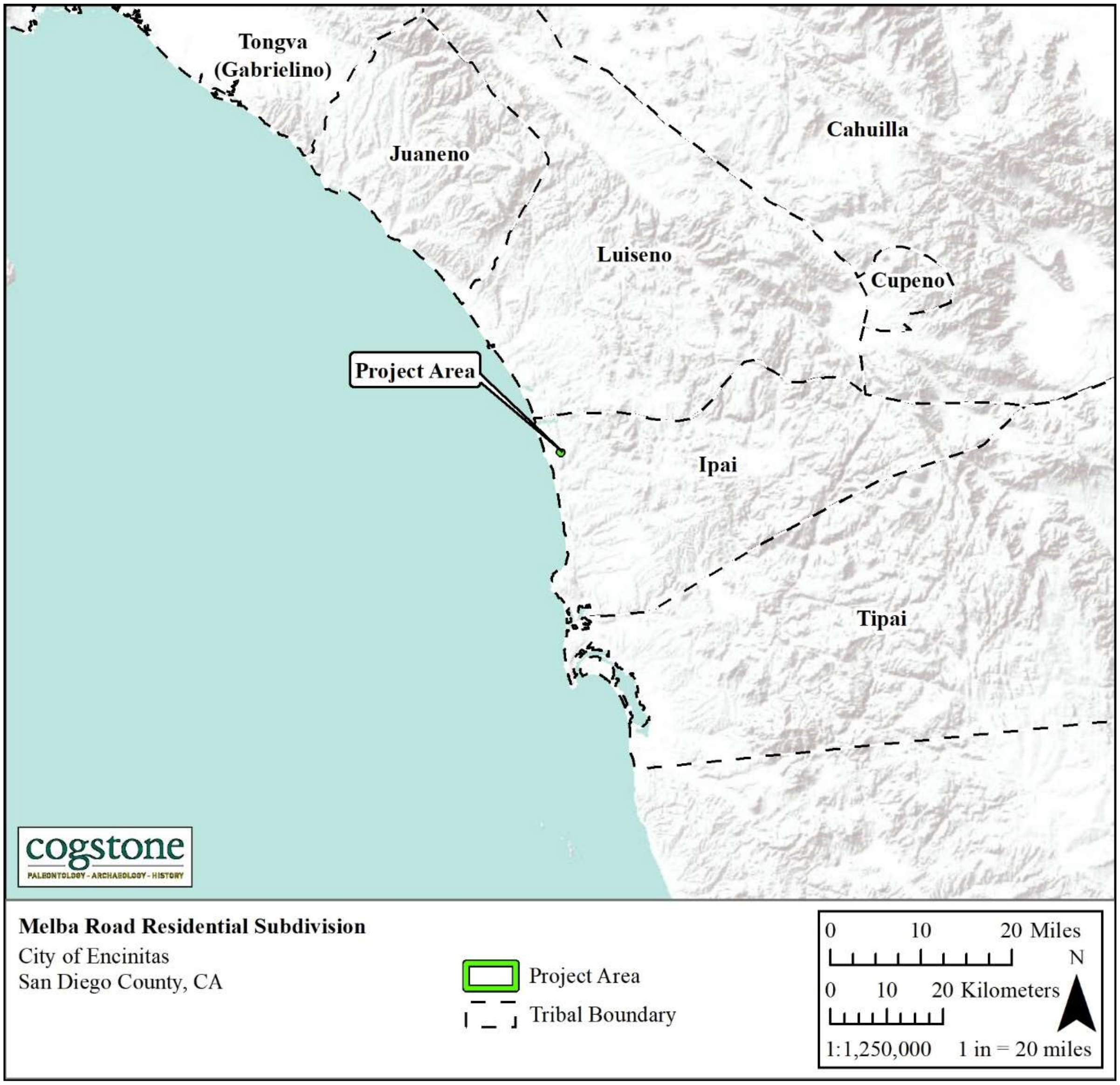

Figure 4. Native American traditional tribal territories

The Kumeyaay were organized into autonomous bands that usually occupied a main village and several smaller habitation sites. One of the main villages occupied by the Kumeyaay was the village of Otay, located on the north of and adjacent to the Otay River and south of the Project. Communities disbanded seasonally and established smaller groups of between 200 and 1,000 people in order to gather, process and store resources. Subgroups spoke individual dialects and often intermarried (Royo 1999).

As typical California seasonal hunters and gatherers, the Kumeyaay diet consisted mainly of plant foods, especially acorns, but also various other seeds and bulbs. This was supplemented by small game, including mammals and reptiles, while coastal inhabitants had access to fish, shellfish and sea mammals (Loumala 1978). Plants were also utilized for medicinal and ceremonial, as well as utilitarian purposes. The medicinal use of plants covered a wide range of ailments, including European-introduced diseases such as syphilis, smallpox, and tuberculosis (Gallegos et al. 1998). Ceremonial usage included tattoos, girls' puberty ceremonies, and rock art. A variety of objects were manufactured with plant materials, including houses, granaries, baskets, nets, adhesives, clothing, and soaps (Gallegos et al. 1998). The Kumeyaay maintained extensive trade networks as far east as the Colorado River, moving acorns, dried seafood, and seashells eastward and bringing salt, seeds, and mesquite beans west (Loumala 1978).

The mission system, beginning with Mission San Diego Alcala (1769), severely disrupted Kumeyaay socio-political structure and led to a population decrease, while the later reservation system (1875) further fragmented Kumeyaay groups. Today's Kumeyaay are represented by the Barona Group of the Capitan Grande, the Campo Band of Diegueno Mission Indiana, the Ewiiaapaayp Band of Kumeyaay Indiana, the Iipay Nation of anta Ysabel, the Inaja-Cosmit Band of Indians, the Jamul Indian Village, the Kwaaymii Laguna Band of Mission Indians, the La Posta Band of Diegueno Mission Indiana, and the La Posta Band of Diegueno Mission Indians (NAHC 2021).

HISTORIC SETTING

EXPLORATION

The earliest European explorations of the San Diego area began in 1542, when Juan Rodríguez Cabrillo and his party landed near Point Loma. Cabrillo had been tasked with the exploration of the Pacific Coast by Antonio de Mendoza, Viceroy of New Spain (currently Mexico). Interaction with the Kumeyaay was initiated, but overall little attention was given to California until the 1700s (NPS 2002).

Spanish settlement of the San Diego area began in 1769 when the Spanish developed plans to build four presidios (forts), and three towns along the California coastline stretching from San Diego northward to Monterey. The town sites, established between 1777 and 1797, included present-day Los Angeles, San Jose, and a small town near Santa Cruz named Branciforte. Presidios were established at San Diego, Santa Barbara, Monterey, and San Francisco. Under Spain, the "borderlands were colonized as defenses against the intrusion of the English, French, Dutch, and Russians, with the Manila trade an important item for protection in California. They were held by two typical institutions: the mission and the presidio" (Bolton 1913; 1921; 1930 as cited in Aviña 1976).

Mission San Diego Alcalá was also founded in 1769, the first of twenty-one Franciscan missions built along the coast on the El Camino Real, from San Diego to Sonoma. The goals of the missions were trifold: they helped establish a Spanish presence on the west coast, allowed for a means to Christianize the native peoples, and served to exploit the native population as laborers. The missionaries, or padres, would essentially serve as a mayor, or head of the town. The Kumeyaay socio-political structure was severely disrupted by the Mission, especially those living closest to the grounds (Loumala 1978).

THE SPANISH (1776-1820) AND MEXICAN RANCHO ERA (1821-1847)

The arrival of the Spanish missionaries brought about prevailing changes for the Native Americans, including high mortality rates and social changes due to the introduction of European diseases and customs such as European farming methods (Dobyns 1983; Walker and Hudson 1989).

The Kumeyaay population decreased due to disease, revolts, and severe changes to their traditional ways of life, however the San Diego Mission was unique in that it allowed neophytes to move freely between the mission and traditional villages in order to hunt and gather food for the struggling mission. This allowed the Kumeyaay to experience a smaller population decline than Native Americans at other California missions. Those who did not return to the mission were hunted as criminals (Carrico 2008).

Mexico gained independence from Spain in 1821. In 1833, the Mission lands were secularized (Secularization Act of 1833), with much of the land being transferred to political appointees. Between 1840 and 1846, the Governors of California, Juan B. Alvarado, Manuel Micheltorena and Pio Pico, made a series of land grants, transferring Mission properties to private ownership (Cowan 1977; Ohles 1997). Ranches and farms were established throughout the greater San Diego area including Rancho Los Encinitos, of which the modern city of Encinitas originated. However, the current Project area is not located within any known land grant.

STATEHOOD

In 1846, the Mexican-American war broke out in part because of American excursions into California. In 1847, General Andrés Pico and John C. Frémont signed the Articles of Capitulation, ending hostilities between the United States and Mexico. The U.S. and Mexico signed the Treaty of Guadalupe Hidalgo, which resulted in Mexico ceding the lands of present-day California, New Mexico, and Texas to the U.S. for $15 million (Fogelson 1993:10). Within two years of the Treaty of Guadalupe Hidalgo, California applied for admission as a state.

SAN DIEGO COUNTY

The County of San Diego was established in 1850, the same year as the City of San Diego. A wharf was built by business partners William Heath Davis and Alonzo Horton shortly after the county was established, and the federal government built supply warehouses. After Davis lost his wealth in a fire, development in San Diego slowed. When Horton purchased 800 acres on the waterfront in 1867, New San Diego was established. The city population tripled over the next 20 years and reached 35,000 by the 1870s due to gold rushes, land booms and developments in transportation (San Diego History Center 2021a). A railroad connected the city to Waterman (renamed to Barstow) in 1885, but slow development resulted in a population decrease by 1890 to approximately 16,150 (San Diego History Center 2021b).

CITY OF ENCINITAS

There are five communities which make up the City of Encinitas: Olivenhain, Cardiff-by-the-Sea, Leucadia, Old Encinitas, and New Encinitas (originally called Green Valley). In 1986, the five communities joined together and officially incorporated as the City of Encinitas (Olivenhain Town Council n.d.). The following includes a brief history of all five communities.

The City of Encinitas is a coastal city located in San Diego County. Following the Mexican War of Independence, the land which would become Encinitas was granted to Andres Ybarra by then Governor Juan Alvarado in 1842. Ybarra constructed Rancho Las Encinitas ("Los Encinitas" meaning "little oaks") with the boundaries of the rancho extending from San Elijo Lagoon to Batiquitos Lagoon. Ybarra would file another claim for Rancho Las Encinitas in 1852 with the Public Land Commission following the cession of California to the United States as the result of the Mexican-American War. Ybarra's grant was patented on April 18, 1871 (Ayers 1886).

While the land grant was patented to Ybarra in 1871, Ybarra sold Rancho Las Encinitas to Joseph S. Mannass and Marcus Schiller in 1860 for 68¢ per acre. During this period of ownership, Mannass and Schiller converted Ybarra's adobe ranch house to a stage coach station for the Seeley-Write Stage Coash Line (Olivenhain Town Council n.d.) and would later be used as a station for the California Southern Railroad (MacMullen 1961). In 1880, following substantial financial difficulties, Mannass and Schiller were forced to foreclose on the property and sold the rancho to Frank and Warren Kimball for $1.18 per acre (Olivenhain Town Council n.d.). At the time of their purchase of Rancho Las Encinitas, the Kimball brothers already owned Rancho de la Nacion.

Olivehain

The Kimball brothers planned to sell the rancho to a group of homogenous immigrants to settle and form a colony. In 1884, they received an offer from Theodore Pinther of Denver, Colorado who wanted to establish a German colony in Southern California. After multiple letters back and forth, Pinther and the Kimballs finalized a deal for the purchase of Rancho Las Encinitas. On May 21, 1884, the colony was launched, and the board of directors chose the name Olivenhain, which is German for olive-grove. The land was subdivided, and parcels sold to colony members who planted fruit trees and vines. Population of the colony would peak at approximately 300 people; however, despite the outward appearance of success, a lack of dependable water sources and the revelation that Pinther accepted a commission for the sale of parcels led to a mass exodus of colonists and the eventual collapse and abolishment of the colony by 1897 (Olivenhain Town Council n.d.).

Cardiff-by-the-Sea

First settled by Scottish immigrant and Civil War veteran Hector Mackinnon, Mackinnon established a 600-acre homestead in 1875. The homestead was located on the north side of San Elijo Lagoon which was considered at the time to be worthless land. Despite such perceptions, Mackinnon successfully raised livestock and produced fruit jellies, milk, and butter. Following financial hardships in 1911, Mackinnon was forced to sell a portion of his ranch to developer Frank Cullen. Cullen began naming streets of his newly purchased land after British cities such as Liverpool, Manchester, and Birmingham. Cullen’s wife named the area Cardiff after the Welsh City. Cullen constructed a 200-foot pier and the Cardiff Mercantile Company following the style of Victorian English architecture (Holtzclaw and Welch 2006).

Leucadia

Located at the northern area of the City of Encinitas, the founding of Leucadia is estimated to have occurred several years before the founding of Old Encinitas. British spiritualists are said to be the first to settle in Leucadia ca. 1870. They named streets after Greek gods such as Vulcan Avenue and Diana Street. The name Leucadia was chosen as it means “sheltered paradise” in Greek. In the 1880s, Eucalyptus trees were planted along what is now Highway 101, many of which remain to this day. The residents of Leucadia are proud of their historic past and architecture with a common phrase being, “Keep Leucadia Funky” (Holtzclaw and Welch 2006).

New Encinitas (Green Valley)

Originally called Green Valley, New Encinitas was first settled by English immigrant F. Lucas Scott and his family in 1919. Their farm consisted of 350 acres known as Oakview Ranch (later known as Scott Valley) and was located just east of El Camino Real. A one-room schoolhouse was built in 1895 along El Camino Real between Olivenhain Roads and Levante. Presently, New Encinitas is a popular commercial district including multiple shopping centers, entertainment, and restaurants.

Old Encinitas

Old Encinitas includes the city’s historic downtown area which was founded in 1881 when a water tower was constructed near Cottonwood Creek to support the railroad. Encinitas was founded by Civil War veterans John Pitcher and Tom Rattan in 1883. That same year, a schoolhouse was erected but was later moved and transformed into a home that is currently used by the Encinitas Historical Society (Davis-Varela n.d.). The Project area is located within the southeast boundary of Old Encinitas.

Some of the oldest buildings in Encinitas are in Old Encinitas and date back to the late 1880s. However, it was in the 1920s that Old Encinitas experienced a major building boom. Also, during the 1920s and 1930s, Moonlight Beach became a popular location for locals to racehorses and picnic while bootleggers would use it as a drop-off point for illegal alcohol during the Prohibition Era. One of the most notable residents of Old Encinitas was Charlie Chaplin, who in 1925 purchased a home in the downtown area for his mother. His brother, Sidney Chaplin, also owned land at what is now South Coast Highway 101 and the remaining building is known as the Sidney Chaplin Building (Davis-Varela n.d.).

In comparison to its neighboring communities, Old Encinitas is not as “funky” as Leucadia or as upscale as New Encinitas. Rather it maintains a small-town feel while incorporating surf culture and values preservation of its downtown historic resources (Davis-Varela n.d.).

PROJECT AREA HISTORY

The earliest USGS topographic map (Oceanside, 1883, 1:62500) shows no built environment located within the Project area. Also, there are no notable changes within the Project area between 1893 and 1904 (Southern California Sheet No. 2, 1:250,000). As shown in the earliest known USDA Aerial Photograph of the Project area (1939), the majority of the Project area consists of fields and a homestead with several associated ancillary buildings. These buildings are within the boundaries of APNs 259-180-3300 (now 1230 Melba Road) and 259-180-1600 (now 1220 Melba Road).

According the Bureau of Land Management (BLM) General Land Office (GLO) William C. Mcfann submitted a homestead claim on Township 13S; Range 4W; north ½ of the southwest ¼ of Section 13 on September 30, 1891. Mcfann was born in Indiana in 1860, and according to the California Great Register (1860-1920) he was registered to vote in Encinitas in 1890 and 1894 (FamilySearch.org 2021). No further information was found.

By 1939, Melba Road and what is assumed to be Island View Lane are present at their current locations (FrameFinder 1939). By 1947, another homestead with one or two ancillary buildings appears within either APN 259-180-1000 or 259-180-0900 (NETROnline 1947). By 1953, the single-family residence at 1240 Melba Road is present and what is now Wotan Drive is realigned to much of its current configuration. In addition, a long rectangular building (assumed to be a single-family residence) and associated ancillary building can be seen in APNs 259-181-0400 and 259-181-0300 (both APNs are associated with 1190 Island View Lane; NETROnline 1953). By 1964, the single-family residence at APN 259-180-1600 (1220 Melba Road) is expanded to its current configuration (NETROnline 1964). During the 1960s, there was substantial growth of trees and dense vegetation within the Project area which obscures much of the built environment in future aerial photographs. By 1978, there are two large rectangular structures (possibly greenhouses) within APNs 259-180-0900 and 259-180-1000. Also, during this time, the fields appear to be used for agricultural purposes (NETROnline 1978). From the 1970s through the 1980s, the fields associated with 1190 Island View Lane (APNs 259-181-04-00, -03-00, and -02-00) are used for agricultural purposes (NETROnline 1978 and 1989). Between 1983 and 1984, another larger square structure (possibly a greenhouse) appears within APN 259-180-3300 (1230 Melba Road), and by 2002 the greenhouse located within APN 259-180-1000 can be seen (NETROnline 1983, 1984, 2002). By 2003, the greenhouse within APN 259-180-3300 can be seen at 1230 Melba Road while only one section of the ca. 1978 greenhouse within APN 259-180-0900 remains (NETROnline 2003).

The Project area consists of seven APNs: 259-180-1000, 259-180-16-00, 259-180-33-00, 259-180-09-00, 259-181-02-00, 259-181-03-00, and 259-181-04-00. Eight addresses have currently and historically been associated with these APNs.

- **795 Balour Drive (APN 259-181-03-00):** Historic address for 1190 Island View Lane. No longer a viable address.
- **1190 Island View Lane (APN 259-181-03-00)**: One residential home (vacant), two ancillary buildings, and associated fields plus APN includes the road Island View Lane. The residence is situated primarily on APN 259-181-04-00 but extends slightly into APN 259-181-03-00. APN 259-181-02-00, a former agricultural field, is also associated with this property.
- **1220 Melba Road (APN 259-180-16-00)**: One residential home and one ancillary building.
- **1230 Melba Road (APN 259-180-33-00)**: One residential home.
- **1230A Melba Road (APN 259-180-33-00)**: One residential home.
- **1234 Melba Road (APN 259-180-10-00)**: Multiple ancillary buildings consisting of two greenhouses and an administration building. The small greenhouse and administration building extends across both APN 259-180-09 and APN 259-180-33-00.
- **1240 Melba Road (APN 259-180-09-00)**: One residential home and multiple ancillary buildings. Property extends onto APN 259-180-10-00.
- **1240A Melba Road (APN 259-180-10-00):** One detached garage possibly used at one time as a residence and ancillary buildings associated with 1240 Melba Road.

For further information regarding the history of these properties, please see Appendix D.

RECORDS SEARCH

CALIFORNIA HISTORIC RESOURCES INFORMATION SYSTEM

Cogstone archaeologist, Logan Freeberg, requested a search of the California Historic Resources Inventory System (CHRIS) from the South Coast Information Center (SCIC) located at the campus of San Diego State University on June 10, 2021, that included the entire proposed Project area as well as a half mile radius. Results of the record search indicate that two previous studies have been completed within the Project area while an additional twenty-four studies have been completed within a half mile radius of the Project area (Table 1).

Table 1. Previous Studies within a half mile radius of the Project area

Report No. (SD-)	Author(s)	Title	Year	Distance (miles) from Project area
00262	Bull, Charles	An Archaeological Survey of Deerpark Encinitas	1976	0.25 - 0.5
00650	Carrico, Richard	Archaeological Salvage of Site 74-0-1	1974	0 - 0.25
00671	Gallegos, Dennis, Dayle Cheever, and Stephan Van Wormer	A Cultural Resource Overview for the Encinitas Planning Area, Encinitas, California	1986	Within
00727	Kaldenberg, Russell L.	Results of An Archaeological Impact Survey of the Encinitas Community Shopping Center near Encinitas, California	1974	0.25 - 0.5
00728	Kaldenberg, Russell L.	An Archaeological Resource Impact Report for Camino Park North	1975	0.25 - 0.5
01914	Hatley, M. Jay, and Charles Bull	Cultural Resources Impact Mitigation Report for Camino Park North and Deerpark Encinitas	1978	0.25 - 0.5
02133	County of San Diego	Draft Environmental Impact Report County of San Diego Santa Fe Drive Extension	1980	0 - 0.25
02672	Smith, Brian F.	An Archaeological Survey of the Encinitas Union School District Project, City of Encinitas	1991	0 - 0.25
03028	Smith, Brian	Results of an Archaeological Evaluation of Cultural Resources Within the Proposed Corridor for the San Elijo Water Reclamation System (Project No. C-06-4155-110)	1995	Within
03799	Hunt, Kevin P, and Brian F Smith	An Archaeological Survey of the Ahlrich Subdivision Project, Encinitas, California	2000	0 - 0.25
04152	Toups	Environmental Impact Statement Summerfield Encinitas Unit No. 4 T.M. 3057-R	1973	0 - 0.25
04893	Recon	Draft EIR for Camino Park North	1976	0.25 - 0.5
07272	Carrico, Richard	Summer Field Encinitas Units 6-9 Archaeological Survey	1973	0.25 - 0.5
07784	Pierson, Larry	An Archaeological Survey Report for the Walnut Creek Sanctuary Project, City of Encinitas	2001	0.25 - 0.5

Report No. (SD-)	Author(s)	Title	Year	Distance (miles) from Project area
08569	County of San Diego	Draft Environmental Impact Report Oakcrest Community Park Encinitas, California	1978	0 - 0.25
08580	Scientific Resource Surveys, Inc.	Cultural and Paleontological Resource Investigation of Lot 163, Map 10140 City of Encinitas, San Diego County, California	1988	0.25 - 0.5
09361	Byrd, Brian F., and Collin O'Neill	Archaeological Survey Report for the Phase I Archaeological Survey Along Interstate 5 San Diego County, Ca	2002	0.25 - 0.5
09566	Gallegos, Dennis R., Monica C. Guerrero, and Susan Bugby	Cultural Resource Study for the San Dieguito High School Academy Project Encinitas, California	2003	0.25 - 0.5
09673	Smith, Brian F., and Seth A. Rosenberg	An Archaeological Investigation for the Lake Drive Property Project, Encinitas, California	2005	0.25 - 0.5
09845	Carrico, Richard L.	Results of the Archaeological Test Excavation at the Las Compadres Site (W-578)	1976	0.25 - 0.5
09975	Carrico, Richard L.	Salvage Methods and Techniques for Los Compadres Plaza Archaeological Salvage	1976	0.25 - 0.5
12422	Ni Ghabhlain, Sinead, and Drew Pallette	A Cultural Resources Inventory for the Route Realignment of the Proposed Pf. Net / AT&T Fiber Optics Conduit Oceanside to San Diego, California	2001	0.25 - 0.5
12549	Bonner, Wayne, and Marnie Aislin-Kay	Cultural Resources Records Search and Site Visit Results for Verizon Wireless Candidate "Manchester/El Camino Real," 510 South El Camino Real, Encinitas, San Diego County, California	2008	0.25 - 0.5
14510	Davison, Kristina, and Mary Robbins-Wade	805 Bracero Road Property- Cultural Resources Survey (Affinis Job No. 2554)	2013	0.25 - 0.5
17585	Pigniolo, Andrew, and Carol Serr	Cultural Resource Survey Report for the Ocean Bluff Senior Facility, City of Encinitas, California	2017	0.25 - 0.5
18917	Price, Harry J.	Cultural Resources Survey for the El Camino Real Water Pipeline Restoration Project, Encinitas, California Agreement #19Agr026 (Recon Number 9421-2)	2019	0.25 - 0.5

No cultural resources have been recorded within the Project area, but a total of four cultural resources have been previously documented within the half mile radius of the Project area (Table 2). These consist of two prehistoric archaeological sites within one quarter mile of the Project area and two prehistoric archaeological sites with one quarter to one half mile of the Project area.

Table 2. Previously Recorded Cultural Resources within a half mile radius of the Project area

Primary No. (P-37)	Trinomial No. (CA-SDI)	Resource Type	Resource Description	Year Recorded	Distance from Project area	CRHR Status
004554	004554	Prehistoric Archaeological Site	2 loci of several hundred fire cracked cobbles, flakes, cores and hearthstones	1975	0.25 - 0.5	Unevaluated
004555	004555	Prehistoric Archaeological Site	Mano fragment, flakes, chione and pecten shell	1974	0 - 0.25	Unevaluated
004880	004880	Prehistoric Archaeological Site	Shell midden	1977	0.25 - 0.5	Unevaluated
013925	013902	Prehistoric Archaeological Site	Marine shell and lithic scatter with subsurface deposit	1995	0 - 0.25	Unevaluated

OTHER SOURCES

In addition to the SCIC records search, a variety of sources were consulted in June 2021 to obtain information regarding the cultural context of the Project area (Table 3). Sources included the National Register of Historic Places (NRHP), the California Register of Historic Resources (CRHR), Built Environment Resource Directory (BERD), California Historical Landmarks (CHL), California Points of Historical Interest (CPHI), and the Bureau of Land Management (BLM), General Land Office (GLO). Specific information about the Project area, obtained from historic-era maps and aerial photographs, is presented in the Project Area History section (Table 4).

Research regarding important historical information was obtained from (but not limited to):

- South Coast Information Center (SCIC)
- City of Encinitas Planning Department
- San Diego County Assessor’s Office
- San Diego County Recorder’s Office
- Encinitas Historical Society
- San Diego Botanic Garden
- USDA Historic Aerial Photographs
- USGS Topographic Maps
- Google Maps: Streetview
- FastPeopleSearch database
- FamilySearch.com
- OpenCorporates.com
- Veterans of Foreign Wars (VFW) website
- City of Encinitas Register of Historical Resources
- Local newspapers: *News-Pilot*, *Pasadena Independent*, *Time-Advocate, The Arroyo Grande Valley Herald Recorder* and *North County Times*.
- Bureau of Land Management (BLM) General Land Office Records
- San Diego County Assessor Residential Building Records
- First American Title Company records
- County of San Diego Grant Deed Records

Table 3. Additional Sources Consulted

Source	Results
National Register of Historic Places (NRHP; 1979-2002 & supplements)	Negative
Historic USGS Topographic Maps	Per the earliest USGS Topographic map, in 1893 (*Oceanside,* 1:62500), there is no built environment located within the Project area. There is no notable change within the Project area between 1893 and 1904 (*Southern California Sheet No. 2*, 1:250,000). The next USGS Topographic map of the Project area is dated 1948 (*Encinitas*, 1:24,000). There are four built resources within the Project area during this time. Melba Road and Island View Lane are present in their current locations and configurations. By 1968 (*Encinitas* 1:24,000), Wotan Drive and a secondary access road are present (the secondary access road is located adjacent to the west side of the residences at 1230 Melba Road and 1220 Melba Road).
Historic US Department of Agriculture Aerial Photographs	Per the earliest known USDA Aerial Photograph of the Project area, in 1939, most of the Project area consists of fields and a homestead with several associated ancillary buildings. These buildings are within the boundaries of APNs 259-180-3300 (now 1230 Melba Road) and 259-180-1600 (now 1220 Melba Road). What is now Melba Road is present at its current location. What is assumed to be Island View Lane is present in its current location; however, it appears unpaved (FrameFinder 1939). By 1947, another homestead with one or two ancillary buildings appears within either APN 259-180-1000 or 259-180-0900 (NETROnline 1947). By 1953, the single-family residence at 1240 Melba Road is present and what is now Wotan Drive is realigned to much of its current configuration. In addition, a long rectangular building (assumed to be a single-family residence) and associated ancillary building are present in their current location and configurations in APNs 259-181-0400 and 259-181-0300 (both APNs are associated with 1190 Island View Lane; NETROnline 1953). By 1964, the single-family residence at APN 259-180-1600 (1220 Melba Road) is expanded to its current configuration (NETROnline 1964). During the 1960s, there is a substantial growth of trees and dense vegetation within the Project area which obscures much of the built environment in future aerial photographs. By 1978, there are two large rectangular structures (possibly greenhouses) within APNs 259-180-0900 and 259-180-1000. Also, during this time, the fields appear to be used for agricultural purposes (NETROnline 1978). Between 1983 and 1984, another larger square structure (possibly a greenhouse) appears within APN 259-180-3300 (1230 Melba Road) (NETROnline 1983 and 1984). By ca. 2002, the greenhouse located within APN 259-180-1000 can be seen (NETROnline 2002). By 2003, the greenhouse within APN 259-180-3300 (1230 Melba Road) can be seen (NETROnline 2003). Only one section of the ca. 1978 greenhouse within APN 259-180-0900 (1240 Melba Road) remains.
California Register of Historical Resources (CRHR; 1992-2014)	Negative
Built Environment Resource Directory (BERD)	Negative

Source	Results
California Historical Landmarks (CHL; 1995 & supplements to 2014)	Negative
California Points of Historical Interest (CPHI; 1992 to 2014)	Negative
Local Historic Societies	On June 28 and July 9 2021, Cogstone sent a request for information to the Encinitas Historical Society (one by US mail and the other by email). On July 9, 2021, Cogstone Architectural Historian Ms. Lopez received a response from Carolyn R. Cope, President of the Encinitas Historical Society. Ms. Cope stated in her response, "The historical society knows of no significant 'cultural or paleontological' issues related to this Project area. It is all too common to see our lovely open spaces swallowed up by development. It is always an emotionally delicate issue as we slowly witness the open fields and greenhouses of our past disappear" (Appendix B).
Bureau of Land Management (BLM) General Land Office Records	Positive; See Table 4

Table 4. Bureau of Land Management (BLM), General Land Office (GLO)

Name	Accession No. s	Date	Authority	Township; Range; Section
Mcfann, William C.	CA0560__.258 CACAAA 083957	9/30/1891	Sale-Cash Entry (3 Stat. 566)	13S; 4W; S13 (Aliquots: N1/2SW1/4)

BACKGROUND HISTORY OF PROPERTY CONSTRUCTION AND OWNERSHIP

After a thorough review of primary and secondary sources the following information was found regarding each property.

1190 ISLAND VIEW LANE AND ROAD (APNS 259-181-03-00 AND 259-181-04-00)

This single-family residence first appears in the 1947 USDA historic aerial photograph with its building footprint nearly identical to present day except for the addition at the north elevation. According to a Residential Building Record from the San Diego County Assessor's office, the original address associated with this property was listed as 795 Balour Drive; it is not known when the address was changed to 1190 Island View Lane. The addition at the north elevation was constructed sometime between 1947 and 1953 (NETROnline 1947 and 1953). The secondary building located adjacent to the southeast corner of the main building was constructed between 1947 and 1953. A drawing from the San Diego County Assessor's office (year not known) labeled this ancillary building as "G" which can be assumed to mean "Garage." At an unknown point in time, the garage was converted to a multi-roomed building (remnants of a shower room are found in the north side of the building). At the northern end of the east elevation is a small concrete room addition (year of addition is not known). The secondary building located adjacent to the southeast corner of the building was constructed between 1947 and 1953 (NETROnline 1953 and 1953). Despite research efforts, a history of ownership could not be identified.

1220 MELBA ROAD (APN 259-180-16-00)

According to a 1939 USDA aerial photo, the main body of what appears to be the current residence at 1220 Melba Road is present in its current location; however, it was originally a rectangular, single gable roofed building (FrameFinder 1939). By 1947, the projection at the northern end of the west elevation has been added (NETROnline 1947). By 1953, the sunroom and the addition at the northeast corner of the residence has been added (NETROnline 1953). Also by 1953, the ancillary building (likely a detached garage) is present in its current location (see Appendix D: Continuation Sheet for 1220 Melba Road for associated photographs).

Anton Van Amersfoort (1881-1973)

A review of the Fidelity National Title preliminary report lists Mr. Amersfoort as the owner of APN 259-180-16-00 (1220 Melba Road) in 1938. Mr. Amersfoort was an immigrant from the Netherlands and later a prominent avocado grower in Encinitas (at least 11 acres of avocado groves by 1919). A San Diego Botanic Garden Museum Guide states that for 20 years, Mr. Amersfoort owned approximately one-half of the land (16.5 acres) which is now the San Diego Botanic Gardens. In addition, during his many years in Encinitas, Mr. Amersfoort claimed at least 16 various properties in the area, with one spanning approximately 80 acres. From 1923-1943, Mr. Amersfoort resided at the “Larabee House” (now part of the San Diego Botanic Gardens and approximately two miles northwest of 1220 Melba Road; Sandler 2019). In 1943, Mr. Amersfoort sold his house and the ranch land to Ruth Larabee who lived at the house until 1957. Following the sale of the house and property, Mr. Amersfoort and his wife, “lived up the street not far from the Larabees, and thus continued to be neighbors, along with the Paul Ecke and Donald Ingersoll families” (Ancestors, Family Search n.d.). Based on this history of residency, while Mr. Amersfoort once owned the property at 1220 Melba Road in 1938 it is highly unlikely that he ever resided at the house located there. With regards to the property’s landscape there is no evidence at present to prove that any plantings currently found therein are associated with Mr. Amersfoort. Inspection by a certified arborist may provide data whether the trees now present are historic in age but no documentation can be found which proves who planted them.

Ownership History of 1220 Melba Road

In May of 1951, the home at 1220 Melba Road was listed for sale by “the owner” (owner unknown) for $14,750. It was described as an 1-acre home with a view of both the ocean and mountains. It consisted of two twin bedrooms and a 9- x18-foot full length “glass run[sic] room” (i.e. sunroom; Newspapers.com, *Pasadena Independent* 1951).

In 1967, an article in *News-Pilot* (Newspapers.com 1967) stated the current resident at 1220 Melba Road was Commander Leo C. Wilder (age 72). A World War II veteran, Commander Wilder was a Coast and Geodetic Survey officer on loan to the Army during the war. In addition to providing mapping services, the Coast and Geodetic Survey provided training for navigation, small-boat use, and amphibious landing techniques to service members. Commander Wilder served as head of boat operation instruction (Theberge 2015).

Wilder and his wife resided at 1220 Melba Road since at least 1957 and were members of the California Calavo Growers Association (*The Arroyo Grande Valley Herald Recorder* 1957). Wilder retired by 1957. As the property was put up for sale in 1951, it is assumed that the Wilders moved in sometime during or not long after 1951. It is not known how long the Wilders remained at this location, however at some point between 1957 and 1983 the property came into the ownership of the nonprofit Veterans of Foreign Wars (*Bank of America* 1983).

A Bank of America Corporation Grant Deed dated February 16, 1983, and cosigned by a Notary Public on March 4, 1983, states that the property associated with APN 259-180-16 (1220 Melba Road) was transferred from Veterans of Foreign Wars Colonel Frank M. Brezina Post 5431 to Torrey Pacific Corporation, Escrow No. 1039-181 (*Bank of America* 1983). Veterans of Foreign Wars (VFW) of the United States is listed as a domestic nonprofit incorporated on May 15, 1947 (*OpenCorporates* 2021). The VFW provides programs and services to support American veterans and their families (*VFW* 2021). It is assumed that Colonel Frank M. Brezina was the assigned VFW District Officer who was authorized to sign the deed which transferred the parcel to its current owner, the family-owned Torrey Pacific Corporation. At present, the single-family property at 1220 Melba Road is owned by Torrey Pacific Corporation but is rented to its current tenants.

1230 MELBA ROAD (APN 259-180-3300)

According to USDA historic aerial photographs, this single-family residence was constructed ca. 1939. The large addition located at the south elevation was added sometime between 1953 and 1964 (NETROnline 1953 and 1964). The porch overhang located at the east elevation was added sometime between 1984 and 1985 (NETROnline 1984 and 1985). Despite research efforts, a history of ownership could not be identified.

1230A MELBA ROAD (APN 259-180-3300)

According to USDA historic aerial photographs, this residence was constructed sometime between 1953 and 1963 (NETROnline 1953 and 1963). Upon visual inspection, the exterior wall cladding does not appear to be historic in age and is estimated to have been added within the last 10-15 years. The roof’s composition shingles are in excellent condition and do not appear historic in age. They are estimated to have been added within the last 10 years. Despite research efforts, a history of ownership could not be identified.

1240 AND 1234 MELBA ROAD (APNS 259-180-0900 259-180-1000)

The primary residence first appears in a 1953 USDA historic aerial photograph (NETROnline 1953). The original footprint appears to be largely a reverse L-shape with the small projection at the southern end of the southeast façade. Due to dense trees adjacent to the southeast façade which obscure the view of the building, it is difficult to determine when the multifaceted hipped roof was added to the center of the façade; however, it is estimated the addition was constructed ca. 1967 (NETROnline 1967). The exterior of the building is clad in horizontal wood siding (weatherboard) which appears to be in good condition; it is estimated this material was added within the last 20 years. There are multiple skylights across the roof which are first visible in the 1982 USDA historic aerial photograph (NETROnline 1982). The vinyl windows and sliding doors do not appear historic in age and are estimated to have been added within the last 15-20 years.

Ownership History for 1240 Melba Road

Information regarding history of ownership for 1240 Melba Road is limited. On March 11, 1983, a Quitclaim Deed recorded with the Office of Records of San Diego County authorizes the transfer of property associated with APNs 259-180-0900 and 259-180-1000 from Marian Staver to the Torrey Pacific Corporation (San Diego County Recorder 1983). In addition, for an unknown period of time, this property was associated with Andrew S. Irwin and Ann S. Irwin *(Newspapers* 2000). The property's address is associated with ASI Investment Company, a business registered with the County Clerk of San Diego on October 18, 2000 *(Newspapers* 2000).

NATIVE AMERICAN CONSULTATION

Cogstone submitted a Sacred Lands File (SLF) search request to the Native American Heritage Commission (NAHC) on June 10, 2021. The NAHC responded on June 30, 2021, with a negative result and a list of twenty-two tribes and individuals that should be contacted for additional information about the Project area (Appendix C). Cogstone assisted the City with the scoping consultation. Scoping letters were sent to these tribes and individuals on July 13, 2021, via United States Postal Service certified mail. Cogstone contacted those tribes and individuals who had not yet responded via electronic mail on July 27, 2021 and a personal phone call on 8/13/2021. A copy of the scoping letter was attached to the electronic mail messages.

The Jamul Indian Village, Rincon Band of Luiseño Indians, San Pasqual Band of Mission Indians, and the Viejas Band of Kumeyaay Indians have determined that the Project area is within their Traditional Use Area (TUA) and have requested formal government-to-government consultation.

SURVEY

METHODS

The survey stage is important in a Project's environmental assessment phase to verify the exact location of each identified cultural resource, the condition or integrity of the resource, and the proximity of the resource to areas of cultural resources sensitivity. During the cultural resources pedestrian survey, all undeveloped ground surface areas within the ground disturbance portion of the Project area were examined for artifacts (e.g., flaked stone tools, tool-making debris, stone milling tools, or fire-affected rock), soil discoloration that might indicate the presence of a cultural midden, soil depressions and features indicative of the former presence of structures or buildings (e.g., postholes, foundations), or historic-era debris (e.g., metal, glass, ceramics). Existing ground disturbances (e.g., cutbanks, ditches, animal burrows, etc.) were visually inspected. Photographs of the Project area, including ground surface visibility and items of interest, were taken with a digital camera.

The built environment resources survey identified and verified the location of all structures and buildings within the Project area aged 45 years or older. Once identified, historic built environment resources were examined to ascertain if it is recommended eligible for listing as a historic resource at the local, state, or national level and if the original integrity of the resource remains intact. The seven aspects of integrity which are considered as part of a determination of eligibility include: location, design, setting, materials, feeling, workmanship, and association.

CULTURAL RESOURCES RESULTS

On July 1, 2021, Cogstone Archaeologist Sandy Duarte surveyed the Project area. The area was highly disturbed due to the residential properties. Some areas were not accessible due to dense overgrowth of plants and bushes, especially within areas that were used as nurseries. The intensive cultural resources pedestrian survey consisted of 1-3 meter wide transects. Ground visibility within the Project area was generally poor (approximately 3-5 percent) due to the developed properties, landscape, and hardscape (Figure 5). Much of the area was covered in dry tall grass, weeds, pine trees, palm trees, eucalyptus trees, and decorative plants. Where visible, surficial sediments primarily consisted of yellowish-brown sandy silts (Figure 6). Much of the larger pebble to cobble sized gravel observed is most likely the result of importing decorative, road, and roof gravels into the area. Modern refuse was also observed.

Figure 5. Dense vegetation, view west

Figure 6. Silty sand sediments close-up

BUILT ENVIRONMENT RESULTS

On July 1, 2021, Cogstone Architectural Historian Shannon Lopez surveyed the Project area. A total of fifteen built environment resources, including one historic road and several types of structures, were recorded (Table 5).

Table 5. BUILT ENVIRONMENT RESOURCES IDENTIFIED

Address	APN(s)	Type	Ancillary Buildings and Features	Description
1190 Island View Lane	259-181-03-00 259-181-04-00	Single Family Residence	2 (Garage, Shed)	Vacant
Island View Lane	259-181-03-00	Road	0	Paved, single lane
1220 Melba Road	259-180-16-00	Single Family Residence	1 (Garage)	-
1230 Melba Road	259-180-3300	Single Family Residence	0	-
1230A Melba Road	259-180-3300	Single Family Residence	0	-
1240 and 1234 Melba Road	259-180-0900 259-180-1000	Single Family Residence and Guest House	6 (Garage, Shed, Greenhouses (2), Administration Building, Driveway)	-

1190 ISLAND VIEW LANE

Residence

This property consists of a one-story single-family residence and two ancillary buildings in poor condition. The residence has an irregular footprint but is largely rectangular. The roof consists of three low pitched telescoping hipped gables with gravel roofs. The roof has a wide eave overhang with the exception of the northernmost segment of the building (added ca. 1947-1953) where there is no eave overhang due to severe deterioration of materials. The majority of the exterior of the building is comprised of brick organized in a Stretcher Bond course. Fenestration is an eclectic collection of fixed, sliding, picture, ribbon, and multi-paneled windows in addition to glass, flush, and multi-paneled pedestrian doors. The main entrance is located near the middle of the west façade, which is identified by a large glass pedestrian door flanked on both sides by large fixed single-pane windows with wooden frames and sills. The ca. 1947-1953 addition at the northern end of the residence is composed of wood board, chicken wire, and stucco and is heavily deteriorated. There are two chimneys associated with this residence, one is covered in a heavy plastic tarp and located at the center of the building, the other is at the northern addition; the red brick is set in a Stretcher Bond.

Much of the building’s exterior is covered by dense vegetation. The east elevation of the building shows a substantial degree of damage including a partial roof collapse, missing doors, deteriorating wood board cladding, etc. (Figure 7).

Figure 7. Partial site overview of 1190 Island View Lane, facing east

Large Ancillary Building

This one-story ancillary building has a square footprint and a flat roof with wide overhanging eaves. From what can be seen from ground level, it appears the roof is gravel similar to the adjacent residential building. This building is in poor condition due to substantial deterioration of materials. The County Assessor's records indicate this building was originally constructed for use as a garage but was later converted to a multi-roomed ancillary building. The original sections of the building are recognizable by the Stretcher Bond brick course. Areas later filled in at the west façade (assumed at the time the garage was converted from its original use) are evident from the use of large plywood sheets and the installation of two one-by-one, aluminum framed sliding windows, a large single-pane fixed window, and two pedestrian door frames. A small concrete room addition (year of addition is not known) is at the northern end of the east elevation. A section of roof at the back of this building (east elevation) has collapsed. An additional two pedestrian door frames and a one-by-one sliding window with an aluminum frame are at the east elevation (Figure 8).

Figure 8. 1190 Island View Lane, large ancillary building, west facade, facing east

Ancillary Building-Shed

The shed is located approximately 20-30 feet from the west façade of the main residence. It is small with a sloped shed roof and is clad with wood boards (possibly plywood). The roof is covered in large sheets of asphalt which show substantial deterioration. A narrow wood framed entrance (no door present) is located at the building's south façade (Figure 9).

Figure 9. 1190 Island View Lane, shed, south façade (left) and east elevation (right), facing west

ISLAND VIEW LANE

This paved, single lane, residential road first appears in a 1947 USDA aerial photograph (NETROnline 1947). It was originally used as a private access road from Balour Drive to the single-family residence at 1190 Island View Lane (per the San Diego County Assessor, the original address of 1190 Island View Lane was 795 Balour Drive). On December 30, 1947, a right of easement was granted to the San Diego Gas and Electric Company for the right to place and maintain "poles and wires." In 1953, a right of way for public road access was granted to the County of San Diego (First American Title 2021). Sometime between 1967 and ca. 1978, the parcels immediately north of Island View Lane were developed and easement of the road was granted to these residences which connect to their own respective driveways. It is assumed based on aerials from 1967, 1978 and 1980 that Island View Lane was first paved sometime in the 1970s. On average, Island View Lane is 10-12 feet wide, paved with asphalt, and is in good condition (Figure 10).

Figure 10. Island View Lane, facing west

1220 MELBA ROAD

Residence

This one-story single-family residence was constructed ca. 1938 and is set on a raised concrete foundation approximately 1-2 feet above ground level. The building's footprint is irregular but does follow a general rectangular shape. The roof is comprised of multi-leveled gabled roofs with slight to moderate exposed overhanging eaves and is clad with composition shingles. Two skylights (added ca. 1975) are located on the north side of the center of the roof. The exterior of the building is clad with a coursed wood shingle pattern. The main entrance is located at the south façade which is accessible by an elevated porch (approximately 2 feet above ground level). A sunroom (or solarium) is located at the eastern half of the south façade. It consists of multiple fixed, large, single-pane glass windows and is covered by a low-pitched shed roof. A red brick chimney, organized in a running bond, is located at the west elevation. Windows at this elevation are one-over-one single-hung windows with wood sashes.

Windows at the east elevation are identical to the west elevation as they are one-over-one single-hung windows with wood sashes. Fenestration at the north elevation includes two doors: one aluminum framed glass sliding door and one two-paneled wood door; both do not appear to be historic in age. Three crank-out casement windows are located near the middle of the elevation. Additional windows include one large rectangular, one-over-one, wood sash, single hung window and one smaller rectangular, one-over-one, single hung window (Figures 11 and 12).

Figure 11. 1220 Melba Road, south façade, facing north

Figure 12. 1220 Melba Road, north façade, facing south

Ancillary Building-Detached Garage

A large one-story Salt Box style ancillary building is located near the west elevation of the main residence. Due to the large size and the double wood doors, it is assumed this building was originally used as a detached garage. The Salt Box style roof is clad in composition shingles. The exterior of most of the building is clad in a coursed wood shingle pattern. An addition at the northern side of the building is distinguished by its difference of material from the main body of the building (horizontal boarding) and a low-pitched shed roof. It is not known when this addition was constructed.

1230 MELBA ROAD

Residence

This small, one-story, single-family residence is in overall good condition. The building has an irregular footprint with a normal pitched open gabled roof (clad in composition shingles) intersected by a low-pitched shed roof (roofing material not known) at the south elevation and a flat roofed porch overhang (covered with corrugated metal sheeting) at the east elevation. The building addition at the southern elevation is set on a concrete block foundation, approximately 1-2 feet ground level. The exterior is clad in wood board and batten siding. The main entrance is located at the north façade and consists of a panel and glass wood door. Windows are wood framed and appear to be original to the building. Two wood framed corner windows (two panes each; one fixed, one casement) are located at the junction of the west elevation and the north façade. Fenestration at the north elevation includes a small wood framed casement window, an aluminum framed sliding window, an aluminum framed sliding door, a five-glass paned door, and one vinyl framed window (not historic in age; Figure 13).

Figure 13. 1230 Melba Road, residence, north façade (left) and west elevation (right), facing southeast

1230A MELBA ROAD

Residence

This one-story single-family residence has a rectangular footprint and a normal pitched roof. The building is set on a concrete foundation and elevated less than a foot above ground level. The roof is clad with composition shingles and has a moderate eave overhang. The exterior of the building is clad in vertical wood siding (weatherboard) and the condition of the material does not appear historic in age (possibly added within the last 10-15 years). The main entrance is located at the west façade and consists of a three-paneled glass/wood door; while the doorknob and lock hardware are not historic in age, the door itself does appear historic. The windows on all elevations are one-by-one sliding windows with aluminum frames, six large and two small. A secondary pedestrian door with a small upper and lower louvered vent is found at the east elevation and allows access to and from the backyard (Figure 14).

Figure 14. 1230A Melba Road, west façade, facing southeast

1240 AND 1234 MELBA ROAD

There are four historic aged buildings associated with 1240 Melba Road (APN 259-180-0900 and 259-180-1000) that consists of a primary residence, a guest house, a detached garage, and a shed. There are three buildings associated with the address 1234 Melba Road (APN 259-180-0900) that consist of a large greenhouse, a small greenhouse, and a small administration building. Based on a Quitclaim Deed filed with San Diego County in 1983, both APNs 259-180-0900 and 259-180-1000 (1234 Melba Road and 1240 Melba Road) were associated with a single owner (Marian Staver) and continue to be owned by a single owner (now Torrey Pacific Corporation).

Buildings of 1240 Melba Road

This property consists of two single-story single-family residences (main house and guest house), one detached garage, one shed, one small greenhouse, one large greenhouse, one small administration building, and a long private driveway with decorative palm trees which give the driveway the appearance of a boulevard. There is also one small child's wooden playhouse constructed in the late 1970s/early 1980s, located at the northwest corner of the property, however this structure is not historic in age and will not be evaluated as part of this study.

Main House

The main house is a Ranch style house with an irregular shaped footprint and an intersecting/overlaid hip roof with a five-sided projection (multifaceted hip roof) located near the center of the southeast façade (added ca. 1967) (NETROnline 1967). The residence is set atop a brick foundation which raises the building approximately 2 feet above ground level. The roof is clad in composition shingles with a red brick chimney located near the center of the body of the building. The exterior of the building is clad in horizontal wood siding (weatherboard), which does not appear historic in age and was possibly added within the last 20 years. The main entrance to the main house is an eight-paneled wood door located at the southeast façade, under the eaves of the multi-faceted hip roof. A sliding glass door and a one-by-one sliding window are at the southern corner of the southeast façade. The southeast elevation consists of multiple one-by-one sliding windows and one large fixed bay window. At the northeast elevation, there are two large roll-up garage doors and a louvered gabled vent (Figure 15).

The northwest elevation consists of multiple one-by-one sliding windows and one-over-one single hung windows (all with vinyl frames). There are also four sliding glass doors; two of these sliding doors are situated on the building projection located at the southern end of the northwest elevation. A large porch overhang supported by three posts is attached to this projection. At the southwest elevation are two large one-by-one sliding windows and one sliding glass door.

Figure 15. 1240 Melba Road, Main House, southeast façade, facing northwest

Guest House

The single-story guest house has a rectangular footprint and has no particular architectural style. The roof is a composition clad intersecting gabled roof with wide exposed eaves. The exterior of the building is clad in square butt shingles. There is one pedestrian door (wood, nine glass panels over one wood cross panel) located at the south façade. At the west end of the south façade is a one-by-one aluminum framed, sliding window. At the east elevation is a large four paneled picture window (wood framed) with the two narrow rectangular windows swinging out. A gabled louvered vent is located at the east elevation (Figure 16).

Figure 14. 1240 Melba Road, guest house, south façade

Detached Garage

The single-story detached garage has no particular style but has wide overhanging exposed eaves as commonly seen with Ranch style. The building's footprint is rectangular and the exterior is clad in horizontal wood weatherboard panels. The normal pitched gabled roof is clad with composition shingles (Figure 17).

Figure 15. 1240 Melba Road, detached garage, west elevation (left) and south façade (right), facing northeast

Shed

This small shed is one story with a rectangular footprint. The normal pitched gabled roof is clad with composition shingles and has a wide eave overhang with exposed rafters. An approximately 4-5 foot overhang at the east elevation, supported by three wood posts, creates a shelter that is currently used for storage of building materials. The exterior of the building is clad in vertical weatherboard which shows notable deterioration; however, despite the deterioration of materials it is uncertain if it is historic in age or was added at a later date. The only entrance to the shed is located at the north façade; the flush wood doors show substantial fading and peeling of materials (Figure 18).

Figure 16. 1240 Melba Road , shed, north façade

Driveway/Boulevard

This driveway begins at Melba Road and leads directly to the residence at 1240 Melba Road with a round-about at the northernmost portion. It is not known when the round-about was added due to the presence of tall trees, however it is first partially visible in the late 1980s (NETROnline 1987). Both the west and east sides of the driveway are lined by over a dozen 50+ year old palm trees giving it the aesthetic of a boulevard. Many of the palm tree crowns have been removed leaving behind the bole (Figure 19).

Figure 17. Driveway/ Boulevard of 1234 and 1240 Melba Road, facing north

Buildings of 1234 Melba Ave.

Large Greenhouse

The large greenhouse has a rectangular footprint and is still in use. The building is wood framed with exposed wood trusses. The normal pitched gabled roof and sides of the building are covered in a combination of large plastic sheets, bird netting, and sheets of plywood. There is one pedestrian door at the east elevation, however, it is inaccessible as it is covered by plastic sheeting. The primary entrance to the large greenhouse is at the south elevation through an intentional gap in the plastic sheeting which aligns with a concrete paved walkway, allowing easy access to and from the building. A long metal rail hangs over this entrance which was possibly used as a track for a sliding door (Figure 20).

Figure 18. 1234 Melba Ave., Greenhouse, west elevation, facing east

Administration Building

The majority of this small single-story building is largely covered with vines; only a portion of the north elevation and east façade are visible. The roof has a low pitch with a wide eave overhang at the west elevation. A single flush pedestrian door is present at the west façade. The exterior of the building is clad in vertical clapboard. Single aluminum framed, two-paneled sliding windows are located at the north elevation, east elevation, and south elevation (Figure 21).

Figure 19. 1234 Melba Ave., administration building, east elevation (left) and north elevation (right), facing southwest

Small Greenhouse

The small greenhouse is adjacent to the west façade of the administration building. The greenhouse is a simple wood frame with the roof and much of the exterior of the structure covered with plastic sheeting. The roof is a normal pitch with no overhang (Figure 22).

Figure 20. 1234 Melba Ave., administration building (left) and north façade of greenhouse (right), facing south

CALIFORNIA REGISTER AND NATIONAL REGISTER EVALUATION

To be eligible for the NRHP and CRHR a resource must:

A/1. be associated with events that have made a significant contribution to the broad patterns of history;

B/2. be associated with the lives of significant persons of the past;

C/3. embody distinctive characteristics of type, period, or method of construction or represent the work of a master, or possess high artistic value, or represent a significant and distinguishable entity those components may lack individual distinction; or

D/4. yielded or may likely yield information important in history or prehistory.

In addition to having significance using the above criteria, resources must have "integrity of location, design, setting, materials, workmanship, feeling, and association" to the period of significance (36 CFR Part 60). The period of significance is the date or span of time within which significant events transpired, or significant individuals made their important contributions.

Integrity is the authenticity of a historical resource's physical identity as evidenced by the survival of characteristics or historic fabric that existed during the resource's period of significance. Alterations to a resource or changes in its use over time may have historical, cultural, or architectural significance. Simply, resources must retain enough of their historic character or appearance to be recognizable as historical resources and to convey the reasons for their significance.

Table 6 summarizes each historic built environment resource eligibility for listing on the CRHR with detailed analysis below.

Table 6. CRHR Evaluation of the Built Environment Resources

Address	APN(s)	Type	Ancillary buildings	Description	Eligibility to the CRHR
1190 Island View Lane	259-181-03-00 259-181-04-00	Single Family Residence	2 Garage, Shed	Vacant	Recommended Not Eligible
Island View Lane	259-181-03-00	Road	0	Paved, single lane	Recommended Not Eligible
1220 Melba Road	259-180-16-00	Single Family Residence	1 Garage	-	Recommended Not Eligible
1230 Melba Road	259-180-33-00	Single Family Residence	0	-	Recommended Not Eligible
1230A Melba Road	259-180-33-00	Single Family Residence	0	-	Recommended Not Eligible
•1240 and 1234 Melba Road	259-180-09-00 259-180-10-00	Single Family Residence and Guest House	(6) Garage, Shed, Greenhouses (2), Administration Building, Driveway	-	Recommended Not Eligible

HISTORIC CONTEXTS

Residential Development: A review of USDA aerial photos show that the Project area was largely vacant until the early 1950s. Various single-family homes appear throughout the Project area from the late 1930s to the 1950s. This gradual residential development largely reflected the slow pace of development in the surrounding area until the residential boom of the late 1950s and 1960s.

Horticulture: A review of USDA aerial photos show that the Project area was used for varying levels of small-scale agricultural use. From the 1940s up to present, properties within the Project area (specifically 1190 Island View Lane and 1240 Melba Road) represent the historic context of horticulture. A 1953 aerial shows rowed planting in front of the existing properties at 1220 Melba Road and 1240 Melba Road. The multiple greenhouses at 1190 Island View Lane and 1240 Melba Road from the late 1970s up until present (two still extant at 1240 Melba Road) are physical representations of these properties' history of use. Historic aerial phots show multiple parcels in use for horticultural purposes (many assumed to be agricultural groves) until the beginning of the 1960s when the land was gradually developed for residential and commercial purposes.

1190 ISLAND VIEW LANE

SINGLE FAMILY RESIDENCE

Historic Context

Themes: Residential Development and Horticulture
Period of Significance: 1947-ca. 2019

Criteria A/1

Is the resource associated with events that have made a significant contribution to the broad patterns of our history?

Despite extensive background research regarding this structure, including searching various newspapers and consultation with historic societies and local government agencies, this residence is not associated with events that have made a significant contribution to the broad patterns of our history. Therefore, this building is recommended not eligible for listing under the National Register of Historic Places (NRHP) Criterion A or the California Register of Historic Resources (CRHR) Criterion 1.

Criteria B/2

Is the resource associated with the lives of significant persons in our past?

Following review of historic newspapers, associated deeds and other property records, the single-family residence is not associated with the lives of significant persons in our past. Therefore, this building is recommended not eligible for listing under the NRHP Criterion B or the CRHR Criterion 2.

Criteria C/3

Does the resource embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction?

The architectural style of the single-family residence is Ranch style with later additions which exhibit no architectural style. Upon visual inspection, it appears much of the main residence was not professionally constructed and was undertaken without official city permits. Overall, the building materials are in poor condition and in its current state, the residence is uninhabitable. Ranch Style is a very common architectural style throughout southern California and this residence is not an exemplary representation of that style. Therefore, this building is recommended not eligible for listing under the NRHP Criterion C or the CRHR Criterion 3.

Criteria D/4

Has this resource yielded or may be likely to yield, information important in history or prehistory?

The development of the property does not appear to predate modern day trash services (predating could indicate historic refuse deposits) and following an intensive pedestrian survey of the residence at 1190 Island View Lane it is unlikely for the building to yield information important to history or prehistory. Therefore, this building is recommended not eligible for listing under the NRHP Criterion D or the CRHR Criterion 4.

Integrity: This residence maintains its integrity of Location. The development of the areas adjacent to this residence in the 1960s (Oak Crest Middle School/ Oak Crest Jr. High), while impacting the setting of 1190 Island View Lane, is now historic in age in its own right. Due to the severe deterioration of materials throughout the building, there is a substantial loss of integrity of Design, Materials, Feeling, and Workmanship. While this building is vacant, it is still listed as a single-family residence and therefore retains its integrity of Association.

ANCILLARY BUILDING

Historic Context

Themes: Residential Development and Horticulture
Period of Significance: ca. 1953-ca. 2019 and ca. 1970s-1989

Criteria A/1

Is the resource associated with events that have made a significant contribution to the broad patterns of our history?

Despite extensive background research regarding this structure, including searching various newspapers and consultation with historic societies and local government agencies, this ancillary building is not associated with events that have made a significant contribution to the broad patterns of our history. Therefore, this structure is recommended not eligible for listing under the NRHP Criterion A or the CRHR Criterion 1.

Criteria B/2

Is the resource associated with the lives of significant persons in our past?

Following review of historic newspapers, associated deeds and other property records, this ancillary building is not associated with the lives of significant persons in our past. Therefore, this building is recommended not eligible for listing under the NRHP Criterion B or the CRHR Criterion 2.

Criteria C/3

Does the resource embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction?

The architectural style of the large ancillary building exhibits some Ranch style elements with a later concrete addition which exhibits no architectural style. Ranch Style is a very common architectural style throughout southern California and this building is not an exemplary representation of that style. Therefore, this building is recommended not eligible for listing under the NRHP Criterion C or the CRHR Criterion 3.

Criteria D/4

Has this resource yielded or may be likely to yield, information important in history or prehistory?

The development of the property does not appear to predate modern day trash services (predating could indicate historic refuse deposits) and following an intensive pedestrian survey of the ancillary building at 1190 Island View Lane it is unlikely for the building to yield information important to history or prehistory. Therefore, this building is recommended not eligible for listing under the NRHP Criterion D or the CRHR Criterion 4.

Integrity: This ancillary building maintains its integrity of Location and Association. The development of the areas adjacent to this residence in the 1960s (Oak Crest Middle School/ Oak Crest Jr. High), while impacting the setting of 1190 Island View Lane, is now historic in age in its own right. Due to the severe deterioration of materials and conversion from a garage to a multi-room building, there is a substantial loss of integrity of Design, Materials, Feeling, and Workmanship.

SHED

Historic Context

Themes: Residential Development and Horticulture
Period of Significance: ca. 1953-ca. 2019 and ca. 1970s-1989

Criteria A/1

Is the resource associated with events that have made a significant contribution to the broad patterns of our history?

Despite extensive background research regarding this structure, including searching various newspapers and consultation with historic societies and local government agencies, this shed is not associated with events that have made a significant contribution to the broad patterns of our history. Therefore, this structure is recommended not eligible for listing under the NRHP Criterion A or the CRHR Criterion 1.

Criteria B/2

Is the resource associated with the lives of significant persons in our past?

Following review of historic newspapers, associated deeds and other property records, the shed is not associated with the lives of significant persons in our past. Therefore, the shed is recommended not eligible for listing under the NRHP Criterion B or the CRHR Criterion 2.

Criteria C/3

Does the resource embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction?
The shed does not represent any particular architectural style nor does it exhibit high artistic values or represent the work of a master architect. Therefore, the shed is recommended not eligible for listing under the NRHP Criterion C or the CRHR Criterion 3.

Criteria D/4

Has this resource yielded or may be likely to yield, information important in history or prehistory?
The development of the property does not appear to predate modern day trash services (predating could indicate historic refuse deposits) and following an intensive pedestrian survey of the shed at 1190 Island View Lane it is unlikely for the shed to yield information important to history or prehistory. Therefore, the shed is recommended not eligible for listing under the NRHP Criterion D or the CRHR Criterion 4.

Integrity: This shed maintains its integrity of Location and Association. The development of the areas adjacent to this residence in the 1960s (Oak Crest Middle School/ Oak Crest Jr. High), while impacting the Setting of 1190 Island View Lane, is now historic in age in its own right. Due to the deterioration of materials throughout the building, there is a notable loss of integrity of Design, Materials, Feeling, and Workmanship.

ISLAND VIEW LANE

Historic Context

Themes: Residential Development and Horticulture
Period of Significance: 1947-ca. 2019 and ca. 1970s-1989

Criteria A/1

Is the resource associated with events that have made a significant contribution to the broad patterns of our history?
Despite extensive background research regarding Island View Lane, including searching various newspapers and consultation with historic societies and local government agencies, this road is not associated with events that have made a significant contribution to the broad patterns of our history. Therefore, this road is recommended not eligible for listing under the NRHP Criterion A or the CRHR Criterion 1.

Criteria B/2

Is the resource associated with the lives of significant persons in our past?

Following review of historic newspapers, associated deeds and other property records, Island View Lane is not associated with the lives of significant persons in our past. Therefore, this road is recommended not eligible for listing under the NRHP Criterion B or the CRHR Criterion 2.

Criteria C/3

Does the resource embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction?

Island View Lane, the access road which is directly associated with 1190 Island View Lane, is a standard one lane access road and not an exemplary representative of a particular style or design. Therefore, Island View Lane is recommended not eligible for listing under the NRHP Criterion C or the CRHR Criterion 3.

Criteria D/4

Has this resource yielded or may be likely to yield, information important in history or prehistory?

Island View Lane is unlikely to yield information important to history or prehistory. Therefore, Island View Lane is recommended not eligible for listing under the NRHP Criterion D or the CRHR Criterion 4.

Integrity: Island View Lane maintains its integrity of Location. Due to substantial residential development adjacent to Island View Lane from ca. 1978 to ca. 2012, there has been a great loss of the road’s integrity of Setting. There is some loss of the road’s initial integrity of Design, Materials, and Workmanship as it was paved sometime in the 1970s and likely slurried within the last 20 years. While easement of the road has been granted to the county and neighboring residential homes, this resource remains associated with 1190 Island View Lane (although no longer exclusively).

1220 MELBA ROAD

RESIDENCE

Historic Context

Theme: Early Residential Development

Period of Significance: 1939-1976

Criteria 1/A

Is the resource associated with events that have made a significant contribution to the broad patterns of our history?

Despite extensive background research regarding this structure, including searching various newspapers and consultation with historic societies and local government agencies, this residence is not associated with events that have made a significant contribution to the broad patterns of our history. Therefore, this residence is recommended not eligible for listing under the NRHP Criterion 1 or the CRHR Criterion A.

Criteria B/2

Is the resource associated with the lives of significant persons in our past?

There are two particular individuals of note associated with 1220 Melba Road: Anton Van Amersfoort and Commander Leo C. Wilder.

Following extensive research including assessor's parcel records, historical newspapers, online articles and publications, and consultation with the local historical society, it is clear that Mr. Amersfoort did own the land associated with 1220 Melba Road in 1938. However, based on various articles published by the San Diego Botanic Gardens, it is highly unlikely that Mr. Amersfoort resided at the single family structure which was present on the property by 1938. This property was one of many owned by Mr. Amersfoort during his time in Encinitas. In addition, as it is not clear if the house was moved to this location or built on site, any direct association of the house's construction with Mr. Amersfoort remains uncertain. Therefore, due to a lack of information, this residence is recommended not eligible for listing under Criteria B/2 for association with lives of significant persons in our past,

According to Cogstone's research, this home was previously occupied by Commander Leo C. Wilder who was a veteran of WWII, however, no evidence of special wartime citations or awards given to Wilder could be found which would elevate Wilder's service to an exemplary level required for Criteria B/2. In addition, Commander Wilder purchased the house sometime between 1951 and 1957, years after the conclusion of WWII in1945. Therefore, the house has no association with Commander Wilder's contributions to WWII as he did not reside there until after the war. Therefore, this residence is recommended not eligible for listing under the NRHP Criterion B or the CRHR Criterion 2.

Criteria C/3

Does the resource embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction?

This residence embodies no particular architectural style but does exhibit some Craftsman elements as seen with the roof overhang and exposed eaves. This residence has two notable exterior character defining features: 1) the wood shingle exterior and 2) the sunroom at the south façade. The President of the Encinitas Historical Society, Carolyn Cope, said that the sunroom is not a common addition to residences and is more often seen in the American south.

Despite these notable features, this residence is not considered an exemplary representation of a particular architectural style, the work of a master architect, nor expresses high artistic values. Therefore, this residence is recommended not eligible for listing under the NRHP Criterion C or the CRHR Criterion 3.

Criteria D/4
Has this resource yielded or may be likely to yield, information important in history or prehistory?
The development of 1220 Melba Road does not appear to predate modern day trash services (predating could indicate historic refuse deposits) and following an intensive pedestrian survey of the property it is unlikely for this residence to yield information important to history or prehistory. Therefore, this residence is recommended not eligible for listing under the NRHP Criterion D or the CRHR Criterion 4.

Integrity: The integrity of this building's location is uncertain per the Encinitas Historical Society which states the building was moved to its current location at an unknown time; USDA historic aerial photographs show that this building was present in its current location (though not configuration) by 1939. From 1939 to ca. 1964, this building has undergone substantial alterations with multiple additions to its west, south, and north elevations, thereby greatly impacting its original integrity of Design, Materials, Feeling, and Workmanship. However, with the passage of time, these alterations, while substantial, have become historic in age and are now part of the history of the building. This building retains its integrity of association with its original use as a single-family property. Residential development in the surrounding area has substantially impacted the residence's integrity of Setting.

ANCILLARY BUILDING-DETACHED GARAGE

Historic Context
Theme: Residential Development
Period of Significance: ca. 1953 to 1976

Criteria 1/A
Is the resource associated with events that have made a significant contribution to the broad patterns of our history?
Despite extensive background research regarding this building, including searching various newspapers and consultation with historic societies and local government agencies, this building is not associated with events that have made a significant contribution to the broad patterns of our history. Therefore, this building is recommended not eligible for listing under the NRHP Criterion 1 or the CRHR Criterion A.

Criteria B/2
Is the resource associated with the lives of significant persons in our past?
Following review of historic newspapers, consultation with the Encinitas Historical Society,

associated deeds and other property records, the detached garage is not associated with the lives of significant persons in our past. Therefore, this building is recommended not eligible for listing under the NRHP Criterion B or the CRHR Criterion 2.

Criteria C/3
Does the resource embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction?
This detached garage is not an exemplary representation of a particular architectural style, the work of a master architect, nor expresses high artistic values. Therefore, this building is recommended not eligible for listing under the NRHP Criterion C or the CRHR Criterion 3.

Criteria D/4
Has this resource yielded or may be likely to yield, information important in history or prehistory?
The development of 1220 Melba Road does not appear to predate modern day trash services (predating could indicate historic refuse deposits) and following an intensive pedestrian survey of the property it is unlikely for this residence to yield information important to history or prehistory. Therefore, this residence is recommended not eligible for listing under the NRHP Criterion D or the CRHR Criterion 4.

Integrity: This ancillary building retains its Integrity of Location and Association. The addition to the north elevation of this building has had a notable impact on the building's Integrity of Design, Materials, Feeling, and Workmanship; however since it is not known when this addition occurred it is not clear if it is a historic-aged feature of this building. Residential development in the surrounding area has substantially impacted the building's integrity of Setting.

1230 MELBA ROAD

RESIDENCE

Historic Context
Theme: Residential Development
Period of Significance: ca. 1939-1976

Criteria 1/A
Is the resource associated with events that have made a significant contribution to the broad patterns of our history?
Despite extensive background research regarding this residence, including searching various newspapers and consultation with historic societies and local government agencies, this residence is not associated with events that have made a significant contribution to the broad

patterns of our history. Therefore, this residence is recommended not eligible for listing under the NRHP Criterion 1 or the CRHR Criterion A.

Criteria B/2
Is the resource associated with the lives of significant persons in our past?
Following review of historic newspapers, associated deeds and other property records, the single-family residence is not associated with the lives of significant persons in our past. Therefore, this building is recommended not eligible for listing under the NRHP Criterion B or the CRHR Criterion 2.

Criteria C/3
Does the resource embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction?
This residence embodies aspects of cottage Bungalow style architecture which includes its small size, gabled roof, and asymmetrical design. Although this residence is very well maintained, it is not an exemplary representation of Bungalow style architecture, nor does it represent the work of a master architect or express high artistic values. Therefore, this residence is recommended not eligible for listing under the NRHP Criterion C or the CRHR Criterion 3.

Criteria D/4
Has this resource yielded or may be likely to yield, information important in history or prehistory?
The development of 1230 Melba Road does not appear to predate modern day trash services (predating could indicate historic refuse deposits) and following an intensive pedestrian survey of the property it is unlikely for this residence to yield information important to history or prehistory. Therefore, this residence is recommended not eligible for listing under the NRHP Criterion D or the CRHR Criterion 4.

Integrity: This residence appears to maintain its integrity of Location and Association. With the construction of the building addition at the south elevation and the porch overhang at the east elevation there has been a notable impact to the building's integrity of Design, Materials, Feeling, and Workmanship. However, the addition at the south elevation is over 50 years old and is now considered a historic-aged feature of this building. Due to residential development in the immediate surrounding area, this building has lost some of its integrity of Setting.

1230A MELBA ROAD

RESIDENCE

Historic Context

Theme: Residential Development
Period of Significance: ca. 1963-1976

Criteria A/1

Is the resource associated with events that have made a significant contribution to the broad patterns of our history?

Despite extensive background research regarding this structure, including searching various newspapers and consultation with historic societies and local government agencies, this residence is not associated with events that have made a significant contribution to the broad patterns of our history. Therefore, this residence is recommended not eligible for listing under the NRHP Criterion A or the CRHR Criterion 1.

Criteria B/2

Is the resource associated with the lives of significant persons in our past?

Following review of historic newspapers, associated deeds and other property records, this single-family residence is not associated with the lives of significant persons in our past. Therefore, this building is recommended not eligible for listing under the NRHP Criterion B or the CRHR Criterion 2.

Criteria C/3

Does the resource embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction?

This residence does not represent a particular architectural style nor does it represent the work of a master or possess high artistic values. Therefore, this residence is recommended not eligible for listing under the NRHP Criterion C or the CRHR Criterion 3.

Criteria D/4

Has this resource yielded or may be likely to yield, information important in history or prehistory?

The development of the property does not appear to predate modern day trash services (predating could indicate historic refuse deposits) and following an intensive pedestrian survey of 1230A Melba Road this property is not likely to yield information important to history or prehistory. Therefore, 1230A Melba Road is recommended not eligible for listing under the NRHP Criterion D or the CRHR Criterion 4.

Integrity: This residence retains its integrity of Location and Association. Large greenhouses immediately north of this residence were added in the 1970s but were mostly removed in ca. 2002 and the residence’s integrity of Setting was restored (NETROnline 1978 and 2002). Due to alterations to the building within the (estimated) past 20 years this building has lost a substantial degree of its integrity of Design, Materials, Feeling, and Workmanship.

1240 MELBA ROAD AND 1234 MELBA ROAD

RESIDENCE

Historic Context

Theme: Residential Development
Period of Significance: ca. 1953-1976

Criteria 1/A

Is the resource associated with events that have made a significant contribution to the broad patterns of our history?

Despite extensive background research regarding this structure, including searching various newspapers and consultation with historic societies and local government agencies, this residence is not associated with events that have made a significant contribution to the broad patterns of our history. Therefore, this residence is recommended not eligible for listing under the NRHP Criterion 1 or the CRHR Criterion A.

Criteria B/2

Is the resource associated with the lives of significant persons in our past?

Following review of historic newspapers, associated deeds and other property records, the main single family residence is not associated with the lives of significant persons in our past. Therefore, this building is recommended not eligible for listing under the NRHP Criterion B or the CRHR Criterion 2.

Criteria C/3

Does the resource embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction?

This residence largely embodies Ranch style architecture which was commonly constructed from the 1930s to the mid-1970s. This residence is not an exemplary representation of Ranch style architecture, nor does it represent the work of a master architect or express high artistic values. Therefore, this residence is recommended not eligible for listing under the NRHP Criterion C or the CRHR Criterion 3.

Criteria D/4

Has this resource yielded or may be likely to yield, information important in history or prehistory?

The development of 1240 Melba Road does not appear to predate modern day trash services (predating could indicate historic refuse deposits) and following an intensive pedestrian survey of the property it is unlikely for this residence to yield information important to history or prehistory. Therefore, this residence is recommended not eligible for listing under the NRHP Criterion D or the CRHR Criterion 4.

Integrity: This building maintains its integrity of Location. As this continues to be used as a single single-family residence it retains its integrity of Association. Due to alterations to the building in previous decades it has lost a moderate degree of its integrity of Design, Materials, Feeling, and Workmanship. Due to residential development in the surrounding area, the addition of a large wood fence, and demolition of nearby historic aged buildings in past decades, this building has lost a notable degree of its integrity of Setting.

GUEST HOUSE

Historic Context

Theme: Residential Development
Period of Significance: ca. 1953-1976

Criteria 1/A

Is the resource associated with events that have made a significant contribution to the broad patterns of our history?

Despite extensive background research regarding this building, including searching various newspapers and consultation with historic societies and local government agencies, this residence is not associated with events that have made a significant contribution to the broad patterns of our history. Therefore, this residence is recommended not eligible for listing under the NRHP Criterion 1 or the CRHR Criterion A.

Criteria B/2

Is the resource associated with the lives of significant persons in our past?

Following review of historic newspapers, associated deeds and other property records, the secondary residence/ guest house is not associated with the lives of significant persons in our past. Therefore, this building is recommended not eligible for listing under the NRHP Criterion B or the CRHR Criterion 2.

Criteria C/3

Does the resource embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction?

This residence does not represent any particular architectural style nor does it exhibit high artistic values or represent the work of a master architect. Therefore, this residence is recommended not eligible for listing under the NRHP Criterion C or the CRHR Criterion 3.

Criteria D/4
Has this resource yielded or may be likely to yield, information important in history or prehistory?
The development of 1240 Melba Road does not appear to predate modern day trash services (predating could indicate historic refuse deposits) and following an intensive pedestrian survey of the property it is unlikely for this residence to yield information important to history or prehistory. Therefore, this residence is recommended not eligible for listing under the NRHP Criterion D or the CRHR Criterion 4.

Integrity: This Building retains its integrity of Location, Design, Setting, Materials, Feeling, Workmanship, and Association.

DETACHED GARAGE

Historic Context

Theme: Residential Development
Period of Significance: ca. 1978

Criteria 1/A
Is the resource associated with events that have made a significant contribution to the broad patterns of our history?
Despite extensive background research regarding this building, including searching various newspapers and consultation with historic societies and local government agencies, this building is not associated with events that have made a significant contribution to the broad patterns of our history. Therefore, this building is recommended not eligible for listing under the NRHP Criterion 1 or the CRHR Criterion A.

Criteria B/2
Is the resource associated with the lives of significant persons in our past?
Following review of historic newspapers, associated deeds and other property records, the detached garage is not associated with the lives of significant persons in our past. Therefore, this building is recommended not eligible for listing under the NRHP Criterion B or the CRHR Criterion 2.

Criteria C/3
Does the resource embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction?
This detached garage does not represent any particular architectural style nor does it exhibit high

artistic values or represent the work of a master architect. Therefore, this garage is recommended not eligible for listing under the NRHP Criterion C or the CRHR Criterion 3.

Criteria D/4

Has this resource yielded or may be likely to yield, information important in history or prehistory?

The development of 1240 Melba Road does not appear to predate modern day trash services (predating could indicate historic refuse deposits) and following an intensive pedestrian survey of the property it is unlikely for this the detached garage to yield information important to history or prehistory. Therefore, this detached garage is recommended not eligible for listing under the NRHP Criteria Criterion D or the CRHR Criterion 4.

Integrity: There has have been alterations to the exterior of the building in recent decades such as the installation of a new garage door and the exterior weatherboard cladding. Therefore this building has lost a notable degree of its integrity of Design, Materials, Feeling, and Workmanship. This building retains its integrity of Location and Association.

STORAGE SHED

Historic Context

Theme: Residential Development
Period of Significance: 1953-1976

Criteria 1/A

Is the resource associated with events that have made a significant contribution to the broad patterns of our history?

Despite extensive background research regarding this structure, including searching various newspapers and consultation with historic societies and local government agencies, this shed is not associated with events that have made a significant contribution to the broad patterns of our history. Therefore, this shed is recommended not eligible for listing under the NRHP Criterion 1 or the CRHR Criterion A.

Criteria B/2

Is the resource associated with the lives of significant persons in our past?

Following review of historic newspapers, associated deeds and other property records, the shed is not associated with the lives of significant persons in our past. Therefore, this building is recommended not eligible for listing under the NRHP Criterion B or the CRHR Criterion 2.

Criteria C/3

Does the resource embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack

individual distinction?

This shed does not represent any particular architectural style nor does it exhibit high artistic values or represent the work of a master architect. Therefore, this shed is recommended not eligible for listing under the NRHP Criterion C or the CRHR Criterion 3.

Criteria D/4

Has this resource yielded or may be likely to yield, information important in history or prehistory?

The development of 1240 Melba Road does not appear to predate modern day trash services (predating could indicate historic refuse deposits) and following an intensive pedestrian survey of the property it is unlikely for the shed to yield information important to history or prehistory. Therefore, the shed is recommended not eligible for listing under the NRHP Criterion D or the CRHR Criterion 4.

Integrity: This building retains its integrity of Location. It appears that this building retains much of its integrity of Design, Feeling, and Association. It is not clear if this building retains its integrity of Materials and Workmanship. Due to residential development in the surrounding area, the addition of a large wood fence, and demolition of nearby historic aged buildings in past decades, this building has lost a notable degree of integrity of Setting.

LARGE GREENHOUSE

Historic Context

Theme: Horticulture

Period of Significance: 1984- Present

While the original greenhouse was likely historic in age, the section of building which remains was constructed in 1984 and is not historic in age. Therefore, at present this section of greenhouse does not meet the standard for 45 years or older in order to be evaluated for eligibility for listing under the CRHR.

Integrity: This remaining section of greenhouse retains its integrity of Location and Association. Due to the demolition of the majority of the original greenhouse, this section of no longer retains its integrity of Design, Setting, Materials, Feeling, or Workmanship.

SMALL GREENHOUSE

Historic Context

Theme: Horticulture

Period of Significance: ca. 1967-1978 to ca. 1978

Criteria 1/A

Is the resource associated with events that have made a significant contribution to the broad patterns of our history?
Despite extensive background research regarding this structure, including searching various newspapers and consultation with historic societies and local government agencies, this greenhouse is not associated with events that have made a significant contribution to the broad patterns of our history. Therefore, this greenhouse is recommended not eligible for listing under the NRHP Criterion 1 or the CRHR Criterion A.

Criteria B/2

Is the resource associated with the lives of significant persons in our past?
Following review of historic newspapers, associated deeds and other property records, the small greenhouse is not associated with the lives of significant persons in our past. Therefore, this greenhouse is recommended not eligible for listing under the NRHP Criterion B or the CRHR Criterion 2.

Criteria C/3

Does the resource embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction?
This greenhouse does not represent any particular architectural style nor does it exhibit high artistic values or represent the work of a master architect. Therefore, this greenhouse is recommended not eligible for listing under the NRHP Criterion C or the CRHR Criterion 3.

Criteria D/4

Has this resource yielded or may be likely to yield, information important in history or prehistory?
The development of 1234 Melba Road does not appear to predate modern day trash services (predating could indicate historic refuse deposits) and following an intensive pedestrian survey of the property it is unlikely for the greenhouse to yield information important to history or prehistory. Therefore, the greenhouse is recommended not eligible for listing under the NRHP Criterion D or the CRHR Criterion 4.

Integrity: This greenhouse retains its integrity of Location, Design, Materials, Feeling, Workmanship, and Association. Due to the demolition of greenhouses that previously occupied the surrounding area, this greenhouse has lost a substantial degree of its integrity of setting.

ADMINISTRATION BUILDING

Historic Context

Theme: Horticulture
Period of Significance: ca. 1967-1978 to ca. 1978

Criteria 1/A

Is the resource associated with events that have made a significant contribution to the broad patterns of our history?

Despite extensive background research regarding this structure, including searching various newspapers and consultation with historic societies and local government agencies, this building is not associated with events that have made a significant contribution to the broad patterns of our history. Therefore, this building is recommended not eligible for listing under the NRHP Criterion 1 or the CRHR Criterion A.

Criteria B/2

Is the resource associated with the lives of significant persons in our past?

Following review of historic newspapers, associated deeds and other property records, the administration building is not associated with the lives of significant persons in our past. Therefore, this building is recommended not eligible for listing under the NRHP Criterion B or the CRHR Criterion 2.

Criteria C/3

Does the resource embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction?

This administration building does not represent any particular architectural style nor does it exhibit high artistic values or represent the work of a master architect. Therefore, this building is recommended not eligible for listing under the NRHP Criterion C or the CRHR Criterion 3.

Criteria D/4

Has this resource yielded or may be likely to yield, information important in history or prehistory?

The development of 1234 Melba Road does not appear to predate modern day trash services (predating could indicate historic refuse deposits) and following an intensive pedestrian survey of the property it is unlikely for the shed building to yield information important to history or prehistory. Therefore, the shed building is recommended not eligible for listing under the NRHP Criteria Criterion D or the CRHR Criterion 4.

Integrity: This building retains its integrity of Location. It appears that this building retains much of its integrity of Design, Feeling, and Association. It is not clear if this building retains its integrity of Materials and Workmanship. Due to residential development in the surrounding area, the addition of a large wood fence, and demolition of nearby historic aged buildings in past decades, this building has lost a notable degree of its integrity of Setting.

MELBA ROAD DRIVEWAY/ BOULEVARD

Historic Context

Theme: Residential Development
Period Significance: ca. 1953- 1976

Criteria A/1

Is the resource associated with events that have made a significant contribution to the broad patterns of our history?

Despite extensive background research regarding this resource, including searching various newspapers and consultation with historic societies and local government agencies, the driveway/ boulevard is not associated with events that have made a significant contribution to the broad patterns of our history. Therefore, this resource is recommended not eligible for listing under the NRHP Criterion 1 or the CRHR Criterion A.

Criteria B/2

Is the resource associated with the lives of significant persons in our past?

Following review of historic newspapers, associated deeds and other property records, the driveway/boulevard is not associated with the lives of significant persons in our past. Therefore, this driveway is recommended not eligible for listing under the NRHP Criterion B or the CRHR Criterion 2.

Criteria C/3

Does the resource embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction?

The addition of the palm trees as decorative elements to the long private driveway creates the look and feel of a narrow boulevard, which is not commonly seen in the dense residential area of the surrounding neighborhood. However, while unusual for a private residence as well as being aesthetically pleasing, this driveway is not an exemplary representation of a boulevard nor represents high artistic values which would raise it to a level of excellence required for listing in the NRHP or the CRHR. Therefore, the driveway/boulevard is recommended not eligible for listing under the NRHP Criteria Criterion C or the CRHR Criterion 3.

Criteria D/4

Has this resource yielded or may be likely to yield, information important in history or prehistory?

The development of 1240 Melba Road does not appear to predate modern day trash services (predating could indicate historic refuse deposits) and following an intensive pedestrian survey of the property it is unlikely for the driveway/ boulevard to yield information important to history or prehistory. Therefore, the driveway/ boulevard is recommended not eligible for listing under the NRHP Criterion D or the CRHR Criterion 4.

Integrity: Despite the addition of the round-about at the northern end of the driveway, overall, this feature retains the majority of its integrity of Location, Design, Materials, Feeling, Workmanship, and Association. Due to residential development adjacent to the eastern side of the driveway, this feature has lost a notable degree of its integrity of Setting.

CONCLUSIONS AND RECOMMENDATIONS

CULTURAL RESOURCES

No prehistoric cultural resources were identified within the Project area during the intensive pedestrian survey or during any previous investigations. In addition, the CHRIS and SLF searches conducted in support of the Project indicate that no archaeological or tribal cultural resources have been previously recorded within the Project area. These negative findings along with a review of historic USDA aerial photographs indicate that the potential for subsurface prehistoric resource deposits is low.

A Sacred Lands File search requested from the Native American Heritage Commission on June 10, 2021, indicated that there are no sacred lands or resources listed within the Project area. Cogstone assisted the City with Native American consultation. The Jamul Indian Village, San Pasqual Band of Mission Indians, and the Viejas Band of Kumeyaay Indians have determined that the Project area is within their Traditional Use Area (TUA) and have requested formal government-to-government consultation.

In the event of an unanticipated discovery, all work must be suspended within 50 feet of the find until a qualified archaeologist evaluates it. In the unlikely event that human remains are encountered during project development, all work must cease near the find immediately.

In accordance with California Health and Safety Code Section 7050.5, the County Coroner must be notified if potentially human bone is discovered. The Coroner will then determine within two working days of being notified if the remains are subject to his or her authority. If the Coroner recognizes the remains to be Native American, he or she shall contact the Native American Heritage Commission (NAHC) by phone within 24 hours, in accordance with Public Resources Code Section 5097.98. The NAHC will then designate a Most Likely Descendant (MLD) with respect to the human remains. The MLD then has the opportunity to recommend to the property owner or the person responsible for the excavation work means for treating or disposing, with appropriate dignity, the human remains and associated grave goods. Work may not resume in the vicinity of the find until all requirements of the health and safety code have been met.

HISTORIC BUILT ENVIRONMENT

Fifteen built environment resources are located within the Project area comprising of thirteen historic-aged buildings and two roads were thoroughly documented during Cogstone’s 2021 built environment survey and associated Department of Parks and Recreation 523 forms were prepared (Appendix D). Due to a lack of significance, the resources within this Project area are recommended not eligible for listing at the local, state, or national level. Demolition and renovation of the existing structures does not require any mitigation due to lack of significance.

No further cultural resources work is recommended for the proposed Project.

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APPENDIX A. QUALIFICATIONS

DESIREÉ RENEÉ MARTINEZ

Task Manager

EDUCATION

1999 M.A., Anthropology (Archaeology), Harvard University, Cambridge
1995 B.A., Anthropology, University of Pennsylvania, Philadelphia

TRAININGS AND CERTIFICATIONS

2017 Section 106 Advanced Seminar, Advisory Council for Historic Preservation, Riverside, CA
2009 Section 106 Training, Advisory Council for Historic Preservation, Agua Caliente, Palm Springs, CA

SUMMARY OF QUALIFICATIONS

Ms. Martinez is a Registered Professional Archaeologist (RPA) with 24 years of experience in archaeological fieldwork, research, and curation. She has expertise in the planning, implementation, and completion of all phases of archaeological work and has participated in archaeological investigations as a principal investigator, crew member, and tribal monitor. She meets national standards in archaeology set by the Secretary of Interior's *Standards and Guidelines for Archaeology and Historic Preservation.* Her experience also includes compliance with CEQA, NEPA, NHPA Sec. 106, NAGPRA, SB 18, AB 52, and California General Order 131-D exemption. Ms. Martinez has extensive experience consulting with Native American leaders and community members in a variety of contexts.

SELECTED EXPERIENCE

Rincon Tribal Resource Conservation Management Plan Project, Rincon Band of Luiseno Indians Reservation, San Diego County, CA. Cogstone conducted a Class III cultural resources assessment to determine the potential impacts to execute a Memorandum of Understanding with the Bureau of Indian Affairs regarding the Tribal Resource Conservation Management Plan. The Memorandum designates Preserve areas containing potentially endangered species and their habitat. The Plan specifies avoidance and minimization measures to ensure the protection of those endangered species and their habitat. Cogstone conducted record searches, a Sacred Lands File Search, an intensive pedestrian survey, gave mitigation recommendations, and produced a report. Task Manager. 2019

Pipeline Safety and Reliability Project – New Natural Gas Line 3602 and De-rating Line 1600, San Diego County, CA. The project proposed constructing a 46.6-mile-long natural gas transmission pipeline, supporting facilities, and de-rating the existing Line 1600. On behalf of the California Public Utilities Commission, Cogstone provided archaeological, paleontological and built environmental review of the overview of SDG&E's and SoCalGas's studies and the Proponent Environmental Application, helped manage the tribal consultation, and drafted portions of the Draft Environmental Impact Report. Sub to E&E. Task Manager. 2017-2018

Carlsbad DKN Marriott Springhill Suites Hotel Project, City of Carlsbad, San Diego County, CA. Cogstone provided cultural and paleontological resources monitoring as well as managed Native American monitoring during ground-disturbing construction activities. San Luis Rey Band of Mission Indians provided Native American monitoring. Ground-disturbing construction activities included grading, trenching, and drilling for a hotel with two levels of underground parking and its associated utilities. Six historic-era artifacts were recovered during monitoring. Isolates, by definition, do not meet significance criteria under CEQA. No paleontological resources were observed or collected. The project was conducted in compliance with the City of Carlsbad's Cultural Resources Guidelines. Sub to DKN Hotels. Task Manager. 2018

Cypress Affordable Housing Project, City of San Diego, San Diego County, CA. Cogstone conducted cultural and paleontological monitoring during excavation for the proposed construction of 63 apartment units within a 5-story apartment building and subgrade parking garage. Cultural and paleontological monitoring was required for this project by the mitigation measures of the Downtown Community Plan Final Environmental Impact Report. The maximum depth of excavation was 30 feet. The City of San Diego was the California Environmental Quality Act lead agency and the United States Department of Housing and Urban Development was the federal lead agency. Sub to Affirmed Housing. Task Manager. 2017

TERESA TERRY, RPA

SOI Archaeologist, Principal Investigator

EDUCATION

2011 M.A., Anthropology with a concentration in Archaeology, California State University, Fullerton
2007 B.A., Anthropology with a minor in Public History and a certificate in Museum Studies, California State University, Fullerton

SUMMARY QUALIFICATIONS

Ms. Terry is a Registered Professional Archaeologist (RPA) with 17 years of experience in cultural resources management. She meets national standards in prehistoric and historic archaeology set by the Secretary of Interior's *Standards and Guidelines for Archaeology and Historic Preservation* and has a thorough understanding of Section 106, NEPA, and CEQA compliance. Ms. Terry is listed as a Field Supervisor on Cogstone's cultural resources BLM permit. She has supervised large monitoring projects in the Southern California area, and served as principal investigator on a variety of archaeological field projects in California and the greater U.S. Southwest as well as written or contributed to archaeological assessments and project reports. Ms. Terry is well versed in the investigation of prehistoric and historic lithic use, debitage (flake) typologies, early 20th century consumer culture, human induced geomorphology, modified vernacular landscapes in architectural and public history, contact, post-contact, native and pioneer settlement patterns and subsistence strategies, and post-contact period ethnography.

SELECTED PROJECTS

Phase I Cultural Resources Assessment, Eckenberg Project, Sandy Valley, Inyo County, CA. The project involved survey and site recording of 40 acres for construction of greenhouses. Cogstone provided in-field artifact analysis utilizing modern typology and dating techniques and recorded all information on DPR 523 Forms. Principal Investigator for Archaeology. Principal Investigator. 2021

New Cuyama Dump Sites 1, 2, and 3, BLM Bakersfield Office, Santa Barbara County, CA. The Project involved identifying archaeological and historical resources present within three illegal dump sites on BLM land. This study included an assessment of the historic potential of dump refuse and NRHP eligibility recommendations for debris demonstrating affirmative evidence for an age of greater than 45 years. A Class III Cultural Resources survey was conducted and included an intensive-level pedestrian survey of the APE and a total of three historic trash scatters were identified during the survey and a total of four historic isolates were identified. These resources were recorded on Department of Parks and Recreation 523 (DPR 523) forms. No artifacts were collected. The deliverables were accepted by the BLM without revisions. Co-Principal Investigator for Archaeology and Field Supervisor. 2020-2021

FY 2020 Border Barrier Project, San Diego and Imperial County, CA. The project involved survey and monitoring for 40 miles of the Mexico/San Diego Border Wall. Surveyed sections from west of Campo to west of Calexico and monitored drilling in Jacumba Wilderness Area during preconstruction, supervised tribal monitors during the construction phase. Supervised archaeological monitors in the Otay Mesa area. 2019-2020.

Scotty's Castle Monitoring, Death Valley National Park, Inyo County, CA. Cogstone performed monitoring, surveying, site recording, and condition assessments during the rehabilitation of the U.S. National Park's National Register of Historic Places (NRHP) historic landmark. Cogstone provided in-field artifact analysis utilizing modern typology and dating techniques and recorded all information on DPR 523 Forms. Principal Investigator for Archaeology. 2019-2020

Rincon Tribal Resource Conservation Management Plan Project, Rincon Band of Luiseno Indians Reservation, San Diego County, CA. Cogstone conducted a Class III cultural resources assessment to determine the potential impacts to execute a Memorandum of Understanding with the Bureau of Indian Affairs regarding the Tribal Resource Conservation Management Plan. The Memorandum designates Preserve areas containing potentially endangered species and their habitat. The Plan specifies avoidance and minimization measures to ensure the protection of those endangered species and their habitat. Cogstone conducted record searches, a Sacred Lands File Search, an intensive pedestrian survey, gave mitigation recommendations, and produced a report. Field Director. 2019

SHANNON LOPEZ
Architectural Historian

EDUCATION

2022 Certificate in Historic Preservation, The Boston Architectural College, Boston

2018 M.A., History (with an emphasis in Architecture), California State University, Fullerton
All courses taken by Ms. Lopez during her graduate program were, with guidance from her respective professors, focused on architectural themes and history. Two courses in history of world architecture were also taken.

2012 B.A., History, Minor in Asian-Pacific Studies, California State University, Dominguez Hills

ADDITIONAL EDUCATION

COURSEWORK FOR CERTIFICATE IN HISTORIC PRESERVATION THE BOSTON ARCHITECTURAL COLLEGE	
COURSE NAME	**UNITS**
Historic Preservation Philosophy and Practice	3
American Architecture: Colonial Period to Post Modernism	3
Architectural Materials Conservation	3

From 2020 to 2022, Ms. Lopez spent 40 hours in a paid mentorship program under Ms. Virginia Adams who is a Senior Architectural Historian at the Public Archaeology Laboratory, Inc. in Pawtucket, Rhode Island. In addition to the paid 40 hours, Ms. Adams spent additional time with Ms. Lopez going above and beyond the requirement of the mentorship contract to ensure that Ms. Lopez had a thorough understanding of specific topics being discussed. Ms. Adams manages architectural history and multi-disciplinary planning and regulatory projects involving historic buildings, structures, landscapes, and archaeological resources for public and private clients throughout the Northeast and California. She received her B.A. and M.A. from Brown University and teaches in the Master of Historic Preservation program at The Boston Architectural College. Ms. Lopez discussed aspects of this project under this mentorship program with Ms. Adams including how to approach the building evaluations.

SUMMARY OF QUALIFICATIONS

Ms. Lopez is a qualified Historian, and she meets the Secretary of the Interior's (SOI) *Standards and Guidelines for Architectural History.* The SOI Professional Qualifications Standards for **Architectural History** state:

The minimum professional qualifications in architectural history are a graduate degree in *architectural history, art history, historic preservation,* ***or closely related field with coursework in American architectural history*** *or a bachelor's degree in architectural history, art history, historic preservation* ***or closely related field plus one of the following:***

1. At least two years of full-time experience in research, writing, or teaching in American architectural history or restoration architecture with an academic institution, historical organization or agency, museum, or other professional institution; or

2. Substantial contribution through research and publication to the body of scholarly knowledge in the field of American architectural history.

Ms. Lopez has earned both a Bachelor's degree and a Master's degree in History which is a "closely related field" and her Master's degree was completed with an emphasis on Architecture. During Ms. Lopez's 4+ years at Cogstone Resource Management, Inc. (Cogstone) as an Architectural Historian, she has completed numerous projects which required extensive research, writing, and evaluation of American Architecture primarily in the state of California but in the Eastern United States as well. Ms. Lopez's experience both meets and exceeds the minimum requirement of Option 1 for the SOI standards for architectural history.

The California Historical Resources Information System (CHRIS) which operates through the California Office of Historic Preservation (OHP) approves of Ms. Lopez's qualification and she is currently listed as a principal investigator on the CHRIS Consultant's List for both History and Architectural History.

Ms. Lopez is experienced in Architectural History research and surveys along with photo documentation and recording of built environment resources for local, state, and federal projects. Ms. Lopez is acknowledged as an approved Architectural Historian by Caltrans. She has extensive knowledge with Native American consultation, consultation with city and county historical societies, and analysis of primary and secondary sources. Additionally, she is an approved Reader at the Huntington Library by the Los Angeles Office of Historic Resources.

SELECTED EXPERIENCE

Chico Very High Frequency Omni-Directional Range Project, City of Chico, Butte County, CA. Cogstone conducted a cultural resources assessment to identify potential impacts to archaeological and historical resources from the Chico (CIC) Very High Frequency Omni Directional Range (VOR) Project which will require the demolition, removal, and disposal of the CIC VOR building, stairs, stoops, roof mounted antennas, and dome. The building's foundation including eight concrete pilings, two steel girders, a concrete pull box, a steel distance measuring equipment (DME) pole, and a metal equipment cabinet will also be demolished. The United States Department of Transportation (USDOT) Volpe National Transportation System Center (Volpe Center) provided environmental compliance support for the Federal Aviation Administration (FAA) to meet their obligations for historic properties identification requirements under 36 CFR 800.4 in Section 106 of the National Historic Preservation Act (NHPA) which included Cogstone's assessment and National Register of Historic Places (NRHP) eligibility recommendations for the one historic building that was constructed in 1966. Cogstone's assessment included a cultural records search from the California Historical Resources Information System (CHRIS), a Sacred Lands File search from the Native American Heritage Commission (NAHC), an archaeological reconnaissance and built environment survey, and evaluation of one historic building on California Department of Parks and Recreation 523 (DPR 523) forms. Cogstone prepared a Cultural Resources Assessment Report documenting the findings of the study. Prime. Architectural Historian. 2021

Priest Valley Very High Frequency Omni-Directional Range Project, Priest Valley, Monterey and Fresno Counties, CA. Cogstone conducted a cultural resources assessment to identify potential impacts to cultural resources from the Priest Valley (ROM) VOR Project which will consist of the demolition, removal, and disposal of the facility (recorded as the Charley Mountain Radio Facility P-10-007062/P-27-003635). The USDOT Volpe Center provided environmental compliance support for the FAA to meet their obligations for historic properties identification requirements under 36 CFR 800.4 in Section 106 of the NHPA. Cogstone's assessment was conducted under the BLM CRUP number CA-19-07 and BLM Fieldwork Authorization No. FWA# CA-19-07-2022-190/01. Cogstone's assessment included a cultural records search from the CHRIS, a Sacred Lands File search from the NAHC, an intensive pedestrian and built environment survey, and updated the evaluation and site record for one historic facility on DPR 523 forms. Cogstone prepared separate Archaeological and Historical Resources Assessment Reports documenting the findings of the study due to changes in scope during the Project. Prime. Architectural Historian. 2021

Development of Management Plans for Historic Properties at Marine Corps Recruit Depot (MCRD) Parris Island, Beaufort County, SC. Cogstone prepared multiple management plans for historic properties located at MCRD Parris Island in order to assist in the day-to-day management of numerous and diverse cultural resources within its installation boundaries including key resources such as the Santa Elena National Historic Landmark, the Mainside Historic District, and four historic African American cemeteries and to fulfill the United States Marine Corp's Section 110 of the NHPA requirements. Specific deliverables included an Integrated Cultural Resources Management Plan (ICRMP) Update for 2020-2025, Character Defining Features Assessment of Historic Properties, Management and Treatment Plan for Historic Buildings and Structures, and a Determination of Eligibility for Four Historic Cemeteries. The management plans were met with praise from MCRD Parris Island and the South Carolina State Historic Preservation Office (SHPO) for their usefulness in the day-to-day management of their cultural resources. Deliverables were completed on time and within budget. All were reviewed and accepted by South Carolina SHPO. Prime. Architectural Historian 2017-2022

Character Defining Features (CDF) Assessment for Contributing Buildings and Structures at Marine Corps

Recruit Depot Parris Island, SC. Cogstone assessed CDFs for contributing resources to the Mainside Historic District and individually eligible historic properties at Marine Corps Recruit Depot Parris Island, South Carolina. The study was conducted to determine which elements of the buildings and structures of the historic district were CDFs for the elements that are eligible for the National Register of Historic Places (NRHP). The assessment satisfied Section 110 of the National Historic Preservation Act (NHPA) and will assist the United States Marine Corps with the management of their historic properties. Prime. Architectural Historian. 2017-2020.

Rhode Island Historical Resource Archive of Melville Naval Historic District and United States Naval Hospital, Newport Historic District, Naval Station Newport, RI. Cogstone completed Rhode Island Historical Resources Archive (RIHRA) documentation of the Melville Naval Historic District and the United States Naval Hospital Newport Historic District, at Naval Station (NAVSTA) Newport, Newport, Rhode Island. Prime. Architectural Historian. 2018

New Cuyama Dump Sites 1, 2, and 3, BLM Bakersfield Office, Santa Barbara County, CA. The Project involved identifying archaeological and historical resources present within three illegal dump sites on BLM land. This study included an assessment of the historic potential of dump refuse and NRHP eligibility recommendations for debris demonstrating affirmative evidence for an age of greater than 45 years. A Class III Cultural Resources survey was conducted and included an intensive-level pedestrian survey of the Area of Potential Effect (APE) with no larger than ten-meter-wide transects when used. Smaller transects were used in narrower areas of the APE and during investigations of newly identified archaeological sites and isolates. A total of three historic trash scatters were identified during the survey and a total of four historic isolates were identified. These resources were recorded on DPR 523 forms. No archaeological sites or isolates were identified. No artifacts were collected. Cogstone was able to meet the scheduled deadlines for the Project and completed the work within the budget. The deliverables were accepted by the BLM without revisions. Prime. Historian. 2020-2021

San Gabriel River Commuter Bikeway and Big Dalton Wash Commuter Bikeway, City of Baldwin Park, Los Angeles County, CA. Cogstone conducted a cultural and historic built environment resources assessment to determine the potential impacts to cultural and historical resources for the proposed construction of approximately five miles of new bikeway/pedestrian pathway. Services included pedestrian surveys, records searches, a Sacred Lands File search from the NAHC, preparation of DPR 523 forms, NRHP eligibility assessments, and reporting. The project required a Section 408 permit from the United States Army Corps of Engineers (USACE) due to the proximity of the federally managed San Gabriel River and tributaries. All work was completed in compliance with Section 106 of the NHPA. The City of Baldwin Park acted as lead agency under the California Environmental Quality Act (CEQA). Sub to Infrastructure Engineering Corporation. Historian. 2020-2021

Well 28 Project, City of Orange, Orange County, CA. Cogstone conducted a cultural and paleontological resources assessment to determine the potential impacts to cultural, historic built environment, and paleontological resources for the proposed construction of a new well and pumping station. Cogstone conducted records searches, a built environment survey, background research, and prepared a final report supporting the IS/MND. The study was completed in compliance with CEQA and the Secretary of the Interior's *Standards for Treatment of Historic Properties*. The City of Orange acted as lead agency under CEQA. Sub to EDP Solutions, Inc. Architectural Historian. 2020

Del Mar Heights School Rebuild Project, City of Del Mar, San Diego County, CA. Cogstone conducted a study to determine the eligibility of the built environment resources for listing on the California Register of Historical Resources (CRHR) for the proposed demolishment of an existing building. Services included a pedestrian survey, records search, background research, and the preparation of a historical review report. Sub to PlaceWorks. Architectural Historian. 2020

141st and Normandie Townhomes Project, City of Gardena, Los Angeles County, CA. Cogstone identified and evaluated the potential impacts to cultural, historic built environment, and paleontological resources for the proposed construction of 50 new, three-story townhomes, which will range in size from 1,252 to 1,689 square feet. Services included pedestrian survey, built environment evaluation, records searches, Sacred Lands File search from the NAHC, background research, and reporting. The project was completed in compliance with the requirements of CEQA with the City of Gardena acting as the lead agency under CEQA. Sub to De Novo Planning. Architectural Historian. 2020

Los Angeles Harbor College, City of Los Angeles, Los Angeles County, CA. Cogstone conducted a study to determine the potential impacts to cultural and historic built environment resources for the proposed demolition, renovation, and construction at the college. Three of the building scheduled for demolition were considered historic in age and required evaluation under CEQA. Cogstone conducted a records search, historical society outreach, a pedestrian survey, and produced a Historic Resources Evaluation Report. Sub to PlaceWorks. Architectural Historian. 2020

737 S. Oxford Ave. Apartments Project, City of Los Angeles, Los Angeles County, CA. The purpose of this study was to determine the potential effects to cultural, historic built environment, and paleontological resources resulting from the construction of a new seven-story, 92-unit apartment building with a single-level subterranean parking garage. The project area was open ranching and agricultural lands until development began in the early 20th century. By 1918, two single-family homes with detached garages were present on the property with nearly two dozen homes around the project area as well a handful of empty lots. Cogstone conducted a survey, documented the building proposed for demolition within the project area, and prepared a cultural resources assessment. Sub to Private Developer. Architectural Historian. 2018

20000 Skyline Boulevard, Redwood City, San Mateo County, CA. Cogstone conducted a built environment evaluation to assist the Midpeninsula Regional Open Space District in determining whether selected buildings on one of their properties are historic in age and whether they are eligible for listing on the California Register of Historical Resources. Cogstone conducted a cultural records search, two intensive level pedestrian surveys, and ultimately determined no mitigation was required due to lack of significance. Prime. Architectural Historian. 2019

3800 W. 6th Street Mixed-Used Development, Koreatown, Los Angeles County, CA. The project proposed to construct a 21-story mixed-use development with two levels of underground parking. Cogstone conducted a paleontological and cultural resources assessment. Tasks included records search, built environment survey, resource recording, and technical report. Conducted built environment survey, recorded building, and conducted viewshed impact analysis. Sub to Gateway Secured Regional Center. Architectural Historian. 2018

Fire Camp 8 Helistop Improvement Project, National Park Service, Los Angeles County, CA. The project involved the construction of a 6-inch diameter, 1,807-foot long water pipe to supply water to three fire hydrants. The route ran through the historic age Nike Missile site – LA-78 L&A. Cogstone conducted an intensive survey, photographed and recorded the historic features and evaluated the site for its potential eligibility for NRHP eligibility listing in accordance with Section 106 procedures. *This was part of an on-call contract with the Los Angeles Department of Water and Power (LADPW).* Sub to Aspen Environmental Group. Assistant Architectural Historian. 2018

HISTORIC RESOURCE EVALUATION REPORTS

Glassell Street at Palmyra Avenue Traffic Signal Installation Project, City of Orange, Orange County, California. Prepared for the City of Orange. 2022 In partnership with Ms. Virginia Adams of PAL, Cogstone prepared a Historic Resource Evaluation Report (HRER)for Caltrans District 12 to determine if the installation of a two phase traffic signal, located with the boundaries of the NRHP listed Old Towne Orange Historic District would negatively impact the integrity of the District. Cogstone conducted an intensive site survey, consultation with local historical societies and city agencies, prepared new and updated DPR 523 forms, and drafted a HRER . Architectural Historian. 2021-2022.

Cultural Resources Assessment Report for the Linbrook Villas Project, City of Anaheim, Orange County, California. Prepared for the City of Anaheim. The purpose of this study was to determine whether the Linbrook Villas Project (Project) had the potential to impact cultural resources located within the project area. Cogstone conducted an intensive pedestrian survey, historical society consultation, intensive archival research, and prepared a cultural assessment report and associated DPR 523 forms. Architectural Historian. 2021.

Historical Resource Assessment for the Santa Ana River Levee Stabilization Project, Riverside County, California. Prepared for County of Riverside, Flood Control and Water Conservation District. This study was conducted to determine the potential impacts to historical resources during the Santa Ana River Levee Stabilization Project (Project), located in Riverside County and San Bernardino, California. Cogstone surveyes and documented the segment of the levee to be impacted by the project, conducted consultation with local historical societies, museums, and various county agencies. Final deliverables included a Historical Resource assessment report and associated DPR 523 forms. 2021.

Historic Resources Evaluation Report for the McBean Park Drive Bridge over Auburn Ravine Bridge Replacement Project, City of Lincoln, Placer County, California. Prepared for Caltrans District 3 and the City of Lincoln. 2021. The project involved the replacement of the existing bridge (Bridge 19C0254) on McBean Park Drive, which was formerly State Route (SR) 193, over the Auburn Ravine. Cogstone conducted records search, built environment survey, resource recording and technical report. Architectural Historian. 2022.

Cultural and Paleontological Resources Assessment for the Palmyra Cemetery Project, City of Orange, Orange County, California. Prepared for the City of Orange. Cogstone conducted a cultural and historic built environment resource assessment to determine the potential impacts to cultural and paleontological resources resulting from the renovation of the existing on-site building and redevelopment of the project area. To meet CEQA compliance Cogstone prepared an onsite survey, historical society consultation, in depth research, prepared a cultural and paleontological assessment report and associated DPR 523 forms. Architectural Historian. 2021.2021

Cultural Resources Assessment for the San Gabriel River Commuter Bikeway and Big Dalton Wash Commuter Bikeway Projects, City of Baldwin Park, Los Angeles County, California. Prepared for the City of Baldwin Park. 2021. Cogstone conducted a cultural and historic built environment resources assessment to determine the potential impacts to cultural and historical resources for the proposed construction of approximately five miles of new bikeway/pedestrian pathway. Services included pedestrian surveys, records searches, a Sacred Lands File search from the NAHC, preparation of DPR 523 forms, NRHP eligibility assessments, and reporting. The project required a Section 408 permit from the USACE due to the proximity of the federally managed San Gabriel River and tributaries. All work performed complied with Section 106 of the NHPA. The City of Baldwin Park acted as lead agency under CEQA. Sub to Infrastructure Engineering Corporation. Architectural Historian. 2020-2021.

Century Villages at Cabrillo, City of Long Beach, Los Angeles County, CA. This Project involved the demolition of 215 dwelling units, 20,000 square feet of administrative and supportive services, and 10,000 square feet of amenities. Cogstone conducted a cultural and historic resources records search, a field visit, evaluation of the historic resources, and produced a built environment report. Conducted research, evaluation and co-author. Architectural Historian. 2019 –2021

Cultural and Paleontological Resources Assessment Report for the 4416 Azusa Canyon Road Project, City of Irwindale, Los Angeles County, California. Prepared for the City of Irwindale. Cogstone conducted a cultural and historic built environment resource assessment to determine the potential impacts to cultural and paleontological resources resulting from the demolition of the existing on-site building and redevelopment of the project area. To meet CEQA compliance Cogstone prepared an onsite survey, historical society consultation, in depth research, prepared a cultural and paleontological assessment report and associated DPR 523 forms. Architectural Historian. 2021.

National Register of Historic Places Eligibility Assessment of Four Historic Cemeteries, Marine Corps Recruit Depot Parris Island, South Carolina. Prepared for Naval Facilities Engineering Command, Mid-Atlantic Region. Cogstone prepared a management plan for MCRD Parris Island in order to assist in the day-to-day management of the four historic African American cemeteries and to fulfill the United States Marine Corp's Section 110 of the NHPA requirements. Specific deliverables included an Integrated Cultural Resources Management Plan (ICRMP) Update for 2020-2025. The management plans were met with praise from MCRD Parris Island and the South Carolina State .istoric Preservation Office (SHPO) for their usefulness in the day-to-day management of their cultural resources. Deliverables were completed on time and within budget. All were reviewed and accepted by South Carolina SHPO. Prime. Architectural Historian. 2017-2022

Historic Resources Evaluation Report for the Faith Home Road/Garner Road Project, Stanislaus County, California. Prepared for Stanislaus County Department of Public Works and Caltrans District 10. 2020. Cogstone identified and evaluated cultural, paleontological, and historic resources present in or adjacent to the construction of a four-lane one-mile expressway. Cogstone produced an Archaeological Survey Report (ASR), Historic Properties Survey Report (HPSR), Historic Resources Evaluation Report (HRER), and Paleontological Identification and Evaluation Report (PIR-PER). Services included intensive level pedestrian surveys, mapping, records searches, DPR forms, and Native American consultation. Sub to Environmental Intelligence. Architectural Historian. 2019.

Condition Assessment for 6101 Wilshire Blvd., Miracle Mile District, City of Los Angeles, Los Angeles County, California. Prepared for Los Angeles County Metropolitan Transportation Authority. 2020. On behalf of METRO, Cogstone was approved to reassess the exterior façade of Johnie’s Coffee Shop located on Wilshire Boulevard. The purpose of this assessment was to document the cracks of the current building during construction of the underground subway. Cogstone conducted a thorough site visit and prepared a condition assessment report. Architectural Historian and Monitor. 2018.

Cultural and Paleontological Resources Assessment for the Well 28 Project, City of Orange, Orange County, California. Prepared for the City of Orange. 2020. Cogstone conducted a cultural and paleontological resources assessment to determine the potential impacts to cultural and paleontological resources for the proposed construction of a new well and pumping station. Cogstone conducted records searches, a built environment survey, background research, and prepared a final report supporting the IS/MND. The study was completed in compliance with CEQA and the Secretary of the Interior’s Standards for Treatment of Historic Properties. The City of Orange acted as lead agency under CEQA. Sub to EDP Solutions, Inc. Architectural Historian. 2020.

Built Environment Evaluation of the Community Baptist Church, Montgomery High School B/Fuze 5052688 Project, City of Santa Rosa, Sonoma County, California. Prepared for Complete Wireless Consulting, Inc. 2018. Verizon Wireless proposed to install a cell tower and associated equipment located adjacent to two potentially historic buildings. Determined the potential effects to built environmental resources. The evaluation was completed in compliance with CEQA guidelines. Co-author of Built Environment Evaluation, prepared DPR forms. Architectural Historian. 2018.

Updated Crack Propagation Memo for 8423 Wilshire Boulevard, City of Beverly Hills, Los Angeles County, California. Prepared for Los Angeles County Metropolitan Transportation Authority. 2018. On behalf of METRO, Cogstone was approved to reassess the exterior façade of the old Porsche building located on Wilshire Boulevard. The purpose of this reassessment was to document and compare the cracks of the current building during construction of the underground subway with those recorded in a pre-construction survey. Architectural Monitor. 2018.

Cultural Resources Assessment for the Dos Palos Water Treatment Facility, City of Dos Palos, Merced County, California. Prepared for the City of Dos Palos. 2018. The purpose of this study was to determine the potential effects to cultural resources resulting from the proposed development of the Dos Palos Water Treatment Facility, where the Dos Palos’ allotment of water is removed from the California Aqueduct and travels through 17.5 miles of pipeline to the main facility for processing. This project had a federal nexus and required compliance with Section 106 of the Nation Historic Preservation Act. Services included archaeological and historical record searches, Sacred Lands search, pedestrian survey, built environment evaluation of three structures, and the production of a cultural assessment. Sub to QK, Inc. Architectural Historian. 2018

HISTORIC PROPERTY TREATMENT PLANS

Treatment Plan for Four Historic Cemeteries at Marine Corps Recruit Depot Parris Island, South Carolina. Prepared for Naval Facilities Engineering Command, Mid-Atlantic Region. Cogstone prepared a management plan for MCRD Parris Island in order to assist in the day-to-day management of the four historic African American cemeteries and to fulfill the United States Marine Corp’s Section 110 of the NHPA requirements.

Specific deliverables included an Integrated Cultural Resources Management Plan (ICRMP) Update for 2020-2025. The management plans were met with praise from MCRD Parris Island and the South Carolina State .istoric Preservation Office (SHPO) for their usefulness in the day-to-day management of their cultural resources. Deliverables were completed on time and within budget. All were reviewed and accepted by South Carolina SHPO. Prime. Architectural Historian 2017-2022

Maintenance and Treatment Plan for Historic Buildings and Structures at Marine Corps Recruit Depot Parris Island, South Carolina. Prepared for Naval Facilities Engineering Command, Mid-Atlantic Region. Cogstone prepared a management plan for historic properties located at MCRD Parris Island in order to assist in the day-to-day management of numerous and diverse cultural resources within its installation boundaries (including the Mainside historic district) in order to fulfill the United States Marine Corp's Section 110 of the NHPA requirements. Specific deliverables included the Management and Treatment Plan for Historic Buildings and Structures. The management plan was met with praise from MCRD Parris Island and the South Carolina State Historic Preservation Office (SHPO) for their usefulness in the day-to-day management of their cultural resources. Deliverables were completed on time and within budget. All were reviewed and accepted by South Carolina SHPO. Prime. Architectural Historian 2017-2022.

HISTORIC PROPERTY CHARACTER DEFINING FEATURES ASSESSMENTS

Character Defining Features Assessment Report for the Contributing Buildings and Structures at Marine Corps Recruit Depot Parris Island, South Carolina. Prepared for Naval Facilities Engineering Command, Mid-Atlantic Region. Cogstone assessed CDFs for contributing resources to the Mainside Historic District and individually eligible historic properties at Marine Corps Recruit Depot Parris Island, South Carolina. The study was conducted to determine which elements of the buildings and structures of the historic district were CDFs for the elements that are eligible for the National Register of Historic Places (NRHP). The assessment satisfied Section 110 of the National Historic Preservation Act (NHPA) and will assist the United States Marine Corps with the management of their historic properties. Prime. Architectural Historian. 2017-2020.

HISTORIC AMERICAN BUILDING SURVEY FORMS

U.S. Naval Station Newport, Rhode Island Melville Naval Historic District, Portsmouth, Newport County, Rhode Island Fueling Pier 40. Prepared for Naval Facilities Engineering Command, Mid-Atlantic Region. 2018. This purpose of this project is to produce Rhode Island Historical Resources Archive (RIHRA) documentation of the Melville Naval Historic District, at Naval Station (NAVSTA) Newport, Newport, Rhode Island. Conducted research, form contributor, and assistant Architectural Historian. 2018.

U.S. Naval Station Newport, Rhode Island U.S. Naval Hospital Newport Historic District Newport, Newport County, Rhode Island Main Hospital. Prepared for Naval Facilities Engineering Command, Mid-Atlantic Region. 2018. This purpose of this project is to produce Rhode Island Historical Resources Archive (RIHRA) documentation of the U.S. Naval Hospital Newport Historic District, at Naval Station (NAVSTA) Newport, Newport, Rhode Island. Conducted research, form contributor, and assistant Architectural Historian. 2018.

PUBLICATIONS

Welebaethan-CSUF

The Welebaethan: A Journal of History is published by undergraduate and graduate scholars in the Department of History at California State University, Fullerton (CSUF). It is also the official journal of CSUF's Theta-Pi Chapter (established 1962) of Phi Alpha Theta (History Honor Society).

In 2018, the Welebaethan published an article by Shannon Lopez titled "The Legacy of the Zanjas". Ms. Lopez combined and interpreted various primary and secondary sources regarding the history and importance of the first water systems of the City of Los Angeles. The methodology of this piece analyzed the relevance of these systems through the framework of California history, local history and culture, economics, as well as Supreme Court legislation regarding water rights of Southern California. The goal was to connect the importance of these water systems to the growth and development of Los Angeles as a national and international city.

SANDY DUARTE

Archaeologist

EDUCATION

2002 B.A., Cultural Anthropology, University of California, Santa Barbara

SUMMARY OF QUALIFICATIONS

Ms. Duarte is a skilled archaeologist with 18 years of experience in monitoring, surveying, and excavation in California. Duarte has experience with Native American consultation as required by Section 106 of the National Historic Preservation Act (NHPA) and under Senate Bill 18 for the protection and management of cultural resources. Beginning in 2006, Duarte worked for the U.S. Forest Service in the Biology, Timber, and Geology Department as an archaeologist, including serving as a trained wild-land firefighter to preserve archaeological sites in forest fires.

SELECTED EXPERIENCE

141st and Normandie Townhomes Project, City of Gardena, Los Angeles County, CA. Cogstone identified and evaluated the potential impacts to cultural, historic built environment, and paleontological resources for the proposed construction of 50 new, three-story townhomes, which will range in size from 1,252 to 1,689 square feet. Services included pedestrian survey, built environment evaluation, records searches, Sacred Lands File search from the NAHC, background research, and reporting. The assessment report was in compliance with the requirements of the California Environmental Quality Act (CEQA) with the City of Gardena acting as the lead agency under CEQA. Sub to De Novo Planning. Archaeologist. 2020

Newport Village Project, City of Newport Beach, Orange County, CA. Cogstone conducted a cultural and paleontological resources assessment to determine the potential impacts to cultural and paleontological resources during proposed construction of 14 residential condominium units, 108 apartment units, and 121,370 square feet of mixed-use development. The project would also have publicly accessible waterfront promenade with 844 parking spaces in surface-level and subterranean parking. Services included records searches, pedestrian survey, Sacred Lands File search from the NAHC, background research, and reporting. The City of Newport Beach acted as the lead agency under CEQA. Sub to Cox, Castle & Nicholson LLP. Archaeologist. 2019-2020

Prologis Vermont Avenue and Redondo Beach Industrial Project, City of Los Angeles, Los Angeles County, CA. Cogstone conducted a cultural and paleontological resources assessment to determine the potential impacts to cultural and paleontological resources during proposed construction of an industrial center, 223 automobile parking spaces, 32 bicycle parking spaces, 36 high truck loading positions, and parking stalls for truck trailers. Services included records searches, pedestrian survey, Sacred Lands File search from the NAHC, background research, and reporting. The City of Los Angeles acted as the lead agency under CEQA. Sub to PlaceWorks. Archaeologist. 2019-2020

Creekside Specific Plan Project, City of San Juan Capistrano, Orange County, CA. Cogstone conducted a cultural and paleontological resources assessment to determine the potential impacts to cultural and paleontological resources during the proposed demolition of a manufacturing building and construction of 188 residential units. Services included records searches, pedestrian survey, Sacred Lands File search from the NAHC, background research, and reporting. The City of San Juan Capistrano acted as the lead agency under CEQA. Sub to PlaceWorks. Archaeologist. 2019-2020

Casas de Bryn Mawr Community Housing Project, City of Loma Linda, San Bernardino County, CA. Cogstone conducted full-time cultural resources monitoring during the construction of four detached 1,400-square-foot, single-story, single-family homes to be built for sale with a preference to low income U.S. Veterans. No mitigation measures were required by the Cultural Resources Inventory Report for the project but recommended mitigation measures from the report were followed. One historic refuse deposit site consisting of approximately 50 artifacts was found slightly beyond the eastern edge of the project area. The lab analysis determined the artifacts were not significant. The City of Loma Linda acted as the lead agency under CEQA.

LOGAN FREEBERG
GIS Supervisor

EDUCATION

2018	Geographic Information Systems (GIS) Certificate, California State University, Fullerton
2003	B.A., Anthropology, University of California, Santa Barbara

SUMMARY OF QUALIFICATIONS

Mr. Freeberg has over 19 years of experience in cultural resource management and has extensive experience in field surveying, data recovery, monitoring, and excavation of archaeological and paleontological resources associated with land development projects in the private and public sectors. He has conducted all phases of archaeological work, including fieldwork, laboratory analysis, research, and reporting. Mr. Freeberg also has a strong grounding in conventional field and laboratory methods and is skilled in the use of ArcGIS.

SELECTED EXPERIENCE

Hilltop and Euclid Mixed-Use Project, City of San Diego, San Diego County, CA. Cogstone conducted paleontological resources monitoring during excavations for the proposed construction of 20 single-family residences, 27 two-story townhome residences, 113 affordable apartment units, a parking garage, and approximately 8,300 square feet of commercial space. No paleontological resources were identified during excavation. Sub to Birdseye Planning Group, LLC. GIS Supervisor. 2020-2021

Del Mar Heights School Rebuild Project, City of Del Mar, San Diego County, CA. Cogstone conducted a study to determine the eligibility of the built environment resources for listing on the California Register of Historical Resources (CRHR) for the proposed demolishment of an existing building. Services included a pedestrian survey, records search, background research, and the preparation of a historical review report. GIS Supervisor. 2020

Rincon Tribal Resource Conservation Management Plan Project, Rincon Band of Luiseno Indians Reservation, San Diego County, CA. Cogstone conducted a class III cultural resources assessment to determine the potential impacts to execute a Memorandum of Understanding with the Bureau of Indian Affairs regarding the Tribal Resource Conservation Management Plan. The Memorandum designates Preserve areas containing potential endangered species and their habitat. The Plan specifies avoidance and minimization measures to ensure the protection of those endangered species and their habitat. Cogstone conducted record searches, a Sacred Lands File Search, an intensive pedestrian survey, gave mitigation recommendations, and produced a report. GIS Supervisor. 2019-2020

141st and Normandie Townhomes Project, City of Gardena, Los Angeles County, CA. Cogstone identified and evaluated the potential impacts to cultural, historic built environment, and paleontological resources for the proposed construction of 50 new, three-story townhomes, which will range in size from 1,252 to 1,689 square feet. Services included pedestrian survey, built environment evaluation, records searches, Sacred Lands File search from the NAHC, background research, and reporting. The assessment report was in compliance with the requirements of the California Environmental Quality Act (CEQA) with the City of Gardena acting as the lead agency under CEQA. Sub to De Novo Planning. GIS Supervisor. 2020

Los Angeles Harbor College, City of Los Angeles, Los Angeles County, CA. Cogstone conducted a study to determine the potential impacts to cultural and historic built environment resources for the proposed demolition, renovation, and construction at the college. Three of the building scheduled for demolition were considered historic in age and required evaluation under CEQA. Cogstone conducted a records search, historical society outreach, a pedestrian survey, and produced a Historic Resources Evaluation Report. Sub to PlaceWorks. GIS Supervisor. 2020

APPENDIX B. HISTORIC SOCIETY CONSULTATION

cogstone
PALEONTOLOGY - ARCHAEOLOGY - HISTORY

June 28, 2021

Encinitas Historical Society
390 West F Street
Encinitas, CA 92024

RE: Request for Information: Cultural Resources Assessment for the Melba Road and Island View Lane Residential Project, City of Encinitas, San Diego County, California

To Whom It May Concern:

Cogstone Resource Management, Inc. (Cogstone) is conducting a cultural and paleontological resources assessment for the Melba Road and Island View Lane Residential Project (Project) as a sub-consultant to BRG Consulting, Inc. The Project is located on approximately seven acres at 1220-1240 Melba Road and 1190 Island View Lane within Assessor's Parcel Numbers (APNs) 259-180-09, -16, -33; 259-081-02, 259-181-03, and 259-181-04, in the City of Encinitas, San Diego County, California.

The Project area is currently developed and contains six historic-aged residences constructed between 1938 and 1978. The existing structures will be demolished to facilitate construction of 30 single-family homes along with a new private road; as well as associated utilities, drainage, and stormwater treatment improvements.

We are contacting you because we would like to invite members of the Encinitas Historical Society to provide input regarding the redevelopment of the Project area. We appreciate any information regarding the history of the Project area that you may have as well as any comments, issues, and/or concerns relating to the history of the Project area.

Please contact me at slopez@cogstone.com or at (714) 974-8300. Thank you for your attention to this matter.

Sincerely,

Shannon Lopez

Shannon Lopez, M.A.
Architectural Historian
(714) 974-8300 x.108
slopez@cogstone.com

1518 West Taft Avenue
Orange, CA 92865
Office (714) 974-8300

Branch Offices
San Diego – Riverside – Morro Bay – Sacramento – Arizona

cogstone.com
Toll free (888) 333-3212

Federal Certifications EDWOSB , SDB
State Certifications DBE, WBE, SBE, UDBE

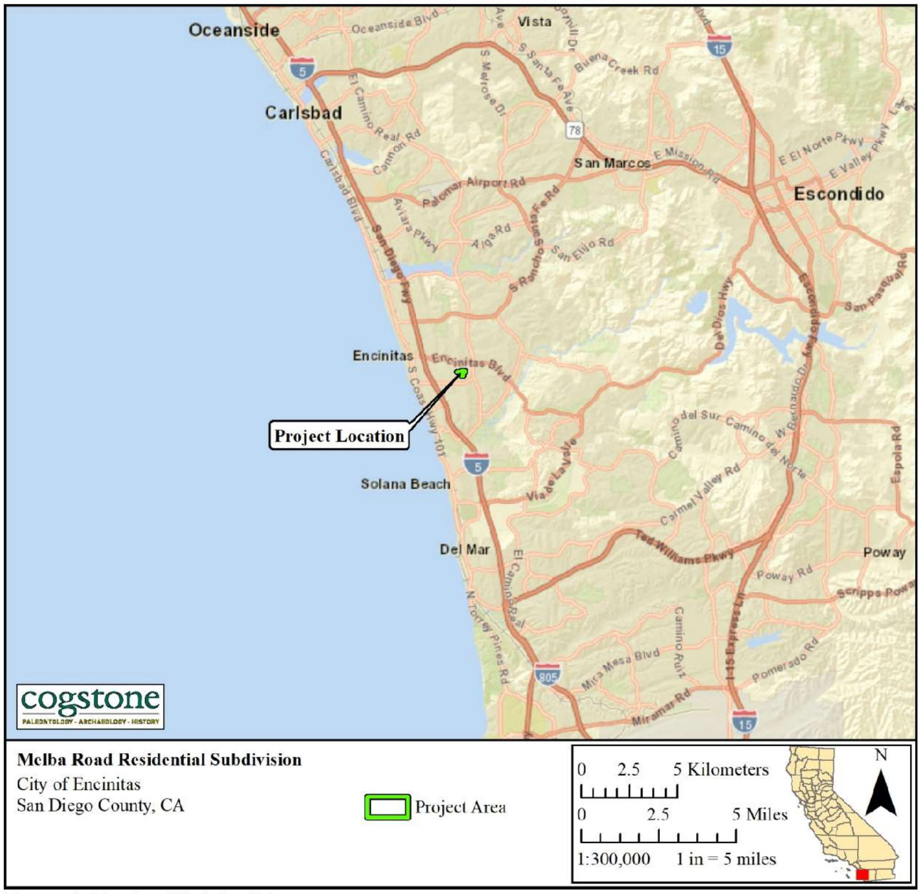


Figure 1. Project Vicinity Map

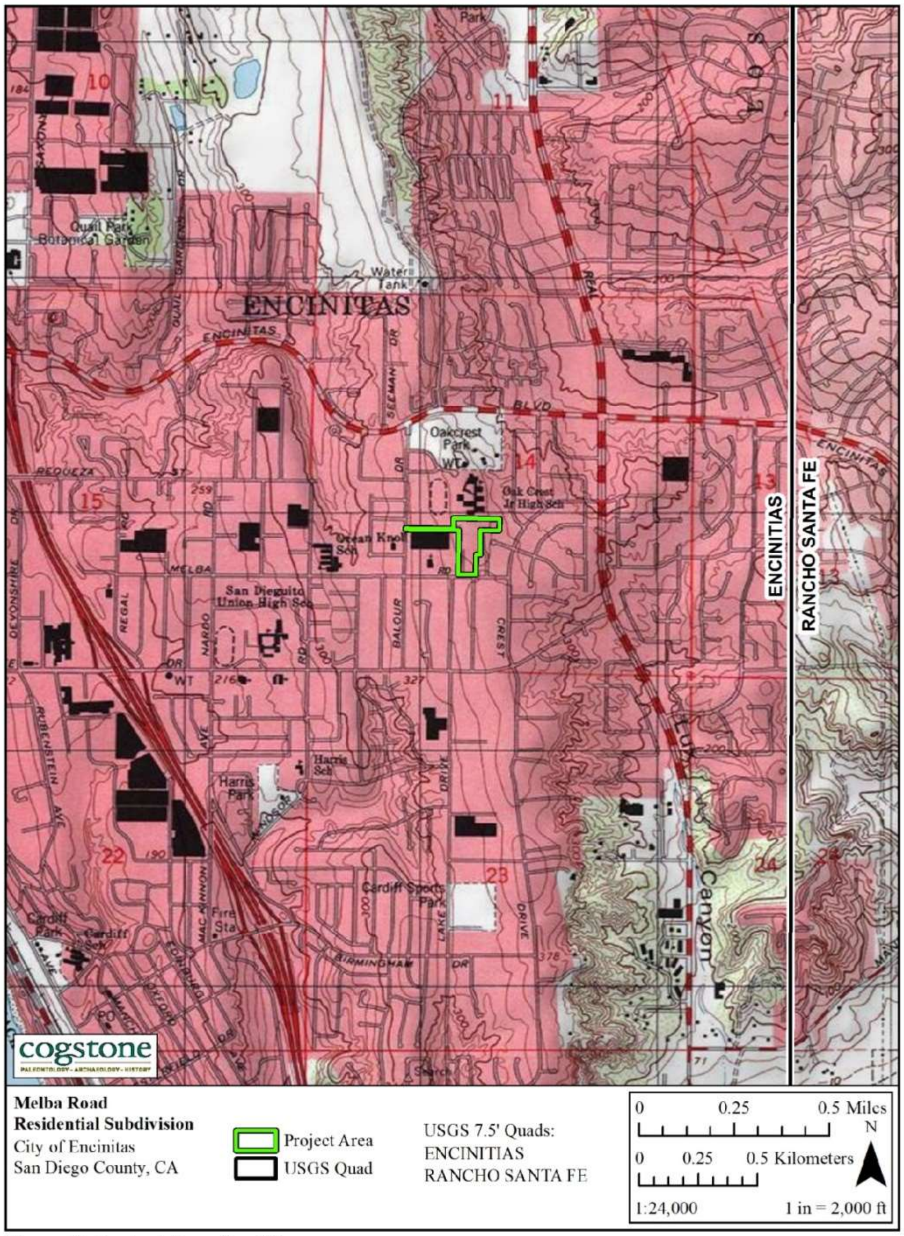


Figure 2. Project Location Map

cogstone.com

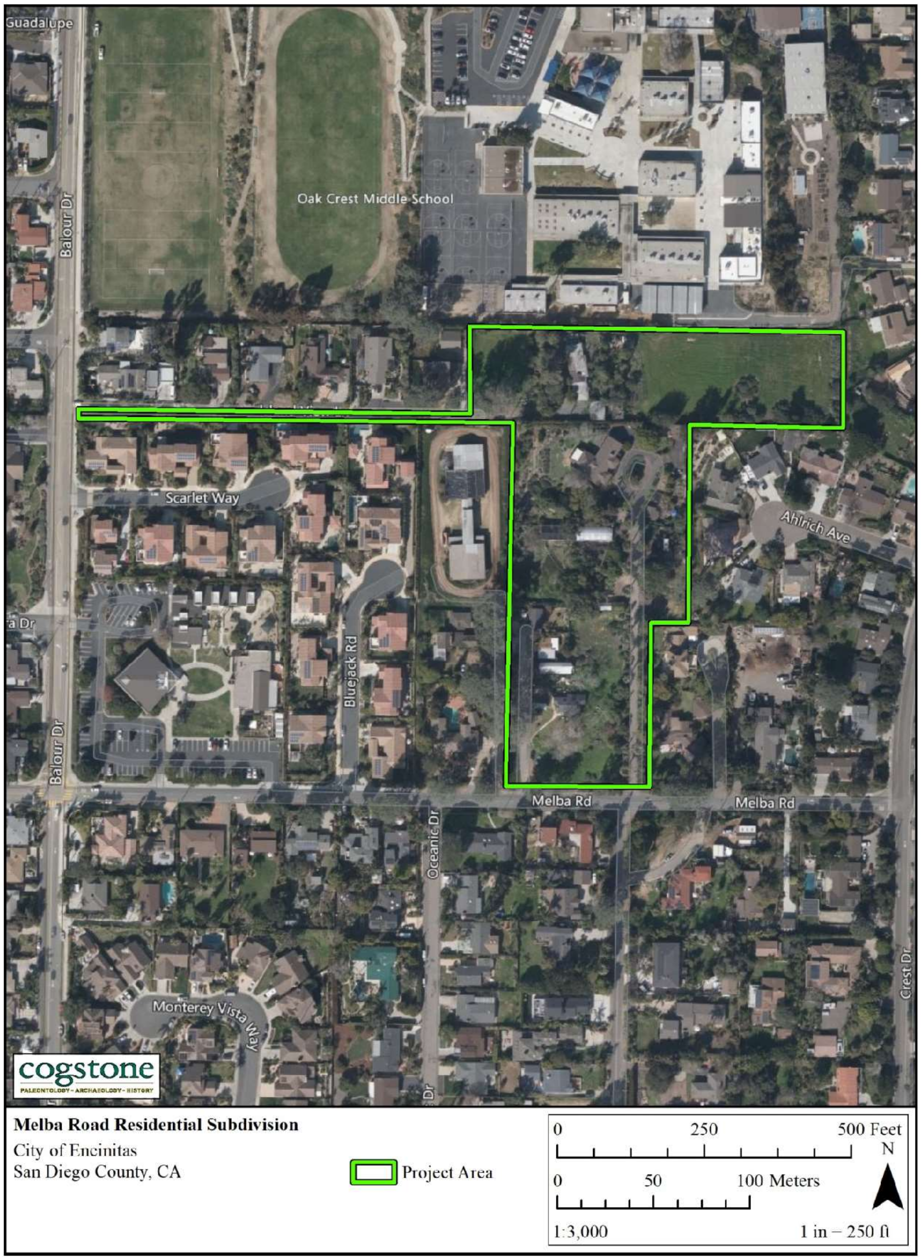


Figure 3. Project Aerial Map

cogstone.com

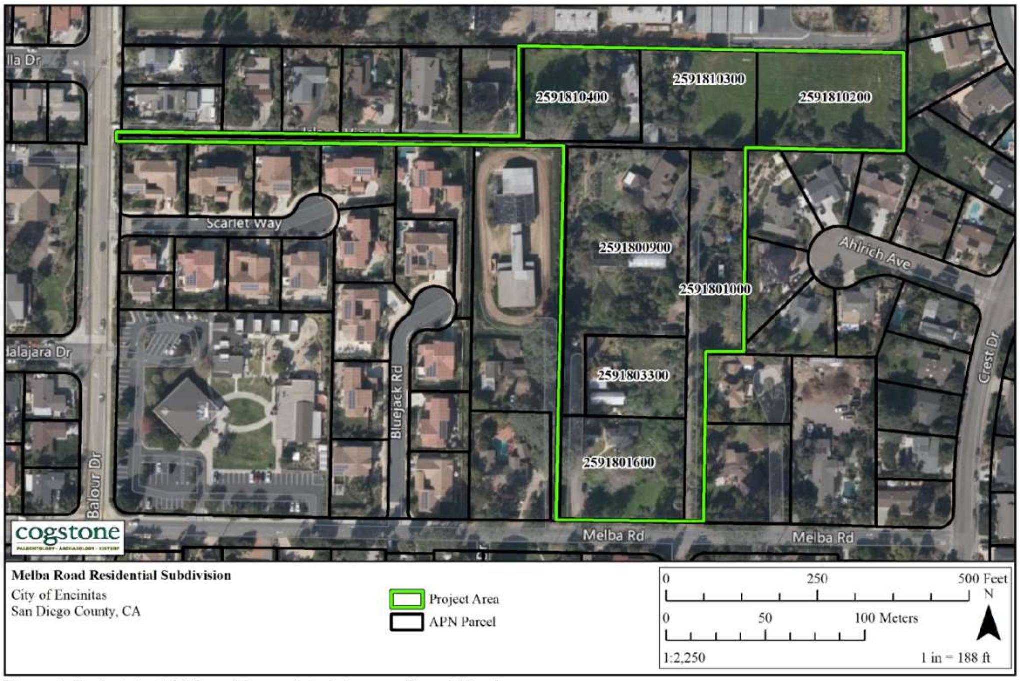
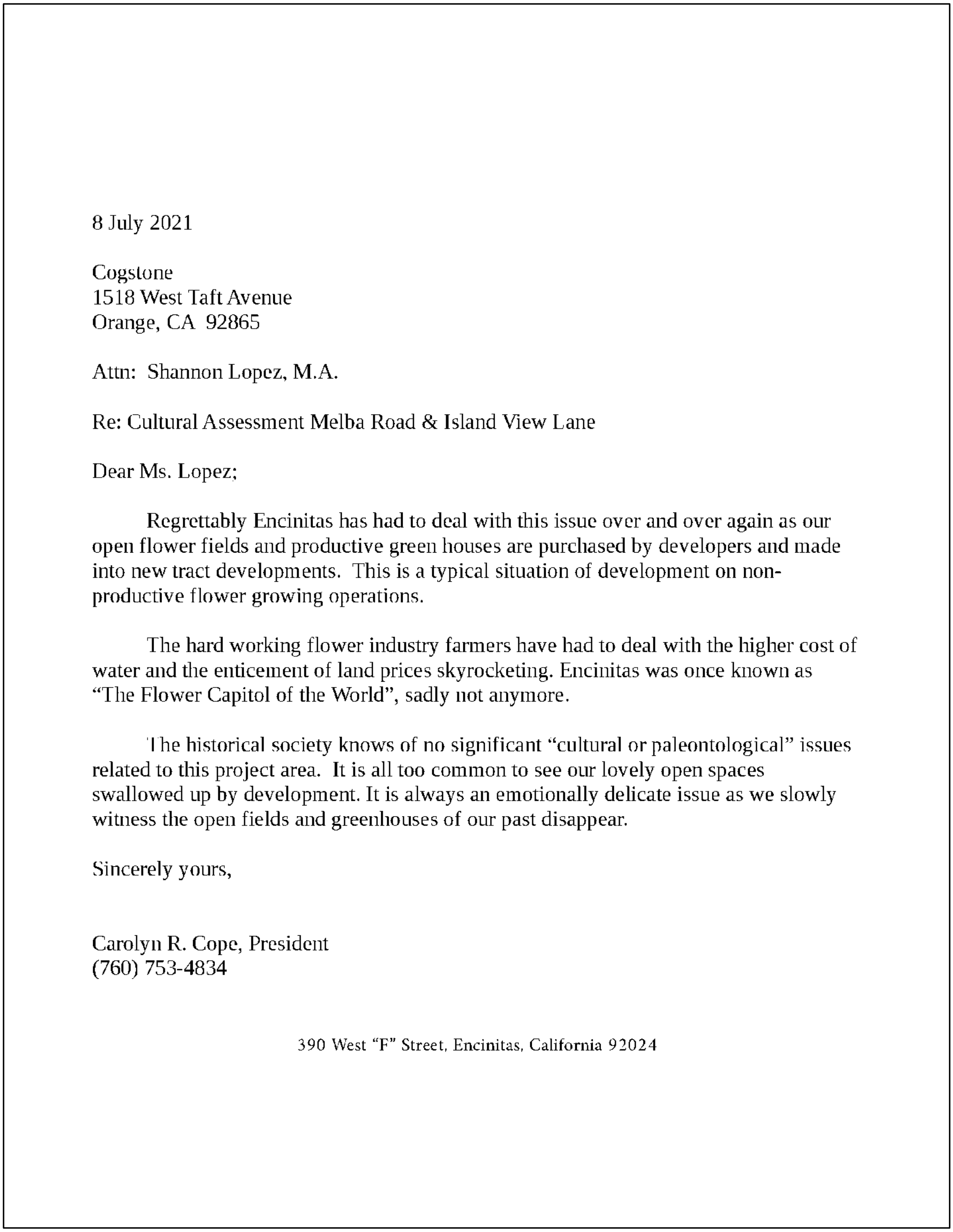


Figure 4. Project Aerial Map with associated Assessor Parcel Numbers

cogstone.com



8 July 2021

Cogstone
1518 West Taft Avenue
Orange, CA 92865

Attn: Shannon Lopez, M.A.

Re: Cultural Assessment Melba Road & Island View Lane

Dear Ms. Lopez;

Regrettably Encinitas has had to deal with this issue over and over again as our open flower fields and productive green houses are purchased by developers and made into new tract developments. This is a typical situation of development on non-productive flower growing operations.

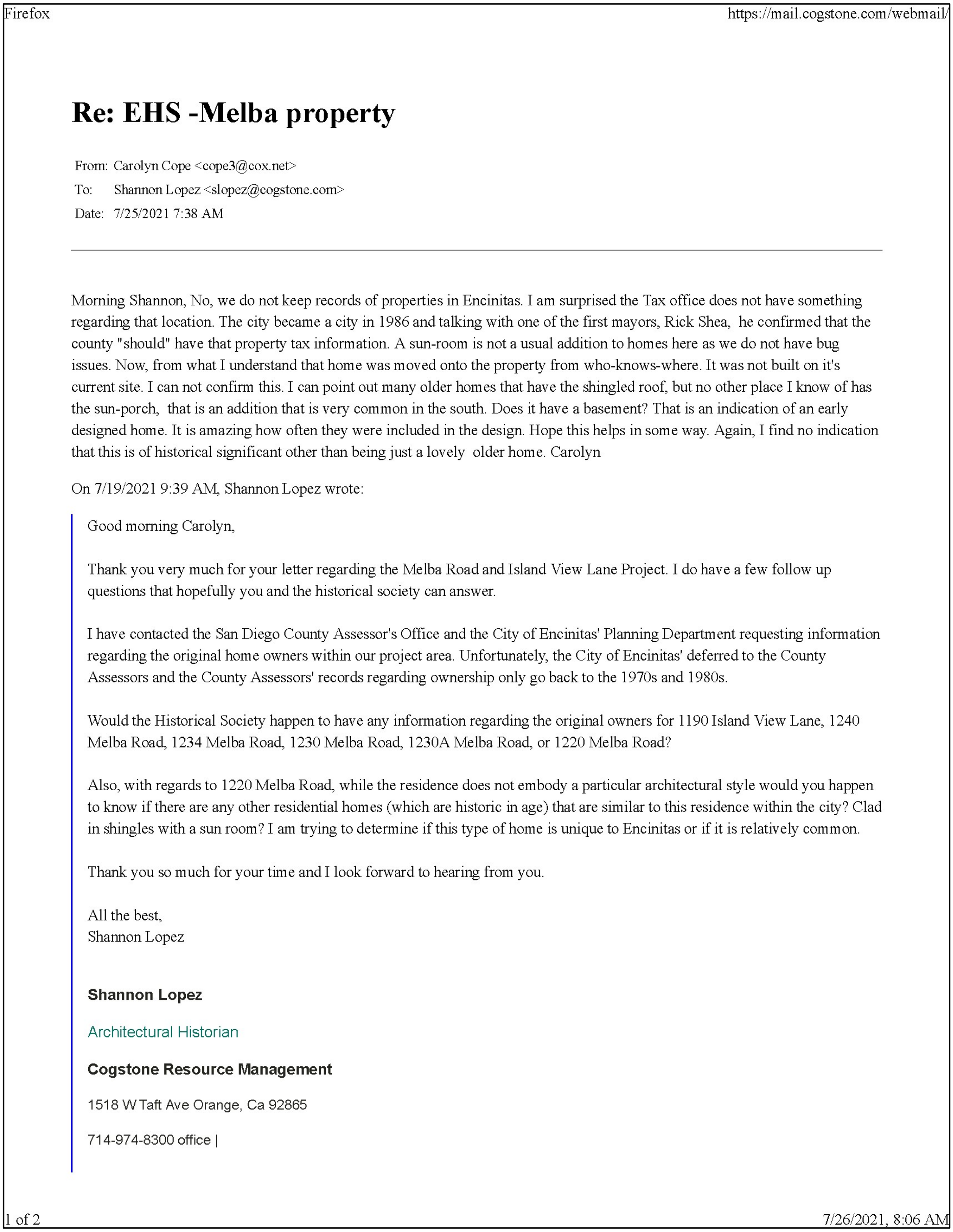
The hard working flower industry farmers have had to deal with the higher cost of water and the enticement of land prices skyrocketing. Encinitas was once known as "The Flower Capitol of the World", sadly not anymore.

The historical society knows of no significant "cultural or paleontological" issues related to this project area. It is all too common to see our lovely open spaces swallowed up by development. It is always an emotionally delicate issue as we slowly witness the open fields and greenhouses of our past disappear.

Sincerely yours,

Carolyn R. Cope, President
(760) 753-4834

390 West "F" Street, Encinitas, California 92024



Firefox https://mail.cogstone.com/webmail/

Re: EHS -Melba property

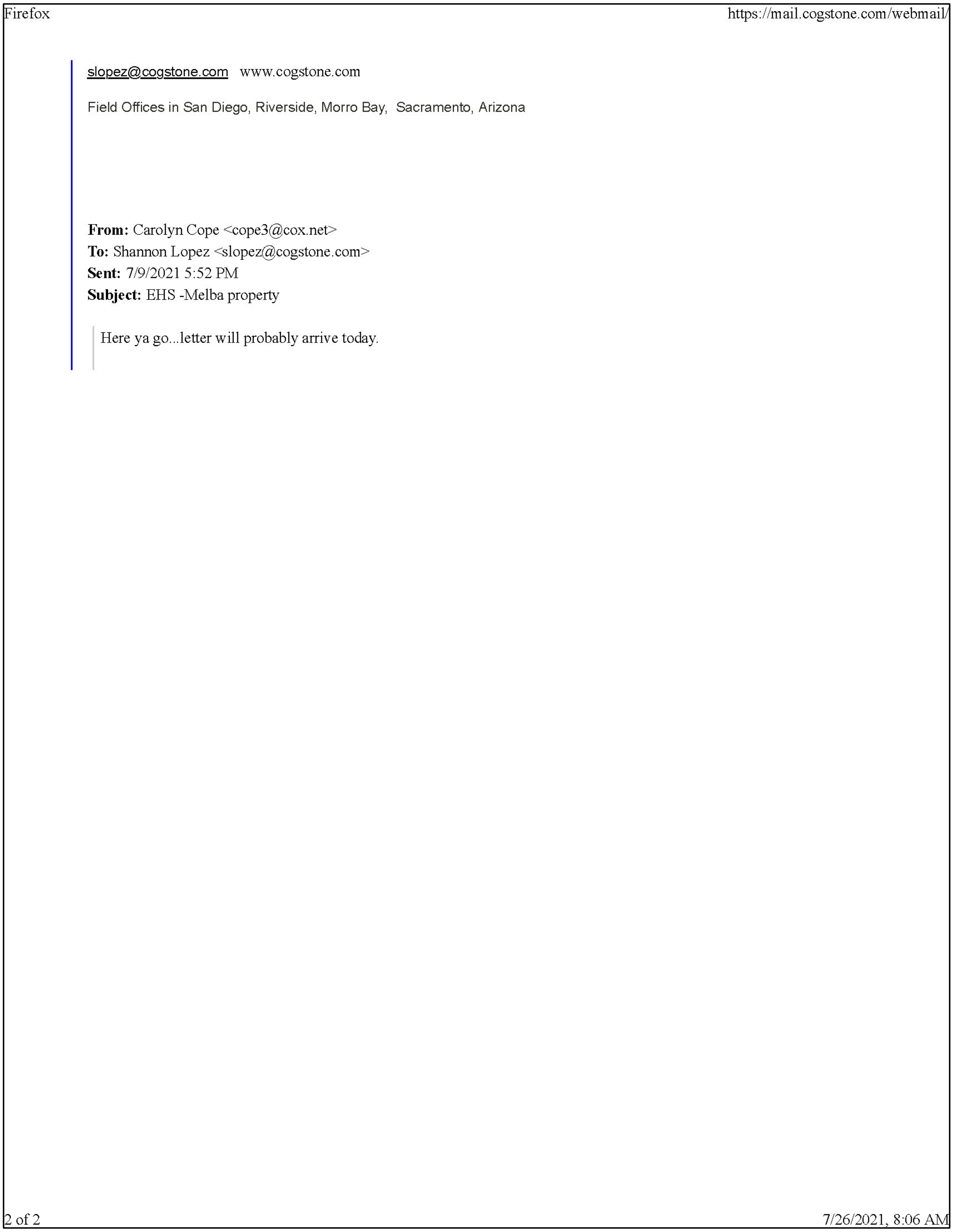
From: Carolyn Cope <cope3@cox.net>
To: Shannon Lopez <slopez@cogstone.com>
Date: 7/25/2021 7:38 AM

Morning Shannon, No, we do not keep records of properties in Encinitas. I am surprised the Tax office does not have something regarding that location. The city became a city in 1986 and talking with one of the first mayors, Rick Shea, he confirmed that the county "should" have that property tax information. A sun-room is not a usual addition to homes here as we do not have bug issues. Now, from what I understand that home was moved onto the property from who-knows-where. It was not built on it's current site. I can not confirm this. I can point out many older homes that have the shingled roof, but no other place I know of has the sun-porch, that is an addition that is very common in the south. Does it have a basement? That is an indication of an early designed home. It is amazing how often they were included in the design. Hope this helps in some way. Again, I find no indication that this is of historical significant other than being just a lovely older home. Carolyn

On 7/19/2021 9:39 AM, Shannon Lopez wrote:

> Good morning Carolyn,
>
> Thank you very much for your letter regarding the Melba Road and Island View Lane Project. I do have a few follow up questions that hopefully you and the historical society can answer.
>
> I have contacted the San Diego County Assessor's Office and the City of Encinitas' Planning Department requesting information regarding the original home owners within our project area. Unfortunately, the City of Encinitas' deferred to the County Assessors and the County Assessors' records regarding ownership only go back to the 1970s and 1980s.
>
> Would the Historical Society happen to have any information regarding the original owners for 1190 Island View Lane, 1240 Melba Road, 1234 Melba Road, 1230 Melba Road, 1230A Melba Road, or 1220 Melba Road?
>
> Also, with regards to 1220 Melba Road, while the residence does not embody a particular architectural style would you happen to know if there are any other residential homes (which are historic in age) that are similar to this residence within the city? Clad in shingles with a sun room? I am trying to determine if this type of home is unique to Encinitas or if it is relatively common.
>
> Thank you so much for your time and I look forward to hearing from you.
>
> All the best,
> Shannon Lopez
>
> **Shannon Lopez**
>
> Architectural Historian
>
> **Cogstone Resource Management**
>
> 1518 W Taft Ave Orange, Ca 92865
>
> 714-974-8300 office |

1 of 2 7/26/2021, 8:06 AM

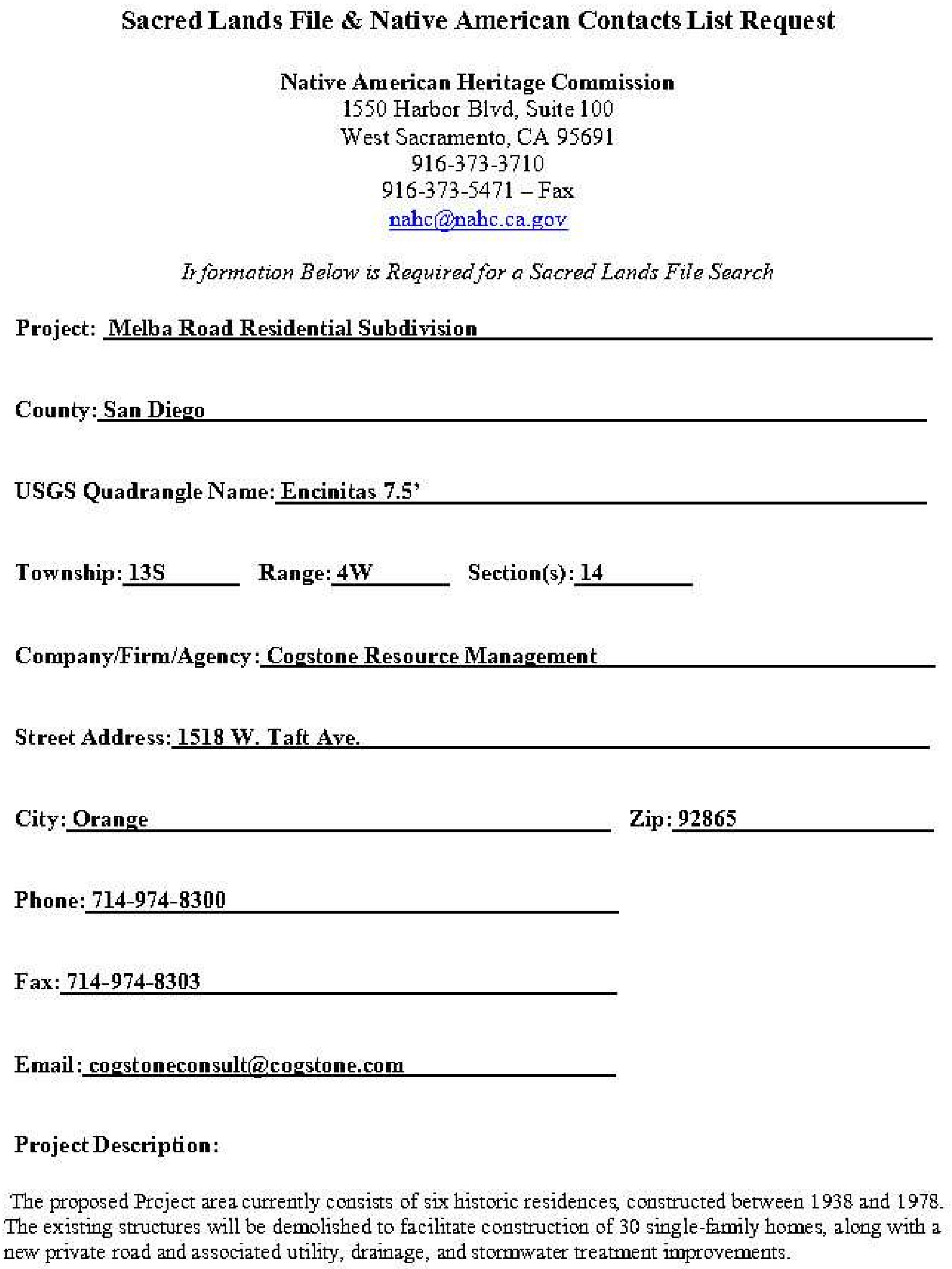


Firefox https://mail.cogstone.com/webmail/

> slopez@cogstone.com www.cogstone.com
>
> Field Offices in San Diego, Riverside, Morro Bay, Sacramento, Arizona
>
> **From:** Carolyn Cope <cope3@cox.net>
> **To:** Shannon Lopez <slopez@cogstone.com>
> **Sent:** 7/9/2021 5:52 PM
> **Subject:** EHS -Melba property
>
> > Here ya go...letter will probably arrive today.

2 of 2 7/26/2021, 8:06 AM

APPENDIX C. NATIVE AMERICAN CONSULTATION



Sacred Lands File & Native American Contacts List Request

Native American Heritage Commission
1550 Harbor Blvd, Suite 100
West Sacramento, CA 95691
916-373-3710
916-373-5471 – Fax
nahc@nahc.ca.gov

Information Below is Required for a Sacred Lands File Search

Project: Melba Road Residential Subdivision

County: San Diego

USGS Quadrangle Name: Encinitas 7.5'

Township: 13S **Range:** 4W **Section(s):** 14

Company/Firm/Agency: Cogstone Resource Management

Street Address: 1518 W. Taft Ave.

City: Orange **Zip:** 92865

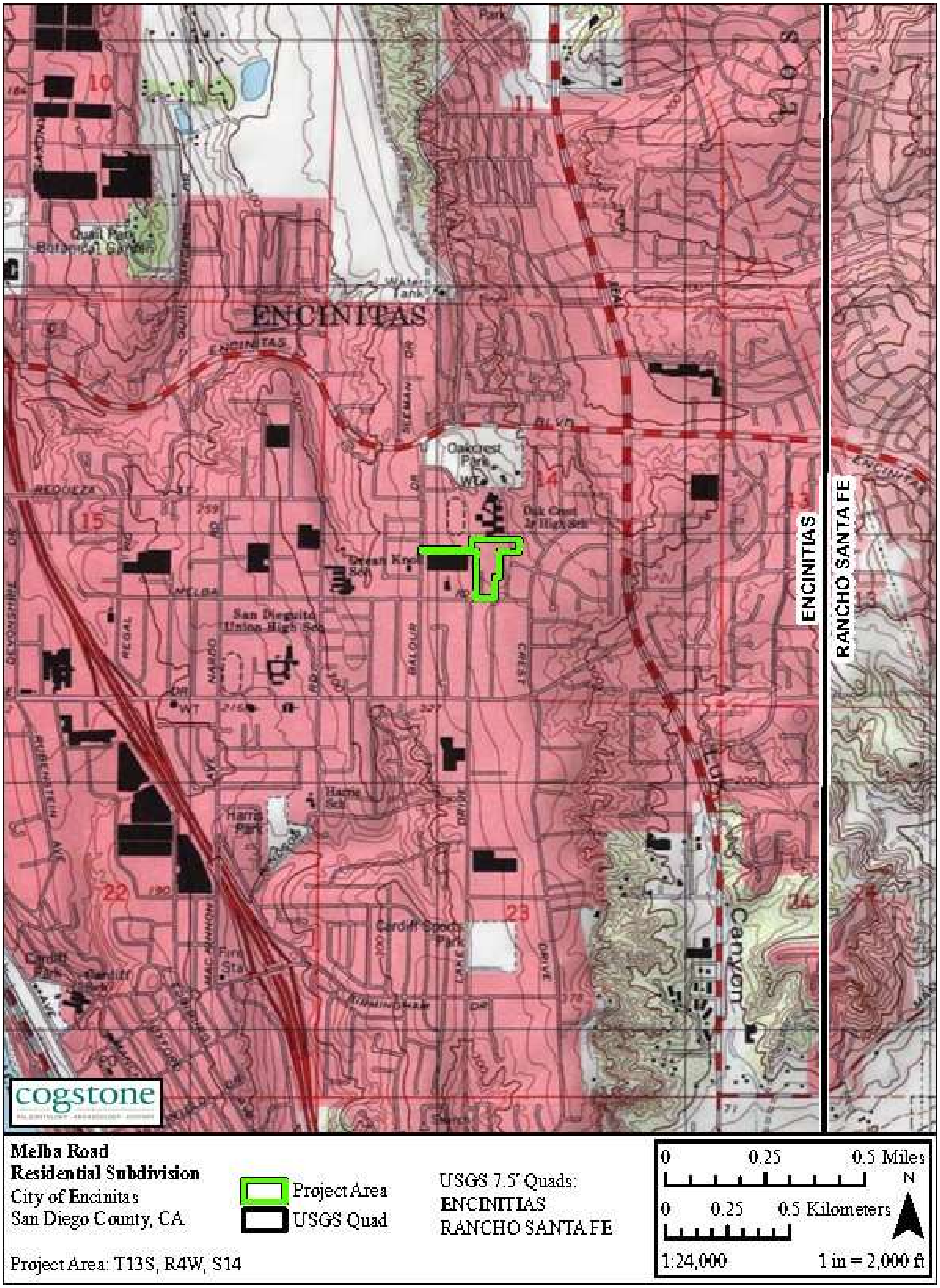
Phone: 714-974-8300

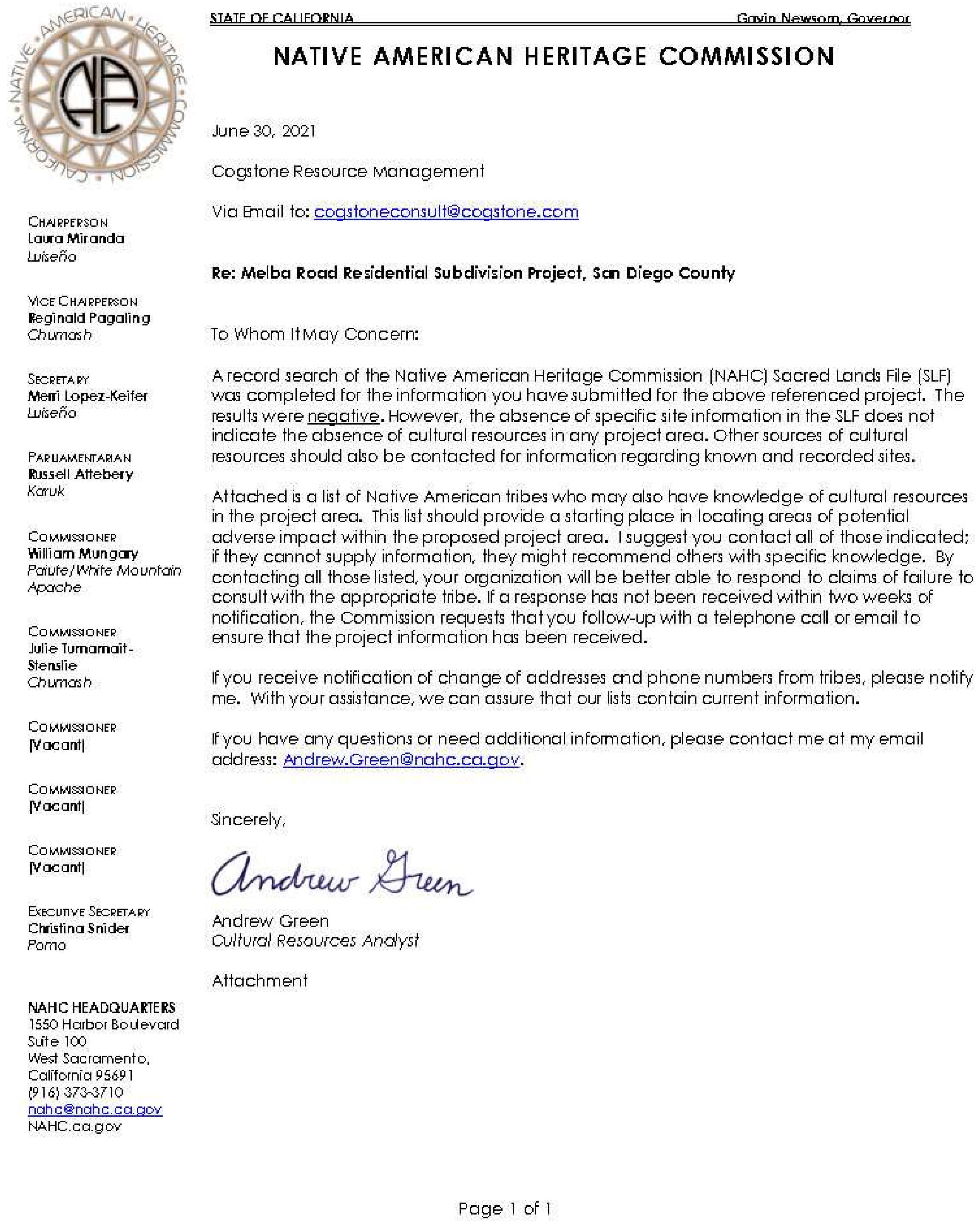
Fax: 714-974-8303

Email: cogstoneconsult@cogstone.com

Project Description:

The proposed Project area currently consists of six historic residences, constructed between 1938 and 1978. The existing structures will be demolished to facilitate construction of 30 single-family homes, along with a new private road and associated utility, drainage, and stormwater treatment improvements.


ENCINITAS
ENCINITIAS
RANCHO SANTA FE
Quail Park Botanical Garden
Water Tank
Oakcrest Park
Oak Crest Jr High Sch
San Dieguito Union High Sch
Harris Park
Cardiff Sports Park
Canyon
cogstone
Melba Road
Residential Subdivision
City of Encinitas
San Diego County, CA
Project Area: T13S, R4W, S14
Project Area
USGS Quad
USGS 7.5' Quads:
ENCINITIAS
RANCHO SANTA FE
0
0.25
0.5 Miles
0
0.25
0.5 Kilometers
N
1:24,000
1 in = 2,000 ft



STATE OF CALIFORNIA Gavin Newsom, Governor

NATIVE AMERICAN HERITAGE COMMISSION

June 30, 2021

Cogstone Resource Management

Via Email to: cogstoneconsult@cogstone.com

Re: Melba Road Residential Subdivision Project, San Diego County

To Whom It May Concern:

A record search of the Native American Heritage Commission (NAHC) Sacred Lands File (SLF) was completed for the information you have submitted for the above referenced project. The results were negative. However, the absence of specific site information in the SLF does not indicate the absence of cultural resources in any project area. Other sources of cultural resources should also be contacted for information regarding known and recorded sites.

Attached is a list of Native American tribes who may also have knowledge of cultural resources in the project area. This list should provide a starting place in locating areas of potential adverse impact within the proposed project area. I suggest you contact all of those indicated; if they cannot supply information, they might recommend others with specific knowledge. By contacting all those listed, your organization will be better able to respond to claims of failure to consult with the appropriate tribe. If a response has not been received within two weeks of notification, the Commission requests that you follow-up with a telephone call or email to ensure that the project information has been received.

If you receive notification of change of addresses and phone numbers from tribes, please notify me. With your assistance, we can assure that our lists contain current information.

If you have any questions or need additional information, please contact me at my email address: Andrew.Green@nahc.ca.gov.

Sincerely,

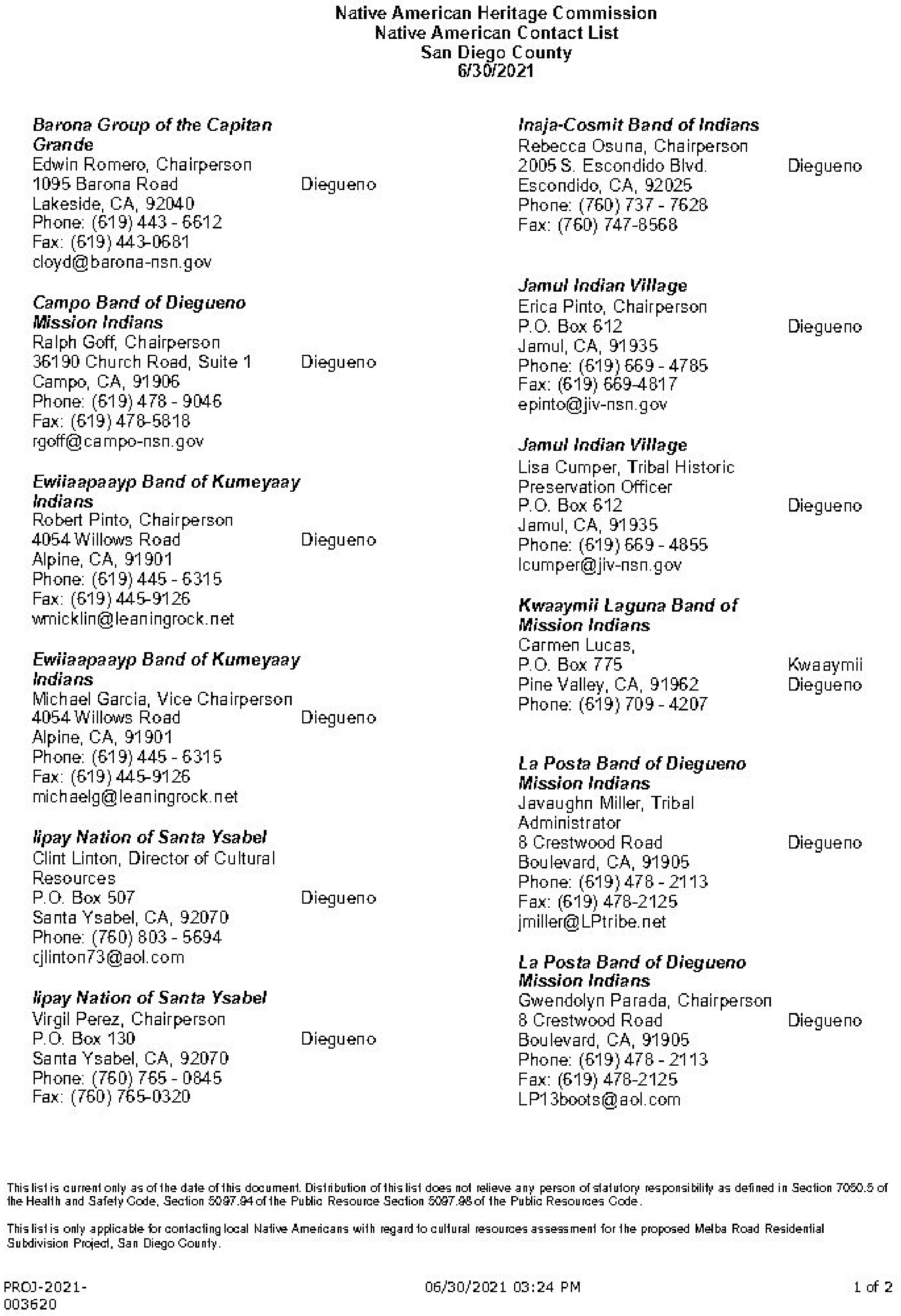
Andrew Green

Andrew Green
Cultural Resources Analyst

Attachment

NAHC HEADQUARTERS
1550 Harbor Boulevard
Suite 100
West Sacramento,
California 95691
(916) 373-3710
nahc@nahc.ca.gov
NAHC.ca.gov

Page 1 of 1



Native American Heritage Commission
Native American Contact List
San Diego County
6/30/2021

Barona Group of the Capitan Grande
Edwin Romero, Chairperson
1095 Barona Road
Lakeside, CA, 92040
Phone: (619) 443 - 6612
Fax: (619) 443-0681
cloyd@barona-nsn.gov
Diegueno

Campo Band of Diegueno Mission Indians
Ralph Goff, Chairperson
36190 Church Road, Suite 1
Campo, CA, 91906
Phone: (619) 478 - 9046
Fax: (619) 478-5818
rgoff@campo-nsn.gov
Diegueno

Ewiiaapaayp Band of Kumeyaay Indians
Robert Pinto, Chairperson
4054 Willows Road
Alpine, CA, 91901
Phone: (619) 445 - 6315
Fax: (619) 445-9126
wmicklin@leaningrock.net
Diegueno

Ewiiaapaayp Band of Kumeyaay Indians
Michael Garcia, Vice Chairperson
4054 Willows Road
Alpine, CA, 91901
Phone: (619) 445 - 6315
Fax: (619) 445-9126
michaelg@leaningrock.net
Diegueno

Iipay Nation of Santa Ysabel
Clint Linton, Director of Cultural Resources
P.O. Box 507
Santa Ysabel, CA, 92070
Phone: (760) 803 - 5694
cjlinton73@aol.com
Diegueno

Iipay Nation of Santa Ysabel
Virgil Perez, Chairperson
P.O. Box 130
Santa Ysabel, CA, 92070
Phone: (760) 765 - 0845
Fax: (760) 765-0320
Diegueno

Inaja-Cosmit Band of Indians
Rebecca Osuna, Chairperson
2005 S. Escondido Blvd.
Escondido, CA, 92025
Phone: (760) 737 - 7628
Fax: (760) 747-8568
Diegueno

Jamul Indian Village
Erica Pinto, Chairperson
P.O. Box 612
Jamul, CA, 91935
Phone: (619) 669 - 4785
Fax: (619) 669-4817
epinto@jiv-nsn.gov
Diegueno

Jamul Indian Village
Lisa Cumper, Tribal Historic Preservation Officer
P.O. Box 612
Jamul, CA, 91935
Phone: (619) 669 - 4855
lcumper@jiv-nsn.gov
Diegueno

Kwaaymii Laguna Band of Mission Indians
Carmen Lucas,
P.O. Box 775
Pine Valley, CA, 91962
Phone: (619) 709 - 4207
Kwaaymii
Diegueno

La Posta Band of Diegueno Mission Indians
Javaughn Miller, Tribal Administrator
8 Crestwood Road
Boulevard, CA, 91905
Phone: (619) 478 - 2113
Fax: (619) 478-2125
jmiller@LPtribe.net
Diegueno

La Posta Band of Diegueno Mission Indians
Gwendolyn Parada, Chairperson
8 Crestwood Road
Boulevard, CA, 91905
Phone: (619) 478 - 2113
Fax: (619) 478-2125
LP13boots@aol.com
Diegueno

This list is current only as of the date of this document. Distribution of this list does not relieve any person of statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resource Section 5097.98 of the Public Resources Code.

This list is only applicable for contacting local Native Americans with regard to cultural resources assessment for the proposed Melba Road Residential Subdivision Project, San Diego County.

PROJ-2021-003620
06/30/2021 03:24 PM
1 of 2

Native American Heritage Commission
Native American Contact List
San Diego County
6/30/2021

Manzanita Band of Kumeyaay Nation
Angela Elliott Santos, Chairperson
P.O. Box 1302 Dieguenо
Boulevard, CA, 91905
Phone: (619) 766 - 4930
Fax: (619) 766-4957

Mesa Grande Band of Dieguеno Mission Indians
Michael Linton, Chairperson
P.O Box 270 Dieguеno
Santa Ysabel, CA, 92070
Phone: (760) 782 - 3818
Fax: (760) 782-9092
mesagrandeband@msn.com

Rincon Band of Luiseno Indians
Bo Mazzetti, Chairperson
One Government Center Lane Luiseno
Valley Center, CA, 92082
Phone: (760) 749 - 1051
Fax: (760) 749-5144
bomazzetti@aol.com

Rincon Band of Luiseno Indians
Cheryl Madrigal, Tribal Historic Preservation Officer
One Government Center Lane Luiseno
Valley Center, CA, 92082
Phone: (760) 297 - 2635
crd@rincon-nsn.gov

San Pasqual Band of Dieguеno Mission Indians
Allen Lawson, Chairperson
P.O. Box 365 Dieguеno
Valley Center, CA, 92082
Phone: (760) 749 - 3200
Fax: (760) 749-3876
allenl@sanpasqualtribe.org

San Pasqual Band of Dieguеno Mission Indians
John Flores, Environmental Coordinator
P. O. Box 365 Dieguеno
Valley Center, CA, 92082
Phone: (760) 749 - 3200
Fax: (760) 749-3876
johnf@sanpasqualtribe.org

Sycuan Band of the Kumeyaay Nation
Cody Martinez, Chairperson
1 Kwaaypaay Court Kumeyaay
El Cajon, CA, 92019
Phone: (619) 445 - 2613
Fax: (619) 445-1927
ssilva@sycuan-nsn.gov

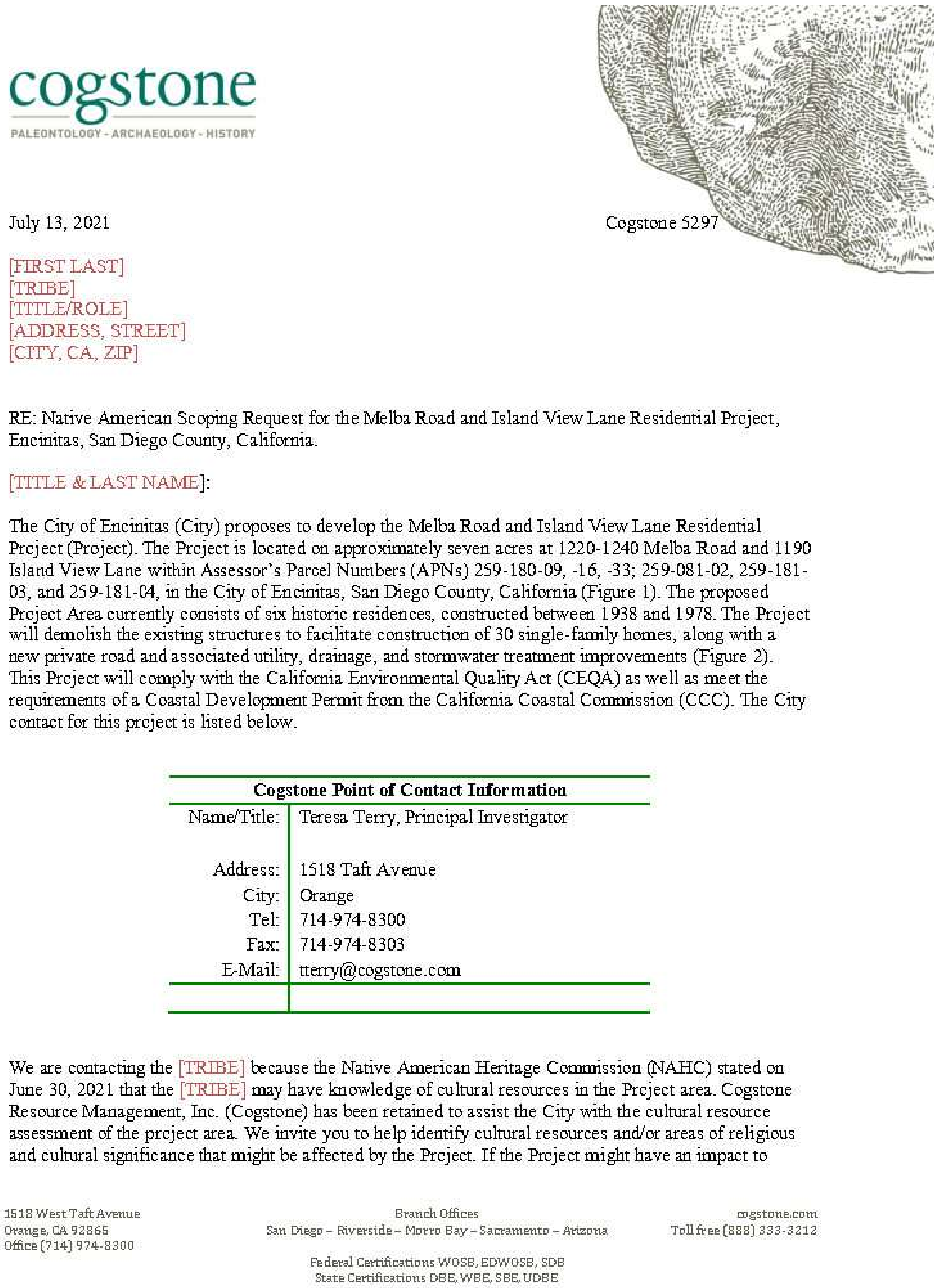
Sycuan Band of the Kumeyaay Nation
Kristie Orosco, Kumeyaay Resource Specialist
1 Kwaaypaay Court Kumeyaay
El Cajon, CA, 92019
Phone: (619) 445 - 6917

Viejas Band of Kumeyaay Indians
John Christman, Chairperson
1 Viejas Grade Road Dieguеno
Alpine, CA, 91901
Phone: (619) 445 - 3810
Fax: (619) 445-5337

Viejas Band of Kumeyaay Indians
Ernest Pingleton, Tribal Historic Officer, Resource Management
1 Viejas Grade Road Dieguеno
Alpine, CA, 91901
Phone: (619) 659 - 2314
epingleton@viejas-nsn.gov

This list is current only as of the date of this document. Distribution of this list does not relieve any person of statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resource Section 5097.98 of the Public Resources Code.

This list is only applicable for contacting local Native Americans with regard to cultural resources assessment for the proposed Melba Road Residential Subdivision Project, San Diego County.



cogstone
PALEONTOLOGY - ARCHAEOLOGY - HISTORY

July 13, 2021

Cogstone 5297

[FIRST LAST]
[TRIBE]
[TITLE/ROLE]
[ADDRESS, STREET]
[CITY, CA, ZIP]

RE: Native American Scoping Request for the Melba Road and Island View Lane Residential Project, Encinitas, San Diego County, California.

[TITLE & LAST NAME]:

The City of Encinitas (City) proposes to develop the Melba Road and Island View Lane Residential Project (Project). The Project is located on approximately seven acres at 1220-1240 Melba Road and 1190 Island View Lane within Assessor's Parcel Numbers (APNs) 259-180-09, -16, -33; 259-081-02, 259-181-03, and 259-181-04, in the City of Encinitas, San Diego County, California (Figure 1). The proposed Project Area currently consists of six historic residences, constructed between 1938 and 1978. The Project will demolish the existing structures to facilitate construction of 30 single-family homes, along with a new private road and associated utility, drainage, and stormwater treatment improvements (Figure 2). This Project will comply with the California Environmental Quality Act (CEQA) as well as meet the requirements of a Coastal Development Permit from the California Coastal Commission (CCC). The City contact for this project is listed below.

Cogstone Point of Contact Information	
Name/Title:	Teresa Terry, Principal Investigator
Address:	1518 Taft Avenue
City:	Orange
Tel:	714-974-8300
Fax:	714-974-8303
E-Mail:	tterry@cogstone.com

We are contacting the [TRIBE] because the Native American Heritage Commission (NAHC) stated on June 30, 2021 that the [TRIBE] may have knowledge of cultural resources in the Project area. Cogstone Resource Management, Inc. (Cogstone) has been retained to assist the City with the cultural resource assessment of the project area. We invite you to help identify cultural resources and/or areas of religious and cultural significance that might be affected by the Project. If the Project might have an impact to

1518 West Taft Avenue
Orange, CA 92866
Office (714) 974-8300

Branch Offices
San Diego – Riverside – Morro Bay – Sacramento – Arizona

cogstone.com
Toll free (888) 333-3212

Federal Certifications WOSB, EDWOSB, SDB
State Certifications DBE, WBE, SBE, UDBE

these resources and/or spaces and places, we would like to discuss possible ways to avoid, minimize or mitigate the potential effects.

The Native American Heritage Commission (NAHC) was contacted on June 10, 2021 to perform a search of the Sacred Lands File. The NAHC responded on June 30, 2021 that the search was negative for Native American sacred sites and/or heritage resources located within the same USGS Quadrangle, Township, Range and Section as the Project Area.

Cogstone requested a record search of the Project area and a half mile buffer from the South Coastal Information Center located on the campus of San Diego State University on June 10, 2021. Results of the record search show that two previous studies have been completed within the Project area and 24 previous studies have been completed with a half mile radius of the Project area. No cultural resources have been recorded within the Project area. Outside of the Project area a total of four cultural resources have been previously documented within the half mile search radius.

An intensive pedestrian survey was conducted on July 1, 2021 and no cultural resources were observed.

This is not a tribal consultation request. Cogstone would appreciate receiving any comments, issues and/or concerns relating to cultural resources and sacred lands that you may have within the Project area so that they can be included in the assessment that is being prepared. All information provided will be kept confidential.

If you have any questions or concerns with the Project, please do not hesitant to contact me by cell phone (760-887-8843), email (cogstoneconsult@cogstone.com or tterry@cogstone.com), or fax (714-974-8303). You can also contact me at Cogstone at the address or email above.

Thank you for your assistance.

Teresa Terry
Principal Investigator

Attachments: Project vicinity map
Project aerial map

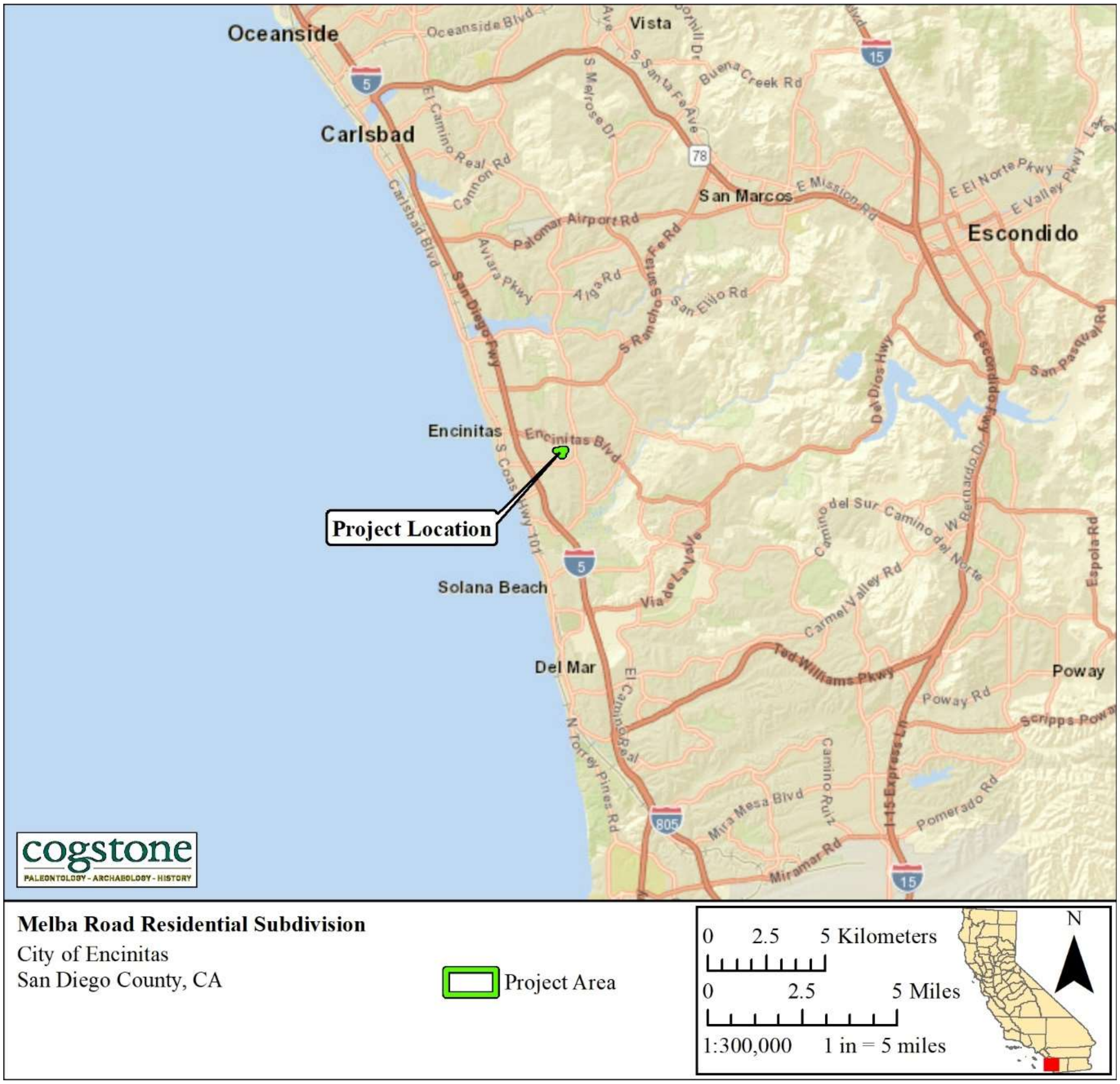


Figure 1. Project vicinity map

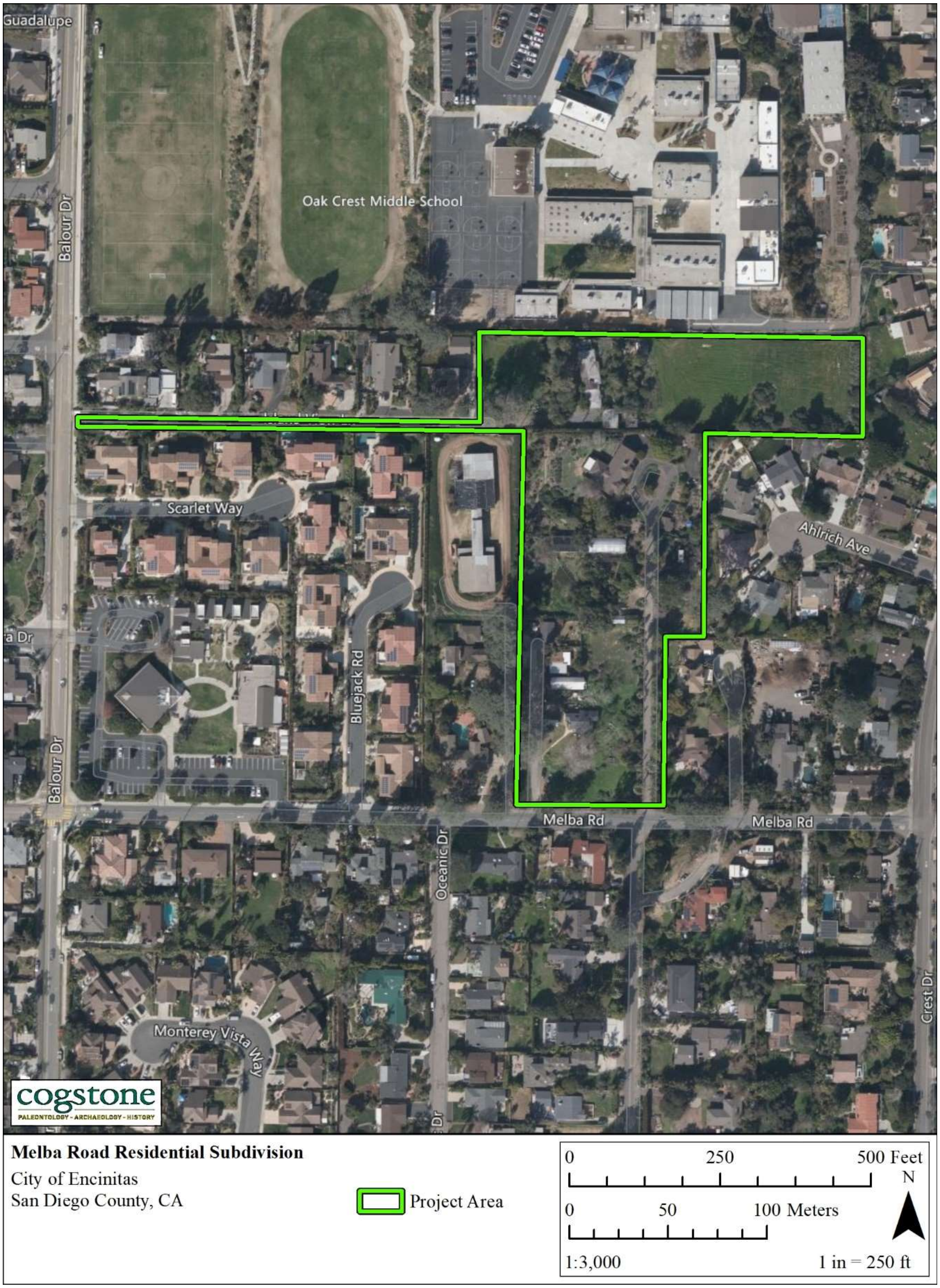


Figure 2. Project aerial map

Native American Group	**First contact attempt and method**	**Second contact attempt and method**	**Third contact attempt and method**	**Replies received and date**	**Comments**
Barona Group of the Capitan Grande-Edwin Romero, Chairperson	7/14/2021 Certified Mail Out	7/27/2021 Email	8/13/2021 Phone call		Left a voicemail.
Campo Band of Diegueno Mission Indians-Ralph Goff, Chairperson	7/14/2021 Certified Mail Out	7/27/2021 Email	8/13/2021 Phone call		Left a voicemail.
Ewiiaapaayp Band of Kumeyaay Indians-Robert Pinto, Chairperson	7/14/2021 Certified Mail Out	7/27/2021 Email	8/13/2021 Phone call		Mailbox is full. Could not leave a message.
Ewiiaapaayp Band of Kumeyaay Indians-Michael Garcia, Vice Chairperson	7/14/2021 Certified Mail Out	7/27/2021 Email	8/13/2021 Phone call		Mailbox is full. Could not leave a message.
Iipay Nation of Santa Ysabel-Clint Linton, Director of Cultural Resources	7/14/2021 Certified Mail Out	7/27/2021 Email	N/A	8/2/2021, replied via email from Director Clint Linton	Acknowledged receipt of email, no comments.
Iipay Nation of Santa Ysabel-Virgil Perez, Chairperson	7/14/2021 Certified Mail Out	7/27/2021 Email	N/A	8/2/2021, replied via email from Director Clint Linton	Acknowledged receipt of email, no comments.

Native American Group	**First contact attempt and method**	**Second contact attempt and method**	**Third contact attempt and method**	**Replies received and date**	**Comments**
Inaja-Cosmit Band of Indians-Rebecca Osuno, Chairperson	7/14/2021 Certified Mail Out	7/27/2021 Email	8/13/2021 Phone call		Left a voicemail.
Jamul Indian Village-Erica Pinto, Chairperson	7/14/2021 Certified Mail Out	7/27/2021 Email	N/A	7/28/2021, reply by Lisa Cumper, Tribal Historic Preservation Officer, Jamul Indian Village of California.	The Jamul Indian Village of California requests consultation for his project due to their records showing that the area is positive for cultural resources.
Jamul Indian Village-Lisa Cumper, Tribal Historic Officer	7/14/2021 Certified Mail Out	7/27/2021 Email	N/A	7/28/2021, reply by Lisa Cumper, Tribal Historic Preservation Officer, Jamul Indian Village of California.	The Jamul Indian Village of California requests consultation for his project due to their records showing that the area is positive for cultural resources.
Kwaaymii Laguna Band of Mission Indians-Carmen Lucas	7/14/2021 Certified Mail Out	7/27/2021 Email	8/13/2021 Phone call		Left a voicemail.
La Posta Band of Diegueno Mission Indians-Javaughn Miller, Tribal Administrator	7/14/2021 Certified Mail Out	7/27/2021 Email	8/13/2021 Phone call		Mr. Miller has no questions or concerns, but he will forward to chairperson Gwendolyn Parada later today.
La Posta Band of Diegueno Mission Indians-Gwendolyn Parada, Chairperson	7/14/2021 Certified Mail Out	7/27/2021 Email	8/13/2021 Phone call		Left a voicemail.

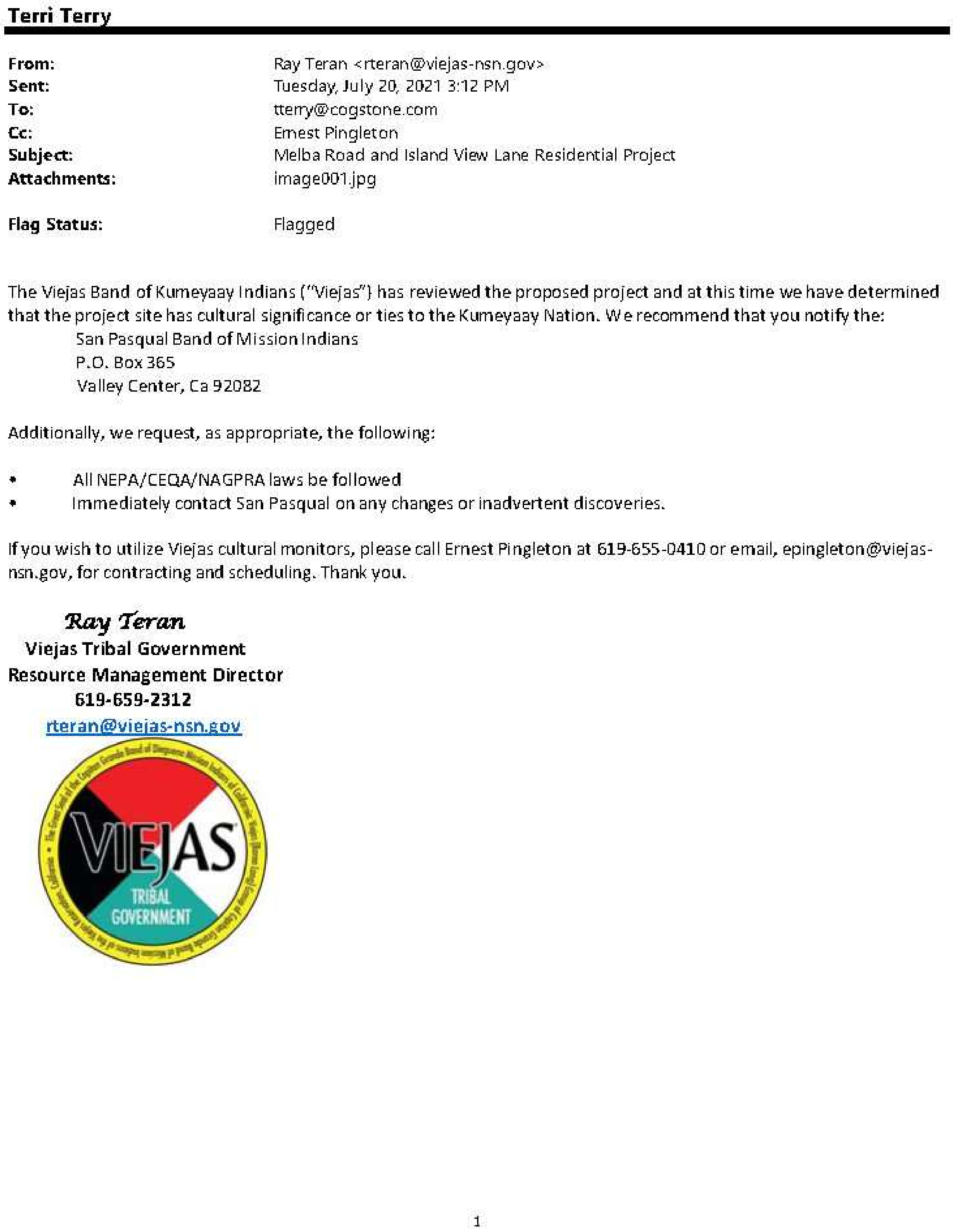
Native American Group	First contact attempt and method	Second contact attempt and method	Third contact attempt and method	Replies received and date	Comments
Manzanita Band of Kumeyaay Nation-Angela Elliot Santos, Chairperson	7/14/2021 Certified Mail Out	7/27/2021 Email	8/13/2021 Phone call		Left a voicemail.
Mesa Grande Band of Diegueno Mission Indians-Michael Linton, Chairperson	7/14/2021 Certified Mail Out	7/27/2021 Email	8/13/2021 Phone call		No answer and could not leave a message.

Native American Group	**First contact attempt and method**	**Second contact attempt and method**	**Third contact attempt and method**	**Replies received and date**	**Comments**
Rincon Band of Luiseno Indians-Bo Mazzetti, Chairperson	7/14/2021 Certified Mail Out	7/27/2021 Email	N/A	8/11/2021 Replied via email from Cheryl Madrigal, Tribal Historic Preservation Officer.	Cheryl Madrigal responded by email. This letter is written on behalf of the Rincon Band of Luiseño Indians (“Rincon Band” or “Band”), a federally recognized Indian Tribe and sovereign government. We have received your notification regarding the above referenced project and we thank you for the opportunity to provide information pertaining to cultural resources. The identified location is within the Traditional Use Area of the Luiseño people, and is also within Rincon’s specific area of Historic interest. Embedded in the Luiseño territory are Rincon’s history, culture and identity. The project is located within a culturally sensitive area and we recommend archaeological and tribal monitoring for all ground-disturbing activities. In consultation with the lead agency and upon review of the cultural resources assessment, further needs for avoidance and mitigation measures might be identified. At this time, we have no further information to provide. If you have additional questions or concerns, please do not hesitate to contact our office at your convenience at (760) 749-1092 ext. 323 or via electronic mail at cmadrigal@rincon-nsn.gov. We look forward to working together to protect and preserve our cultural assets

Native American Group	First contact attempt and method	Second contact attempt and method	Third contact attempt and method	Replies received and date	Comments
Rincon Band of Luiseno Indians-Cheryl Madrigal, Tribal Historic Preservation Officer	7/14/2021 Certified Mail Out	7/27/2021 Email	N/A	8/11/2021 Replied via email from Cheryl Madrigal, Tribal Historic Preservation Officer.	Cheryl Madrigal responded by email. This letter is written on behalf of the Rincon Band of Luiseño Indians ("Rincon Band" or "Band"), a federally recognized Indian Tribe and sovereign government. We have received your notification regarding the above referenced project and we thank you for the opportunity to provide information pertaining to cultural resources. The identified location is within the Traditional Use Area of the Luiseño people, and is also within Rincon's specific area of Historic interest. Embedded in the Luiseño territory are Rincon's history, culture and identity. The project is located within a culturally sensitive area and we recommend archaeological and tribal monitoring for all ground-disturbing activities. In consultation with the lead agency and upon review of the cultural resources assessment, further needs for avoidance and mitigation measures might be identified. At this time, we have no further information to provide. If you have additional questions or concerns, please do not hesitate to contact our office at your convenience at (760) 749-1092 ext. 323 or via electronic mail at cmadrigal@rincon-nsn.gov. We look forward to working together to protect and preserve our cultural assets

Native American Group	First contact attempt and method	Second contact attempt and method	Third contact attempt and method	Replies received and date	Comments
San Pasqual Band of Diegueno Mission Indians-Allen Lawson, Chairperson	7/14/2021 Certified Mail Out	N/A	N/A	7/23/2021 Replied via email from Angelina Gutierrez, San Pasqual Tribal Historic Preservation Officer.	The San Pasqual Band of Mission Indians Tribal Historic Preservation Office on behalf of Desiree Morales Whitman. They have consulted their maps and determined the project is outside the recognized San Pasqual Indian Reservation, however it is within their Traditional Use Area (TUA). They would like to engage in formal government-to-government consultation under Section 106. They also requested any cultural resource reports that have been or will be generated during the environmental review process.
San Pasqual Band of Diegueno Mission Indians-John Flores, Environmental Coordinator	7/14/2021 Certified Mail Out	NA	N/A	7/23/2021 Replied via email from Angelina Gutierrez, San Pasqual Tribal Historic Preservation Officer.	The San Pasqual Band of Mission Indians Tribal Historic Preservation Office on behalf of Desiree Morales Whitman. They have consulted their maps and determined the project is outside the recognized San Pasqual Indian Reservation, however it is within their Traditional Use Area (TUA). They would like to engage in formal government-to-government consultation under Section 106. They also requested any cultural resource reports that have been or will be generated during the environmental review process.
Sycuan Band of the Kumeyaay Nation-Cody Martinez, Chairperson	7/14/2021 Certified Mail Out	7/27/2021 Email	8/13/2021 Phone call		Left a voicemail.

Native American Group	First contact attempt and method	Second contact attempt and method	Third contact attempt and method	Replies received and date	Comments
Sycuan Band of the Kumeyaay Nation-Kristie Orozco, Kumeyaay Resource Specialist	7/14/2021 Certified Mail Out	7/27/2021 Email	8/13/2021 Phone call		Left a voicemail.
Viejas Band of Kumeyaay Indians-John Christman, Chairperson	7/14/2021 Certified Mail Out	N/A	NA	July 20, 2021 Replied via email from Ray Teran, Viejas Tribal Government Resource Management Director.	The Viejas Band of Kumeyaay Indians ("Viejas") has reviewed the proposed project and at this time we have determined that the project site has cultural significance or ties to the Kumeyaay Nation. They recommend being notified. Additionally, they request, as appropriate, the following: All NEPA/CEQA/NAGPRA laws be followed and immediately contact San Pasqual on any changes or inadvertent discoveries.
Viejas Band of Kumeyaay Indians-Ernest Pingleton, Tribal Historic Officer, Resource Management	7/14/2021 Certified Mail Out	N/A	N//A	July 20, 2021 Replied via email from Ray Teran, Viejas Tribal Government Resource Management Director.	The Viejas Band of Kumeyaay Indians ("Viejas") has reviewed the proposed project and at this time we have determined that the project site has cultural significance or ties to the Kumeyaay Nation. They recommend being notified. Additionally, they request, as appropriate, the following: All NEPA/CEQA/NAGPRA laws be followed and immediately contact San Pasqual on any changes or inadvertent discoveries.



Terri Terry

From: Ray Teran <rteran@viejas-nsn.gov>
Sent: Tuesday, July 20, 2021 3:12 PM
To: tterry@cogstone.com
Cc: Ernest Pingleton
Subject: Melba Road and Island View Lane Residential Project
Attachments: image001.jpg

Flag Status: Flagged

The Viejas Band of Kumeyaay Indians ("Viejas") has reviewed the proposed project and at this time we have determined that the project site has cultural significance or ties to the Kumeyaay Nation. We recommend that you notify the:

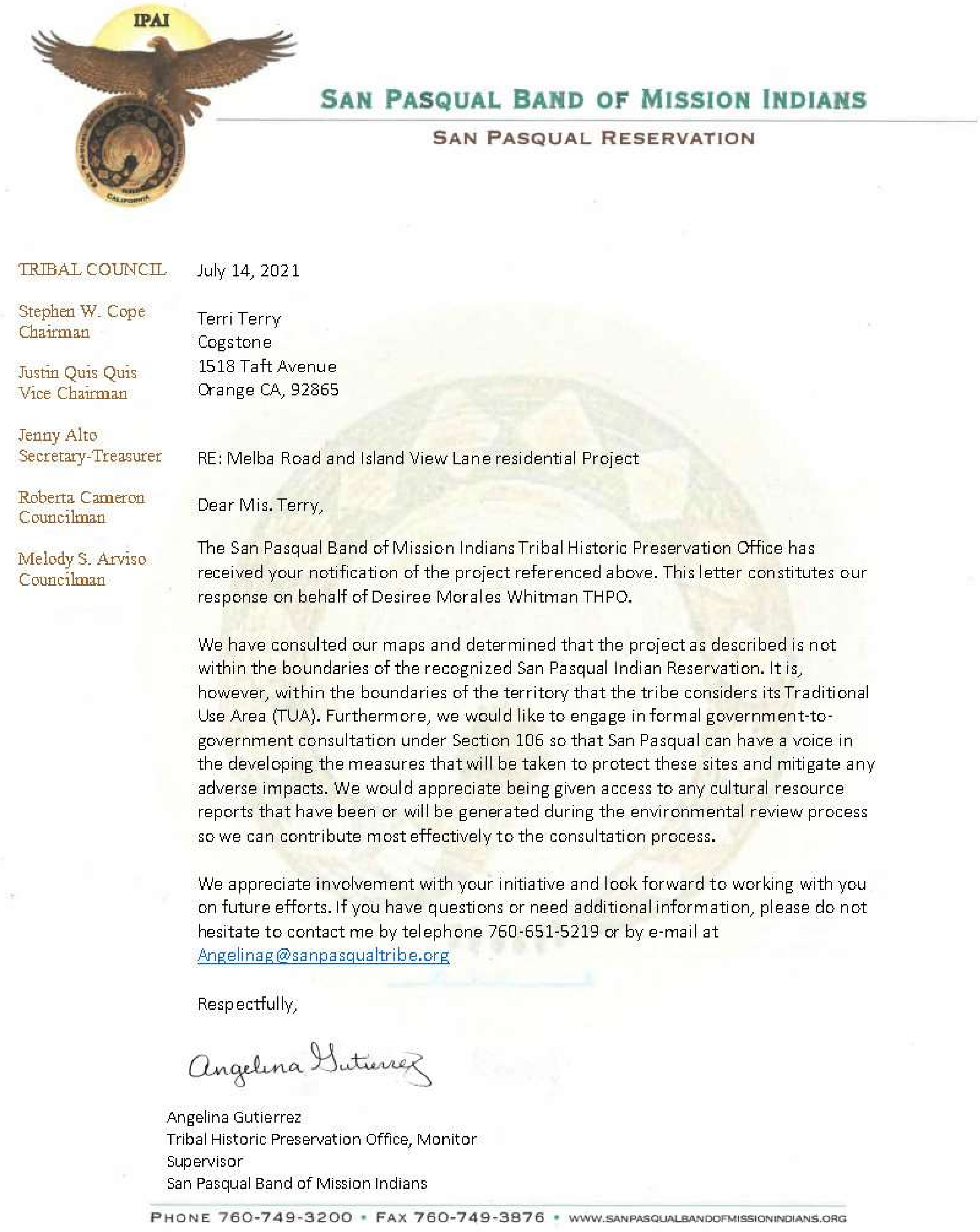
San Pasqual Band of Mission Indians
P.O. Box 365
Valley Center, Ca 92082

Additionally, we request, as appropriate, the following:

- All NEPA/CEQA/NAGPRA laws be followed
- Immediately contact San Pasqual on any changes or inadvertent discoveries.

If you wish to utilize Viejas cultural monitors, please call Ernest Pingleton at 619-655-0410 or email, epingleton@viejas-nsn.gov, for contracting and scheduling. Thank you.

Ray Teran
Viejas Tribal Government
Resource Management Director
619-659-2312
rteran@viejas-nsn.gov



IPAI

SAN PASQUAL BAND OF MISSION INDIANS
SAN PASQUAL RESERVATION

TRIBAL COUNCIL

Stephen W. Cope
Chairman

Justin Quis Quis
Vice Chairman

Jenny Alto
Secretary-Treasurer

Roberta Cameron
Councilman

Melody S. Arviso
Councilman

July 14, 2021

Terri Terry
Cogstone
1518 Taft Avenue
Orange CA, 92865

RE: Melba Road and Island View Lane residential Project

Dear Mis. Terry,

The San Pasqual Band of Mission Indians Tribal Historic Preservation Office has received your notification of the project referenced above. This letter constitutes our response on behalf of Desiree Morales Whitman THPO.

We have consulted our maps and determined that the project as described is not within the boundaries of the recognized San Pasqual Indian Reservation. It is, however, within the boundaries of the territory that the tribe considers its Traditional Use Area (TUA). Furthermore, we would like to engage in formal government-to-government consultation under Section 106 so that San Pasqual can have a voice in the developing the measures that will be taken to protect these sites and mitigate any adverse impacts. We would appreciate being given access to any cultural resource reports that have been or will be generated during the environmental review process so we can contribute most effectively to the consultation process.

We appreciate involvement with your initiative and look forward to working with you on future efforts. If you have questions or need additional information, please do not hesitate to contact me by telephone 760-651-5219 or by e-mail at Angelinag@sanpasqualtribe.org

Respectfully,

Angelina Gutierrez

Angelina Gutierrez
Tribal Historic Preservation Office, Monitor
Supervisor
San Pasqual Band of Mission Indians

PHONE 760-749-3200 • FAX 760-749-3876 • WWW.SANPASQUALBANDOFMISSIONINDIANS.ORG

From: Lisa Cumper <lcumper@jiv-nsn.gov>
To: Cogstone Resource Management <cogstoneconsult@cogstone.com>
Sent: 7/28/2021 5:54 PM
Subject: Re: Melba Road and Island View Lane Residential Project Scoping Request

Hi Desiree,

According to our records this project is in an area that is positive for cultural resources. We recommend consultation for this project.

Thanks,
Lisa

Kindest Regards,

Lisa K. Cumper, THPO
Tribal Historic Preservation Officer
Cultural Resources Manager,
The Jamul Indian Village of California
Secretary, Kumeyaay Cultural Repatriation Committee
KCRC, Kumeyaay Nation

P.O. Box 612, Jamul CA 91935
desk: 619.669.4855
cell: 619.928.8689
fax: 619.669.4817

email: lcumper@jiv-nsn.gov
web: www.jamulindianvillage.com

The ground on which we stand is sacred ground, it is the blood of our ancestors. Chief Plenty Coups, Crow.

On Tue, Jul 27, 2021 at 9:04 AM Cogstone Resource Management <cogstoneconsult@cogstone.com> wrote:
Good morning THPO Cumper,

I am writing today to follow up on the Native American scoping letter requesting information for the Melba Road and Island View Lane Residential Project Area that Cogstone Resource Management mailed on July 14, 2021. The Project is located at 1220-1240 Melba Road and 1190 Island View Lane in the City of Encinitas, San Diego County, California.

The original scoping letters indicated that there were no previously recorded resources within the Project Area and four resources within the search radius. All four of these resources are prehistoric archaeological sites previously identified in the search radius.

A copy of the scoping letter is attached. Please contact us at cogstoneconsult@cogstone.com if you have any questions or have information about the Project Area.

Thank you,

cogstone™
PALEONTOLOGY - ARCHAEOLOGY - HISTORY

Federal Certifications EDWOSB, SDB
State Certifications DBE, WBE, SBE, UDBE

Cogstone Resource Management, Inc.
Native American Consultation Department
1518 W Taft Ave, Orange, CA 92865
714-974-8300 office
cogstoneconsult@cogstone.com www.cogstone.com
Field Offices in San Diego, Riverside, Morro Bay,
Northern California

We tell the stories of ancient life and human cultures to promote an appreciation of the past and its relevance to the future.™

Rincon Band of Luiseño Indians

CULTURAL RESOURCES DEPARTMENT

One Government Center Lane | Valley Center | CA 92082
(760) 749-1092 | Fax: (760) 749-8901 | rincon-nsn.gov

August 11, 2021

Sent only via email to: tterry@cogstone.com
Cogstone
Ms. Teresa Terry
1518 Taft Avenue
Orange, CA 92865

Re: Melba Road and Island View Lane Residential Project, Encinitas, San Diego County, California

Dear Ms. Terry,

This letter is written on behalf of the Rincon Band of Luiseño Indians ("Rincon Band" or "Band"), a federally recognized Indian Tribe and sovereign government. We have received your notification regarding the above referenced project and we thank you for the opportunity to provide information pertaining to cultural resources. The identified location is within the Traditional Use Area of the Luiseño people, and is also within Rincon's specific area of Historic interest.

Embedded in the Luiseño territory are Rincon's history, culture and identity. The project is located within a culturally sensitive area and we recommend archaeological and tribal monitoring for all ground-disturbing activities. In consultation with the lead agency and upon review of the cultural resources assessment, further needs for avoidance and mitigation measures might be identified. At this time, we have no further information to provide.

If you have additional questions or concerns, please do not hesitate to contact our office at your convenience at (760) 749-1092 ext. 323 or via electronic mail at cmadrigal@rincon-nsn.gov. We look forward to working together to protect and preserve our cultural assets.

Sincerely,

Cheryl Madrigal
Tribal Historic Preservation Officer
Cultural Resources Manager

APPENDIX D. DEPARMENT OF RECREATION 523 FORMS

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

PRIMARY RECORD

Primary #
HRI #
Trinomial
NRHP Status Code

Other Listings
Review Code **Reviewer** **Date**

Page 1 **of** 18 *__Resource Name or #:__ 1190 Island View Lane

P1. Other Identifier:

P2. Location: ☐**Not for Publication** ☒ **Unrestricted**

a. County: San Diego

b. USGS 7.5' Quad: Encinitas **Date:** 1997 **T** ; **R** ; **¼ of** **¼ of Sec** **; S.B.B.M.**

c. Address: 1190 Island View Lane **City:** Encinitas **Zip:** 92024

d. UTM: Zone: ; mE/ mN

e. Other Locational Data: (APNs: 259-181-0400, 259-181-0300, and 259-181-0200)

Elevation:

P3a. Description:

This property consists of a single-family residence and two ancillary buildings (all are in poor condition). The residence has an irregular footprint but is largely rectangular. The roof consists of three low pitched telescoping hipped gable roofs covered in gravel. The roof has a wide eave overhang except for the northernmost segment of the building (added ca. 1947-1953) where there is no eave overhang due to severe deterioration of materials. Most of the exterior of the building is comprised of brick organized in a Stretcher Bond course. Fenestration is an eclectic collection of fixed, sliding, picture, ribbon, and multi-paneled windows in addition to glass, flush, and multi-paneled pedestrian doors (See Continuation Sheet; P5b Photos Cont.). The main entrance is located near the middle of the west façade and is identified by a large glass pedestrian door flanked on both sides by large, fixed single-pane windows with wooden frames and sills. The ca. 1947-1953 addition at the northern end of the residence is composed of wood board, chicken wire, and stucco (this section is heavily deteriorated). There are two chimneys associated with this residence, one is covered in a heavy plastic tarp and located at the center of the building, the other is at the northern addition; the red brick is set in a Stretcher Bond. (See Continuation Sheet)

P3b. Resource Attributes: HP2. Single Family Property and HP4. Ancillary Building

P4. Resources Present: ☒Building ☒Structure ☐Object ☐Site ☐District ☐Element of District ☐Other

P5b. Description of Photo:
Site overview, facing east

P6. Date Constructed/Age and Sources: ☒Historic ☐Prehistoric ☐Both
Built 1947; San Diego County Assessor

P7. Owner and Address:
Torrey Pacific Corporation
171 Saxony Rd. Suite 109
Encinitas, CA 92024

P8. Recorded by:
Cogstone Resource Management, Inc.; 1518 W. Taft Ave., Orange, CA 92865

P9. Date Recorded:
July 1, 2021

P10. Survey Type: Pedestrian Survey

P11. Report Citation: *Cultural Resources Assessment Report for the Melba Road and Island View Lane Residential Project, City of Encinitas, San Diego County, California*. Prepared for BRG Consulting. Prepared by Cogstone Resource Management.

Attachments: ☐NONE ☒Location Map ☐Sketch Map ☒Continuation Sheet ☒Building, Structure, and Object Record ☐Archaeological Record ☐District Record ☐Linear Feature Record ☐Milling Station Record ☐Rock Art Record ☐Artifact Record ☐Photograph Record ☐ Other

Primary #
Trinomial

BUILDING, STRUCTURE, AND OBJECT RECORD

***Resource Name or #:**1190 Island View Lane **Status Code:** 6Z

B1. Historic Name: None
B2. Common Name: 1190 Island View Lane
B3. Original Use: Single Family residence **B4. Present Use:** Vacant
***B5. Architectural Style:** Ranch style with No Style variants
***B6. Construction History:**

This single-family residence first appears in the 1947 USDA historic aerial photograph with its building footprint nearly identical to present day except for the addition at the north elevation. Per a Residential Building Record from the San Diego County Assessor's office, the original address associated with this property was listed as 795 Balour Drive; it is not known when the address was changed to 1190 Island View Lane. The addition at the north elevation was constructed sometime between 1947 and 1953 (NETROnline 1947 and 1953). Despite research efforts, a history of ownership could not be identified.

***B7. Moved?** ☒**No** ☐**Yes** ☐**Unknown** **Date:** **Original Location:**
***B8. Related Features:**

B9a. Architect: Not known **b. Builder:** Not Known
***B10. Significance: Theme:** Residential Development and Horticulture **Area:** Encinitas, CA
Period of Significance: ca. 1947-ca. 2019 **Property Type:** Single Family Property
Applicable Criteria: N/A

Criteria A/1
Is the resource associated with events that have made a significant contribution to the broad patterns of our history?

Despite extensive background research regarding this structure, including searching various newspapers and consultation with historic societies and local government agencies, this residence is not associated with events that have made a significant contribution to the broad patterns of our history. Therefore, this building is recommended not eligible for listing under the National Register of Historic Places (NRHP) Criterion A or the California Register of Historic Resources (CRHR) Criterion 1.

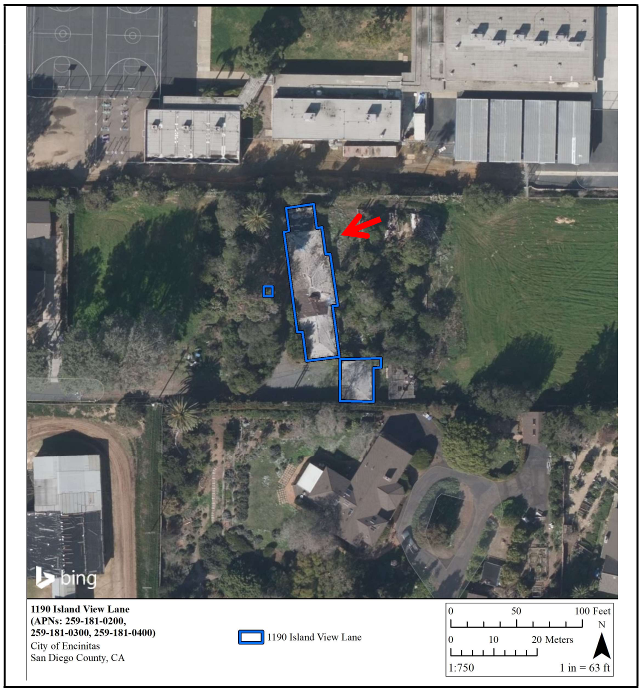
See Continuation Sheet

B11. Additional Resource Attributes:
***B12. References:**

See Continuation Sheet

B13. Remarks:

***B14. Evaluator:** Shannon Lopez
***Date of Evaluation:** June 6, 2021



State of California — The Resources Agency **Primary #**
DEPARTMENT OF PARKS AND RECREATION **Trinomial**

BUILDING, STRUCTURE, AND OBJECT RECORD

Page 3 **of** 18 *__Resource Name or #:__1190 Island View Lane **Status Code:** 6Z

B1. Historic Name: None
B2. Common Name: 1190 Island View Lane
B3. Original Use: Ancillary Building **B4. Present Use:** Vacant
***B5. Architectural Style:** Ranch style elements
***B6. Construction History:**

The secondary building located adjacent to the southeast corner of the main building was constructed between 1947 and 1953. A drawing from the San Diego County Assessor's office (year not known) labeled this ancillary building as "G" which can be assumed to mean "Garage." At an unknown point in time, the garage was converted to a multi-roomed building (remnants of a shower room are found in the north side of the building). At the northern end of the east elevation is a small concrete room addition (year of addition is not known).

***B7. Moved?** ☒**No** ☐**Yes** ☐**Unknown** **Date:** **Original Location:**
***B8. Related Features:**

B9a. Architect: Not Known **b. Builder:** Not Known
***B10. Significance: Theme:** Residential Development and Horticulture **Area:** Encinitas, CA
Period of Significance: ca. 1953-ca. 2019 **Property Type:** Ancillary Building **Applicable Criteria:** N/A

Criteria A/1
Is the resource associated with events that have made a significant contribution to the broad patterns of our history?

Despite extensive background research regarding this structure, including searching various newspapers and consultation with historic societies and local government agencies, this residence is not associated with events that have made a significant contribution to the broad patterns of our history. Therefore, this structure is recommended not eligible for listing under the NRHP Criterion A or the CRHR Criterion 1.

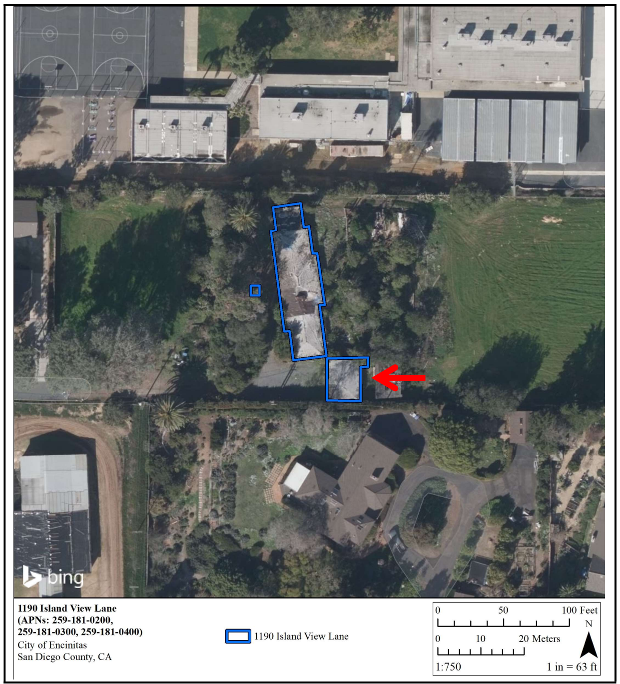
See Continuation Sheet

B11. Additional Resource Attributes:
***B12. References:**

See Continuation Sheet

B13. Remarks:

***B14. Evaluator:** Shannon Lopez
***Date of Evaluation:** June 6, 2021



*__Resource Name or #:__1190 Island View Lane **Status Code:** 6Z

B1. Historic Name: None
B2. Common Name: 1190 Island View Lane
B3. Original Use: Shed **B4. Present Use:** Vacant
***B5. Architectural Style:** No style
***B6. Construction History:**

The secondary building located adjacent to the southeast corner of the building was constructed between 1947 and 1953 (NETROnline 1953 and 1953).

***B7. Moved?** ☒**No** ☐**Yes** ☐**Unknown** **Date:** **Original Location:**
***B8. Related Features:**

B9a. Architect: Not known **b. Builder:** Not Known
***B10. Significance: Theme:** Residential Development and Horticulture **Area:** Encinitas, CA
Period of Significance: ca. 1953-ca. 2019 **Property Type:** Ancillary Building **Applicable Criteria:** N/A

Criteria A/1
Is the resource associated with events that have made a significant contribution to the broad patterns of our history?

Despite extensive background research regarding this structure, including searching various newspapers and consultation with historic societies and local government agencies, this shed is not associated with events that have made a significant contribution to the broad patterns of our history. Therefore, this structure is recommended not eligible for listing under the NRHP Criterion A or the CRHR Criterion 1.

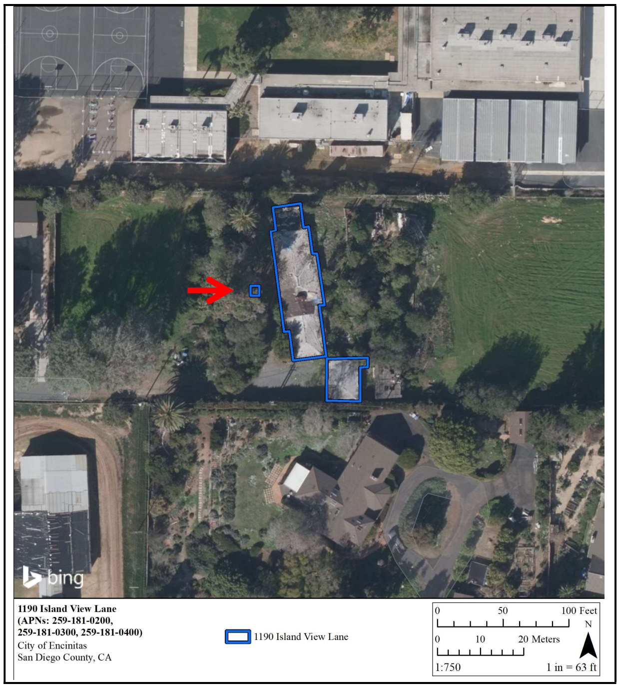
See Continuation Sheet

B11. Additional Resource Attributes:
***B12. References:**

See Continuation Sheet

B13. Remarks:

***B14. Evaluator:** Shannon Lopez
***Date of Evaluation:** June 6, 2021



L1. Historic and/or Common Name: Island View Lane

L2a. Portion Described: ☒ Entire Resource ☐ Segment ☐ Point Observation **Designation:** 6Z

b. Location of point or segment:
Island View Lane, Encinitas, California. From Balour Drive to terminus at 1190 Island View Lane.

L3. Description:
This paved, single lane, residential road first appears in a 1947 USDA aerial photograph (NETROnline 1947). It was originally used as a private access road from Balour Drive to the single-family residence at 1190 Island View Lane (per the San Diego County Assessor, the original address of 1190 Island View Lane was 795 Balour Drive). On December 30, 1947, a right of easement was granted to the San Diego Gas and Electric Company for the right to place and maintain “poles and wires.” In 1953, a right of way for public road access was granted to the County of San Diego (*First American Title* 2021). Sometime between 1967 and ca. 1978, the parcels immediately north of Island View Lane were developed and easement of the road was granted to these residences which connect to their own respective driveways. It is assumed based on aerials from 1967, 1978 and 1980 that Island View Lane was first paved sometime in the 1970s. On average, Island View Lane is 10-12 feet wide, paved with asphalt, and is in good condition.

L4. Dimensions:
- a. **Top Width** 10-12 feet
- b. **Bottom Width** 10-12 feet
- c. **Height or Depth** Approx. 0.5 inch above grade
- d. **Length of Segment** 879 feet

L5. Associated Resources: Residence at 1190 Island View Lane.

L6. Setting: Residential

L4e. Sketch of Cross-Section Facing: ____________

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L7. Integrity Considerations:
Island View Lane maintains its integrity of Location. Due to substantial residential development adjacent to Island View Lane from ca. 1978 to ca. 2012, there has been a great loss of the road’s integrity of Setting. There is some loss of the road’s initial integrity of Design, Materials, and Workmanship as it was paved sometime in the 1970s and likely slurried within the last 20 years. While easement of the road has been granted to the county and neighboring residential homes, this resource remains associated with 1190 Island View Lane (although no longer exclusively).

L8a. Photograph, Map or Drawing

(See Continuation Sheet)

L8b. Description of Photo, Map, or Drawing:
Aerial overview of Island View Lane

L9. Remarks:

L10. Form Prepared by:
Shannon Lopez

L11. Date: July 15, 2021

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

LOCATION MAP

Primary #
HRI#
Trinomial

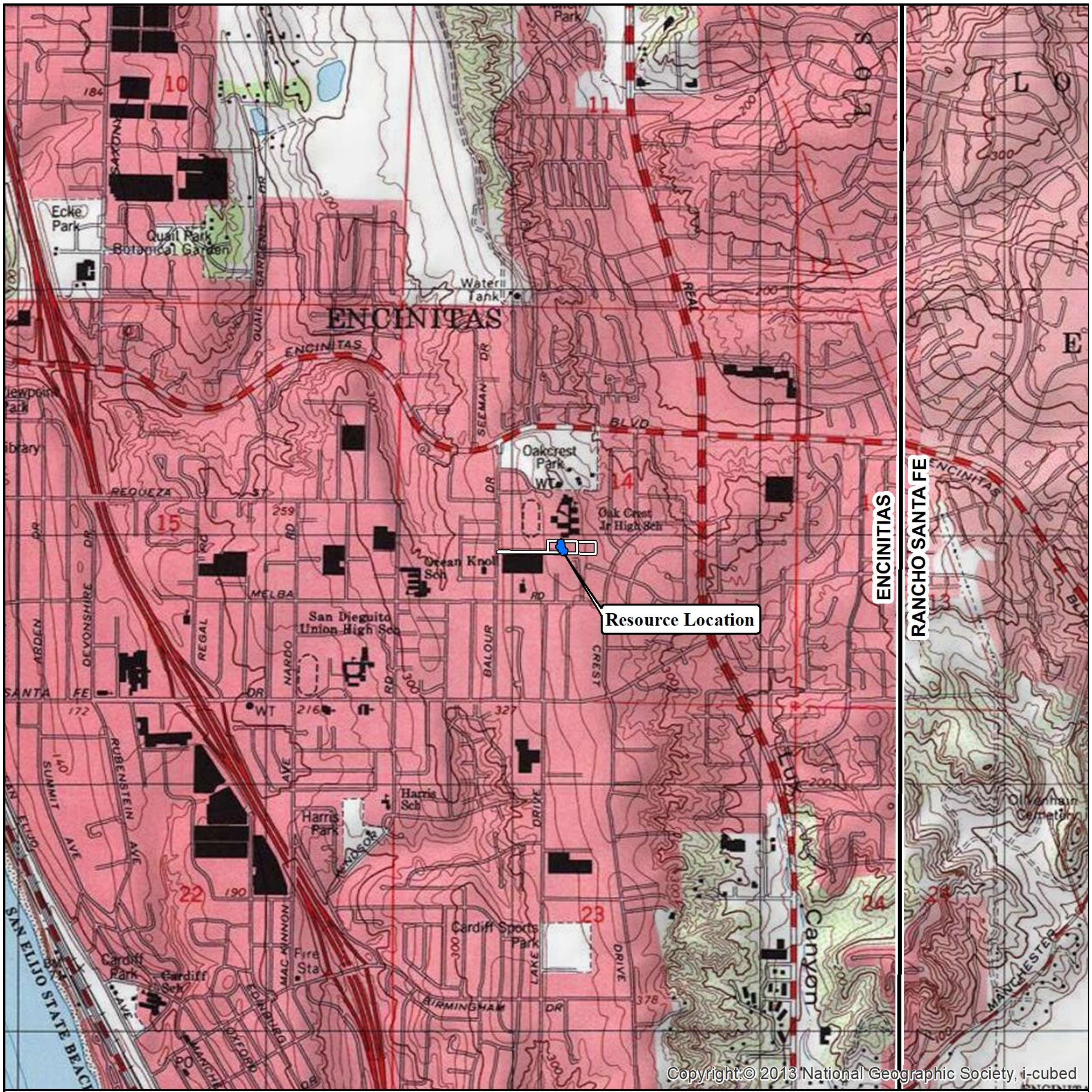
Page 6 **of** 18

Resource Name or #: 1190 Island View Lane

Map Name: Encinitas

***Scale:** 1:24,000

***Date of Map:** 1997



Copyright:© 2013 National Geographic Society, i-cubed

1190 Island View Lane
(APNs: 259-181-0200,
259-181-0300, 259-181-0400)
City of Encinitas
San Diego County, CA

- ▭ 1190 Island View Lane
- ▭ APN Parcel
- ▭ USGS Quad

USGS 7.5' Quads:
ENCINITIAS
RANCHO SANTA FE

0 0.25 0.5 Miles
0 0.25 0.5 Kilometers
N
1:24,000
1 in = 2,000 ft

P3a. Description Cont.:
Residence Cont.
Much of the building's exterior is covered by dense vegetation. The east elevation of the building shows a substantial degree of damage as seen with a partial roof collapse, missing doors, deteriorating wood board cladding, etc.

Large Ancillary Building
This one-story ancillary building has a square footprint and a flat roof with wide overhanging eaves. From what can be seen of the roof from ground level, it appears the roof is covered in gravel such as the adjacent residential building. This building is in poor condition due to substantial deterioration of materials. The county assessor's records indicate this building was originally constructed for use as a garage but was later converted to a multi-roomed ancillary building. The original sections of the building are recognizable by the Stretcher Bond brick course. Areas later filled in at the west façade (assumed at the time the garage was converted from its original use) are evident from the use of large plywood sheets and the installation of two one-by-one, aluminum framed sliding windows, a large single-pane fixed window, and two pedestrian door frames. A small concrete room addition (year of addition is not known) is at the northern end of the east elevation. A section of roof at the back of this building (east elevation) has collapsed. An additional two pedestrian door frames and one one-by-one sliding window with an aluminum frame are at the east elevation.

Ancillary Building-Shed
The shed is located approximately 20-30 feet from the west façade of the main residence. It is small with a sloped shed roof and is clad with wood boards (possibly plywood). The roof is covered in large sheets of asphalt which show substantial deterioration. A narrow wood framed entrance (no door present) is located at the building's south façade.

Previous Ownership:
History of ownership regarding this property is limited. Per a Quitclaim Deed from the San Diego Recorder's Office, in 1964, the quitclaim was issued to Ruth E. Wainwright (*San Diego County Recorder* 1964). In 1994, 1190 Island View Lane was associated with a business license for Joe L. Quezada (*Newspapers.com* 1994). While the property is currently vacant, the last known resident of the property was Gilbert Quezada (*Fast People Search* 2021). No further information regarding these residents could be found at present. The current owner of 1190 Island View Lane is Torrey Pacific Corporation.

***B10. Significance Cont.:**

The single-family residence and its associated features (ancillary building and Island View Lane) are within the historic context of Residential Development (1947-2019) and Horticulture (ca. 1970s-1989).

Single Family Residence
Criteria B/2
Is the resource associated with the lives of significant persons in our past?

Following review of historic newspapers, associated deeds and other property records, the single-family residence is not associated with the lives of significant persons in our past. Therefore, this building is recommended not eligible for listing under the NRHP Criterion B or the CRHR Criterion 2.

Criteria C/3
Does the resource embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction?

The architectural style of the single-family residence is Ranch style with later additions which exhibit no architectural style. Upon visual inspection, it appears much of the main residence was not professionally constructed and was undertaken without official city permits. Overall, the building materials are in poor condition and in its current state, the residence is uninhabitable. Ranch Style is a very common architectural style throughout southern California and this residence is not an exemplary representation of that style. Therefore, this building is recommended not eligible for listing under the NRHP Criterion C or the CRHR Criterion 3.

Page 8 **of** 1818 ***Resource Name or #** 1190 Island View Lane ☒ Continuation ☐ Update

Criteria D/4
Has this resource yielded or may be likely to yield, information important in history or prehistory?

The development of the property does not appear to predate modern day trash services (predating could indicate historic refuse deposits) and following an intensive pedestrian survey of the residence at 1190 Island View Lane it is unlikely for the building to yield information important to history or prehistory. Therefore, this building is recommended not eligible for listing under the NRHP Criterion D or the CRHR Criterion 4.

Integrity: This residence maintains its integrity of Location. The development of the areas adjacent to this residence in the 1960s (Oak Crest Middle School/ Oak Crest Jr. High), while impacting the setting of 1190 Island View Lane, is now historic in age in its own right. Due to the severe deterioration of materials throughout the building, there is a substantial loss of integrity of Design, Materials, Feeling, and Workmanship. While this building is vacant it is still listed as a single-family residence and therefore retains its integrity of Association.

Ancillary Building
Criteria B/2
Is the resource associated with the lives of significant persons in our past?

Following review of historic newspapers, associated deeds and other property records, this ancillary building is not associated with the lives of significant persons in our past. Therefore, this building is recommended not eligible for listing under the NRHP Criterion B or the CRHR Criterion 2.

Criteria C/3
Does the resource embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction?

The architectural style of the large ancillary building exhibits some Ranch style elements with a later concrete addition which exhibits no architectural style. Ranch Style is a very common architectural style throughout southern California and this building is not an exemplary representation of that style. Therefore, this building is recommended not eligible for listing under the NRHP Criterion C or the CRHR Criterion 3.

Criteria D/4
Has this resource yielded or may be likely to yield, information important in history or prehistory?

The development of the property does not appear to predate modern day trash services (predating could indicate historic refuse deposits) and following an intensive pedestrian survey of the ancillary building at 1190 Island View Lane it is unlikely for the building to yield information important to history or prehistory. Therefore, this building is recommended not eligible for listing under the NRHP Criterion D or the CRHR Criterion 4.

Integrity: This ancillary building maintains its integrity of Location and Association. The development of the areas adjacent to this residence in the 1960s (Oak Crest Middle School/ Oak Crest Jr. High), while impacting the setting of 1190 Island View Lane, is now historic in age in its own right. Due to the severe deterioration of materials and conversion from a garage to a multi-room building, there is a substantial loss of integrity of Design, Materials, Feeling, and Workmanship.

Ancillary Building- Shed
Criteria B/2
Is the resource associated with the lives of significant persons in our past?

Following review of historic newspapers, associated deeds and other property records, the shed is not associated with the lives of significant persons in our past. Therefore, the shed is recommended not eligible for listing under the NRHP Criterion B or the CRHR Criterion 2.

Criteria C/3
Does the resource embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction?

The shed does not represent any particular architectural style nor does it exhibit high artistic values or represent the work of a master architect. Therefore, the shed is recommended not eligible for listing under the NRHP Criterion C or the CRHR Criterion 3.

Criteria D/4
Has this resource yielded or may be likely to yield, information important in history or prehistory?

The development of the property does not appear to predate modern day trash services (predating could indicate historic refuse deposits) and following an intensive pedestrian survey of the shed at 1190 Island View Lane it is unlikely for the shed to yield information important to history or prehistory. Therefore, the shed is recommended not eligible for listing under the NRHP Criterion D or the CRHR Criterion 4.

Integrity: This ancillary building maintains its integrity of Location and Association. The development of the areas adjacent to this residence in the 1960s (Oak Crest Middle School/ Oak Crest Jr. High), while impacting the Setting of 1190 Island View Lane, is now historic in age in its own right. Due to the deterioration of materials throughout the building, there is a notable loss of integrity of Design, Materials, Feeling, and Workmanship.

Island View Lane
Criteria A/1
Is the resource associated with events that have made a significant contribution to the broad patterns of our history?

Despite extensive background research regarding Island View Lane, including searching various newspapers and consultation with historic societies and local government agencies, this road is not associated with events that have made a significant contribution to the broad patterns of our history. Therefore, this road is recommended not eligible for listing under the NRHP Criterion A or the CRHR Criterion 1.

Criteria B/2
Is the resource associated with the lives of significant persons in our past?

Following review of historic newspapers, associated deeds and other property records, Island View Lane is not associated with the lives of significant persons in our past. Therefore, this road is recommended not eligible for listing under the NRHP Criterion B or the CRHR Criterion 2.

Criteria C/3
Does the resource embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction?

Island View Lane, the access road which is directly associated with 1190 Island View Lane, is a standard one lane access road and not an exemplary representative of a particular style or design. Therefore, Island View Lane is recommended not eligible for listing under the NRHP Criterion C or the CRHR Criterion 3.

Criteria D/4
Has this resource yielded or may be likely to yield, information important in history or prehistory?

Island View Lane is unlikely to yield information important to history or prehistory. Therefore, Island View Lane is recommended not eligible for listing under the NRHP Criterion D or the CRHR Criterion 4.

Page 10 **of** 18 ***Resource Name or #** 1190 Island View Lane ☒ Continuation ☐ Update

L8a. Photograph, Map or Drawing

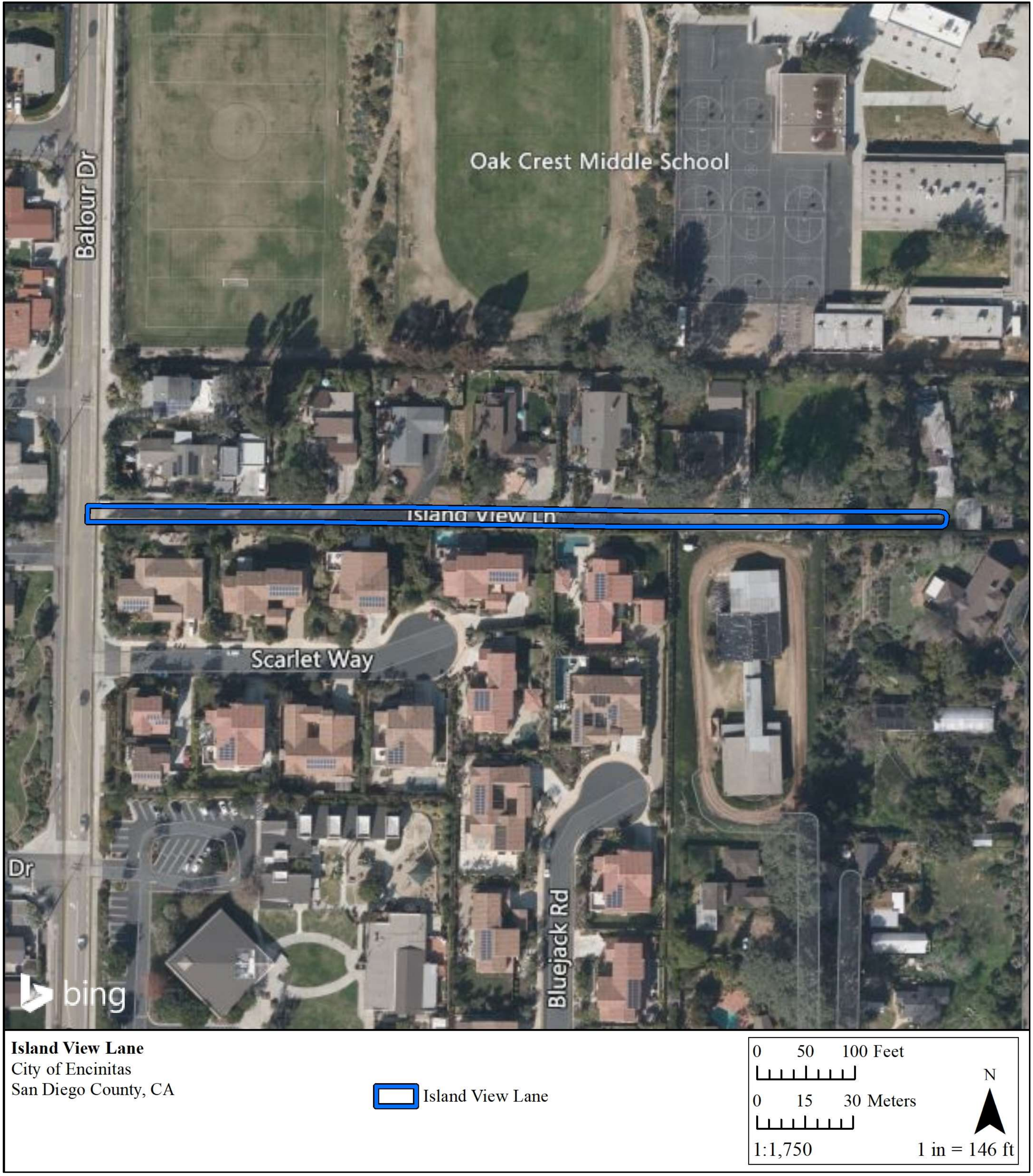


Photo Key for 1190 Island View Lane (1 of 2)

Photo Key for 1190 Island View Lane (2 of 2)

	
1. Paved driveway, facing east	2. Overview of field at APN: 259-181-0400
	
3. Main building (left) and ancillary building (right)	4. Ancillary building, west façade, facing east
	
5. Ancillary building, south elevation (left) and east elevation (right)	6. Ancillary building, east elevation

7. Ancillary building, east elevation

8. Ancillary building, north elevation

9. Ancillary building, north elevation

10. Ancillary building, north elevation

11. Main building, south elevation

12. Main building, south end of west façade

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
CONTINUATION SHEET

Primary #
HRI#
Trinomial

Page 14 **of** 18 ***Resource Name or #** 1190 Island View Lane ☒ Continuation ☐ Update

	
13. Main building, main entrance of west façade	14. Main building, northern half of west facade
	
15. Main building, overview of west façade, facing southeast	16. Main building, north elevation
	
17. Main building, overview of northern half of eastern elevation	18. Main building, east elevation

DPR 523A (9/2013) ***Required information**

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
CONTINUATION SHEET

Primary #
HRI#
Trinomial

Page 15 **of** 18 ***Resource Name or #** 1190 Island View Lane ☒ Continuation ☐ Update

19. Main building, southern end of east elevation

20. Shed, south facade

21. Shed, south façade (left) and east elevation (right), facing west

22. Shed, north elevation

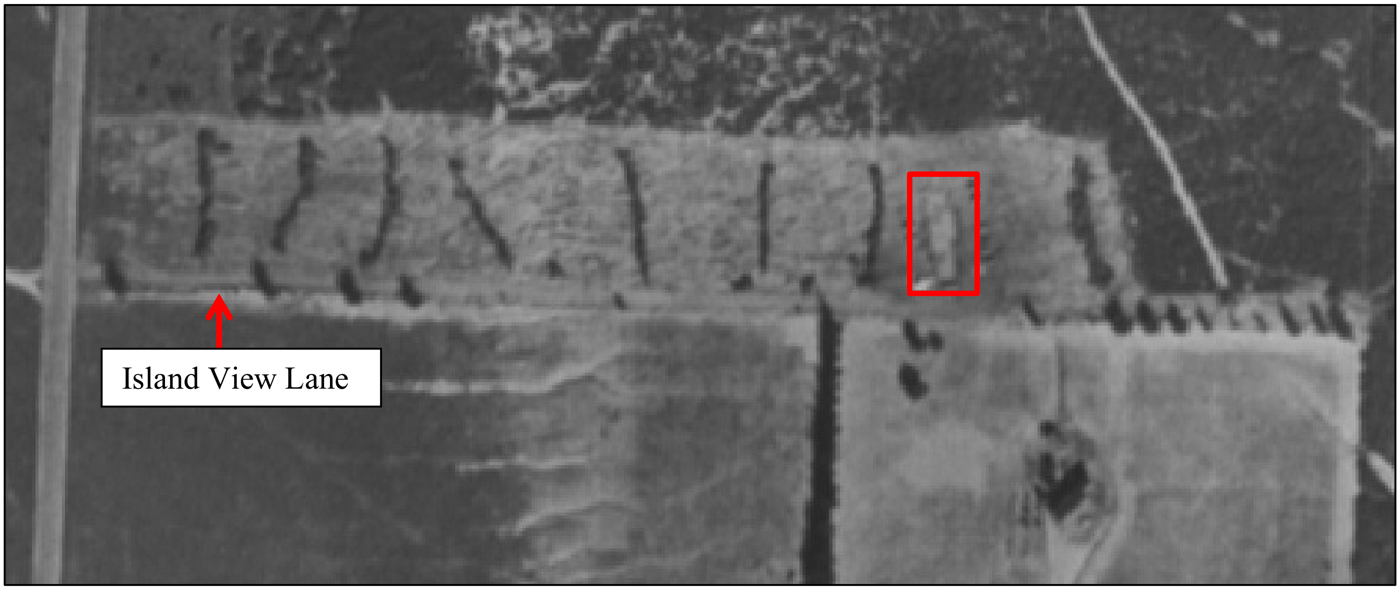
23. Shed, west elevation

24. Overview of shed and main building, facing east

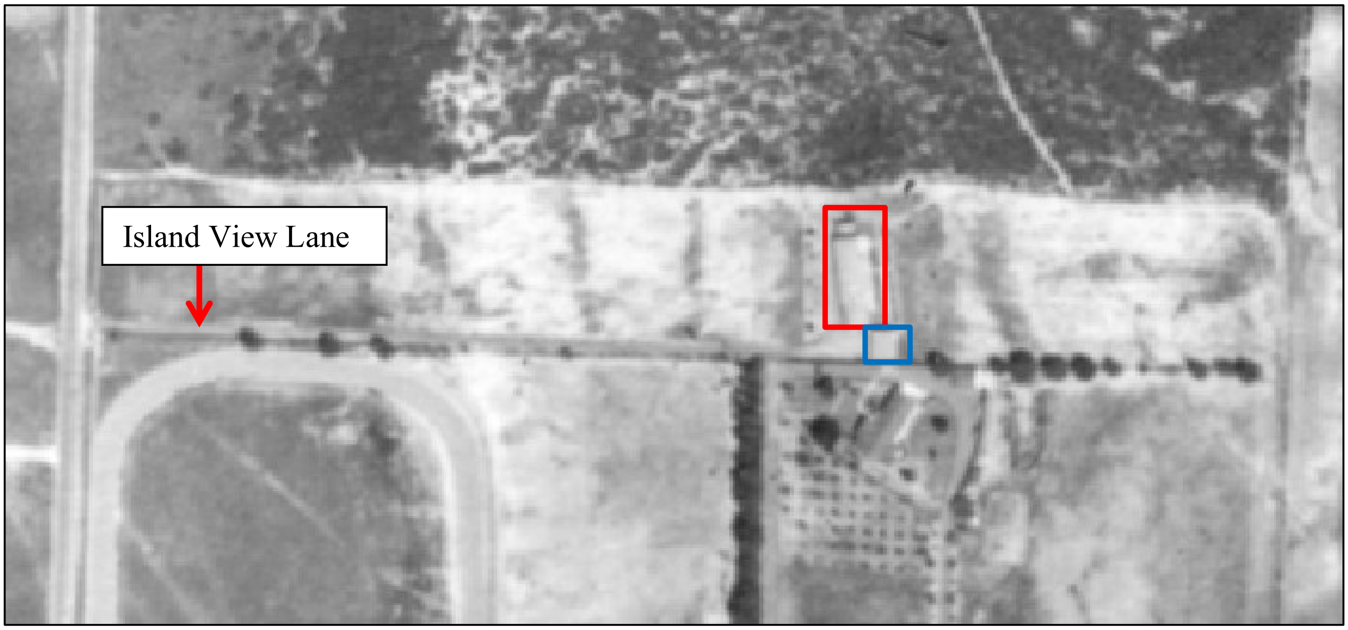
Primary #
HRI#
Trinomial

***Resource Name or #** 1190 Island View Lane ☒ Continuation ☐ Update

	
25. Northeast corner of APN: 259-181-030, facing east	26. Northwest corner of APN: 259-181-0200, facing southeast
	Blank
27. Northeast corner of APN: 259-181-0200, facing southwest	Blank



Residence at 1190 Island View Lane, 1947 (Red: residence; FrameFinder 1947)



Residence at 1190 Island View Lane, 1953, (Red: residence, Blue: secondary building; FrameFinder 1953)

References

FastPeopleSearch

2021 "People Living at: 1190 Island View Ln, Encinitas CA 92024". https://www.fastpeoplesearch.com/address/1190-island-view-ln_encinitas-ca-92024. Accessed: July 23, 2021.

FrameFinder

1947 "Flight GS_CP, Frame 11-137". January 1, 1947. https://mil.library.ucsb.edu/ap_indexes/FrameFinder/. Accessed: July 6, 2021.

1953 "Flight AXN_1953, Frame 8M-15". January 1, 1953. https://mil.library.ucsb.edu/ap_indexes/FrameFinder/. Accessed: July 6, 2021.

First American Title Company

2021 *File No.: NHSC-6005868 (DG)*. "CLTA Preliminary Report Form." Prepared for: Brian Staver of Torrey Pacific Corporation. Prepared by Title Officer: Derek Gray.

NETROnline

1947 *Historic Aerials*. https://www.historicaerials.com/viewer. Accessed: July 15, 2021/.

1953 *Historic Aerials*. https://www.historicaerials.com/viewer. Accessed: July 15, 2021/.

Newspapers.com

1994 "Vista Business Licenses". *Time-Advocate*. June 6, 1994. Page 13. https://www.newspapers.com/image/571952205/?terms=1190%20Island%20View%20Lane&match=1. Accessed: July 6, 2021.

San Diego County Assessor's Office

n.d. *Residential Building Records*. "Address 795 Balour Dr., APN: 259-181-03". Document provided by Brian Staver of Torrey Pacific Corporation.

San Diego County Recorder's Office

1964 "DocID 1964.50885." *Quitclaim Deed*. Document provided by Brian Staver of Torrey Pacific Corporation.

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

PRIMARY RECORD

Primary #
HRI #
Trinomial
NRHP Status Code

Other Listings
Review Code **Reviewer** **Date**

Page 1 **of** 15 *__Resource Name or #:__ 1220 Melba Road

P1. Other Identifier:
P2. Location: ☒ **Not for Publication** ☐ **Unrestricted**
a. County: San Diego County
b. USGS 7.5' Quad: Encinitas **Date:** 1997 **T** ; **R** ; **¼ of** **¼ of Sec** **; S.B.B.M.**
c. Address: 1220 Melba Road **City:** Encinitas **Zip:** 92024
d. UTM: Zone: ; **mE/** **mN**
e. Other Locational Data: **Elevation:**
Parcel # (APN): 259-180-1600

P3a. Description:
This one story, single-family residence was constructed in ca. 1938 and is set on a raised concrete foundation (approximately 1-2 feet above ground level). The building's footprint is irregular but does follow a general rectangular shape. The roof is comprised of multi-leveled gabled roofs with slight to moderate exposed overhanging eaves and is clad with composition shingles. Two skylights (added ca. 1975) are located on the north side of the center of the roof. The exterior of the building is clad with a coursed wood shingle pattern. The main entrance is located at the south façade which is accessible by an elevated porch (approximately 2 feet above ground level). A sunroom (or solarium) is located at the eastern half of the south façade. It consists of multiple fixed, large, single-pane glass windows and is covered by a low-pitched shed roof. A red brick chimney, organized in a running bond, is located at the west elevation. Windows at this elevation are one-over-one single-hung windows with wood sashes. (See Continuation Sheet)

P3b. Resource Attributes: HP2. Single Family Property; HP4. Ancillary Building
P4. Resources Present: ☒Building ☐Structure ☐Object ☐Site ☐District ☐Element of District ☐Other

P5b. Description of Photo:
South façade, facing north

P6. Date Constructed/Age and Sources: ☒Historic ☐Prehistoric ☐Both
Ca. 1939; USDA Aerial Photographs (FrameFinder 1939)

P7. Owner and Address:
Torrey Pacific Corporation
171 Saxony Rd. Suite 109
Encinitas, CA 92024

P8. Recorded by:
Cogstone Resource Management, Inc.; 1518 W. Taft Ave., Orange, CA 92865

P9. Date Recorded:
July 1, 2021

P10. Survey Type: Pedestrian Survey
P11. Report Citation: *Cultural Resources Assessment Report for the Melba Road and Island View Lane Residential Project, City of Encinitas, San Diego County, California*. Prepared for: BRG Consulting. Prepared by: Cogstone Resource Management.

Attachments: ☐NONE ☒Location Map ☐Sketch Map ☒Continuation Sheet ☒Building, Structure, and Object Record ☐Archaeological Record ☐District Record ☐Linear Feature Record ☐Milling Station Record ☐Rock Art Record ☐Artifact Record ☐Photograph Record ☐ Other

*__Resource Name or #:__ 1220 Melba Road **Status Code:** 6Z

B1. Historic Name: None
B2. Common Name: 1220 Melba Road
B3. Original Use: Single Family Residence **B4. Present Use:** Single Family Residence
***B5. Architectural Style:** No Style with Craftsman Style elements
***B6. Construction History:**

Per a 1939 USDA aerial photo, the main body of what appears to be the current residence at 1220 Melba Road is present in its current location; however, it was originally a rectangular, single gable roofed building (FrameFinder 1939). By 1947, the projection at the northern end of the west elevation has been added (NETROnline 1947). By 1953, the sunroom and the addition at the northeast corner of the residence has been added (NETROnline 1953). Also by 1953, the ancillary building (likely a detached garage) is present in its current location. (See Continuation Sheet for associated photographs)

***B7. Moved?** ☐**No** ☐**Yes** ☒**Unknown** **Date:** **Original Location:**

A Residential Building Record of 1220 Melba Road states the house was built in 1938, however, per consultation with Carolyn Cope, President of the Encinitas Historical Society, Ms. Cope stated that this residence was not built on site and was moved to its current location at an unknown time; its point of origin and original owner is not clear at this time. Historic USDA aerial photographs from 1939, 1947, and 1953 show this residence in its current location at 1220 Melba Road; they also show the development of the building's additions which were constructed throughout the decades (NETROnline 1947, 1953 and FrameFinder 1953). If this building was moved from another location, it is assumed to have occurred ca. 1938/1939.

***B8. Related Features:**

Ancillary building; assumed to be a detached single car garage.

B9a. Architect: Not known **b. Builder:** Not known
***B10. Significance: Theme:** Early Residential Development **Area:** Encinitas, CA
Period of Significance: 1938/1939-1976 **Property Type:** Single Family Property **Applicable Criteria:** N/A

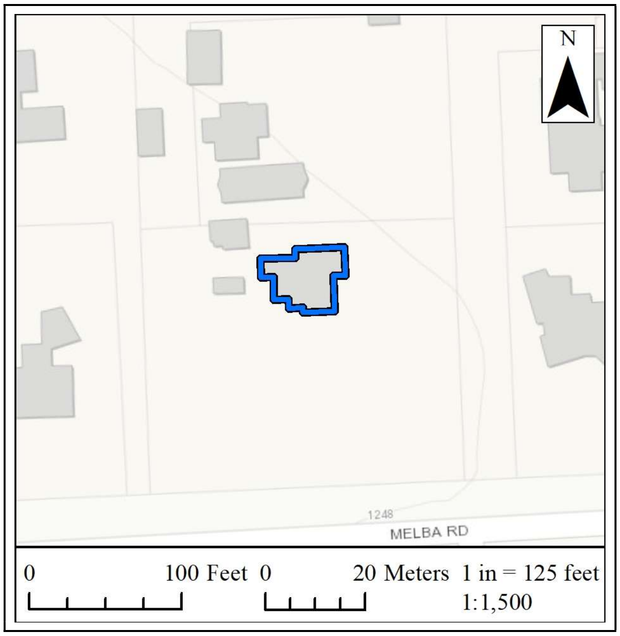
Criteria 1/A
Is the resource associated with events that have made a significant contribution to the broad patterns of our history?

Despite extensive background research regarding this structure, including searching various newspapers and consultation with historic societies and local government agencies, this residence is not associated with events that have made a significant contribution to the broad patterns of our history. Therefore, this residence is recommended not eligible for listing under the National Register of Historic Places (NRHP) Criterion 1 or the California Register of Historic Resources (CRHR) Criterion A.

See Continuation Sheet

B11. Additional Resource Attributes:
***B12. References:**
See Continuation Sheet

B13. Remarks:
***B14. Evaluator:** Shannon Lopez
***Date of Evaluation:** July 26, 2021



BUILDING, STRUCTURE, AND OBJECT RECORD

Page 3 **of** 15 *__Resource Name or #:__ 1220 Melba Road **Status Code:** 6Z

B1. Historic Name: None
B2. Common Name: None
B3. Original Use: Ancillary Building- likely a detached garage **B4. Present Use:** Not known
***B5. Architectural Style:** Salt Box style
***B6. Construction History:** This ancillary building was constructed sometime between 1947 and 1953 and was likely used as a detached garage due to the size of the building and width of the double doors. Based on a visual inspection of this building, the Salt Box style roof is not original and is the result of an addition to the building's north elevation (year added is not known). The addition is easily identified due to the exterior wall cladding; the original building is clad in wood shingles while the addition is clad in horizontal wood boards.

***B7. Moved?** ☒**No** ☐**Yes** ☐**Unknown** **Date:** **Original Location:**
***B8. Related Features:** Single Family Residence

B9a. Architect: Not Known **b. Builder:** Not Known
***B10. Significance: Theme:** Residential Development **Area:** Encinitas, CA
Period of Significance: ca. 1953 to 1976 **Property Type:** Ancillary Building **Applicable Criteria:** N/A

Criteria 1/A
Is the resource associated with events that have made a significant contribution to the broad patterns of our history?

Despite extensive background research regarding this building, including searching various newspapers and consultation with historic societies and local government agencies, this building is not associated with events that have made a significant contribution to the broad patterns of our history. Therefore, this building is recommended not eligible for listing under the NRHP Criterion 1 or the CRHR Criterion A.

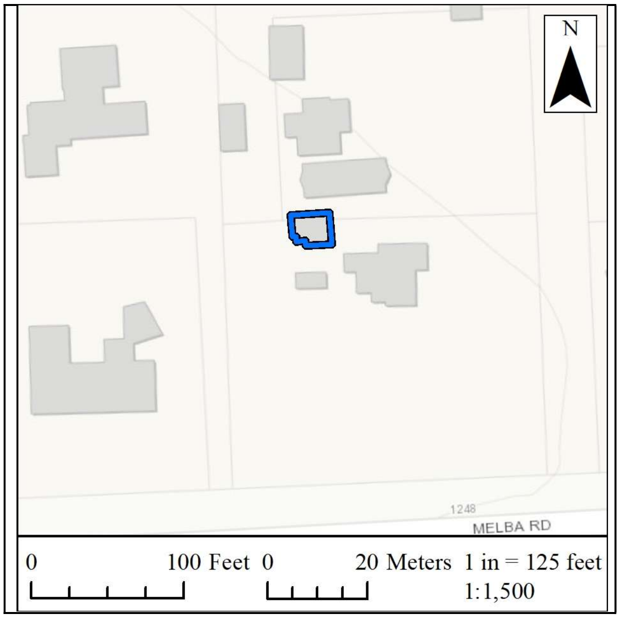
See Continuation Sheet

B11. Additional Resource Attributes:
***B12. References:**

(See Continuation Sheet)

B13. Remarks:

***B14. Evaluator:** Shannon Lopez
***Date of Evaluation:** July 26, 2021



State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

LOCATION MAP

Primary #
HRI#
Trinomial

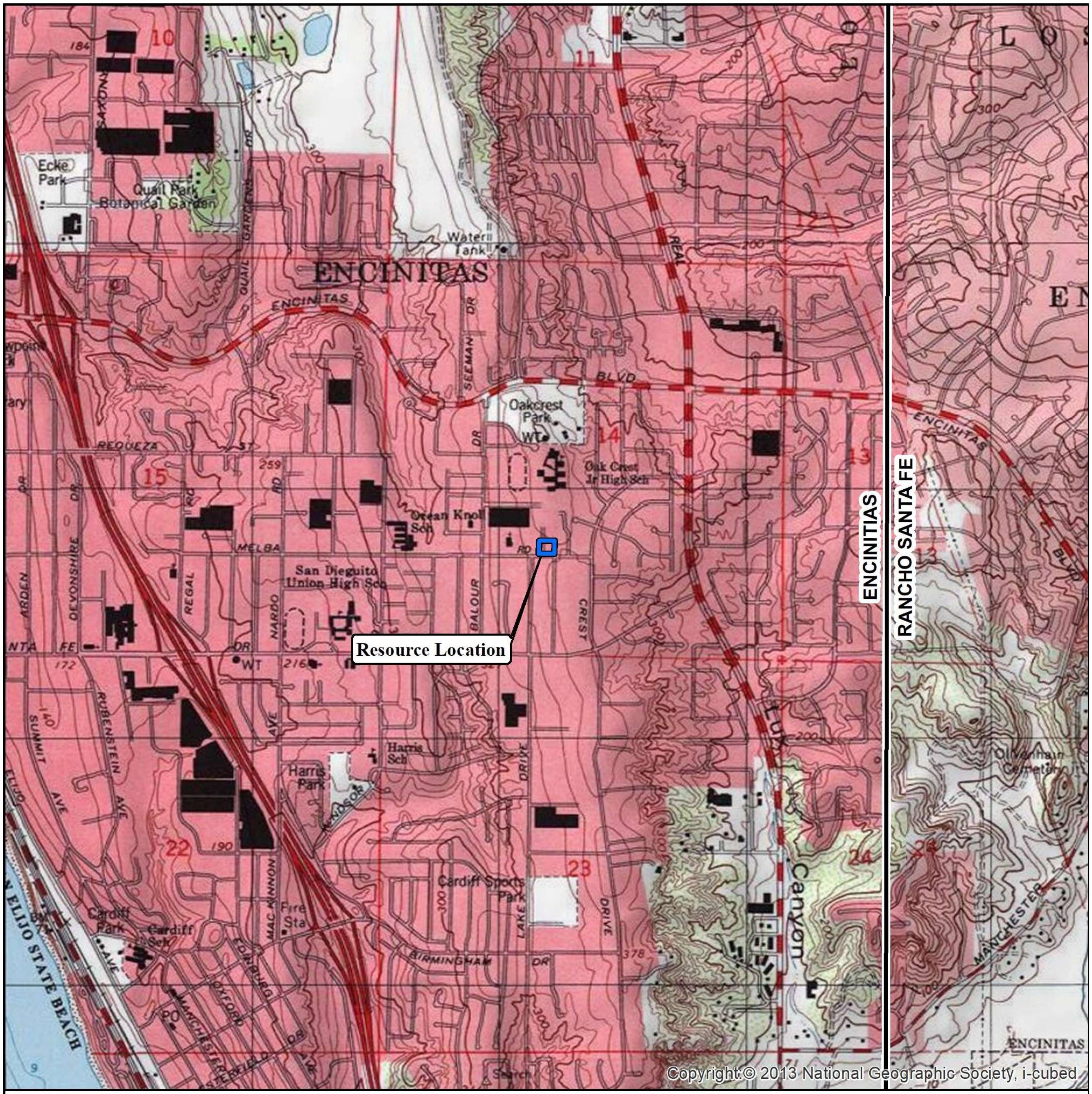
Page 4 **of** 15

***Resource Name or #:** 1220 Melba Road

Map Name: Encinitas

***Scale:** 1:24,000

***Date of Map: 1997**



1220 Melba Road
(APN: 259-180-1600)
City of Encinitas
San Diego County, CA

🟦 1220 Melba Road
☐ USGS Quad

USGS 7.5' Quads:
ENCINITIAS
RANCHO SANTA FE

0 0.25 0.5 Miles
0 0.25 0.5 Kilometers
N
1:24,000 1 in = 2,000 ft

P3a. Description:
Windows at the east elevation are identical to the west elevation. They are one-over-one single-hung windows with wood sashes. Fenestration at the north elevation includes two doors (one aluminum framed glass sliding door and one a two-paneled wood door; both do not appear to be historic in age). Three crank-out casement windows are located near the middle of the elevation. Additional windows include one large rectangular, one-over-one, wood sash, single-hung window and one smaller rectangular, one-over-one, single-hung window.

A large Salt Box style ancillary building is located near the west elevation of the main residence. Due to the large size and the double wood doors, it is assumed this building was originally used as a detached garage. The Salt Box style roof is clad in composition shingles. The exterior of most of the building is clad in a coursed wood shingle pattern. An addition at the northern side of the building is distinguished by its difference of material from the main body of the building (horizontal boarding) and a low-pitched shed roof. It is not known when this addition was constructed.

BACKGROUND HISTORY

Anton Van Amersfoort (1881-1973)

A review of the Fidelity National Title preliminary report list Mr. Amersfoort as the owner of APN: 259-180-16-00 (1220 Melba Road) in 1938. Mr. Amersfoort was an immigrant from the Netherlands and later a prominent avocado grower in Encinitas (at least 11 acres of avocado groves by 1919). A San Diego Botanic Garden Museum Guide states that for 20 years, Mr. Amersfoort owned (16.5 acres) approximately one-half of the land (16.5 acres) which is now the San Diego Botanic Gardens. In addition, during his many years in Encinitas, Mr. Amersfoort claimed at least 16 various properties in the area, with one spanning approximately 80 acres. From 1923-1943, Mr. Amersfoort resided at the "Larabee House" (now part of the San Diego Botanic Gardens and approximately two miles northwest of 1220 Melba Road; Sandler 2019). In 1943, Mr. Amersfoort sold his house and the ranch land to Ruth Larabee who lived at the house until 1957. Following the sale of the house and property, Mr. Amersfoort and his wife, "lived **up the street** not far from the Larabees, and thus continued to be neighbors, along with the Paul Ecke and Donald Ingersoll families" (Ancestors, Family Search n.d.). Based on this history of residency, while Mr. Amersfoort once owned the property at 1220 Melba Road in 1938 it is highly unlikely that he ever resided at the house located there. With regards to the property's landscape there is no evidence at present to prove that any plantings found therein are associated with Mr. Amersfoort. Inspection by a certified arborist may provide data whether the trees now present are historic in age but no documentation can be found which proves who planted them.

Ownership History of 1220 Melba Road:

In May of 1951, the home at 1220 Melba Road was listed for sale by "the owner" (owner unknown) for $14,750. It was described as a 1-acre home with a view of both the ocean and mountains. It consisted of two twin bedrooms and a 9-x18-foot full length "glass run[sic] room" (sunroom; *Pasadena Independent* 1951).

In 1967, an article in *News-Pilot* (Newspapers.com 1967) stated the current resident at 1220 Melba Road was Commander Leo C. Wilder (age 72). A World War II veteran, Commander Wilder was a Coast and Geodetic Survey officer on loan to the Army during the war. In addition to providing mapping services, the Coast and Geodetic Survey provided training for navigation, small-boat use, and amphibious landing techniques to service members. Commander Wilder served as head of boat operation instruction (Theberge 2015).

Wilder and his wife resided at 1220 Melba Road since at least 1957 and were members of the California Calavo Growers Association (*The Arroyo Grande Valley Herald Recorder* 1957). Wilder retired by 1957. As the property was put up for sale in 1951, it is assumed that the Wilders moved in sometime during or not long after. It is not known how long the Wilders remained at this location, however at some point between 1957 and 1983 the property came into the ownership of the nonprofit Veterans of Foreign Wars (*Bank of America* 1983).

A Bank of America Corporation Grant Deed dated February 16, 1983, and cosigned by a Notary Public on March 4, 1983, states that the property associated with APN: 259-180-16 (1220 Melba Road) was transferred from Veterans of Foreign Wars Colonel Frank M. Brezina Post 5431 to Torrey Pacific Corporation, Escrow No. 1039-181 (*Bank of America* 1983). Veterans of Foreign Wars (VFW) of the United States is listed as a domestic nonprofit incorporated on May 15, 1947 (*OpenCorporates* 2021). The VFW provides programs and services to support American veterans and their families (*VFW* 2021). It is assumed that Colonel Frank M. Brezina was the assigned VFW District Officer who was authorized to sign the deed which transferred the parcel to its current owner, the family-owned Torrey Pacific

Corporation. At present, the single-family property at 1220 Melba Road is owned by Torrey Pacific Corporation but is rented to its current tenants.

***B10. Significance Cont.:**

Single Family Residence
Criteria B/2
Is the resource associated with the lives of significant persons in our past?

There are two particular individuals of note associated with 1220 Melba Road: Anton Van Amersfoort and Commander Leo C. Wilder.

Following extensive research including assessor's parcel records, historical newspapers, online articles and publications, and consultation with the local historical society, it is clear that Mr. Amersfoort did own the land associated with 1220 Melba Road in 1938. However, based on various articles published by the San Diego Botanic Gardens, it is highly unlikely that Mr. Amersfoort resided at the single-family structure which was present on the property by 1938.This property was one of many owned by Mr. Amersfoort during his time in Encinitas. In addition, as it is not clear if the house was moved to this location or built on site, any direct association of the house's construction with Mr. Amersfoort remains uncertain. Therefore, due to a lack of information, this residence is recommended not eligible for listing under Criteria B/2 for association with lives of significant persons in our past,

Per Cogstone's research, this home was previously occupied by Commander Leo C. Wilder who was a veteran of WWII, however, no evidence of special wartime citations or awards given to Wilder could be found which would elevate Wilder's service to an exemplary level required for Criteria B/2. In addition, Commander Wilder purchased the house sometime between 1951 and 1957, years after the conclusion of WWII in1945. Therefore, the house has no association with Commander Wilder's contributions to WWII as he did not reside there until after the war. Therefore, this residence is recommended not eligible for listing under the NRHP Criterion B or the CRHR Criterion 2.

Criteria C/3
Does the resource embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction?

This residence embodies no particular architectural style but does exhibit some Craftsman elements as seen with the roof overhang and exposed eaves. This residence has two notable exterior character defining features: 1) the wood shingle exterior and 2) the sunroom at the south façade. The President of the Encinitas Historical Society, Carolyn Cope, said that the sunroom is not a common addition to residences and is more often seen in the American south.

Despite these notable features, this residence is not considered an exemplary representation of a particular architectural style, the work of a master architect, nor expresses high artistic values. Therefore, this residence is recommended not eligible for listing under the NRHP Criterion C or the CRHR Criterion 3.

Criteria D/4
Has this resource yielded or may be likely to yield, information important in history or prehistory?

The development of 1220 Melba Road does not appear to predate modern day trash services (predating could indicate historic refuse deposits) and following an intensive pedestrian survey of the property it is unlikely for this residence to yield information important to history or prehistory. Therefore, this residence is recommended not eligible for listing under the NRHP Criterion D or the CRHR Criterion 4.

Integrity: The integrity of this building's location is uncertain per the Encinitas Historical Society which states the building was moved to its current location at an unknown time; USDA historic aerial photographs show that this building was present in its current location (though not configuration) by 1939. From 1939 to ca. 1964, this building has undergone substantial alterations with multiple additions to its west, south, and north elevations, thereby greatly impacting its original integrity of Design, Materials, Feeling, and Workmanship. However, with the passage of time, these alterations, while substantial, have become historic in age and are now part of the history of the building. This building retains its integrity of association with its original use as a single-family property. Residential development in the surrounding area has substantially impacted the residence's integrity of Setting.

Ancillary Building- Detached Garage
Criteria B/2
Is the resource associated with the lives of significant persons in our past?

Following review of historic newspapers, consultation with the Encinitas Historical Society, associated deeds and other property records, the detached garage is not associated with the lives of significant persons in our past. Therefore, this building is recommended not eligible for listing under the NRHP Criterion B or the CRHR Criterion 2.

Criteria C/3
Does the resource embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction?

This detached garage is not an exemplary representation of a particular architectural style, the work of a master architect, nor expresses high artistic values. Therefore, this building is recommended not eligible for listing under the NRHP Criterion C or the CRHR Criterion 3.

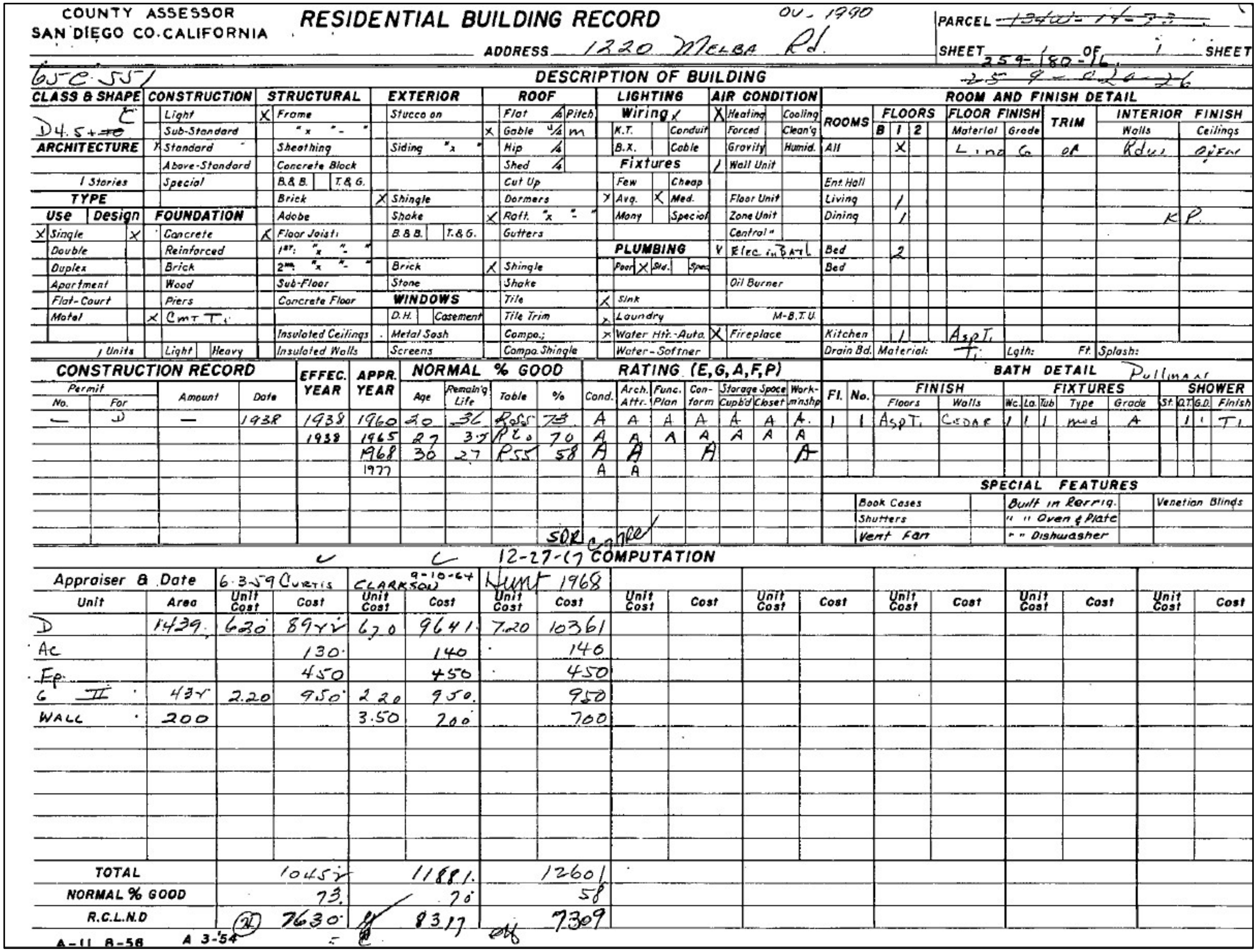
Criteria D/4
Has this resource yielded or may be likely to yield, information important in history or prehistory?

The development of 1220 Melba Road does not appear to predate modern day trash services (predating could indicate historic refuse deposits) and following an intensive pedestrian survey of the property it is unlikely for this residence to yield information important to history or prehistory. Therefore, this residence is recommended not eligible for listing under the NRHP Criterion D or the CRHR Criterion 4.

Integrity: This ancillary building retains its Integrity of Location and Association. The addition to the north elevation of this building has had a notable impact on the building's Integrity of Design, Materials, Feeling, and Workmanship; however since it is not known when this addition occurred it is not clear if it is a historic-aged feature of this building. Residential development in the surrounding area has substantially impacted the building's integrity of Setting.

Primary #
HRI#
Trinomial

Page 8 **of** 15 ***Resource Name or #** 1220 Melba Road ☒ Continuation ☐ Update



COUNTY ASSESSOR
SAN DIEGO CO. CALIFORNIA

RESIDENTIAL BUILDING RECORD OU - 1990

ADDRESS 1220 Melba Rd.

PARCEL ~~134W-14-22~~

SHEET 1 OF 1 SHEET
259-180-16
~~259-020-26~~

65-C-551

DESCRIPTION OF BUILDING

CLASS & SHAPE: D4.5+~~10~~ C
ARCHITECTURE
1 Stories
TYPE — Use: ☒ Single; Design: ☒; Double; Duplex; Apartment; Flat-Court; Motel; 1 Units

CONSTRUCTION: Light; Sub-Standard; ☒ Standard; Above-Standard; Special
FOUNDATION: ☒ Concrete; Reinforced; Brick; Wood; Piers; ☒ Cmt Ti; Light; Heavy

STRUCTURAL: ☒ Frame " x " - "; Sheathing; Concrete Block; B.& B.; T.& G.; Brick; Adobe; ☒ Floor Joists; 1st: " x " - "; 2nd: " x " - "; Sub-Floor; Concrete Floor; Insulated Ceilings; Insulated Walls

EXTERIOR: Stucco on; Siding " x "; B.& B.; T.& G.; ☒ Shingle; Shake; Brick; Stone
WINDOWS: D.H.; Casement; Metal Sash; Screens

ROOF: Flat /4 Pitch; ☒ Gable 1/4 m; Hip /4; Shed /4; Cut Up; Dormers; ☒ Raft. " x " - "; Gutters; ☒ Shingle; Shake; Tile; Tile Trim; Compo.; Compo. Shingle

LIGHTING: Wiring ✓; K.T.; Conduit; B.X.; Cable
Fixtures: Few; Cheap; ☒ Avg.; ☒ Med.; Many; Special
PLUMBING: Poor ☒ Std.; Spec.; ☒ Sink; ☒ Laundry; ☒ Water Htr.-Auto.; Water-Softner

AIR CONDITION: ☒ Heating; Cooling; Forced; Clean'g; Gravity; Humid.; ✓ Wall Unit; Floor Unit; Zone Unit; Central "; ✓ Elec in Bath; Oil Burner; M-B.T.U.; ☒ Fireplace

ROOM AND FINISH DETAIL

ROOMS	FLOORS B	FLOORS 1	FLOORS 2	FLOOR FINISH Material	FLOOR FINISH Grade	TRIM	INTERIOR FINISH Walls	INTERIOR FINISH Ceilings
All		X		Lino	G	Of	Rdw.	Open
Ent. Hall								
Living		1						
Dining		1						KP.
Bed		2						
Bed								
Kitchen		1		AspT.				

Drain Bd. Material: Ti. Lgth: Ft. Splash:

CONSTRUCTION RECORD

Permit No.	Permit For	Amount	Date	EFFEC. YEAR	APPR. YEAR	NORMAL % GOOD Age	Remain'g Life	Table	%	RATING (E,G,A,F,P) Cond.	Arch. Attr.	Func. Plan	Con-form	Storage Space Cupb'd	Closet	Work-m'nshp
—	D	—	1938	1938	1960	20	36	R55	73	A	A	A	A	A	A	A.
				1938	1965	27	37	R60	70	A	A	A	A	A	A	A
					1968	30	27	R55	58	A	A		A			A
					1977					A	A					

50R correct

BATH DETAIL Pullman

Fl.	No.	FINISH Floors	FINISH Walls	FIXTURES Wc.	La.	Tub	Type	Grade	SHOWER St.	O.T.	G.D.	Finish
1	1	AspT.	Cedar	1	1	1	med	A		1	1	Ti.

SPECIAL FEATURES
Book Cases; Shutters; Vent Fan; Built in Refrig.; " " Oven & Plate; " " Dishwasher; Venetian Blinds

12-27-67 COMPUTATION

Appraiser & Date		6-3-59 Curtis		9-10-64 Clarkson		Hunt 1968	
Unit	Area	Unit Cost	Cost	Unit Cost	Cost	Unit Cost	Cost
D	1439	6.20	8922	6.70	9641	7.20	10361
Ac			130		140		140
Fp			450		450		450
G II	432	2.20	950	2.20	950		950
WALL	200			3.50	700		700
TOTAL			10452		11881		12601
NORMAL % GOOD			73		70		58
R.C.L.N.D			7630		8317		7309

A-11 8-58 A 3-'54

Residential Building Record for 1220 Melba Road (Courtesy of San Diego County, County Assessor n.d.)

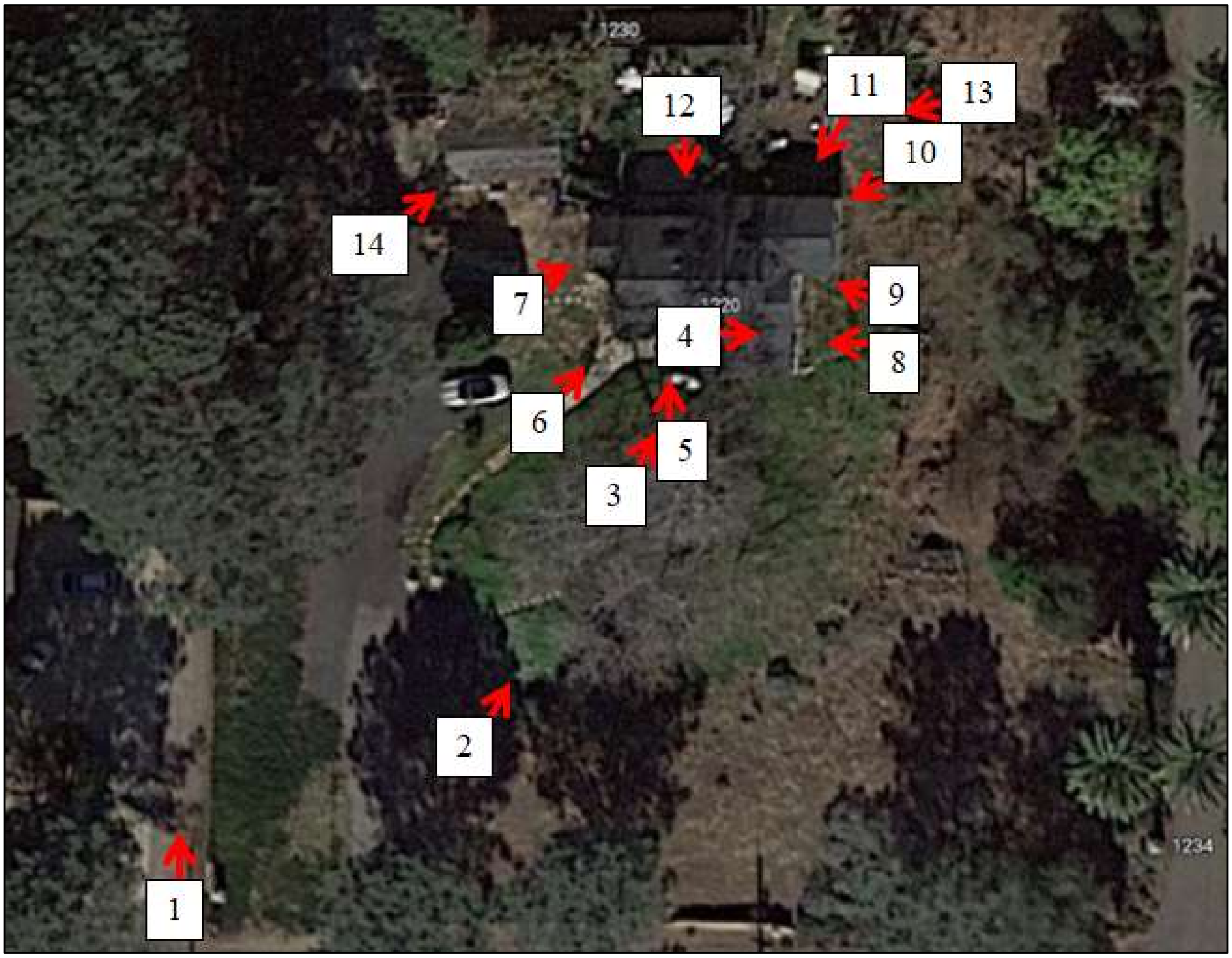


Photo Key for 1220 Melba Road

1. Driveway of 1220 Melba Road, facing north

2. Overview of 1220 Melba Road, south façade

3. Residence, east side of south façade (sunroom)

4. Interior of sunroom

5. Residence, west side of south façade

6. Residence, west elevation (left) and south façade (right)

7. Residence, west elevation

8. Residence, east elevation

9. Residence, east elevation

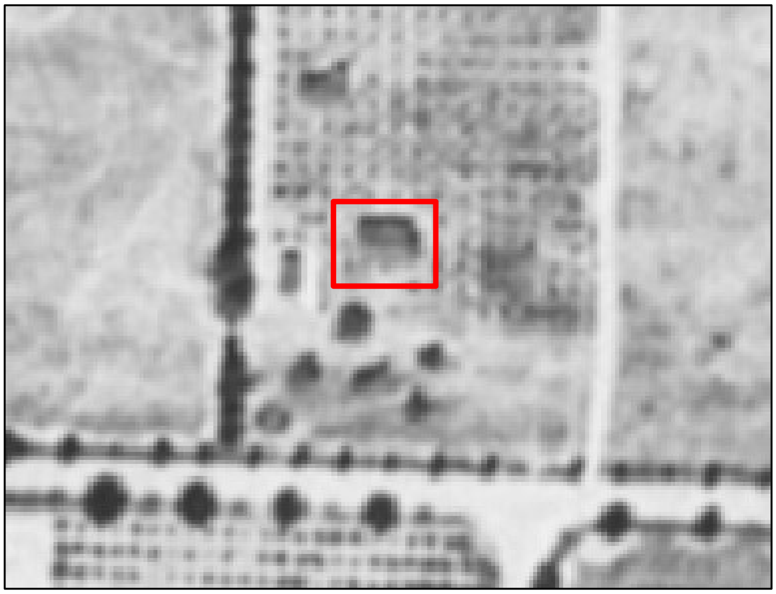
10. Residence, west elevation (left) and north elevation (right)

11. Residence, east half of north elevation

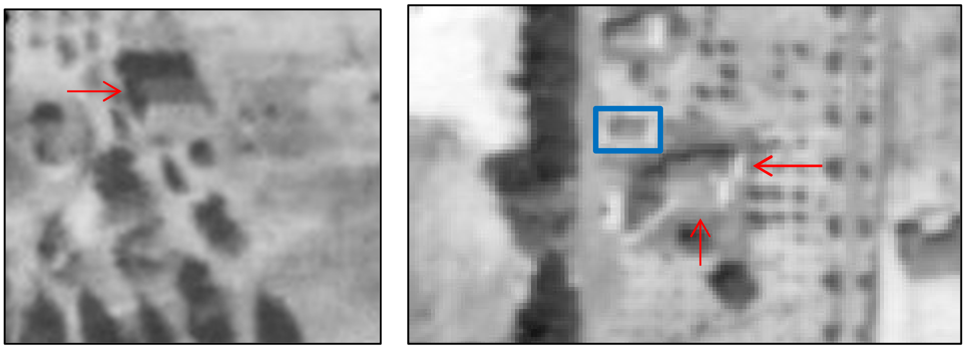
12. Residence, west half of north elevation

13. Overview of lawn adjacent to north elevation

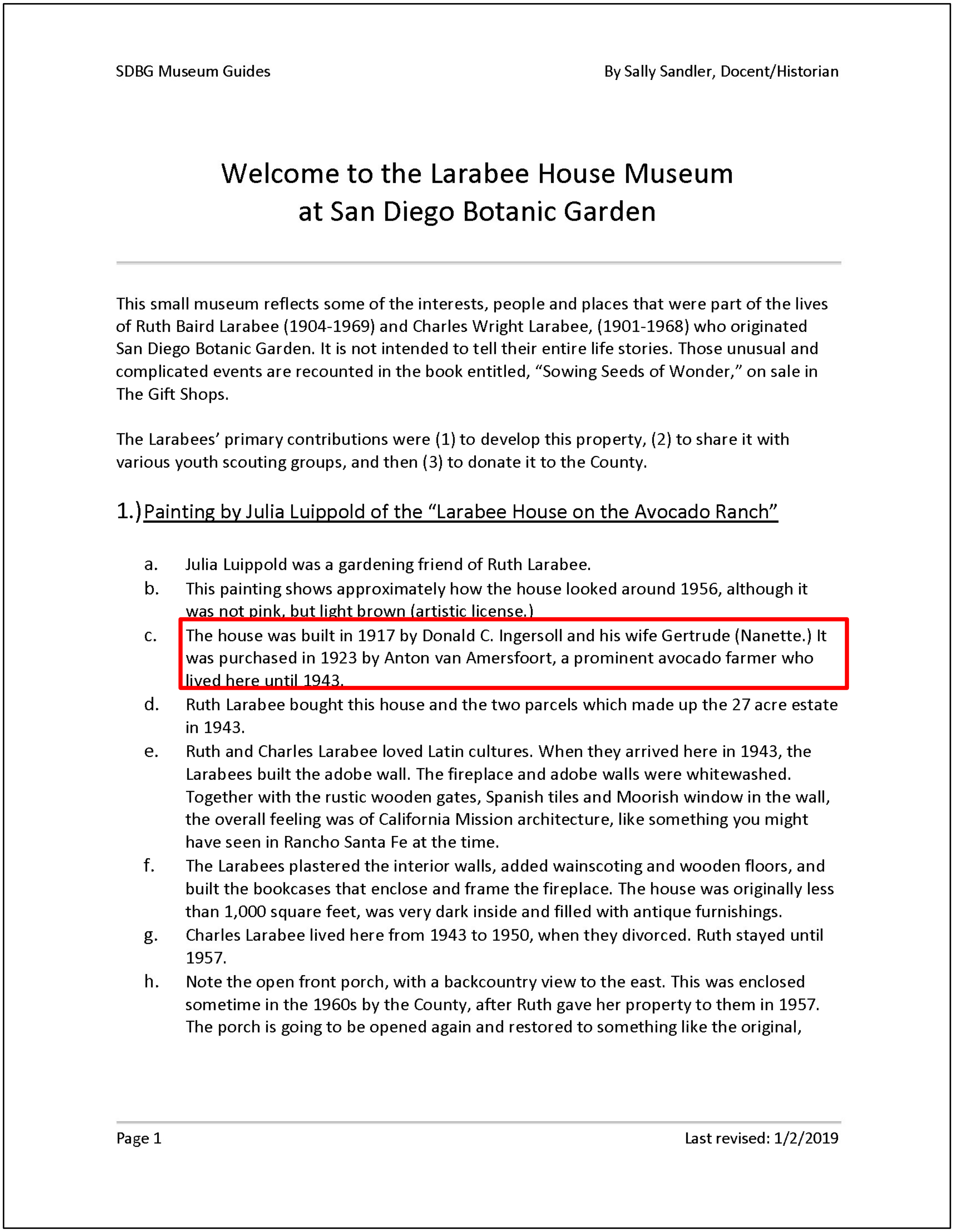
14. Detached ancillary building



1939 USDA Aerial Photograph of 1220 Melba Road (red: residence; FrameFinder 1939)



(Left) 1947 aerial, 1220 Melba Rd. (NETROnline 1947); (right) 1953 USDA aerial photograph of 1220 Melba Rd. (FrameFinder 1953). Red arrows: building additions. Blue outline: detached ancillary building (likely a garage).



Welcome to the Larabee House Museum at San Diego Botanic Garden

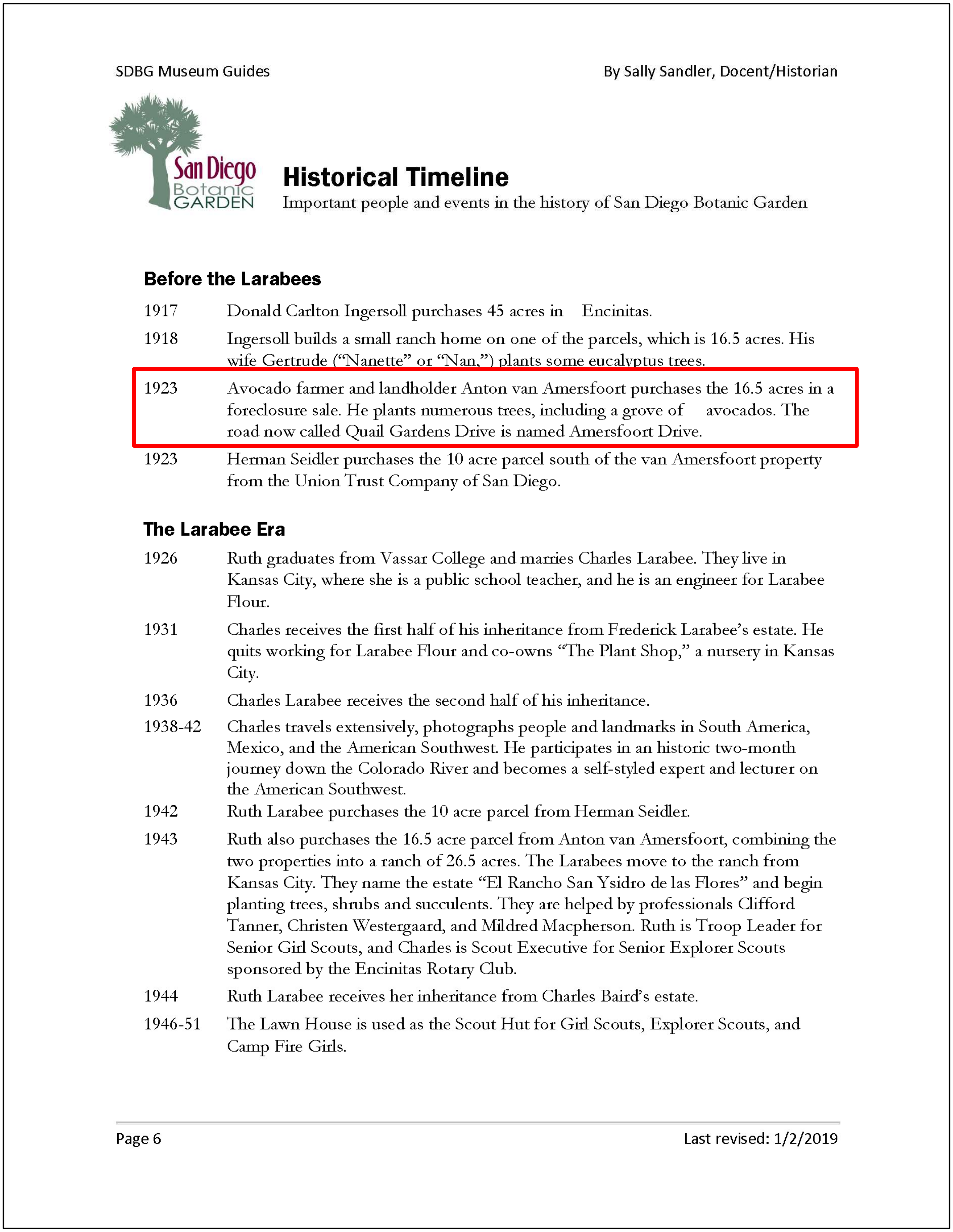
This small museum reflects some of the interests, people and places that were part of the lives of Ruth Baird Larabee (1904-1969) and Charles Wright Larabee, (1901-1968) who originated San Diego Botanic Garden. It is not intended to tell their entire life stories. Those unusual and complicated events are recounted in the book entitled, "Sowing Seeds of Wonder," on sale in The Gift Shops.

The Larabees' primary contributions were (1) to develop this property, (2) to share it with various youth scouting groups, and then (3) to donate it to the County.

1.) Painting by Julia Luippold of the "Larabee House on the Avocado Ranch"

a. Julia Luippold was a gardening friend of Ruth Larabee.
b. This painting shows approximately how the house looked around 1956, although it was not pink, but light brown (artistic license.)
c. The house was built in 1917 by Donald C. Ingersoll and his wife Gertrude (Nanette.) It was purchased in 1923 by Anton van Amersfoort, a prominent avocado farmer who lived here until 1943.
d. Ruth Larabee bought this house and the two parcels which made up the 27 acre estate in 1943.
e. Ruth and Charles Larabee loved Latin cultures. When they arrived here in 1943, the Larabees built the adobe wall. The fireplace and adobe walls were whitewashed. Together with the rustic wooden gates, Spanish tiles and Moorish window in the wall, the overall feeling was of California Mission architecture, like something you might have seen in Rancho Santa Fe at the time.
f. The Larabees plastered the interior walls, added wainscoting and wooden floors, and built the bookcases that enclose and frame the fireplace. The house was originally less than 1,000 square feet, was very dark inside and filled with antique furnishings.
g. Charles Larabee lived here from 1943 to 1950, when they divorced. Ruth stayed until 1957.
h. Note the open front porch, with a backcountry view to the east. This was enclosed sometime in the 1960s by the County, after Ruth gave her property to them in 1957. The porch is going to be opened again and restored to something like the original,

Excerpt of SDBG Museum Guide regarding Anton Van Amersfoort (Sandler 2019)



SDBG Museum Guides

By Sally Sandler, Docent/Historian

Historical Timeline

Important people and events in the history of San Diego Botanic Garden

Before the Larabees

1917	Donald Carlton Ingersoll purchases 45 acres in Encinitas.
1918	Ingersoll builds a small ranch home on one of the parcels, which is 16.5 acres. His wife Gertrude ("Nanette" or "Nan,") plants some eucalyptus trees.
1923	Avocado farmer and landholder Anton van Amersfoort purchases the 16.5 acres in a foreclosure sale. He plants numerous trees, including a grove of avocados. The road now called Quail Gardens Drive is named Amersfoort Drive.
1923	Herman Seidler purchases the 10 acre parcel south of the van Amersfoort property from the Union Trust Company of San Diego.

The Larabee Era

1926	Ruth graduates from Vassar College and marries Charles Larabee. They live in Kansas City, where she is a public school teacher, and he is an engineer for Larabee Flour.
1931	Charles receives the first half of his inheritance from Frederick Larabee's estate. He quits working for Larabee Flour and co-owns "The Plant Shop," a nursery in Kansas City.
1936	Charles Larabee receives the second half of his inheritance.
1938-42	Charles travels extensively, photographs people and landmarks in South America, Mexico, and the American Southwest. He participates in an historic two-month journey down the Colorado River and becomes a self-styled expert and lecturer on the American Southwest.
1942	Ruth Larabee purchases the 10 acre parcel from Herman Seidler.
1943	Ruth also purchases the 16.5 acre parcel from Anton van Amersfoort, combining the two properties into a ranch of 26.5 acres. The Larabees move to the ranch from Kansas City. They name the estate "El Rancho San Ysidro de las Flores" and begin planting trees, shrubs and succulents. They are helped by professionals Clifford Tanner, Christen Westergaard, and Mildred Macpherson. Ruth is Troop Leader for Senior Girl Scouts, and Charles is Scout Executive for Senior Explorer Scouts sponsored by the Encinitas Rotary Club.
1944	Ruth Larabee receives her inheritance from Charles Baird's estate.
1946-51	The Lawn House is used as the Scout Hut for Girl Scouts, Explorer Scouts, and Camp Fire Girls.

Page 6

Last revised: 1/2/2019

Excerpt of SDBG Museum Guide regarding Anton Van Amersfoort (Sandler 2019)

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State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
PRIMARY RECORD

Primary #
HRI #
Trinomial
NRHP Status Code

Other Listings
Review Code **Reviewer** **Date**

Page 1 **of** 8 ***Resource Name or #:** 1230 Melba Road

P1. Other Identifier:
P2. Location: ☒ **Not for Publication** ☐ **Unrestricted**
a. County: San Diego
b. USGS 7.5' Quad: Encinitas **Date:** 1997 **T** ; **R** ; **¼ of** **¼ of Sec** **; S.B.B.M.**
c. Address: 1230 Melba Road **City:** Encinitas **Zip:** 92024
d. UTM: Zone: ; **mE/** **mN**
e. Other Locational Data: APN: 259-180-3300 **Elevation:**

P3a. Description:
This small, one-story, single-family residence is in overall good condition. The building has an irregular footprint with a normal pitched open gabled roof (clad in composition shingles) intersected by a low pitched shed roof (roofing material not known) at the south elevation, and a flat roofed porch overhang (covered with corrugated metal sheeting) at the east elevation. The building addition at the southern elevation is set on a concrete block foundation, approximately 1-2 feet above ground level. The exterior is clad in wood board and batten siding. The main entrance is located at the north façade and consists of a panel and glass wood door. Windows are wood framed and appear to be original to the building. Two wood framed corner windows (two panes each; one fixed, one casement) are located at the junction of the west elevation and the north façade. (See Continuation Sheet)

P3b. Resource Attributes: HP2. Single family property
P4. Resources Present: ☒Building ☐Structure ☐Object ☐Site ☐District ☐Element of District ☐Other

P5b. Description of Photo: Residence, north façade (left) and west elevation (right)

P6. Date Constructed/Age and Sources: ☒Historic ☐Prehistoric ☐Both
Ca. 1939; USDA Historic aerial photograph (FrameFinder 1939)

P7. Owner and Address:
Torrey Pacific Corporation
171 Saxony Rd., Suite 109
Encinitas, CA 92024

P8. Recorded by:
Cogstone Resource Management, Inc.; 1518 W. Taft Ave., Orange, CA 92865

P9. Date Recorded:
July 1, 2021

P10. Survey Type: Pedestrian survey

P11. Report Citation: *Cultural Resources Assessment Report for the Melba Road and Island View Lane Residential Project, City of Encinitas, San Diego County, California*. Prepared for: BRG Consulting. Prepared by: Cogstone Resource Management.

Attachments: ☐NONE ☒Location Map ☐Sketch Map ☒Continuation Sheet ☒Building, Structure, and Object Record ☐Archaeological Record ☐District Record ☐Linear Feature Record ☐Milling Station Record ☐Rock Art Record ☐Artifact Record ☐Photograph Record ☐ Other

State of California — The Resources Agency **Primary #**
DEPARTMENT OF PARKS AND RECREATION **Trinomial**

BUILDING, STRUCTURE, AND OBJECT RECORD

Page 2 **of** 8 *__Resource Name or #:__ 1230 Melba Road **Status Code:** 6Z

B1. **Historic Name:** None
B2. **Common Name:** None
B3. **Original Use:** Single family residence **B4.** **Present Use:** Single family residence
***B5.** **Architectural Style:** Cottage Bungalow Style elements
***B6.** **Construction History:**

Per USDA historic aerial photographs, this single-family residence was constructed ca. 1939. The large addition located at the south elevation was added sometime between 1953 and 1964 (NETROnline 1953 and 1964). The porch overhang located at the east elevation was added sometime between 1984 and 1985 (NETROnline 1984 and 1985). Despite research efforts, a history of ownership could not be identified.

***B7.** **Moved?** ☒**No** ☐**Yes** ☐**Unknown** **Date:** **Original Location:**
***B8.** **Related Features:**

B9a. **Architect:** Not known **b. Builder:** Not Known
***B10.** **Significance: Theme:** Residential Development **Area:** Encinitas, CA
Period of Significance: ca. 1939-1976 **Property Type:** Single family property **Applicable Criteria:** N/A

Criteria 1/A
Is the resource associated with events that have made a significant contribution to the broad patterns of our history?

Despite extensive background research regarding this residence, including searching various newspapers and consultation with historic societies and local government agencies, this residence is not associated with events that have made a significant contribution to the broad patterns of our history. Therefore, this residence is recommended not eligible for listing under the National Register of Historic Places (NRHP) Criterion 1 or the California Register of Historic Resources (CRHR) Criterion A.

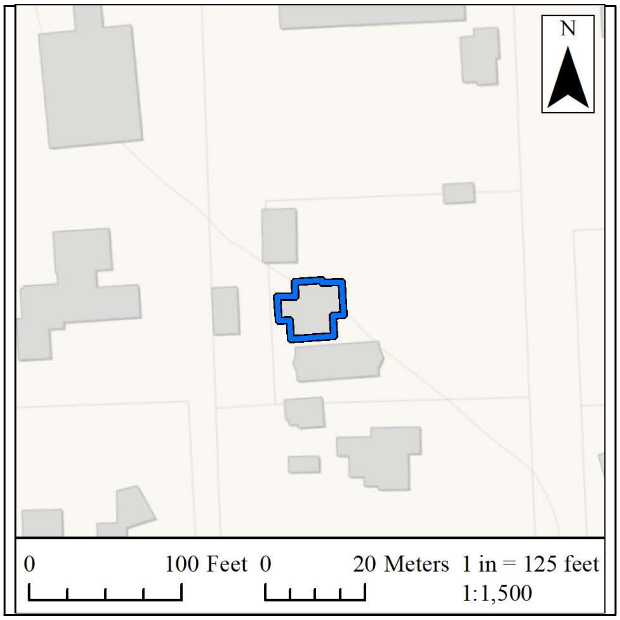
See Continuation Sheet

B11. **Additional Resource Attributes:**
***B12.** **References:**

See Continuation Sheet

B13. **Remarks:**

***B14.** **Evaluator:** Shannon Lopez
***Date of Evaluation:** July 26, 2021

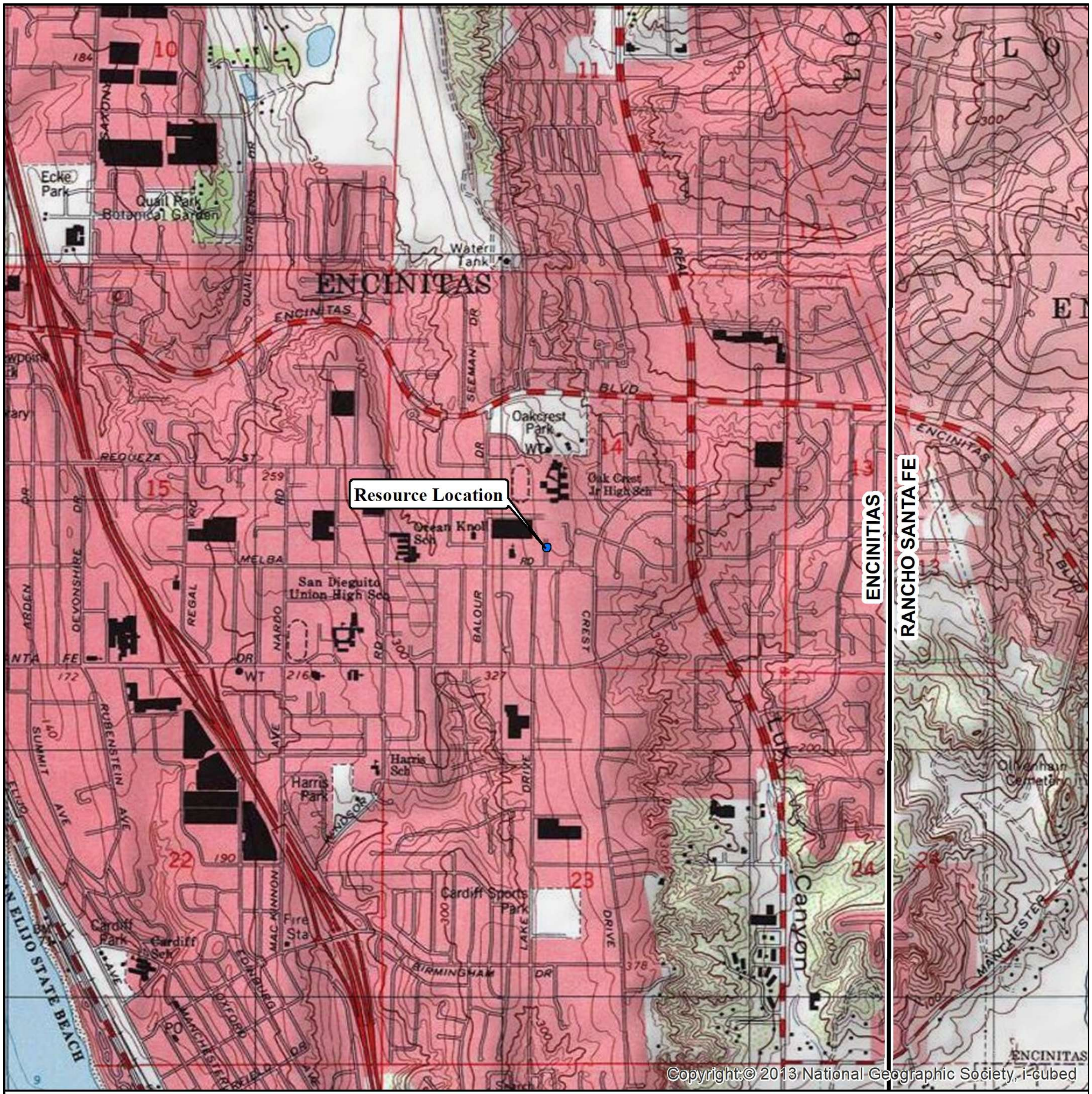


State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
LOCATION MAP

Primary #
HRI#
Trinomial

Page 3 **of** 8
***Resource Name or #:** 1230 Melba Road

Map Name: Encinitas
***Scale:** 1:24,000
***Date of Map:** 1997



1230 Melba Residence
(APN: 259-180-3300)
City of Encinitas
San Diego County, CA

☐ 1230 Melba Road
☐ USGS Quad

USGS 7.5' Quads:
ENCINITIAS
RANCHO SANTA FE

0 0.25 0.5 Miles
0 0.25 0.5 Kilometers
N
1:24,000
1 in = 2,000 ft

***Required information**

Page 4 **of** 8 ***Resource Name or #** 1230 Melba Road ☒ Continuation ☐ Update

P3a. Description Cont.:
Fenestration at the north elevation includes a small wood framed casement window, an aluminum framed sliding window, an aluminum framed sliding door, a five-glass paned door, and one vinyl framed window (not historic in age).

***B10. Significance Cont.:**
Criteria B/2
Is the resource associated with the lives of significant persons in our past?

Following review of historic newspapers, associated deeds and other property records, the single-family residence is not associated with the lives of significant persons in our past. Therefore, this building is recommended not eligible for listing under the NRHP Criterion B or the CRHR Criterion 2.

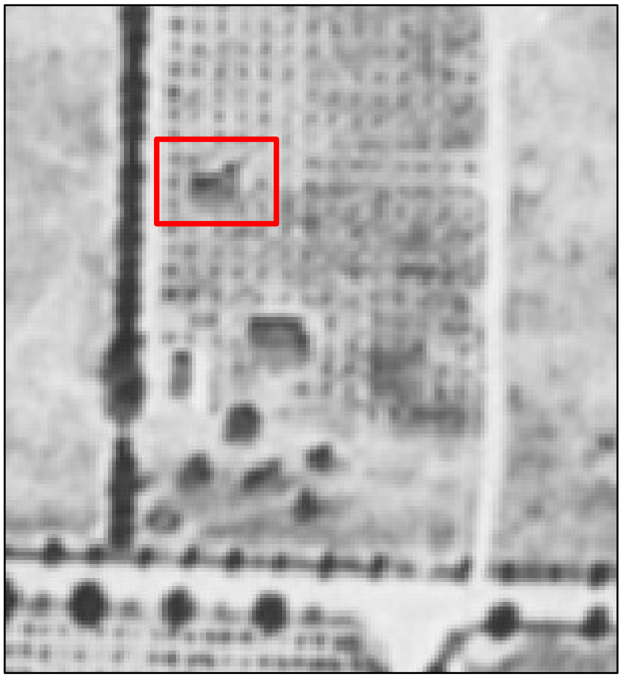
Criteria C/3
Does the resource embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction?

This residence embodies aspects of cottage Bungalow style architecture which includes its small size, gabled roof, and asymmetrical design. Although this residence is very well maintained, it is not an exemplary representation of Bungalow style architecture, nor does it represent the work of a master architect or express high artistic values. Therefore, this residence is recommended not eligible for listing under the NRHP Criterion C or the CRHR Criterion 3.

Criteria D/4
Has this resource yielded or may be likely to yield, information important in history or prehistory?

The development of 1230 Melba Road does not appear to predate modern day trash services (predating could indicate historic refuse deposits) and following an intensive pedestrian survey of the property it is unlikely for this residence to yield information important to history or prehistory. Therefore, this residence is recommended not eligible for listing under the NRHP Criterion D or the CRHR Criterion 4.

Integrity: This residence appears to maintain its integrity of Location and Association. With the construction of the building addition at the south elevation and the porch overhang at the east elevation there has been a notable impact to the building's integrity of Design, Materials, Feeling, and Workmanship. However, the addition at the south elevation is over 50 years old and is now considered a historic-aged feature of this building. Due to residential development in the immediate surrounding area, this building has lost some of its integrity of Setting.



1939, residence at what is now 1230 Melba Road (Frame Finder 1939)

Ca. 2021; residence at 1230 Melba Road (courtesy of *Google Maps*)

State of California — The Resources Agency **DEPARTMENT OF PARKS AND RECREATION**	**Primary #** **HRI#**
CONTINUATION SHEET	**Trinomial**

Page 6 **of** 8 ***Resource Name or #** 1230 Melba Road ☒ Continuation ☐ Update

Photo Key for 1230 Melba Road

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
CONTINUATION SHEET

Primary #
HRI#
Trinomial

Page 7 **of** 8 ***Resource Name or #** 1230 Melba Road ☒ Continuation ☐ Update

1. Residence, north façade (left) and west elevation (right)

2. Close up of secondary entrance near north façade

3. Residence, north façade

4. Residence, east elevation with porch overhang

5. Residence, south end of west elevation

6. Residence, west elevations

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
CONTINUATION SHEET

Primary #
HRI#
Trinomial

Page 8 **of** 8 ***Resource Name or #** 1230 Melba Road ☒ Continuation ☐ Update

References

FrameFinder
1939 "Flight C_5750, Frame 204-55." https://mil.library.ucsb.edu/ap_indexes/FrameFinder/. Accessed: July 26, 2021.

Google
Ca. 2021 "1230 Melba Road." *Google Maps*. https://www.google.com/maps. Accessed: June 26, 2021.

NETROnline
1953 *Historic Aerials*. https://www.historicaerials.com/viewer#. Accessed: June 26, 2021.
1964 *Historic Aerials*. https://www.historicaerials.com/viewer#. Accessed: June 26, 2021.
1984 *Historic Aerials*. https://www.historicaerials.com/viewer#. Accessed: June 26, 2021.
1985 *Historic Aerials*. https://www.historicaerials.com/viewer#. Accessed: June 26, 2021.

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

PRIMARY RECORD

Primary #
HRI #
Trinomial
NRHP Status Code

Other Listings
Review Code **Reviewer** **Date**

Page 1 **of** 7 ***Resource Name or #:** 1230A Melba Road

P1. Other Identifier:

P2. Location: ☐ **Not for Publication** ☒ **Unrestricted**

a. **County:** San Diego County
b. **USGS 7.5' Quad:** Encinitas **Date:** 1997 **T** ; **R** ; **¼ of** **¼ of Sec** **; S.B.B.M.**
c. **Address:** 1230A Melba Road **City:** Encinitas **Zip:** 92024
d. **UTM: Zone:** **;** **mE/** **mN**
e. **Other Locational Data:** (APN: 259-180-3300) **Elevation:**

P3a. Description:

This one-story, single-family residence has a rectangular footprint and a normal pitched roof. The building is set on a concrete foundation and elevated less than a foot above ground level. The roof is clad with composition shingles and has a moderate eave overhang. The exterior of the building is clad in vertical wood siding (weatherboard) and the condition of the material does not appear historic in age (possibly added within the last 10-15 years). The main entrance is located at the west façade and consists of a three paneled glass/wood door; while the doorknob and lock hardware are not historic in age, the door itself does appear historic in age. The six large and two small windows on all elevations are one-by-one sliding windows with aluminum frames. A secondary pedestrian door with a small upper and lower louvered vent is found at the east elevation and allows access to and from the backyard.

P3b. Resource Attributes: HP2. Single Family property; HP4. Ancillary Building

P4. Resources Present: ☒Building ☒Structure ☐Object ☐Site ☐District ☐Element of District ☐Other

P5b. Description of Photo:
West Façade, facing southeast

P6. Date Constructed/Age and Sources: ☒Historic ☐Prehistoric ☐Both
Ca. 1963

P7. Owner and Address:
Torrey Pacific Corporation
171 Saxony Rd. Suite 109
Encinitas, CA 92024

P8. Recorded by:
Cogstone Resource Management, Inc.; 1518 W. Taft Ave., Orange, CA 92865

P9. Date Recorded:
July 1, 2021

P10. Survey Type:
Pedestrian Survey

P11. Report Citation: *Cultural Resources Assessment Report for the Melba Road and Island View Lane Residential Project, City of Encinitas, San Diego County, California*. Prepared for: BRG Consulting. Prepared by Cogstone Resource Management.

Attachments: ☐NONE ☒Location Map ☐Sketch Map ☒Continuation Sheet ☒Building, Structure, and Object Record ☐Archaeological Record ☐District Record ☐Linear Feature Record ☐Milling Station Record ☐Rock Art Record ☐Artifact Record ☐Photograph Record ☐ Other

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
Primary #
Trinomial

BUILDING, STRUCTURE, AND OBJECT RECORD

Page 0 **of** 7 *__Resource Name or #:__ 1230A Melba Road **Status Code:** 6Z

B1. Historic Name: None
B2. Common Name: 1230A Melba Road
B3. Original Use: Single Family Residence **B4. Present Use:** Single Family property
***B5. Architectural Style:** No Style
***B6. Construction History:**

Per USDA historic aerial photographs, this residence was constructed sometime between 1953 and 1963 (NETROnline 1953 and 1963). Upon visual inspection, the exterior wall cladding does not appear to be historic in age and is estimated to have been added within the last 10-15 years. The roof's composition shingles are in excellent condition and do not appear historic in age. They are estimated to have been added within the last 10 years. Despite research efforts, a history of ownership could not be identified.

***B7. Moved?** ☒**No** ☐**Yes** ☐**Unknown** **Date:** **Original Location:**

***B8. Related Features:**

The adjacent shed is not historic in age as it first appears in historic aerials sometime between 1978 and 1980 (NETROnline 1978 and 1980).

B9a. Architect: Not Known **b. Builder:** Not Known

***B10. Significance: Theme:** Residential Development **Area:** Encinitas, CA
Period of Significance: ca. 1963-1976 **Property Type:** Single family property
Applicable Criteria: N/A

Criteria A/1
Is the resource associated with events that have made a significant contribution to the broad patterns of our history?

Despite extensive background research regarding this structure, including searching various newspapers and consultation with historic societies and local government agencies, this residence is not associated with events that have made a significant contribution to the broad patterns of our history. Therefore, this residence is recommended not eligible for listing under the National Register of Historic Places (NRHP) Criterion A or the California Register of Historic Resources (CRHR) Criterion 1.

See Continuation Sheet

B11. Additional Resource Attributes:

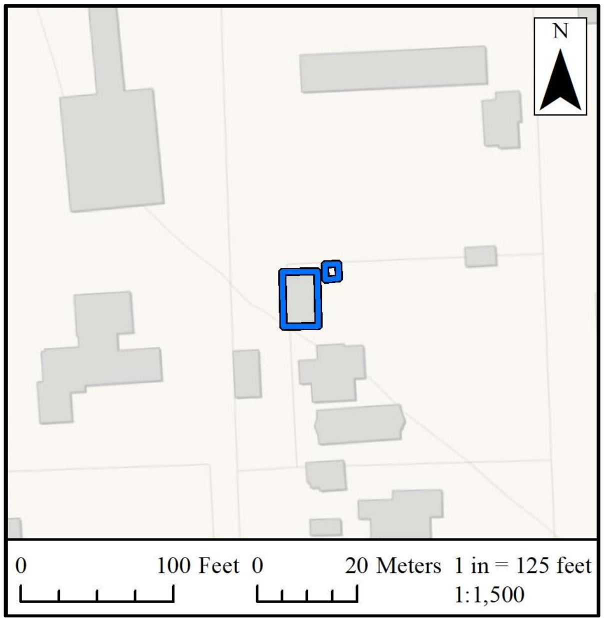
***B12. References:**

See Continuation Sheet

B13. Remarks:

***B14. Evaluator:** Shannon Lopez

***Date of Evaluation:** July 23, 2021

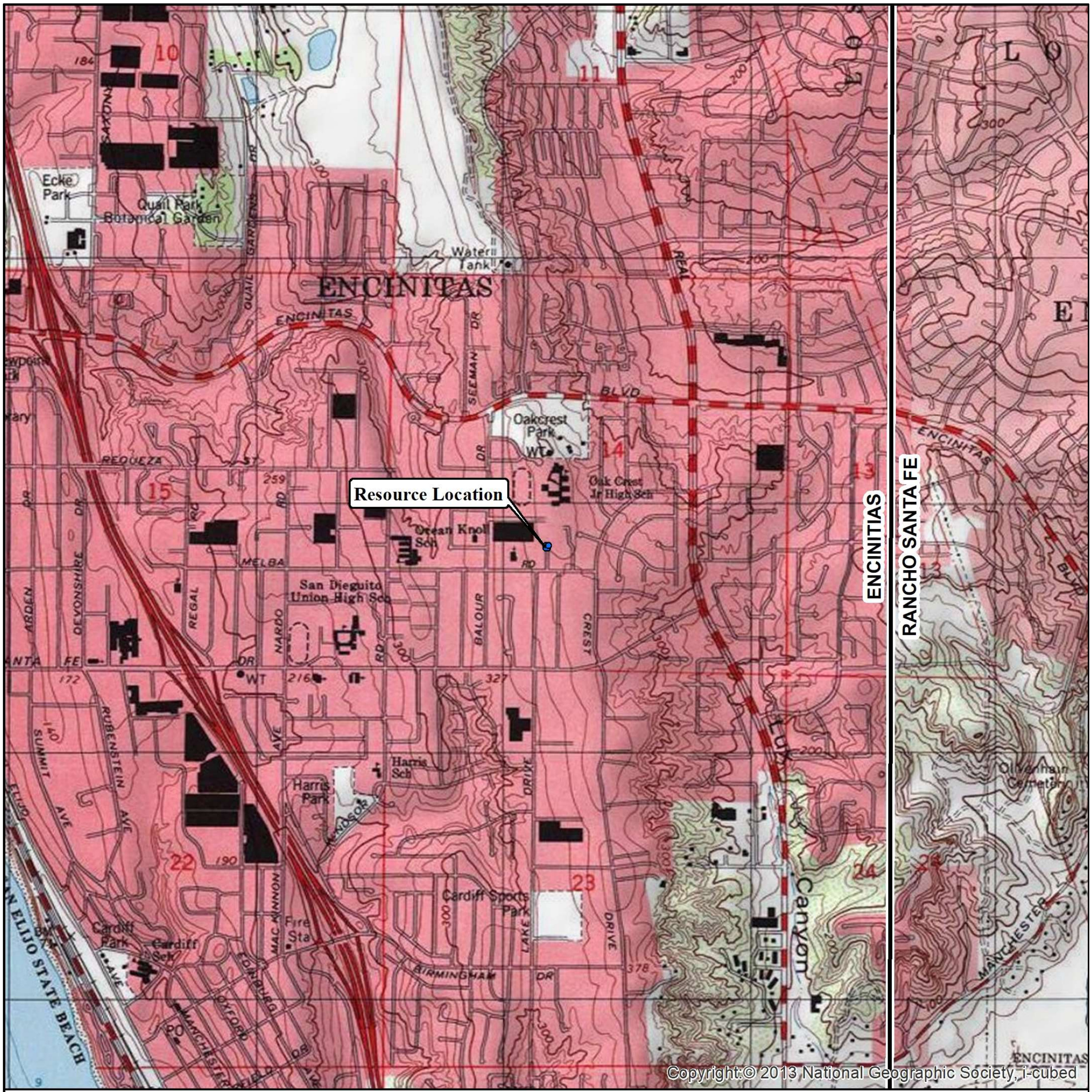


State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

LOCATION MAP

Primary #
HRI#
Trinomial

Page 3 **of** 7
Resource Name or #: 1230A Melba Road
Map Name: Encinitas
***Scale:** 1:24,000
***Date of Map:** 1997



1230A Melba Residence
(APN: 259-180-3300)
City of Encinitas
San Diego County, CA

- 1230A Melba Road
- USGS Quad

USGS 7.5' Quads:
ENCINITIAS
RANCHO SANTA FE

0 0.25 0.5 Miles
0 0.25 0.5 Kilometers
N
1:24,000 1 in = 2,000 ft

*Required information

Page 4 **of** 7 ***Resource Name or #** 1230A Melba Road ☒ Continuation ☐ Update

History of Ownership
Information regarding previous ownership is limited.

A Quitclaim Deed filed with the San Diego County Recorder in 1979 shows the transfer of ownership of property associated with APN: 259-180-3300 from Rachel Staver to Torrey Pacific Properties (*San Diego County Recorder* 1979). It is possible that Rachel Staver was the original homeowner.

***B10. Significance Cont.:**
Criteria B/2
Is the resource associated with the lives of significant persons in our past?

Following review of historic newspapers, associated deeds and other property records, this single-family residence is not associated with the lives of significant persons in our past. Therefore, this building is recommended not eligible for listing under the NRHP Criterion B or the CRHR Criterion 2.

Criteria C/3
Does the resource embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction?

This residence does not represent a particular architectural style nor does it represent the work of a master or possess high artistic values. Therefore, this residence is recommended not eligible for listing under the NRHP Criterion C or the CRHR Criterion 3.

Criteria D/4
Has this resource yielded or may be likely to yield, information important in history or prehistory?

The development of the property does not appear to predate modern day trash services(predating could indicate historic refuse deposits) and following an intensive pedestrian survey of 1230A Melba Road this property is not likely to yield information important to history or prehistory. Therefore, 1230A Melba Road is recommended not eligible for listing under the NRHP Criterion D or the CRHR Criterion 4.

Integrity: This residence retains its integrity of Location and Association. Large greenhouses immediately north of this residence were added in the 1970s but were mostly removed in ca. 2002 and the residence's integrity of Setting was restored (NETROnline 1978 and 2002). Due to alterations to the building within the (estimated) past 20 years this building has lost a substantial degree of its integrity of Design, Materials, Feeling, and Workmanship.

References:

FrameFinder
1963 "Flight CAS_SD, Frame 1-99". January 1, 1963. https://mil.library.ucsb.edu/ap_indexes/FrameFinder/. Accessed: July 23, 2021.

NETROnline
1953 *Historic Aerials*. https://www.historicaerials.com/viewer. Accessed: July 23, 2021.
1978 *Historic Aerials*. https://www.historicaerials.com/viewer. Accessed: July 23, 2021.
2002 *Historic Aerials*. https://www.historicaerials.com/viewer. Accessed: July 23, 2021.

San Diego County Recorder
1979 "File No. 79-348694". *Quitclaim Deed*. Document provided by Brian Staver of the Torrey Pacific Corporation.

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

CONTINUATION SHEET

Primary #
HRI#
Trinomial

Page 5 **of** 7 ***Resource Name or #** 1230A Melba Road ☒ Continuation ☐ Update

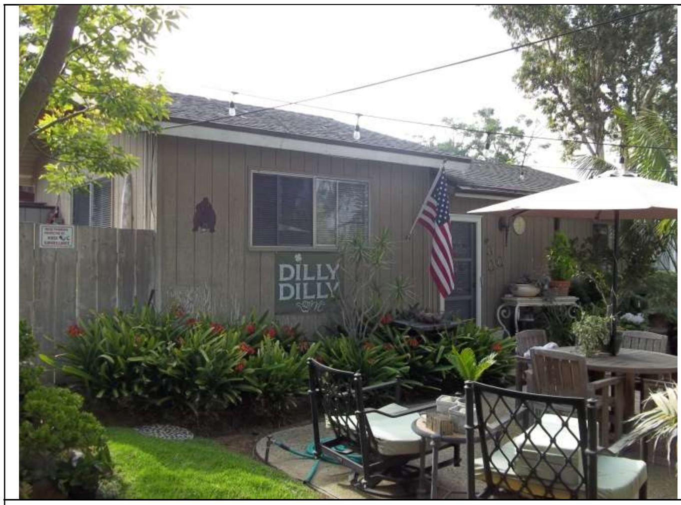
Photo Key for 1230A Melba Road

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

Primary #
HRI#
Trinomial

CONTINUATION SHEET

Page 6 **of** 7 ***Resource Name or #** 1230A Melba Road ☒ Continuation ☐ Update



1. Residence, west façade

2. Residence, north elevation

3. Residence, east elevation

4. Shed, west façade (right) and south elevation (right)

5. Residence, south elevation

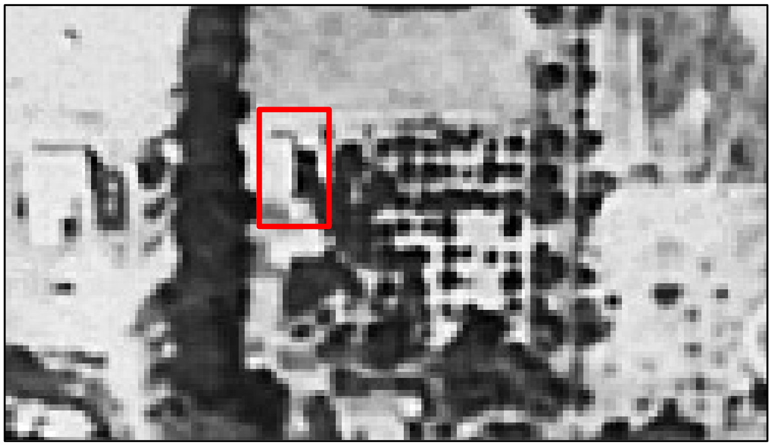
Blank

Blank

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
CONTINUATION SHEET

Primary #
HRI#
Trinomial

Page 7 **of** 7 ***Resource Name or #** 1230A Melba Road ☒ Continuation ☐ Update



USDA Aerial Photograph of 1230A Melba Road (FrameFinder 1963)

State of California — The Resources Agency **Primary #**
DEPARTMENT OF PARKS AND RECREATION **HRI #**

PRIMARY RECORD

Trinomial
NRHP Status Code
Other Listings
Review Code **Reviewer** **Date**

Page 1 **of** 28 ***Resource Name or #:** 1240 and 1234 Melba Road

P1. Other Identifier:
P2. Location: ☒ **Not for Publication** ☐ **Unrestricted**
a. County: San Diego
b. USGS 7.5' Quad: Encinitas **Date:** 1997 **T** ; **R** ; **¼ of** **¼ of Sec** **; S.B.B.M.**
c. Address: 1240 Melba Road **City:** Encinitas **Zip:** 92024
d. UTM: Zone: ; **mE/** **mN**
e. Other Locational Data: **Elevation:**
(APNs: 259-180-0900 and 259-180-1000)

P3a. Description:
This property consists of two single-family residences (main house and guest house), one detached garage, one shed, one small greenhouse, one large greenhouse, one small administration building, and a long private driveway with decorative palm trees which give the driveway the appearance of a boulevard. There is also one small child’s playhouse constructed in the late 1970s/ early 1980s, located at the northwest corner of the property (however this structure is not historic in age and will not be evaluated for eligibility). The main residence is a one-story Ranch style house with an irregular shaped footprint and an intersecting/ overlaid hip roof with a five-sided projection (multifaceted hip roof) located near the center of the southeast façade (added ca. 1967) (NETROnline 1967). The residence is set atop a brick foundation which raises the building approximately 2 feet above grade. The roof is clad in composition shingles with a red brick chimney located near the center of the body of the building. The exterior of the building is clad in horizontal wood siding (weatherboard), which does not appear historic in age and was possibly added within the last 20 years. (See Continuation Sheet)

P3b. Resource Attributes: HP2. Single family property, HP4. Ancillary Building, HP37. Driveway/ Boulevard
P4. Resources Present: ☒Building ☒Structure ☐Object ☐Site ☐District ☐Element of District ☐Other

P5b. Description of Photo: Southeast façade, facing northwest

P6. Date Constructed/Age and Sources: ☒Historic ☐Prehistoric ☐Both
Built ca. 1953; NETROnline Historic Aerials

P7. Owner and Address:
Torrey Pacific Corporation
171 Saxony Road, Suite 109
Encinitas, CA 92024

P8. Recorded by:
Shannon Lopez
Cogstone Resource Management, Inc.; 1518 W. Taft Ave, Orange, CA 92865

P9. Date Recorded: July 1, 2021

P10. Survey Type: Pedestrian Survey

P11. Report Citation: *Cultural Resources Assessment Report for the Melba Road and Island View Lane Residential Project, City of Encinitas, San Diego County, California*. Prepared for: BRG Consulting. Prepared by: Cogstone Resource Management.

Attachments: ☐NONE ☒Location Map ☐Sketch Map ☒Continuation Sheet ☒Building, Structure, and Object Record ☐Archaeological Record ☐District Record ☒Linear Feature Record ☐Milling Station Record ☐Rock Art Record ☐Artifact Record ☐Photograph Record ☐ Other

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

Primary #
Trinomial

BUILDING, STRUCTURE, AND OBJECT RECORD

Page 2 **of** 28 ***Resource Name or #:** 1240 and 1234 Melba Road **Status Code:** 6Z

B1. Historic Name: None
B2. Common Name: 1240 Melba Road
B3. Original Use: Single Family Residence **B4. Present Use:** Single Family Residence
***B5. Architectural Style:** Ranch Style

***B6. Construction History:** This building first appears in a 1953 USDA historic aerial photograph (NETROnline 1953). The original footprint appears to be largely a reverse L-shape with the small projection at the southern end of the southeast façade. Due to dense trees adjacent to the southeast façade which obscure the view of the building, it is difficult to determine when the multifaceted hipped roof was added to the center of the façade; however, it is estimated the addition was constructed ca. 1967 (NETROnline 1967). The exterior of the building is clad in horizontal wood siding (weatherboard) which appears to be in good condition; it is estimated this material was added within the last 20 years. There are multiple skylights across the roof which are first visible in the 1982 USDA historic aerial photograph (NETROnline 1982). The vinyl windows and sliding doors do not appear historic in age and are estimated to have been added within the last 15-20 years.

***B7. Moved?** ☒**No** ☐**Yes** ☐**Unknown** **Date:** **Original Location:**

***B8. Related Features:**

B9a. Architect: Not Known **b. Builder:** Not known

***B10. Significance: Theme:** Residential Development **Area:** Encinitas, CA
Period of Significance: ca. 1953-1976 **Property Type:** Single family property **Applicable Criteria:** N/A

Criteria 1/A
Is the resource associated with events that have made a significant contribution to the broad patterns of our history?

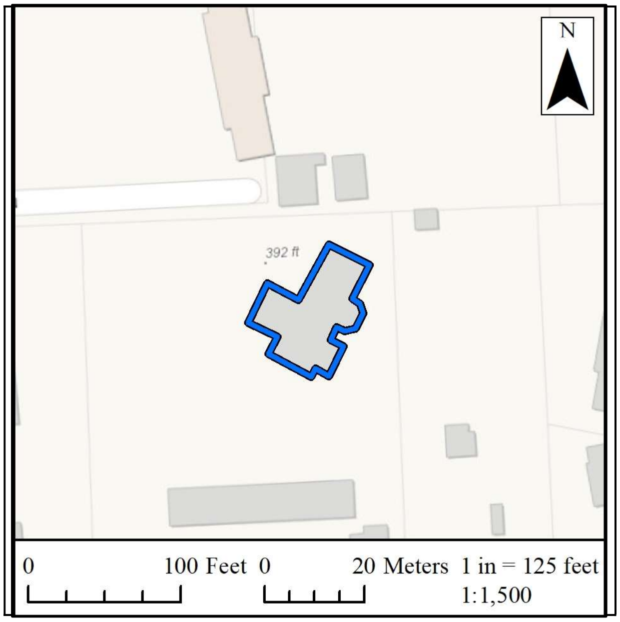
Despite extensive background research regarding this structure, including searching various newspapers and consultation with historic societies and local government agencies, this residence is not associated with events that have made a significant contribution to the broad patterns of our history. Therefore, this residence is recommended not eligible for listing under the National Register of Historic Places (NRHP) Criterion 1 or the California Register of Historic Resources (CRHR) Criterion A.

B11. Additional Resource Attributes:

***B12. References:**
(See Continuation Sheet)

B13. Remarks:

***B14. Evaluator:** Shannon Lopez
***Date of Evaluation:** July 22, 2021



BUILDING, STRUCTURE, AND OBJECT RECORD

Page 3 **of** 28 ***Resource Name or #:** 1240 and 1234 Melba Road **Status Code:** 6Z

B1. **Historic Name:** None
B2. **Common Name:** 1240 Melba Road
B3. **Original Use:** Single Family Residence-Guest House **B4.** **Present Use:** Single family residence
***B5.** **Architectural Style:** No style

***B6.** **Construction History:** This building first appears in the 1953 USDA historic aerial photograph (NETROnline 1953). Dense vegetation adjacent to the building obstructs the view of the building after 1964 (NETROnline 1964). Based on visual inspection of the building, it appears that the external building materials are historic in age and most likely original to the building.

***B7.** **Moved?** ☒**No** ☐**Yes** ☐**Unknown** **Date:** **Original Location:**

***B8.** **Related Features:**

B9a. **Architect:** Not known **b. Builder:** Not known

***B10.** **Significance: Theme:** Residential Development **Area:** Encinitas, CA
Period of Significance: ca. 1953-1976 **Property Type:** Single family residence **Applicable Criteria:** N/A

Criteria 1/A
Is the resource associated with events that have made a significant contribution to the broad patterns of our history?

Despite extensive background research regarding this building, including searching various newspapers and consultation with historic societies and local government agencies, this residence is not associated with events that have made a significant contribution to the broad patterns of our history. Therefore, this residence is recommended not eligible for listing under the NRHP Criterion 1 or the CRHR Criterion A.

See Continuation Sheet

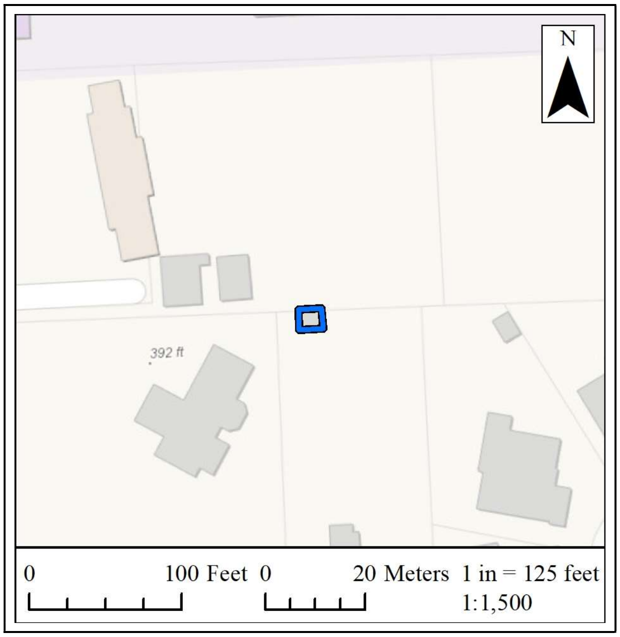
B11. **Additional Resource Attributes:**

***B12.** **References:**

(See Continuation Sheet)

B13. **Remarks:**

***B14.** **Evaluator:** Shannon Lopez
***Date of Evaluation:** July 22, 2021



BUILDING, STRUCTURE, AND OBJECT RECORD

Page 4 **of** 28 ***Resource Name or #:** 1240 and 1234 Melba Road **Status Code:** 6Z

B1. Historic Name: None

B2. Common Name: 1240 Melba Road

B3. Original Use: Detached Garage **B4. Present Use:** Detached garage/ storage
***B5. Architectural Style:** No Style but with Ranch elements

***B6. Construction History:** It is unclear when the detached garage was initially constructed but it seems to be partially visible in a 1978 USDA historic aerial (NETROnline 1978). By 1980, the driveway was realigned to its current configuration in front of the garage. Overall, the building appears to be in good condition. The automatic garage door appears to be approximately 20 years old or less. The exterior horizontal weatherboard siding is also in good condition and does not appear historic in age. It is not known when the two skylight windows were added to the west facing side of the roof.

***B7. Moved?** ☒**No** ☐**Yes** ☐**Unknown** **Date:** **Original Location:**

***B8. Related Features:**

B9a. Architect: Not Known **b. Builder:** Not Known

***B10. Significance: Theme:** Residential Development **Area:** Encinitas, CA
Period of Significance: ca. 1978 **Property Type:** Ancillary Building **Applicable Criteria:** N/A

Criteria 1/A
Is the resource associated with events that have made a significant contribution to the broad patterns of our history?

Despite extensive background research regarding this building, including searching various newspapers and consultation with historic societies and local government agencies, this building is not associated with events that have made a significant contribution to the broad patterns of our history. Therefore, this building is recommended not eligible for listing under the NRHP Criterion 1 or the CRHR Criterion A.

See Continuation Sheet

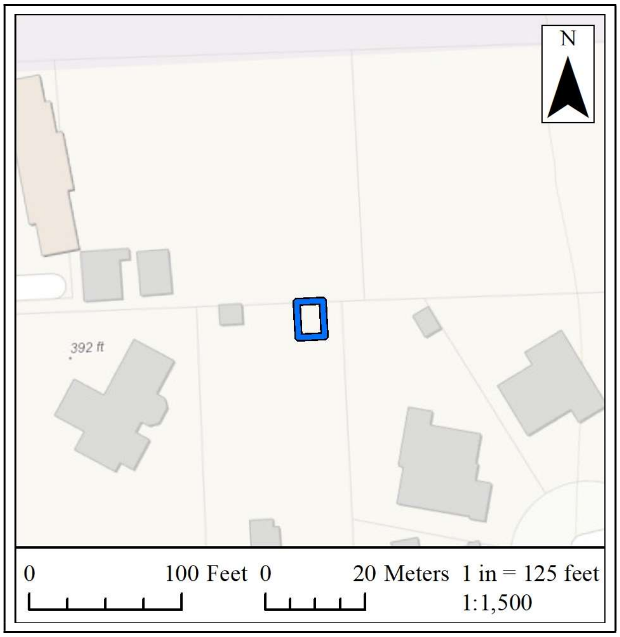
B11. Additional Resource Attributes:

***B12. References:**

(See Continuation Sheet)

B13. Remarks:

***B14. Evaluator:** Shannon Lopez
***Date of Evaluation:** July 22, 2021



BUILDING, STRUCTURE, AND OBJECT RECORD

B1. Historic Name: None

B2. Common Name: 1240 Melba Road

B3. Original Use: Storage Shed **B4. Present Use:** Storage shed
***B5. Architectural Style:** Ranch elements

***B6. Construction History:** What appears to be this building is seen in the 1953 USDA historic aerial photograph (NETROnline 1953). Documentation regarding this structure is limited. The exterior vertical weatherboard shows notable deterioration, however, despite the deterioration of materials it is uncertain if it is historic in age or was added at a later date. The flush wood doors at the north façade show substantial fading and peeling of materials. The condition of the composition shingle roofing material also does not appear historic in age.

***B7. Moved?** ☒**No** ☐**Yes** ☐**Unknown** **Date:** **Original Location:**

***B8. Related Features:**

B9a. Architect: Not known **b. Builder:** Not known

***B10. Significance: Theme:** Residential Development **Area:** Encinitas, CA
Period of Significance: 1953-1976 **Property Type:** Ancillary Building **Applicable Criteria:** N/A

Criteria 1/A
Is the resource associated with events that have made a significant contribution to the broad patterns of our history?

Despite extensive background research regarding this structure, including searching various newspapers and consultation with historic societies and local government agencies, this shed is not associated with events that have made a significant contribution to the broad patterns of our history. Therefore, this shed is recommended not eligible for listing under the NRHP Criterion 1 or the CRHR Criterion A.

See Continuation Sheet

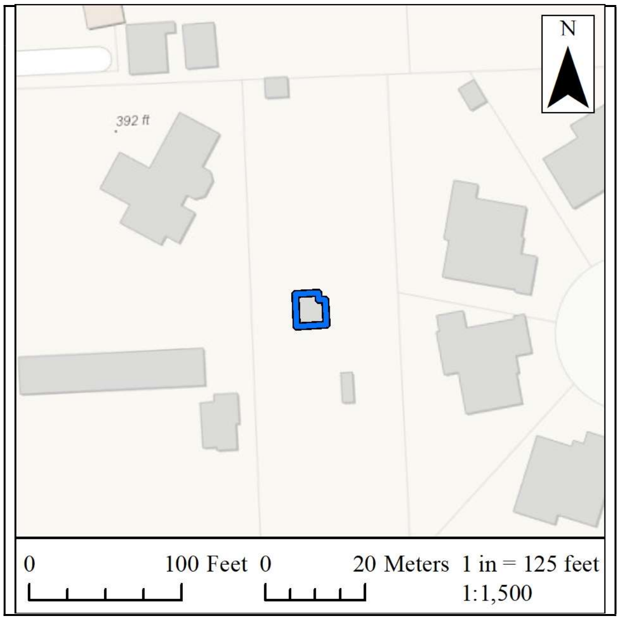
B11. Additional Resource Attributes:

***B12. References:**

(See Continuation Sheet)

B13. Remarks:

***B14. Evaluator:** Shannon Lopez
***Date of Evaluation:** July 22, 2021



BUILDING, STRUCTURE, AND OBJECT RECORD

***Resource Name or #:** 1240 and 1234 Melba Road **Status Code:** N/A

B1. Historic Name: None

B2. Common Name: Greenhouse

B3. Original Use: Large Greenhouse **B4. Present Use:** Greenhouse

***B5. Architectural Style:** No Style

***B6. Construction History:** Due to data gaps, the large greenhouse does not appear in USDA historic aerial photographs until sometime between 1967 and 1978. In 1978, the greenhouse was much larger than its current state, comprising three identical rectangular segments. In 1984, a fourth rectangular section was added to the north side of the building. By 2003, three of the four sections of the greenhouse had been demolished, leaving behind the 1984 addition which is still extant today.

***B7. Moved?** ☒**No** ☐**Yes** ☐**Unknown** **Date:** **Original Location:**

***B8. Related Features:**

B9a. Architect: Not known **b. Builder:** Not known

***B10. Significance: Theme:** Horticulture **Area:** Encinitas, CA
Period of Significance: 1984- Present **Property Type:** Ancillary Building
Applicable Criteria: NA

While the original greenhouse was likely historic in age, the section of building which remains was constructed in 1984 and is not historic in age. Therefore, at present this section of greenhouse does not meet the standard for 45 years or older in order to be evaluated for eligibility for listing under the NRHP or the CRHR.

Integrity: This remaining section of greenhouse retains its integrity of Location and Association. Due to the demolition of the majority of the original greenhouse, this section of no longer retains its integrity of Design, Setting, Materials, Feeling, or Workmanship.

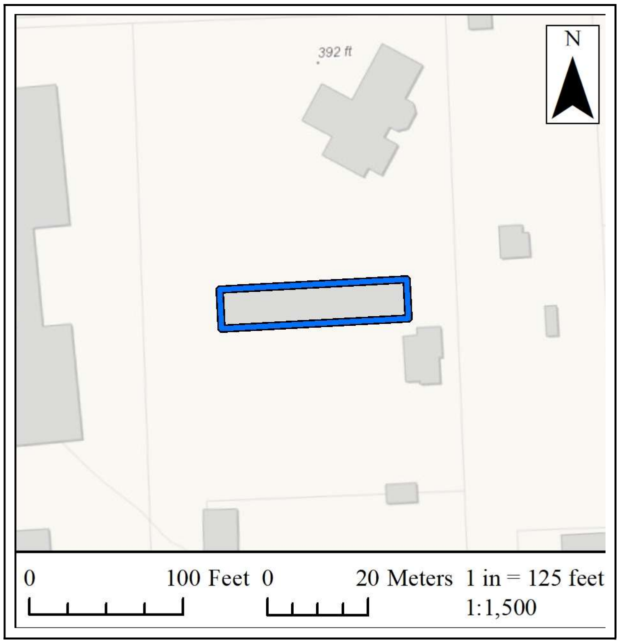
B11. Additional Resource Attributes:

***B12. References:**

(See Continuation Sheet)

B13. Remarks:

***B14. Evaluator:** Shannon Lopez
***Date of Evaluation:** July 22, 2021



BUILDING, STRUCTURE, AND OBJECT RECORD

***Resource Name or #:** 1240 and 1234 Melba Road **Status Code:** 6Z

B1. Historic Name: None

B2. Common Name: Greenhouse

B3. Original Use: Small Greenhouse **B4. Present Use:** Storage

***B5. Architectural Style:** No Style

***B6. Construction History:** Due to data gaps, this small greenhouse does not appear in USDA historic aerial photographs until sometime between 1967 and 1978. Information regarding this greenhouse is extremely limited, however, based on aerial photographs and a pedestrian survey it does not appear there have been any substantial alterations to the building's footprint.

***B7. Moved?** ☒**No** ☐**Yes** ☐**Unknown** **Date:** **Original Location:** ***B8. Related Features:**

B9a. Architect: Not Known **b. Builder:** Not Known

***B10. Significance: Theme:** Horticulture **Area:** Encinitas, CA
Period of Significance: ca. 1967-1978 to ca. 1978 **Property Type:** Ancillary Building
Applicable Criteria: N/A

Criteria 1/A
Is the resource associated with events that have made a significant contribution to the broad patterns of our history?

Despite extensive background research regarding this structure, including searching various newspapers and consultation with historic societies and local government agencies, this greenhouse is not associated with events that have made a significant contribution to the broad patterns of our history. Therefore, this greenhouse is recommended not eligible for listing under the NRHP Criterion 1 or the CRHR Criterion A.

See Continuation Sheet

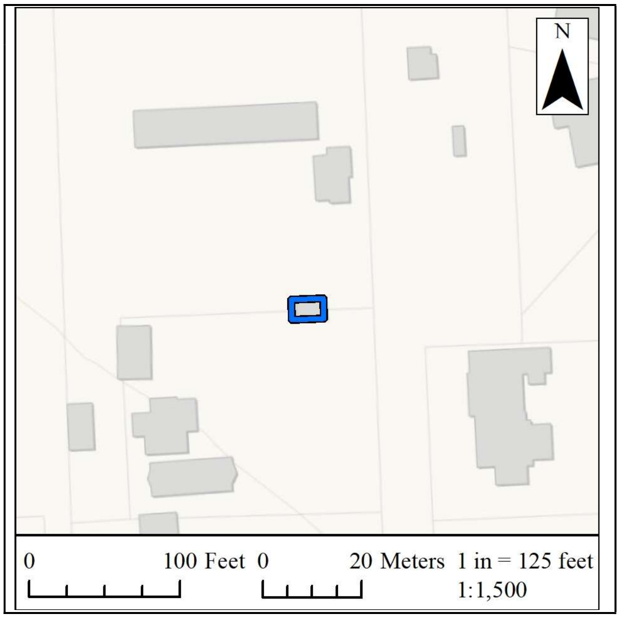
B11. Additional Resource Attributes:

***B12. References:**

(See Continuation Sheet)

B13. Remarks:

***B14. Evaluator:** Shannon Lopez
***Date of Evaluation:** July 22, 2021



BUILDING, STRUCTURE, AND OBJECT RECORD

***Resource Name or #:**1240 and 1234 Melba Road **Status Code:** 6Z

B1. Historic Name: None

B2. Common Name:

B3. Original Use: Administration Building **B4. Present Use:** Vacant

***B5. Architectural Style:** No Style

***B6. Construction History:** This small shed-like building was constructed sometime between 1967 and 1978 (NETROnline 1967 and 1978). Information regarding this building is extremely limited, however, based on aerial photographs and a pedestrian survey it does not appear there have been any substantial alterations to the building's footprint. According to Brian Staver of Torrey Pacific Corporation, this building was used as an administration building by the previous owners.

***B7. Moved?** ☒**No** ☐**Yes** ☐**Unknown** **Date:** **Original Location:** ***B8. Related Features:**

B9a. Architect: Not Known **b. Builder:** Not Known

***B10. Significance: Theme:** Horticulture **Area:** Encinitas, CA
Period of Significance: ca. 1967-1978 to ca. 1978 **Property Type:** Ancillary Building
Applicable Criteria: N/A

Criteria 1/A
Is the resource associated with events that have made a significant contribution to the broad patterns of our history?

Despite extensive background research regarding this structure, including searching various newspapers and consultation with historic societies and local government agencies, this building is not associated with events that have made a significant contribution to the broad patterns of our history. Therefore, this building is recommended not eligible for listing under the NRHP Criterion 1 or the CRHR Criterion A.

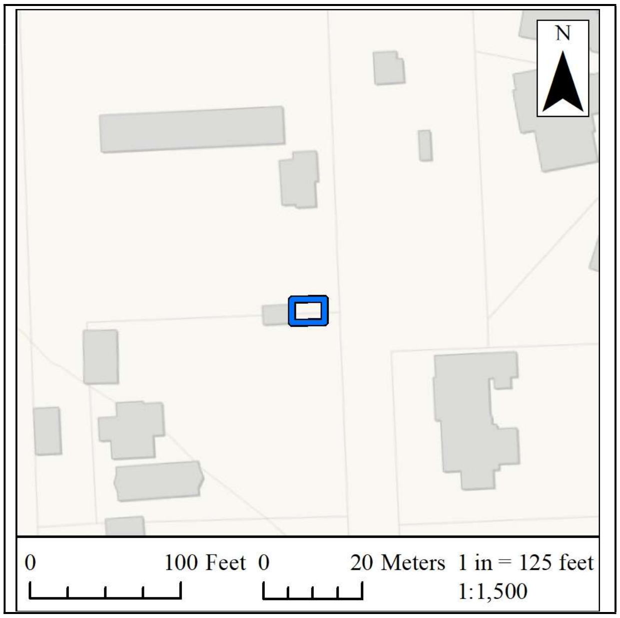
See Continuation Sheet

B11. Additional Resource Attributes:

***B12. References:**

B13. Remarks:

***B14. Evaluator:** Shannon Lopez
***Date of Evaluation:** July 22, 2021



State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
LINEAR FEATURE RECORD

Primary #
Trinomial
NRHP Status Code

***Resource Name or #:** 1240 and 1234 Melba Road

L1. Historic and/or Common Name: 1240 Melba Road Driveway/ Boulevard

L2a. Portion Described: ☒ Entire Resource ☒ Segment ☐ Point Observation **Designation:** 6Z

b. Location of point or segment:
Located between Melba Road and the two single family residences at 1240 Melba Road.

L3. Description:
This driveway begins at Melba Road and leads directly to the residence at 1240 Melba Road with a round-about at the northernmost portion. It is not known when the round-about was added due to the presence of tall trees, however it is first partially visible in the late 1980s (NETROnline 1987). Both the west and east sides of the driveway are lined by over a dozen 50+ year old palm trees giving it the aesthetic of a boulevard. Many of the palm tree crowns have been removed leaving behind the bole.

L4. Dimensions:
- **a. Top Width** 10-12 feet
- **b. Bottom Width** At Grade
- **c. Height or Depth** At Grade
- **d. Length of Segment** 529 feet

L5. Associated Resources:
Residences at 1240 Melba Road and associated ancillary buildings.

L6. Setting: Residential

L4e. Sketch of Cross-Section **Facing:** ________________

(Intentionally Blank)

L7. Integrity Considerations:
Despite the addition of the round-about at the northern end of the driveway, overall, this feature retains the majority of its integrity of Location, Design, Materials, Feeling, Workmanship, and Association. Due to residential development adjacent to the eastern side of the driveway, this feature has lost a notable degree of its integrity of Setting.

See Continuation Sheet

L8a. Photograph, Map or Drawing

(See Continuation Sheet)

L8b. Description of Photo, Map, or Drawing:
Aerial view of driveway

L9. Remarks:

L10. Form Prepared by:
Shannon Lopez

L11. Date: July 19, 2021

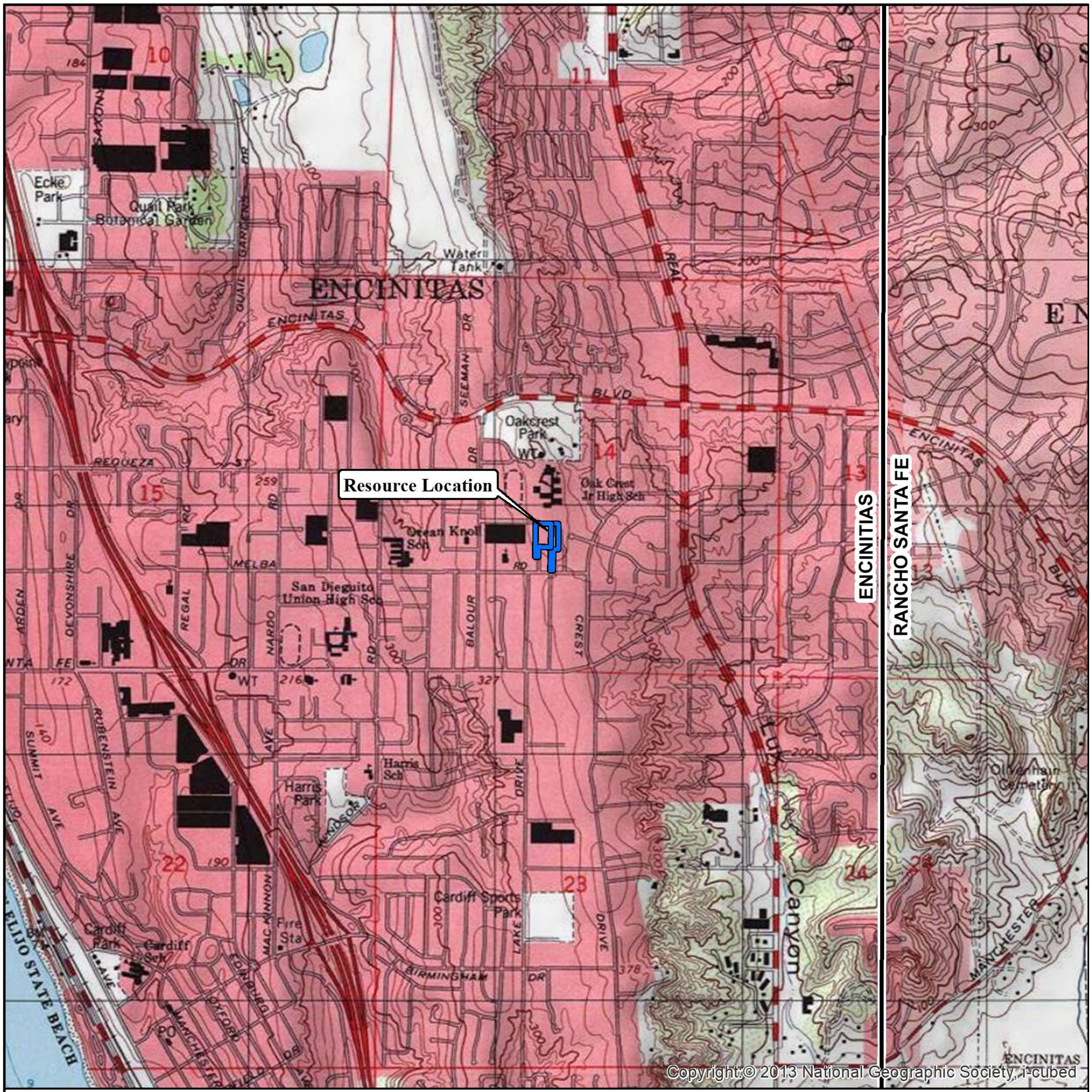
State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

LOCATION MAP

Primary #
HRI#
Trinomial

Page 10 **of** 28 ***Resource Name or #:** 1240 Melba Road

Map Name: Encinitas ***Scale:** 1:24,000 ***Date of Map:** 1997



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1240 Melba Residence
(APNs: 259-180-0900,
259-180-1000)
City of Encinitas
San Diego County, CA

🟦 1240 Melba Road
☐ USGS Quad

USGS 7.5' Quads:
ENCINITIAS
RANCHO SANTA FE

0 0.25 0.5 Miles
0 0.25 0.5 Kilometers
N
1:24,000 1 in = 2,000 ft

P3a. Description Cont.:

Main House:

The main entrance to the residence is an eight-paneled wood door located at the southeast façade, under the eaves of the multi-faceted hip roof. A sliding glass door and a one-by-one sliding window are at the southern corner of the southeast façade.

The southeast elevation consists of multiple one-by-one sliding windows and one large fixed bay window.

At the northeast elevation, there are two large roll-up garage doors and a louvered gabled vent.

The northwest elevation consists of multiple one-by-one sliding windows and one-over-one single-hung windows (all with vinyl frames). There are also four sliding glass doors; two of these sliding doors are situated on the building projection located at the southern end of the northwest elevation. A large porch overhang supported by three posts is attached to this projection. At the southwest elevation are two large one-by-one sliding windows and one sliding glass door.

Guest House:

The single-story guest house has a rectangular footprint and has no particular architectural style. The roof is a composition clad intersecting gabled roof with wide exposed eaves. The exterior of the building is clad in square butt shingles. There is one pedestrian door (wood, nine glass panels over one wood cross panel) located at the south façade. At the west end of the south façade is a one-by-one aluminum framed, sliding window. At the east elevation is a large four paneled picture window (wood framed) with the two narrow rectangular windows swinging out. A gabled louvered vent is located at the east elevation.

Detached Garage:

The detached garage has no particular style, but has wide overhanging exposed eaves as commonly seen with Ranch style. The building's footprint is rectangular and the exterior is clad in horizontal wood weatherboard panels. The normal pitched gabled roof is clad with composition shingles.

Shed:

This small shed is one story with a rectangular footprint. The normal pitched gabled roof is clad with composition shingles and has a wide eave overhang with exposed rafters. An approximately 4-5 foot overhang at the east elevation, supported by three wood posts, creates a shelter that is currently used for storage of building materials. The exterior of the building is clad in vertical weatherboard which shows notable deterioration; however, despite the deterioration of materials it is uncertain if it is historic in age or was added at a later date. The only entrance to the shed is located at the north façade; the flush wood doors show substantial fading and peeling of materials.

Driveway/Boulevard:

This driveway begins at Melba Road and leads directly to the residence at 1240 Melba Road with a round-about at the northernmost portion. It is not known when the round-about was added due to the presence of tall trees, however it is first partially visible in the late 1980s (NETROnline 1987). Both the west and east sides of the driveway are lined by over a dozen 50+ year old palm trees giving it the aesthetic of a boulevard. Many of the palm tree crowns have been removed leaving behind the bole.

Buildings of 1234 Melba Ave.

There are three buildings associated with the address 1234 Melba Ave. (APN: 259-180-0900) which consists of a large greenhouse, a small greenhouse, and a small administration building.

Large Greenhouse

The large greenhouse has a rectangular footprint and is still in use. The building is wood framed with exposed wood trusses. The normal pitched gabled roof and sides of the building are covered in a combination of large plastic sheets, bird netting, and sheets of plywood. There is one pedestrian door at the east elevation, however, it is inaccessible as it is covered by plastic sheeting. The primary entrance to the large greenhouse is at the south elevation through an intentional gap in the plastic sheeting which aligns with a concrete paved walkway, allowing easy access to and from the building. A long metal rail hangs over this entrance which was possibly used as a track for a sliding door.

Administration Building
The majority of this small single-story building is largely covered with vines; only a portion of the north elevation and east façade are visible. The roof has a low pitch with a wide eave overhang at the west elevation. A single flush pedestrian door is present at the west façade. The exterior of the building is clad in vertical clapboard. Single aluminum framed, two-paneled sliding windows are located at the north elevation, east elevation, and south elevation.

Small Greenhouse
The small greenhouse is adjacent to the west façade of the administration building. The greenhouse is a simple wood frame with the roof and much of the exterior of the structure covered with plastic sheeting. The roof is a normal pitch with no overhang.

B10. Significance Cont.:

History of Ownership

Information regarding history of ownership for 1240 Melba Road is limited.

On March 11, 1983, a Quitclaim Deed recorded with the Office of Records of San Diego County authorizes the transfer of property associated with APNs: 259-180-0900 and 259-180-1000 from Marian Staver to the Torrey Pacific Corporation (San Diego County Recorder 1983).

In addition, for an unknown period of time, this property was associated with Andrew S. Irwin and Ann S. Irwin. The property's address is associated with ASI Investment Company. The business was filed with the County Clerk of San Diego on October 18, 2000 (*Newspapers* 2000).

Single Family Residence (Main Residence):

Criteria B/2
Is the resource associated with the lives of significant persons in our past?

Following review of historic newspapers, associated deeds and other property records, the main single family residence is not associated with the lives of significant persons in our past. Therefore, this building is recommended not eligible for listing under the NRHP Criterion B or the CRHR Criterion 2.

Criteria C/3
Does the resource embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction?

This residence largely embodies Ranch style architecture which was commonly constructed from the 1930s to the mid-1970s. This residence is not an exemplary representation of Ranch style architecture, nor does it represent the work of a master architect or express high artistic values. Therefore, this residence is recommended not eligible for listing under the NRHP Criterion C or the CRHR Criterion 3.

Criteria D/4
Has this resource yielded or may be likely to yield, information important in history or prehistory?

The development of 1240 Melba Road does not appear to predate modern day trash services (predating could indicate historic refuse deposits) and following an intensive pedestrian survey of the property it is unlikely for this residence to yield information important to history or prehistory. Therefore, this residence is recommended not eligible for listing under the NRHP Criterion D or the CRHR Criterion 4.

Integrity: This building maintains its integrity of Location. As this continues to be used as a single single-family residence it retains its integrity of Association. Due to alterations to the building in previous decades it has lost a moderate degree of its integrity of Design, Materials, Feeling, and Workmanship. Due to residential development in the surrounding area, the addition of a large wood fence, and demolition of nearby historic aged buildings in past decades, this building has lost a notable degree of integrity of Setting.

Guest House:

Criteria B/2

Is the resource associated with the lives of significant persons in our past?

Following review of historic newspapers, associated deeds and other property records, the secondary residence/ guest house is not associated with the lives of significant persons in our past. Therefore, this building is recommended not eligible for listing under the NRHP Criterion B or the CRHR Criterion 2.

Criteria C/3

Does the resource embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction?

This residence does not represent any particular architectural style nor does it exhibit high artistic values or represent the work of a master architect. Therefore, this residence is recommended not eligible for listing under the NRHP Criterion C or the CRHR Criterion 3.

Criteria D/4

Has this resource yielded or may be likely to yield, information important in history or prehistory?

The development of 1240 Melba Road does not appear to predate modern day trash services (predating could indicate historic refuse deposits) and following an intensive pedestrian survey of the property it is unlikely for this residence to yield information important to history or prehistory. Therefore, this residence is recommended not eligible for listing under the NRHP Criterion D or the CRHR Criterion 4.

Integrity: This Building retains its integrity of Location, Design, Setting, Materials, Feeling, Workmanship, and Association.

Detached Garage:

Criteria B/2

Is the resource associated with the lives of significant persons in our past?

Following review of historic newspapers, associated deeds and other property records, the detached garage is not associated with the lives of significant persons in our past. Therefore, this building is recommended not eligible for listing under the NRHP Criterion B or the CRHR Criterion 2.

Criteria C/3

Does the resource embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction?

This detached garage does not represent any particular architectural style nor does it exhibit high artistic values or represent the work of a master architect. Therefore, this garage is recommended not eligible for listing under the NRHP Criterion C or the CRHR Criterion 3.

Criteria D/4
Has this resource yielded or may be likely to yield, information important in history or prehistory?

The development of 1240 Melba Road does not appear to predate modern day trash services (predating could indicate historic refuse deposits) and following an intensive pedestrian survey of the property it is unlikely for this the detached garage to yield information important to history or prehistory. Therefore, this detached garage is recommended not eligible for listing under the NRHP Criteria Criterion D or the CRHR Criterion 4.

Integrity: There has have been alterations to the exterior of the building in recent decades such as the installation of a new garage door and the exterior weatherboard cladding. Therefore this building has lost a notable degree of its integrity of Design, Materials, Feeling, and Workmanship. This building retains its integrity of Location and Association.

Shed:
Criteria B/2
Is the resource associated with the lives of significant persons in our past?

Following review of historic newspapers, associated deeds and other property records, the shed is not associated with the lives of significant persons in our past. Therefore, this building is recommended not eligible for listing under the NRHP Criterion B or the CRHR Criterion 2.

Criteria C/3
Does the resource embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction?

This shed does not represent any particular architectural style nor does it exhibit high artistic values or represent the work of a master architect. Therefore, this shed is recommended not eligible for listing under the NRHP Criterion C or the CRHR Criterion 3.

Criteria D/4
Has this resource yielded or may be likely to yield, information important in history or prehistory?

The development of 1240 Melba Road does not appear to predate modern day trash services (predating could indicate historic refuse deposits) and following an intensive pedestrian survey of the property it is unlikely for the shed to yield information important to history or prehistory. Therefore, the shed is recommended not eligible for listing under the NRHP Criterion D or the CRHR Criterion 4.

Integrity: This building retains its integrity of Location. It appears that this building retains much of its integrity of Design, Feeling, and Association. It is not clear if this building retains its integrity of Materials and Workmanship. Due to residential development in the surrounding area, the addition of a large wood fence, and demolition of nearby historic aged buildings in past decades, this building has lost a notable degree of integrity of Setting.

Administration Building
Criteria B/2
Is the resource associated with the lives of significant persons in our past?

Following review of historic newspapers, associated deeds and other property records, the administration building is not associated with the lives of significant persons in our past. Therefore, this building is recommended not eligible for listing under the NRHP Criterion B or the CRHR Criterion 2.

Criteria C/3
Does the resource embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction?

This administration building does not represent any particular architectural style nor does it exhibit high artistic values or represent the work of a master architect. Therefore, this building is recommended not eligible for listing under the NRHP Criterion C or the CRHR Criterion 3.

Criteria D/4
Has this resource yielded or may be likely to yield, information important in history or prehistory?

The development of 1234 Melba Road does not appear to predate modern day trash services (predating could indicate historic refuse deposits) and following an intensive pedestrian survey of the property it is unlikely for the shed building to yield information important to history or prehistory. Therefore, the shed building is recommended not eligible for listing under the NRHP Criteria Criterion D or the CRHR Criterion 4.

Integrity: This building retains its integrity of Location. It appears that this building retains much of its integrity of Design, Feeling, and Association. It is not clear if this building retains its integrity of Materials and Workmanship. Due to residential development in the surrounding area, the addition of a large wood fence, and demolition of nearby historic aged buildings in past decades, this building has lost a notable degree of integrity of Setting.

Small Greenhouse
Criteria B/2
Is the resource associated with the lives of significant persons in our past?

Following review of historic newspapers, associated deeds and other property records, the small greenhouse is not associated with the lives of significant persons in our past. Therefore, this greenhouse is recommended not eligible for listing under the NRHP Criterion B or the CRHR Criterion 2.

Criteria C/3
Does the resource embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction?

This greenhouse building does not represent any particular architectural style nor does it exhibit high artistic values or represent the work of a master architect. Therefore, this greenhouse is recommended not eligible for listing under the NRHP Criterion C or the CRHR Criterion 3.

Criteria D/4
Has this resource yielded or may be likely to yield, information important in history or prehistory?

The development of 1234 Melba Road does not appear to predate modern day trash services (predating could indicate historic refuse deposits) and following an intensive pedestrian survey of the property it is unlikely for the greenhouse to yield information important to history or prehistory. Therefore, the greenhouse is recommended not eligible for listing under the NRHP Criterion D or the CRHR Criterion 4.

Integrity: This greenhouse retains its integrity of Location, Design, Materials, Feeling, Workmanship, and Association. Due to the demolition of greenhouses that previously occupied the surrounding area, this greenhouse has lost a substantial degree of integrity of setting.

Driveway/ Boulevard:
Criteria A/1
Is the resource associated with events that have made a significant contribution to the broad patterns of our history?

Despite extensive background research regarding this resource, including searching various newspapers and consultation with historic societies and local government agencies, the driveway/ boulevard is not associated with events that have made a significant contribution to the broad patterns of our history. Therefore, this resource is recommended not eligible for listing under the NRHP Criterion 1 or the CRHR Criterion A.

Criteria B/2
Is the resource associated with the lives of significant persons in our past?

Following review of historic newspapers, associated deeds and other property records, the driveway/ boulevard is not associated with the lives of significant persons in our past. Therefore, this driveway is recommended not eligible for listing under the NRHP Criterion B or the CRHR Criterion 2.

Criteria C/3
Does the resource embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction?

The addition of the palm trees as decorative elements to the long private driveway creates the look and feel of a narrow boulevard, which is not commonly seen in the dense residential area of the surrounding neighborhood. However, while unusual for a private residence as well as being aesthetically pleasing, this driveway is not an exemplary representation of a boulevard nor represents high artistic values which would raise it to a level of excellence required for listing in the NRHP or the CRHR. Therefore, the driveway/ boulevard is recommended not eligible for listing under the NRHP Criteria Criterion C or the CRHR Criterion 3.

Criteria D/4
Has this resource yielded or may be likely to yield, information important in history or prehistory?

The development of 1240 Melba Road does not appear to predate modern day trash services (predating could indicate historic refuse deposits) and following an intensive pedestrian survey of the property it is unlikely for the driveway/ boulevard to yield information important to history or prehistory. Therefore, the driveway/ boulevard is recommended not eligible for listing under the NRHP Criterion D or the CRHR Criterion 4.

Photo Key for 1240 Melba Road; Main Residence

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
CONTINUATION SHEET

Primary #
HRI#
Trinomial

Page 18 **of** 28 ***Resource Name or #** 1240 and 1234 Melba Road ☒ Continuation ☐ Update


1. Residence, southern end of southeast façade


2. Residence, overview of southeast façade


3. Residence, northern end of southeast façade


4. Residence, northeast elevation


5. Residence, northern end of northwest elevation


6. Residence, northeast elevation (left) and northwest elevation (right)

***Resource Name or #** 1240 and 1234 Melba Road ☒ Continuation ☐ Update


7. Residence, northwest elevation


8. Residence, northwest elevation (left) and southwest elevation (right)


9. Residence, northwest elevation (left) and southwest elevation (right)


10. Residence, southwest elevation


11. Residence, southwest elevation

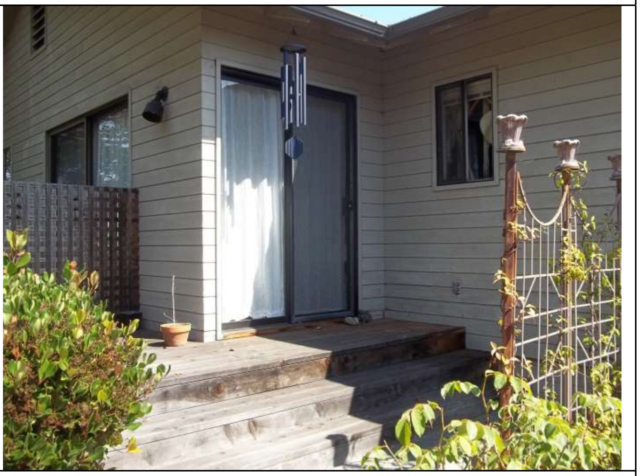

12. Residence, southeast elevation (with sliding door) and southwest elevation

Photo Key for 1240 Melba Road; Secondary Residence and Detached Garage

Secondary Residence at 1240 Melba Road (APN259-180-1000)

13. Residence, south facade

14. Residence, south facade

15. Residence, east elevation

16. Residence, north elevation

1240B Melba Road
1 Ancillary Building (Detached Garage)

	
17. Garage, south facade	18. Garage, west elevation (left) and south façade (right)
	
19. Garage, north elevation	20. Garage, east elevation

Photo Key for 1240 Melba Road; Ancillary Building/Shed

Ancillary Building/ Shed on APN 259-180-1000

	
21. Ancillary building, north facade	22. Ancillary building, east elevation
	
23. Ancillary building, east elevation	24. Ancillary building, south elevation

Child’s Playhouse Northeast of Main Residence at 1240 Melba Road
(Not historic in age; ca. late 1970s early 1980s)

25. Playhouse, east façade (left) and north elevation (right)

26. Playhouse, west elevation (left) and south elevation (right)

Large Greenhouse

17. Greenhouse, west elevation

18. Greenhouse, eastern end of south façade

19. Greenhouse, south façade

20. Greenhouse, entrance at south façade

21. Greenhouse, western end of south façade

22. Interior, eastern half of greenhouse

***Resource Name or #** 1240 and 1234 Melba Road ☒ Continuation ☐ Update

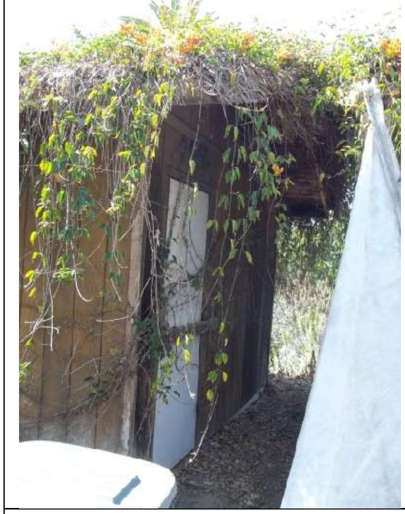
23. Interior, ventilation equipment at east elevation

24. Interior, western half of greenhouse

Administration Building and Small Greenhouse

1. Administration building, east elevation (left) and north elevation (right)

2. Interior of administration building, east elevation (left) and south elevation (right)



3. Administration building, west façade

4. Administration building (left) and north façade of greenhouse (right)

6. South elevations of greenhouse (left) and administration building (right)

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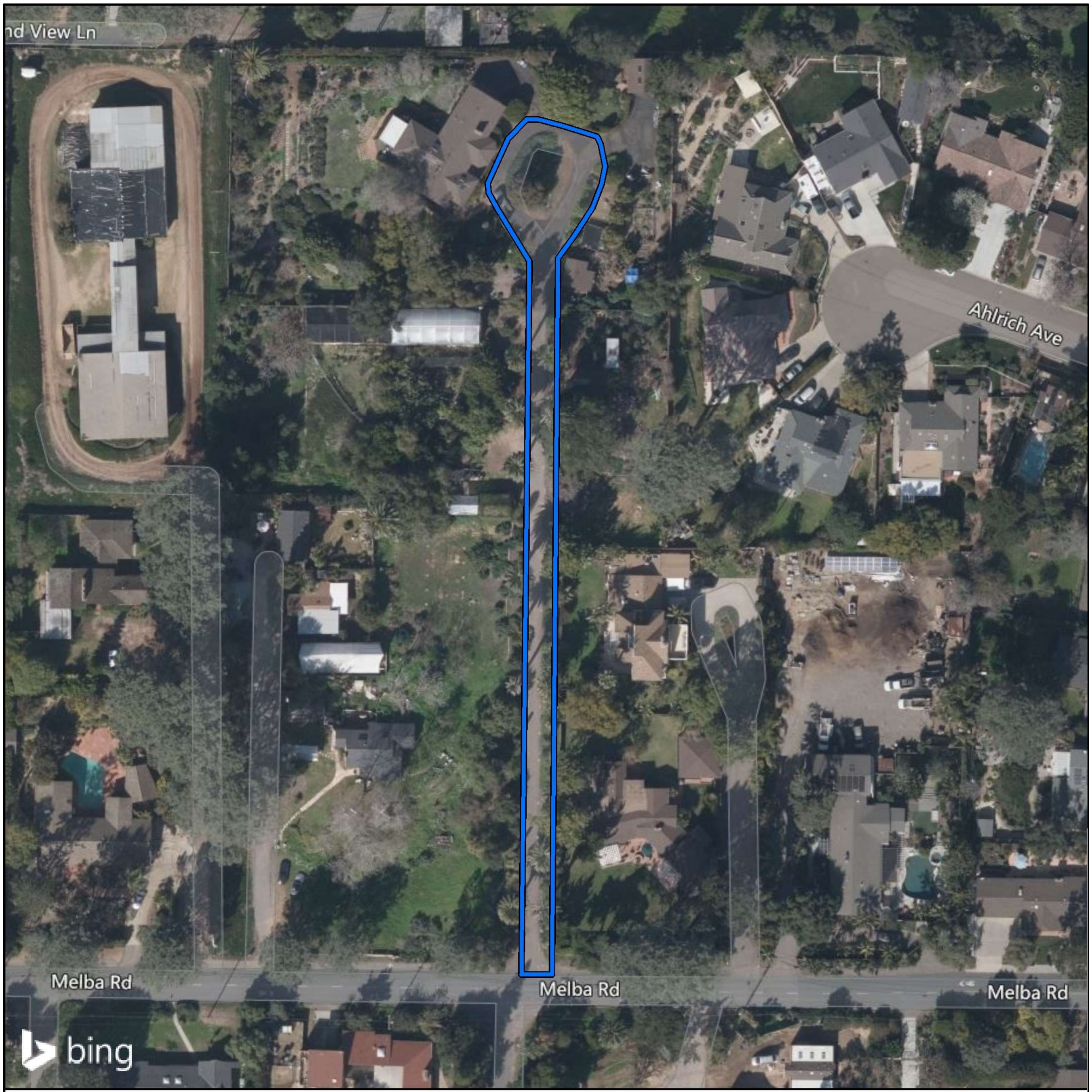
Blank

Primary #
HRI#
Trinomial

***Resource Name or #** 1240 and 1234 Melba Road

☒ Continuation ☐ Update



1240 Melba Road Driveway
City of Encinitas
San Diego County, CA

▭ 1240 Melba Road Driveway

1:1,250
1 in = 104 ft

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1983 "Individual Quitclaim Deed". APNs: 259-180-09 and 259-180-10. Document provided by Brian Staver of Torrey Pacific Corporation.

D-2

Assembly Bill 52 Consultation

City of Encinitas
Development Services Department
505 South Vulcan Avenue, Encinitas, California 92024-3633

December 16, 2021

VIA ELECTRONIC MAIL AND U.S. MAIL

Ms. Cami Mojado
Cultural Resources Manager
San Luis Rey Band of Mission Indians
1889 Sunset Drive
Vista, CA 92081

SUBJECT: AB 52 Notification for the Melba Residential Subdivision Project
City Case No. MULTI-4309-2021 / SUB-4310-2021 / CDPNF-4312-2021 / DR-4313-2021 / CPP-4313-2021

Dear Ms. Mojado,

Pursuant to Public Resources Code Section 21080.3.1, this letter serves as formal notification of the above-referenced development application for tribal consultation purposes. The project is a Density Bonus Tentative Map, Design Review Permit, and Coastal Development Permit (MULTI-004309-2021, SUB-00-4310-2021, DR-004311-2021, CDPNF-004312-2021 respectively) for a 6.646-gross acre property (289,499.76 gross square feet) for the demolition of all onsite structures, and construction of 30 detached single-family residences with 27 market-rate units and three very-low affordable units, a private road, utility, drainage, and stormwater improvements.

The project site includes the following addresses and assessor parcel numbers (APNs):

	Address	APN
1.	Balour Drive	259-181-02
2.	1180 Balour Drive	259-181-04
3.	1190 Island View Lane	259-181-03
4.	1220 Melba Road	259-180-16
5.	1230 Melba Road	259-180-33
6.	1234 Melba Road	259-180-09
7.	1240 Melba Road	259-180-10

Source: ESRI, SanGIS

Project Location

Melba Road Residential Subdivision

Figure 1

The project applicant has retained the services of Cogstone Resource Management, Inc. to conduct a Phase I Archaeological Survey for the project. The survey report completed by Cogstone Resource Management indicated that no significant cultural resources were observed on the project site. The consulting archaeologist recommended archaeological monitoring during construction activity.

Additionally, the following documents are available for your review and reference. Because of document size constraints, please contact me obtain a direct and secure download link from a shared drive for the documents.

1. Project Location Map
2. Grading Plan (Pasco Laret Suiter & Associates)
3. Geotechnical Study (GEOCON Incorporated)
4. Phase I Archaeological Study (Cogstone Resource Management, Inc)

If you wish to request consultation for this project, please contact me within 30 days. My contact information is found below:

J. Alfred Dichoso, AICP
Associate Planner
Encinitas Development Services Department
505 South Vulcan Avenue
Encinitas, CA 92024
Phone: 760-633-2681
Email: jdichoso@encinitasca.gov

Please contact me if you need any additional information.

Sincerely,

J. Alfred Dichoso, AICP
Associate Planner

From: J Dichoso
To: Carmen Mojado
Cc: Christina Willis; Nick Koutoufidis; Andrew Maynard
Subject: AB52 Follow-up - Melba Density Bonus
Date: Monday, March 7, 2022 10:58:13 AM

Hi Carmen – I am following up on your questions for us that we left unanswered during our recent meeting. Primarily, I am looking for the engineering-focused questions so we can provide answers to your satisfaction.

Thank you.

J. ALFRED DICHOSO, AICP
Associate Planner

760.633.2681 I jdichoso@encinitasca.gov
Development Services Department
505 South Vulcan Ave, Encinitas, CA 92024
www.cityofencinitas.org

From: Cheryl Madrigal <CMadrigal@rincon-nsn.gov>
Sent: Wednesday, January 25, 2023 11:45 AM
To: J Dichoso <JDichoso@encinitasca.gov>
Cc: Deneen Pelton <DPelton@rincon-nsn.gov>; Nick Koutoufidis <nkoutoufidis@encinitasca.gov>; Christina Willis <Christina@brginc.net>
Subject: RE: Torrey Crest/Melba Road Subdivision MULTI-004309-2021

No problem at all. Great, thank you so much. Let me review and get back to you.

Cheryl

Cheryl Madrigal
Cultural Resources Manager
Tribal Historic Preservation Officer
Cultural Resources Department
Rincon Band of Luiseño Indians
1 West Tribal Road | Valley Center, CA 92082
Office: (760) 749 1092 ext. 323|Cell: 760-648-3000
Fax: 760-749-8901
Email: cmadrigal@rincon-nsn.gov

From: J Dichoso <JDichoso@encinitasca.gov>
Sent: Wednesday, January 25, 2023 10:47 AM
To: Cheryl Madrigal <CMadrigal@rincon-nsn.gov>
Cc: Deneen Pelton <DPelton@rincon-nsn.gov>; Nick Koutoufidis <nkoutoufidis@encinitasca.gov>; Christina Willis <Christina@brginc.net>
Subject: RE: Torrey Crest/Melba Road Subdivision MULTI-004309-2021

Hello Cheryl – I'm sorry for the late reply. Please see the link below which includes all documents previously shared with you including the Arborist Report as discussed at our meeting last week.

🗀 22-11-21 AB52 Consultation - Torrey Crest-Melba Road Subdivision - MULTI-004309-2021

Thank you. Let me know if you have any questions.

J. ALFRED DICHOSO, AICP
760.633.2681
jdichoso@encinitasca.gov

Development Services Department
www.encinitasca.org

From: Cheryl Madrigal <CMadrigal@rincon-nsn.gov>
Sent: Wednesday, December 21, 2022 6:13 PM
To: J Dichoso <JDichoso@encinitasca.gov>
Cc: Deneen Pelton <DPelton@rincon-nsn.gov>; Nick Koutoufidis <nkoutoufidis@encinitasca.gov>
Subject: RE: Torrey Crest/Melba Road Subdivision MULTI-004309-2021

Got it. Thanks

From: J Dichoso <JDichoso@encinitasca.gov>
Sent: Wednesday, December 21, 2022 6:10 PM
To: Cheryl Madrigal <CMadrigal@rincon-nsn.gov>
Cc: Deneen Pelton <DPelton@rincon-nsn.gov>; Nick Koutoufidis <nkoutoufidis@encinitasca.gov>
Subject: RE: Torrey Crest/Melba Road Subdivision MULTI-004309-2021

Hello Cheryl – I just sent the appointment.

Thank you.

J. ALFRED DICHOSO, AICP
760.633.2681
jdichoso@encinitasca.gov

Development Services Department
www.encinitasca.org

From: Cheryl Madrigal <CMadrigal@rincon-nsn.gov>
Sent: Wednesday, December 21, 2022 5:55 PM
To: J Dichoso <JDichoso@encinitasca.gov>
Cc: Deneen Pelton <DPelton@rincon-nsn.gov>; Nick Koutoufidis <nkoutoufidis@encinitasca.gov>
Subject: RE: Torrey Crest/Melba Road Subdivision MULTI-004309-2021

CAUTION: External Email. Do not click any links or open attachments unless you recognize the sender, verified their email address, and know the content is safe.

Yes, feel free to invite the CEQA consultant. Thanks for asking!

Cheryl

Cheryl Madrigal
Cultural Resources Manager
Tribal Historic Preservation Officer
Cultural Resources Department
Rincon Band of Luiseño Indians
1 West Tribal Road | Valley Center, CA 92082
Office: (760) 749 1092 ext. 323|Cell: 760-648-3000
Fax: 760-749-8901
Email: cmadrigal@rincon-nsn.gov

From: J Dichoso <JDichoso@encinitasca.gov>
Sent: Wednesday, December 21, 2022 5:37 PM
To: Cheryl Madrigal <CMadrigal@rincon-nsn.gov>
Cc: Deneen Pelton <DPelton@rincon-nsn.gov>; Nick Koutoufidis <nkoutoufidis@encinitasca.gov>
Subject: RE: Torrey Crest/Melba Road Subdivision MULTI-004309-2021

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Hi Cheryl – Sorry for the late response. Is it acceptable for us to invite our CEQA consultant? With her, it would be myself, Nick Koutoufidis (staff CEQA coordinator, included in this email); a total of three. If no, that's acceptable, it'd be just myself and Nick.
Thank you.

J. ALFRED DICHOSO, AICP
760.633.2681
jdichoso@encinitasca.gov

Development Services Department
www.encinitasca.org

Correspondents should be aware that all communications to and from this address are subject to public disclosure and may be reviewed by third parties.

Conduct business with the City of Encinitas online from the convenience of your office, home, or mobile device!

Please tell us how we are doing.

From: Cheryl Madrigal <CMadrigal@rincon-nsn.gov>
Sent: Monday, December 19, 2022 6:53 AM
To: J Dichoso <JDichoso@encinitasca.gov>
Cc: Deneen Pelton <DPelton@rincon-nsn.gov>; Nick Koutoufidis <nkoutoufidis@encinitasca.gov>
[redacted]

CAUTION: External Email. Do not click any links or open attachments unless you recognize the sender, verified their email address, and know the content is safe.

J. Alfred,

Thank you so much for your response. Online meeting is fine and most likely, I will be the only one attending the meeting.

Thanks,

Cheryl

Cheryl Madrigal
Cultural Resources Manager
Tribal Historic Preservation Officer
Cultural Resources Department
Rincon Band of Luiseño Indians
1 West Tribal Road | Valley Center, CA 92082
Office: (760) 749 1092 ext. 323|Cell: 760-648-3000
Fax: 760-749-8901
Email: cmadrigal@rincon-nsn.gov

From: J Dichoso <JDichoso@encinitasca.gov>
Sent: Thursday, December 15, 2022 3:38 PM
To: Cheryl Madrigal <CMadrigal@rincon-nsn.gov>
Cc: Deneen Pelton <DPelton@rincon-nsn.gov>; Nick Koutoufidis <nkoutoufidis@encinitasca.gov>
Subject: RE: Torrey Crest/Melba Road Subdivision MULTI-004309-2021

Hello Cheryl –

My apologies for the late reply. Thank you for responding and we recognize your request to consult.

My next email will be an appointment to meet after January 9, 2023.

I have a two questions -

1. Is it your preference to meet in person or online in a virtual meeting?
2. To whom would you like me to send the meeting invitation?

Thank you.

J. ALFRED DICHOSO, AICP
760.633.2681
jdichoso@encinitasca.gov

Development Services Department
www.encinitasca.org

From: Cheryl Madrigal <CMadrigal@rincon-nsn.gov>
Sent: Monday, December 12, 2022 12:25 PM
To: J Dichoso <JDichoso@encinitasca.gov>
Cc: Deneen Pelton <DPelton@rincon-nsn.gov>
Subject: Torrey Crest/Melba Road Subdivision MULTI-004309-2021

Dear Alfred,

This email is written on behalf of the Rincon Band of Luiseño Indians ("Rincon Band" or "Tribe"), a federally recognized Indian Tribe and sovereign government. We have received your notification regarding the above-mentioned project and we request consultation to assess potential impacts to cultural resources. The identified location is within the Traditional Use Area (TUA) of the Luiseño people. As such, the Rincon Band is traditionally and culturally affiliated to the project area.

After review of the provided documents and our internal information, the Rincon Band has specific concerns that the project may impact tangible Tribal Cultural Resources (TCRs), Traditional Cultural Landscapes (TCLs), and potential Traditional Cultural Properties (TCPs). Embedded in these resources and within the TUA are Rincon's history, culture, and continuing traditional identity.

Thank you for providing the Tribe with copies of existing documents pertaining to the project such as the cultural survey including the archaeological site records, archaeological record search results, geotechnical report, and the grading plans. The Rincon Band would like to consult on the project in order to learn more about any potential impacts to cultural resources. Please provide meeting dates for the week of January 9, 2023 or later.

If you have additional questions or concerns, please do not hesitate to contact our office at your convenience at (760) 749 1092 ext. 323 or via electronic mail at cmadrigal@rincon-nsn.gov. Thank you for the opportunity to protect and preserve our cultural assets.

Cheryl

Cheryl Madrigal
Cultural Resources Manager
Tribal Historic Preservation Officer
Cultural Resources Department
Rincon Band of Luiseño Indians
1 West Tribal Road | Valley Center, CA 92082
Office: (760) 749 1092 ext. 323|Cell: 760-648-3000
Fax: 760-749-8901
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Rincon Band of Luiseño Indians
www.rincon-nsn.gov

Rincon Band of Luiseño Indians
CULTURAL RESOURCES DEPARTMENT
One Government Center Lane | Valley Center | CA 92082
(760) 749-1092 | Fax: (760) 749-8901 | rincon-nsn.gov

March 16, 2023

Sent via email: jdichoso@encinitasca.gov
City of Encinitas
Development Services Department
J. Alfred Dichoso
505 South Vulcan Avenue
Encinitas, CA 92024

Re: Conclusion of Consultation on the Melba Road & Island View Lane Residential Project

Dear Mr. Dichoso,

This letter is written on behalf of the Rincon Band of Luiseño Indians ("Rincon Band" or "Tribe"), a federally recognized Indian tribe and sovereign government. Thank you for providing the Rincon Band with the project description and associated reports for the above referenced project.

Rincon's Tribal Historic Preservation Office has reviewed the provided documents. We believe potential exists that archaeological resources will be unearthed during ground-disturbing activities associated with the proposed project. The Rincon Band recommends archaeological and tribal monitoring for all ground disturbing activities, a monitoring report, and protocols for discovery of cultural material and human remains. Additionally, we believe that tribal cultural resources such as native trees and shrubs utilized in traditional practices will be impacted by this project. We recommend working closely with the San Pasqual Band of Mission Indians to further consult on opportunities for a cultural resources monitoring program including an avoidance and habitat restoration plan for the project. We understand that other Tribes potentially have knowledge particular to this project site and may request additional measures. Please note that the Rincon Band supports all efforts to completely avoid cultural resources as preferred mitigation.

The Tribe has no further comments regarding this project, and we can conclude consultation at this time. If you have additional questions or concerns, please do not hesitate to contact our office at your convenience at (760) 749 1092 or via electronic mail at cmadrigal@rincon-nsn.gov. Thank you for the opportunity to protect and preserve our cultural assets.

Sincerely,

Cheryl Madrigal
Tribal Historic Preservation Officer
Cultural Resources Manager

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SAN PASQUAL BAND OF MISSION INDIANS
SAN PASQUAL RESERVATION

August 11, 2022

Anna Colamussi
City of Encinitas
Planning Manager
Development Services Department
505 South Vulcan Ave, Encinitas, CA 92024

Sent Via: USPS Certified Mail

RE: California Environmental Quality Act Public Resources Code section 21080.3(b) Request for Formal Notification of Proposed Projects Within the San Pasqual Band of Mission Indian's Geographic Area of Traditional and Cultural Affiliation

To whom this may concern,

With this letter, in accordance with Public Resources Code Section 21080.3.1(b), the San Pasqual Band of Mission Indians ("Band"), which is traditionally and culturally affiliated with the geographic area incorporating your agency's geographic area of jurisdiction and sphere of influence, present a formal standing request for government to government consultation and notice of and information on all ongoing and proposed projects for which your agency serves or will serve as a lead agency under the California Environmental Quality Act (CEQA), per Public Resources Code section 21000 et seq.

Pursuant to Public Resources Code section 21080.3.1(b), and until further notice, the Band hereby designates the following people as the Band's lead contacts for the purposes of consultation and receiving notices of all ongoing and proposed and projects from your agency:

Desiree Morales Whitman
Tribal Historic Preservation Officer (THPO)
16400 Kumeyaay Way, Valley Center, California 92082
Phone: 760-749-3200
Direct Line: 760-651-5142
Fax: 760-751-3485
Email: Desireem@sanpasqualtribe.org
THPO@sanpasqualtribe.org

Angelina Gutierrez
THPO Monitor Supervisor
16400 Kumeyaay Way, Valley Center, California 92082
Phone 760-749-3200
Direct Line:760 651-5219
Fax: 760-751-3485 Email: Angelinag@sanpasqualtribe.org

We request that all notices be sent via certified U.S. Mail with return receipt. Following receipt and review of the information your agency provides, within the 30-day period proscribed by Public Resources Code section 21080.3.1(d), the Band may request consultation, as defined by Public Resources Code section 21080.3.1(b), pursuant to Public Resources Code section 21080.3.2 to mitigate any project impacts a specific project may cause to tribal cultural resources (TCRs).

Respectfully,

Desiree M. Whitman

Desiree Morales Whitman
Tribal Historic Preservation Officer (THPO)
16400 Kumeyaay Way, Valley Center, California 92082

SAN LUIS REY BAND OF MISSION INDIANS
1889 Sunset Drive • Vista, California 92081
760-724-8505 • FAX 760-724-2172
www.slrmissionindians.org

December 28th, 2021

J.Alfred Dichoso, AICP
Associate Planner
Encinitas Development Services Department
City of Encinitas
505 South Vulcan Ave.
Encinitas, CA 92024

VIA ELECTRONIC MAIL
Jdichoso@encinitasca.gov

RE: **Formal Request for Tribal Consultation Pursuant to the California Environmental Quality Act (CEQA), Public Resources Code section 21080.3.1, subds. (b), (d) and (e) for the Melba Residential Subdivision Project, Encinitas, CA (MULTI-4309-2021 / SUB-4310-2021 / CDNF-4312-2021 / DR-4313-2021 / CPP-4313-2021**

Dear Mr.Dichoso :

This letter constitutes a formal request for tribal consultation under the provisions of the California Environmental Quality Act (CEQA) (Public Resources Code section 21080.3.1 subdivisions (b), (d) and (e)) for the mitigation of potential project impacts to tribal cultural resource for the above referenced project. The San Luis Rey Band of Mission Indians requested formal notice and information for all projects within your agency's geographical jurisdiction and received notification on December 16th, 2021, regarding the above referenced project.

The San Luis Rey Band of Mission Indians requests consultation on the following topics checked below, which shall be included in consultation if requested (Public Resources Code section 21080.3.2, subd. (a)):

__X__ Alternatives to the project

__X__ Recommended mitigation measures

__X__ Significant effects of the project

The San Luis Rey Band of Mission Indians also requests consultation on the following discretionary topics checked below (Public Resources Code section 21080.3.2 (subd. (a):

__X__ Type of environmental review necessary

__X__ Significance of tribal cultural resources, including any regulations, policies or standards used by your agency to determine significance of tribal cultural resources

__X__ Significance of the project's impacts on tribal cultural resources

__X__ Project alternatives and/or appropriate measures for preservation or mitigation that we may recommend, including, but not limited to:

(1) Avoidance and preservation of the resources in place, pursuant to Public Resources Code section 21084.3, including, but not limited to, planning and construction to avoid the resources and protect the cultural and natural context, or planning greenspace, parks or other open space, to incorporate the resources with culturally appropriate protection and management criteria;

(2) Treating the resources with culturally appropriate dignity taking into account the tribal cultural values and meaning of the resources, including but not limited to the following:

a. Protecting the cultural character and integrity of the resource;
b. Protection the traditional use of the resource; and
c. Protecting the confidentiality of the resource.

(3) Permanent conservation easements or other interests in real property, with culturally appropriate management criteria for the purposes of preserving or utilizing the resources or places.

(4) Protecting the resource.

Additionally, the San Luis Rey Band of Mission Indians requests to receive any cultural resources assessments or other assessments that have been completed on all or part of the project's potential "area of project effect" (APE), including, but not limited to:

1. The results of any record search that may have been conducted at an Information Center of the California Historical Resources Information System (CHRIS), including, but not limited to:
    - A listing of any and all known cultural resources have already been recorded on or adjacent to the APE;
    - Copies of any and all cultural resource records and study reports that may have been provided by the Information Center as part of the records search response;
    - If the probability is low, moderate, or high that cultural resources are located in the APE.
    - Whether the records search indicates a low, moderate or high probability that unrecorded cultural resources are located in the potential APE; and
    - If a survey is recommended by the Information Center to determine whether previously unrecorded cultural resources are present.

2. The results of any archaeological inventory survey that was conducted, including:
    - Any report that may contain site forms, site significance, and suggested mitigation measures.

      All information regarding site locations, Native American human remains, and associated funerary objects should be in a separate confidential addendum, and not be made available for public disclosure in accordance with Government Code Section 6254.10.

3. The results of any Sacred Lands File (SFL) check conducted through Native American Heritage Commission. The request form can be found at http://www.nahc.ca.gov/slf_request.html. USGS 7.5-minute quadrangle name, township, range, and section required for the search.

4. Any ethnographic studies conducted for any area including all or part of the potential APE; and

5. Any geotechnical reports regarding all or part of the potential APE.

We would like to remind your agency that CEQA Guidelines section 15126.4, subdivision (b)(3) states that preservation in place is the preferred manner of mitigating impacts to archaeological sites. Section 15126.4, subd. (b)(3) of the CEQA Guidelines has been interpreted by the California Court of Appeal to mean that "feasible preservation in place must be adopted to mitigate impacts to historical resources of an archaeological nature unless the lead agency determines that another form of mitigation is available and provides superior mitigation of impacts." *Madera Oversight Coalition v. County of Madera* (2011) 199 Cal.App.4th 48, disapproved on other grounds, *Neighbors for Smart Rail v. Exposition Metro Line Construction Authority* (2013) 57 Cal.4th 439.

The San Luis Rey Band of Mission Indians expects to begin consultation within 30 days of your receipt of this letter. Please contact the San Luis Rey Band of Mission Indians lead contact person identified in our previous request for notification.

Name: Cami Mojado
Title: Cultural Resources Manager
Address: 1889 Sunset Drive, Vista, CA 92081
Office Phone Number: 760-724-8505
Direct Cell Phone Number: 760-917-1736
Office Fax Number 760-724-2172
Email Address: cjmojado@slrmissionindians.org

Sincerely,

Cami Mojado
Cultural Resources Manager
San Luis Rey Band of Mission Indians

E

Geotechnical Investigations

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E-1

Limited Geotechnical Investigation

LIMITED
GEOTECHNICAL INVESTIGATION

TORREY CREST
1220-1240 MELBA ROAD AND
1190 ISLAND VIEW LANE
ENCINITAS, CALIFORNIA

GEOCON
INCORPORATED

GEOTECHNICAL
ENVIRONMENTAL
MATERIALS

PREPARED FOR

TORREY PACIFIC CORPORATION
ENCINITAS, CALIFORNIA

MARCH 21, 2022
REVISED MAY 5, 2022
PROJECT NO. G2438-52-01

GEOCON
INCORPORATED
GEOTECHNICAL ■ ENVIRONMENTAL ■ MATERIALS

Project No. G2438-52-01
March 21, 2022
Revised May 5, 2022

Torrey Pacific Corporation
171 Saxony Road, Suite 109
Encinitas, California 92024

Attention: Mr. Brian Staver

Subject: LIMITED GEOTECHNICAL INVESTIGATION
TORREY CREST
1220-1240 MELBA ROAD AND 1190 ISLAND VIEW LANE
ENCINITAS, CALIFORNIA

Dear Mr. Staver:

In accordance with your request and authorization of our Proposal No. LG-19293 dated August 7, 2019, we herein submit the results of our geotechnical investigation for the subject project. We performed our investigation to evaluate the underlying soil and geologic conditions and potential geologic hazards, and to assist in the design of the proposed residential subdivision.

The accompanying report presents the results of our study and conclusions and recommendations pertaining to geotechnical aspects of the proposed project. The site is suitable for the proposed residential development improvements provided the recommendations of this report are incorporated into the design and construction of the planned project.

Should you have questions regarding this report, or if we may be of further service, please contact the undersigned at your convenience.

Very truly yours,

GEOCON INCORPORATED

Michael C. Ertwine
CEG 2659

Shawn Foy Weedon
GE 2714

PROFESSIONAL GEOLOGIST
MICHAEL C. ERTWINE
No. 2659
CERTIFIED ENGINEERING GEOLOGIST
STATE OF CALIFORNIA

REGISTERED PROFESSIONAL ENGINEER
SHAWN WEEDON
No. 2714
GEOTECHNICAL
STATE OF CALIFORNIA

MCE:SFW:kv

(e-mail) Addressee

TABLE OF CONTENTS

LIMITED GEOTECHNICAL INVESTIGATION

1. PURPOSE AND SCOPE

This report presents the results of our geotechnical investigation for a new 30 lot residential subdivision located in the Encinitas, California (see Vicinity Map). The purpose of the geotechnical investigation is to evaluate the surface and subsurface soil conditions and general site geology, and to identify geotechnical constraints that may affect development of the property including faulting, liquefaction and seismic shaking based on the 2019 CBC seismic design criteria. In addition, we provided recommendations for remedial grading, shallow foundations, concrete slab-on-grade, concrete flatwork, pavement, and retaining walls.

Vicinity Map

We reviewed the following plans and report in preparation of this report:

1. *Limited Geotechnical Investigation, Oak Crest Middle School, 675 Balour Drive, Encinitas, California*, prepared by Geocon Incorporated, dated August 26, 2013 (Project No. G1571-42-01).

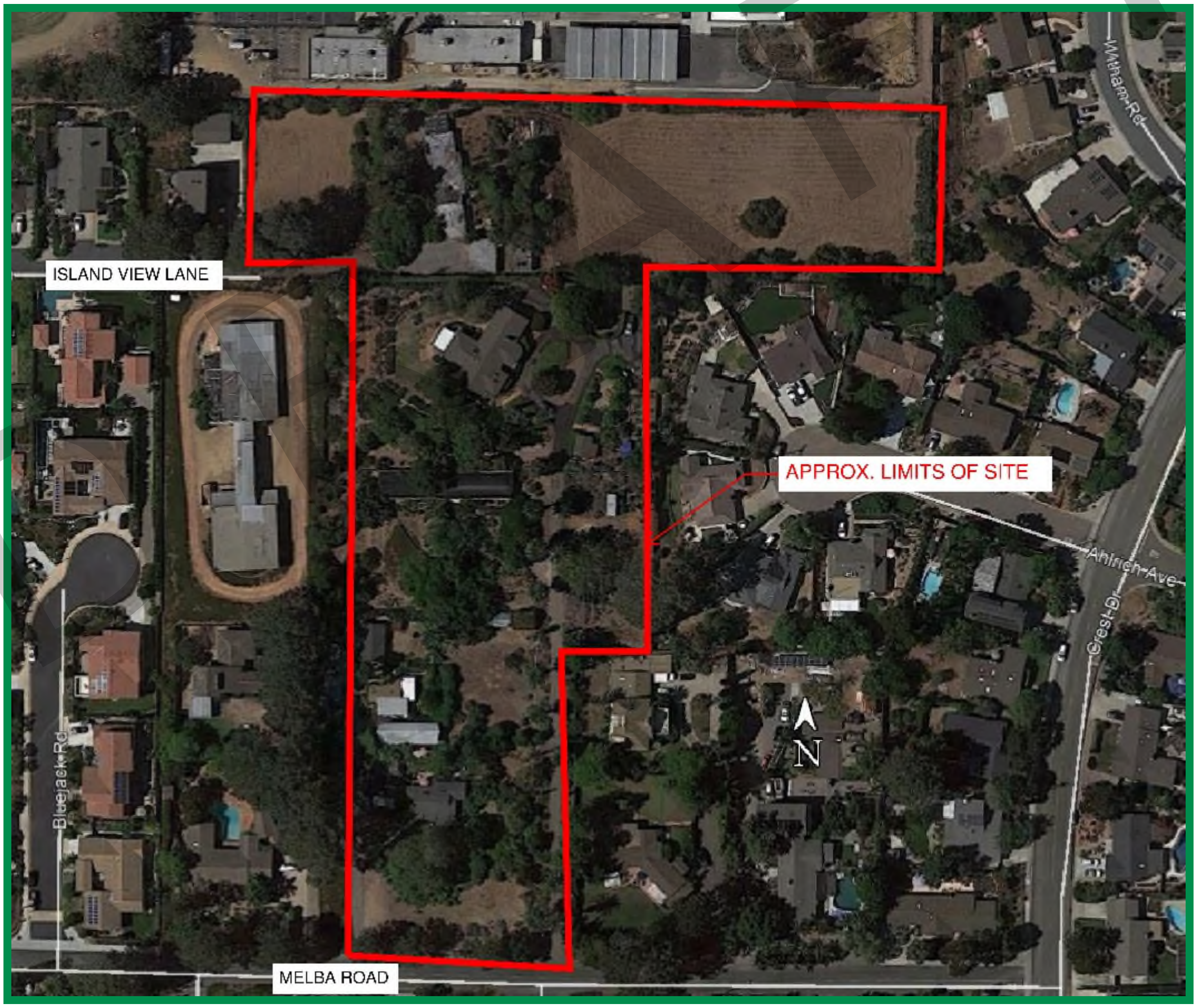
2. *Preliminary Grading Plan for: Torrey Crest, 1220-1240 Melba Road and 1190 Island View Lane*, prepared by Pasco, Laret, Suiter & Associates, (PLSA 3086-01), dated March 18, 2022.

3. *Concept Site Plan, Melba Road SFD, Encinitas, California*, prepared by JZMK Partners, dated October 22, 2020 (JZMK #202019).

The scope of this investigation included reviewing readily available published and unpublished geologic literature (see List of References); performing engineering analyses; and preparing this report. We also advanced 11 exploratory trenches (Trenches T -1 through T-11 and P-1 through P-4) to a maximum depth of about 7 feet, performed percolation/infiltration testing, sampled soil and performed laboratory testing. Appendix A presents the exploratory boring logs and details of the field investigation. The details of the laboratory tests and a summary of the test results are shown in Appendix B and on the boring logs in Appendix A.

2. SITE AND PROJECT DESCRIPTION

The property is located north of Melba Road and east of the Island View Lane terminus in the City of Encinitas, California. The subject project site is occupied by four single-family residences with accompanied ancillary structures, utilities, landscaping and driveways. The property is accessed by two driveways from Melba Road and a driveway from Island View Lane. The topography is relatively flat to gently sloping at an elevation of about 370 to 400 feet above mean sea level (MSL). The Existing Site Plan shows the current site conditions.



Existing Site Plan

Based on a referenced plan prepared by PLSA, we understand the project will consist of demolishing the existing structures, removing the existing utilities, and constructing a new residential development. The new development would consist of 30 single-family residences with associated utilities, landscape roadway, cul-de-sac, basin and access driveways. The development would be accessed by a private road from Melba Road with a cul-de-sac on the north end. A bioretention basin is planned on the southwestern portion of the property. We expect the proposed residences would be supported on conventional shallow foundations consisting of post-tensioned slabs.

The locations, site descriptions, and proposed development are based on our geotechnical investigation, review of published geologic literature, field investigations, and discussions with project personnel. If development plans differ from those described herein, Geocon Incorporated should be contacted for review of the plans and possible revisions to this report.

3. GEOLOGIC SETTING

Regionally, the site is located in the Peninsular Ranges geomorphic province. The province is bounded by the Transverse Ranges to the north, the San Jacinto Fault Zone on the east, the Pacific Ocean coastline on the west, and the Baja California on the south. The province is characterized by elongated northwest-trending mountain ridges separated by straight-sided sediment-filled valleys. The northwest trend is further reflected in the direction of the dominant geologic structural features of the province that are northwest to west-northwest trending folds and faults, such as the nearby Rose Canyon fault zone.

Locally, the site is within the coastal plain of San Diego County. The coastal plain is underlain by a thick sequence of relatively undisturbed and non-conformable sedimentary bedrock units that thicken to the west and range in age from Upper Cretaceous age through the Pleistocene age which have been deposited on Cretaceous to Jurassic age igneous and volcanic bedrock. Geomorphically, the coastal plain is characterized by a series of twenty-one, stair-stepped marine terraces (younger to the west) that have been dissected by west flowing rivers. The coastal plain is a relatively stable block that is dissected by relatively few faults consisting of the potentially active La Nacion Fault Zone and the active Rose Canyon Fault Zone.

The site is located on the western portion of the coastal plain. Marine sedimentary units make up the geologic sequence encountered on the site and consist of middle to early Pleistocene-age Very Old Paralic Deposits (formerly known as Terrace Deposits). The Very Old Paralic Deposits are shallow marine deposits generally consisting of sand and silty sand units interfingered with layers of silt and clay. This unit may be in excess of 50 feet thick underlain by the Torrey Sandstone. The Regional Geologic Map shows the geologic units in the area of the site.

Regional Geologic Map

4. SOIL AND GEOLOGIC CONDITIONS

During our field investigation, we encountered one surficial soil unit (consisting of topsoil) and two formational units (consisting of Very Old Paralic Deposits and the Torrey Sandstone). The occurrence, distribution, and description of topsoil and geologic unit encountered are shown on the Geologic Map, Figure 1 and on the trench logs in Appendix A. The Geologic Cross-Sections, Figure 2, show the approximate subsurface relationship between the geologic units. We prepared the geologic cross-sections using interpolation between exploratory excavations and observations; therefore, actual geotechnical conditions may vary from those illustrated and should be considered approximate. The surficial soil and geologic units are described herein in order of increasing age.

4.1 Topsoil (unmapped)

We encountered Holocene-age topsoil present as a relatively thin veneer locally blanketing the geologic unit across the site. The topsoil is less than a foot to two feet thick across the site and can be characterized as loose, damp to dry, reddish to grayish brown, silty, fine to medium sand. The topsoil is compressible and possess a “very low” expansion potential (expansion index of 20 or less). Remedial grading of the topsoil will be necessary in areas to support proposed fill or structures. The topsoil can be reused for new compacted fills. Water that is allowed to migrate within the topsoil cannot be controlled, would destabilize support for the existing improvements, and would shrink and swell. Therefore, full and partial infiltration should not be allowed within the topsoil.

4.2 Very Old Paralic Deposits (Qvop)

Quaternary-age Very Old Paralic Deposits, Unit 10 (formerly called the Terrace Deposits) underlies the topsoil and extended to the maximum depth explored of 7 feet. The Very Old Paralic Deposits consists of a sandstone unit consists of dense to very dense sandstone. We encountered practical trenching refusal in the dense sandstone materials in the exploratory borings, where encountered. The sandstone unit within the Very Old Paralic Deposits possess a “very low” expansion potential (expansion index of 20 or less). Excavations within this unit will likely encounter difficult digging conditions in the cemented zones.

4.3 Torrey Sandstone (Tt)

Torrey Sandstone likely underlies the Very Old Paralic Deposits at an elevation of about 330 feet MSL. The Torrey Sandstone consists of a very dense sandstone and excavates as silty, fine to medium sand. We did not encounter this unit during our exploratory excavations. We expect the sandstone unit possesses a “very low” expansion potential (expansion index of 20 or less). We should not encounter this unit during the construction operations with the exception of during installation of dry wells.

5. GROUNDWATER

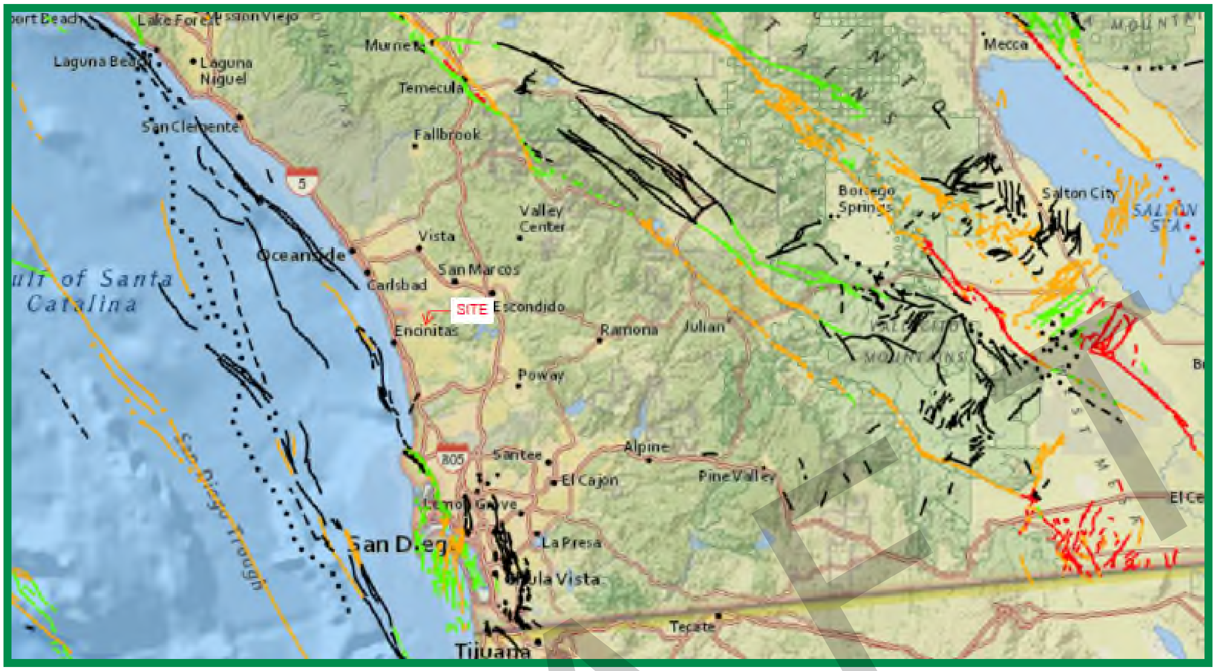
We did not encounter groundwater or seepage during our site investigation. However, it is not uncommon for shallow seepage conditions to develop where none previously existed when sites are irrigated or infiltration is implemented. Seepage is dependent on seasonal precipitation, irrigation, land use, among other factors, and varies as a result. Proper surface drainage will be important to future performance of the project. We expect groundwater is deeper than about 150 feet below existing grade. We do not expect groundwater to be encountered during construction of the proposed development.

6. GEOLOGIC HAZARDS

6.1 Faulting and Seismicity

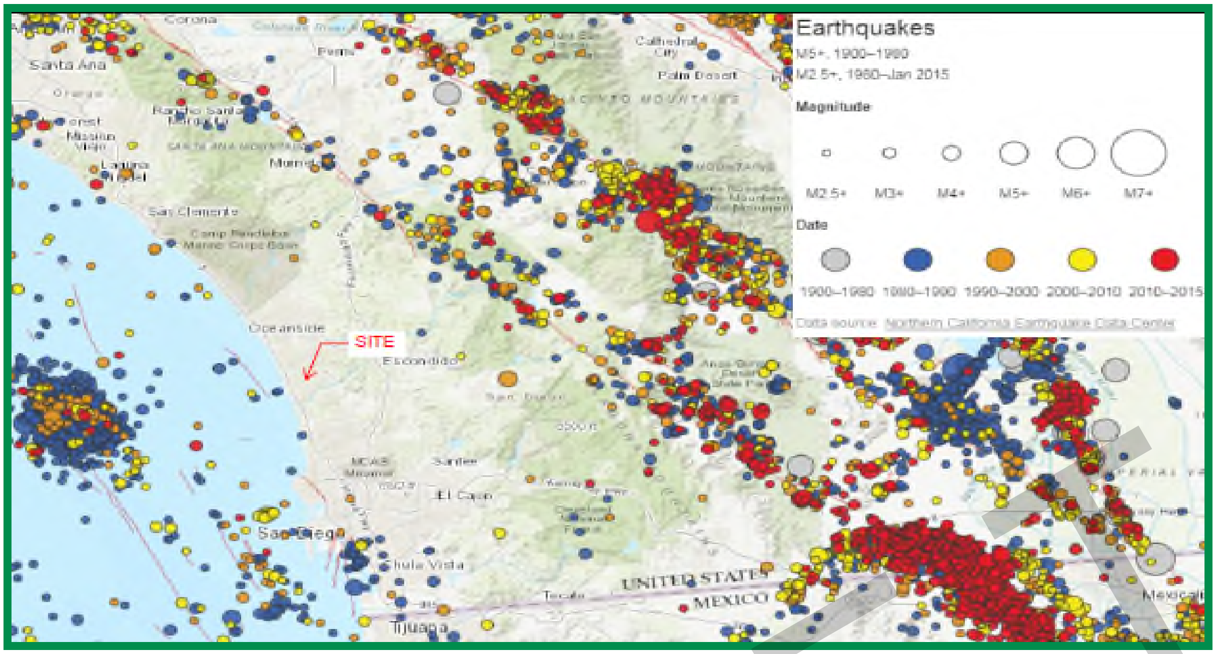
A review of the referenced geologic materials and our knowledge of the general area indicate that the site is not underlain by active, potentially active, or inactive faults. An active fault is defined by the California Geological Survey (CGS) as a fault showing evidence for activity within the last 11,700 years. The site is not located within a State of California Earthquake Fault Zone.

The USGS has developed a program to evaluate the approximate location of faulting in the area of properties. The following figure shows the location of the existing faulting in the San Diego County and Southern California region. The fault traces are shown as solid, dashed and dotted that represent well-constrained, moderately constrained and inferred, respectively. The fault line colors represent faults with ages less than 150 years (red), 15,000 years (orange), 130,000 years (green), 750,000 years (blue) and 1.6 million years (black).



Faults in Southern California

The San Diego County and Southern California region is seismically active. The following figure presents the occurrence of earthquakes with a magnitude greater than 2.5 from the period of 1900 through 2015 according to the Bay Area Earthquake Alliance website.



Earthquakes in Southern California

Considerations important in seismic design include the frequency and duration of motion and the soil conditions underlying the site. Seismic design of structures should be evaluated in accordance with the California Building Code (CBC) guidelines currently adopted by the local agency.

6.2 Ground Rupture

Ground surface rupture occurs when movement along a fault is sufficient to cause a gap or rupture where the upper edge of the fault zone intersects the ground surface. The potential for ground rupture is considered to be very low due to the absence of active faults at the subject site.

6.3 Liquefaction

Liquefaction typically occurs when a site is located in a zone with seismic activity, onsite soils are cohesionless or silt/clay with low plasticity, groundwater is encountered within 50 feet of the surface and soil densities are less than about 70 percent of the maximum dry densities. If the four previous criteria are met, a seismic event could result in a rapid pore water pressure increase from the earthquake-generated ground accelerations. Due to the lack of a permanent, near-surface groundwater table and the very dense nature of the underlying Very Old Paralic Deposits, liquefaction potential for the site is considered very low.

6.4 Storm Surge, Tsunamis, and Seiches

Storm surges are large ocean waves that sweep across coastal areas when storms make landfall. Storm surges can cause inundation, severe erosion and backwater flooding along the water front. The site is located approximately 4 miles from the Pacific Ocean and at an elevation of about 370 feet to 400 feet above mean sea level (MSL). Therefore, the potential of storm surges affecting the site is considered low.

A tsunami is a series of long period waves generated in the ocean by a sudden displacement of large volumes of water. Causes of tsunamis include underwater earthquakes, volcanic eruptions, or offshore slope failures. We consider the risk of a tsunami hazard at the site to be low due the site elevations and the distance from the Pacific Ocean.

A seiche is a run-up of water within a lake or embayment triggered by fault- or landslide-induced ground displacement. The site is not located near an inland body of water; therefore, we consider the potential for seiches to impact the site low.

6.5 Subsidence

Subsidence occurs when a large portion of land is displaced vertically, usually due to the withdrawal of groundwater, oil or natural gas. Soil particularly subject to subsidence include those with high silt or clay content. The site is not located within an area of known ground subsidence. We understand known large-scale extraction of groundwater, gas, oil or geothermal energy is not occurring or planned at the site or in the general site vicinity. Therefore, the potential for ground subsidence due to withdrawal of fluids or gases at the site is considered low.

6.6 Landslides

We did not observe evidence of previous or incipient slope instability at the site during our study and the property is relatively flat. Published geologic mapping indicates landslides are not present on or adjacent to the site. Therefore, in our professional opinion, the potential for a landslide is not a significant concern for this project.

6.7 Erosion

The site is relatively flat and is not located adjacent to the Pacific Ocean coast or a free-flowing drainage where active erosion is occurring. Provided the engineering recommendations herein are followed and the project civil engineer prepares the grading plans in accordance with generally-accepted regional standards, we do not expect erosion to be a major impact to site development.

7. CONCLUSIONS AND RECOMMENDATIONS

7.1 General

7.1.1 We did not encounter soil or geologic conditions during our exploration that would preclude the proposed development, provided the recommendations presented herein are followed and implemented during design and construction. We will provide supplemental recommendations if we observe variable or undesirable conditions during construction, or if the proposed construction will differ from that anticipated herein.

7.1.2 Potential geologic hazards at the site include seismic shaking, bentonitic claystone and siltstone layers, and expansive and compressible soil. Based on our investigation, testing and observations during previous mass grading operations, and available geologic information, active, potentially active, or inactive faults are not present underlying or trending toward the site.

7.1.3 Topsoil blankets the site and is potentially compressible and unsuitable in its present condition for the support of compacted fill or settlement-sensitive improvements. Remedial grading of these materials should be performed as discussed herein. The dense portions of the Very Old Paralic Deposits and Torrey Sandstone are considered suitable for the support of proposed fill and structural loads. We should not encounter the Torrey Sandstone unit during the grading operations with the exception of during installation of dry wells.

7.1.4 We did not encounter groundwater during our subsurface exploration and we do not expect it to be a constraint to project development. However, seepage within surficial soils and rock materials may be encountered during the grading operations, especially during the rainy seasons.

7.1.5 Proper drainage should be maintained in order to preserve the engineering properties of the fill in both the building pads and slope areas. Recommendations for site drainage are provided herein.

7.1.6 We will prepare a storm water management investigation under a separate report to help evaluate the potential for infiltration on the property. The project civil engineer should use that report to help design the storm water management devices.

7.1.7 Based on our review of the project plans, we opine the planned development can be constructed in accordance with our recommendations provided herein. We do not expect the planned development will destabilize or result in settlement of adjacent properties if properly constructed.

7.1.8 The site is considered suitable for the use of conventional continuous and spread footings with a concrete slab-on-grade system or a post-tensioned foundation system.

7.1.9 The building pads should be graded such that at least the upper 3 feet of materials below proposed pad grade are composed of compacted fill. The undercut bottoms should be sloped to drain away from the building pads and toward adjacent streets or toward the deeper fill areas.

7.1.10 Surface settlement monuments and canyon subdrains will not be required on this project.

7.2 Excavation and Soil Characteristics

7.2.1 The soil encountered in the field investigation is considered to be "non-expansive" (expansion index [EI] of 20 or less) as defined by 2019 California Building Code (CBC) Section 1803.5.3. Table 7.2 presents soil classifications based on the expansion index. We expect a majority of the soil encountered possess a "very low" to "low" expansion potential (EI of 50 or less).

TABLE 7.2
EXPANSION CLASSIFICATION BASED ON EXPANSION INDEX

Expansion Index (EI)	ASTM D 4829 Expansion Classification	2019 CBC Expansion Classification
0 – 20	Very Low	Non-Expansive
21 – 50	Low	Expansive
51 – 90	Medium	
91 – 130	High	
Greater Than 130	Very High	

7.2.2 We performed a laboratory test on a sample of the site materials to evaluate the percentage of water-soluble sulfate content. Appendix B presents results of the laboratory water-soluble sulfate content test. The test results indicate the on-site materials at the location tested possesses "S0" sulfate exposure to concrete structures as defined by 2019 CBC Section 1904 and ACI 318-14 Chapter 19. The presence of water-soluble sulfates is not a visually discernible characteristic; therefore, other soil samples from the site could yield different concentrations. Additionally, over time landscaping activities (i.e., addition of fertilizers and other soil nutrients) may affect the concentration.

7.2.3 Geocon Incorporated does not practice in the field of corrosion engineering. Therefore, further evaluation by a corrosion engineer may be performed if improvements susceptible to corrosion are planned.

7.2.4 Excavation of the topsoil and the weathered portions of the Very Old Paralic Deposits should generally be possible with moderate to heavy effort using conventional, heavy-duty equipment during grading and trenching operations. We expect very heavy effort with possible refusal in localized areas for excavations into strongly cemented portions of the Very Old Paralic Deposits.

7.3 Grading

7.3.1 Grading should be performed in accordance with the recommendations provided in this report, the Recommended Grading Specifications contained in Appendix C and the City of Encinitas Grading Ordinance. Geocon Incorporated should observe the grading operations on a full-time basis and provide testing during the fill placement.

7.3.2 Prior to commencing grading, a preconstruction conference should be held at the site with the county inspector, developer, grading and underground contractors, civil engineer, and geotechnical engineer in attendance. Special soil handling and/or the grading plans can be discussed at that time.

7.3.3 Site preparation should begin with the removal of deleterious material, debris, and vegetation. The depth of vegetation removal should be such that material exposed in cut areas or soil to be used as fill is relatively free of organic matter. Material generated during stripping and/or site demolition should be exported from the site. Asphalt and concrete should not be mixed with the fill soil unless approved by the Geotechnical Engineer.

7.3.4 Abandoned foundations and buried utilities (if encountered) should be removed and the resultant depressions and/or trenches should be backfilled with properly compacted material as part of the remedial grading.

7.3.5 Topsoil and weathered formational materials within the limits of grading should be removed to expose dense formational materials. The actual depth of removal should be evaluated by the engineering geologist during grading operations.

7.3.6 We expect the planned structures will be supported on a shallow foundation system supported on properly compacted fill. The surficial fill soils should be removed to dense geologic unit and replaced with properly compacted fill within the areas of the proposed structures. In addition, to reduce the potential for differential settlement, the building pad area should be undercut in areas where formation is exposed within 3 feet of pad grade such that at least 3 feet of properly compacted fill exists below pad grade. The removals should extend at least 10 feet outside of the proposed foundation system, where possible.

7.3.7 We should observe the grading operations and the removal bottoms to check the exposure of the formational materials prior to the placement of compacted fill. Deeper excavations may be required if highly weathered formational materials are present at the base of the removals. Fill soil should not be placed until we observe the bottom excavations. Table 7.3.1 provides a summary of the grading recommendations.

TABLE 7.3.1
SUMMARY OF GRADING RECOMMENDATIONS

Area	Removal Requirements
Topsoil and Weathered Very Old Paralic Deposits	Remove to Underlying, Dense Very Old Paralic Deposits
Very Old Paralic Deposits Within 3 Feet of Proposed Building Pad Elevations	Undercut 3 Feet Below Finish Grade
Very Old Paralic Deposits at Grade in Areas of Surface Improvements	Process Upper 1 to 2 Feet of Existing Materials
Lateral Grading Limits	10 Feet Outside of Buildings/2 Feet Outside of Improvement Areas, Where Possible
Exposed Bottoms of Remedial Grading	Scarify Upper 12 Inches

7.3.8 The bottom of the excavations should be sloped 1 percent to the adjacent street or deepest fill. Prior to fill soil being placed, the existing ground surface should be scarified, moisture conditioned as necessary, and compacted to a depth of at least 12 inches. Deeper removals may be required if saturated or loose fill soil is encountered. A representative of Geocon should be on-site during removals to evaluate the limits of the remedial grading.

7.3.9 Some areas of overly wet and saturated soil could be encountered due to the existing landscape and pavement areas. The saturated soil would require additional effort prior to placement of compacted fill or additional improvements. Stabilization of the soil would include scarifying and air-drying, removing and replacement with drier soil, use of stabilization fabric (e.g. Tensar TX7 or other approved fabric), or chemical treating (i.e. cement or lime treatment).

7.3.10 The contractor should be careful during the remedial grading operations to avoid a "pumping" condition at the base of the removals. Where recompaction of the excavated bottom will result in a "pumping" condition, the bottom of the excavation should be tracked with low ground pressure earthmoving equipment prior to placing fill. If needed to improve the stability of the excavation bottoms, reinforcing fabric or 2- to 3-inch crushed rock can be placed prior to placement of compacted fill.

7.3.11 The site should then be brought to final subgrade elevations with fill compacted in layers. In general, soil native to the site is suitable for use from a geotechnical engineering standpoint as fill if relatively free from vegetation, debris and other deleterious material. Layers of fill should be about 6 to 8 inches in loose thickness and no thicker than will allow for adequate bonding and compaction. Fill, including backfill and scarified ground surfaces, should be compacted to a dry density of at least 90 percent of the laboratory maximum dry density near to slightly above optimum moisture content in accordance with ASTM Test Procedure D 1557. Fill materials placed below optimum moisture content may require additional moisture conditioning prior to placing additional fill. The upper 12 inches of subgrade soil underlying pavement should be compacted to a dry density of at least 95 percent of the laboratory maximum dry density near to slightly above optimum moisture content shortly before paving operations.

7.3.12 Import fill (if necessary) should consist of the characteristics presented in Table 7.3.2. Geocon Incorporated should be notified of the import soil source and should perform laboratory testing of import soil prior to its arrival at the site to determine its suitability as fill material.

TABLE 7.3.2
SUMMARY OF IMPORT FILL RECOMMENDATIONS

Soil Characteristic	Values
Expansion Potential	"Very Low" to "Medium" (Expansion Index of 90 or less)
Particle Size	Maximum Dimension Less Than 3 Inches
	Generally Free of Debris

7.3.13 The site should then be brought to final subgrade elevations with fill compacted in layers. In general, soil native to the site is suitable for use from a geotechnical engineering standpoint as fill if relatively free from vegetation, debris and other deleterious material. Table 7.3.3 provides a summary of the compaction recommendations. Layers of fill should be compacted to a dry density of at least 90 percent of the laboratory maximum dry density near to slightly above optimum moisture content in accordance with ASTM Test Procedure D 1557. Fill materials placed below optimum moisture content may require additional moisture conditioning prior to placing additional fill.

TABLE 7.3.3
SUMMARY OF COMPACTION RECOMMENDATIONS

Soil Characteristic	Values
Loose Fill Thickness	About 6 to 8 Inches
	No Thicker Than Will Allow for Adequate Bonding and Compaction
Grading Compaction	90 Percent
Utility Trench, Retaining Wall, Subgrade for Sidewalk and Curb/Gutter	90 Percent
Pavement Subgrade, Base Materials	95 Percent
Moisture Content	Near to Slightly Above Optimum
Expansion Potential (Upper 4 Feet)	"Very Low" to "Medium" (Expansion Index of 90 or less)

7.3.14 Cut slope excavations should be observed during grading operations to check that soil and geologic conditions do not differ significantly from those expected.

7.3.15 The outer 15 feet (or a distance equal to the height of the slope, whichever is less) of fill slopes should be composed of properly compacted granular "soil" fill to reduce the potential for surficial sloughing. In general, soil with an expansion index of 90 or less or at least 35 percent sand-size particles should be acceptable as "soil" fill. Soil of questionable strength to satisfy surficial stability should be tested in the laboratory for acceptable drained shear strength. The use of cohesionless soil in the outer portion of fill slopes should be avoided. Fill slopes should be overbuilt 2 feet and cut back or be compacted by backrolling with a loaded sheepsfoot roller at vertical intervals not to exceed 4 feet and should be track-walked at the completion of each slope such that the fill is compacted to a dry density of at least 90 percent of the laboratory maximum dry density near to slightly above optimum moisture content to the face of the finished sloped.

7.3.16 Slopes should be landscaped with drought-tolerant vegetation having variable root depths and requiring minimal landscape irrigation. In addition, all slopes should be drained and properly maintained to reduce erosion.

7.3.17 Import fill (if necessary) should consist of the characteristics presented in Table 7.3.4. Geocon Incorporated should be notified of the import soil source and should perform laboratory testing of import soil prior to its arrival at the site to determine its suitability as fill material.

TABLE 7.3.4
SUMMARY OF IMPORT FILL RECOMMENDATIONS

Soil Characteristic	Values
Expansion Potential	"Very Low" to "Medium" (Expansion Index of 90 or less)
Particle Size	Maximum Dimension Less Than 3 Inches
	Generally Free of Debris

7.3.18 Finished slopes should be landscaped with drought-tolerant vegetation having variable root depths and requiring minimal landscape irrigation. In addition, the slopes should be drained and properly maintained to reduce erosion.

7.4 Subdrains

7.4.1 With the exception of retaining wall drains, we do not expect the installation of other subdrains. We should be contacted to provide recommendations for wick drains, if proposed.

7.5 Temporary Excavations

7.5.1 The recommendations included herein are provided for stable excavations. It is the responsibility of the contractor and their competent person to ensure all excavations, temporary slopes and trenches are properly constructed and maintained in accordance with applicable OSHA guidelines in order to maintain safety and the stability of the excavations and adjacent improvements. These excavations should not be allowed to become saturated or to dry out. Surcharge loads should not be permitted to a distance equal to the height of the excavation from the top of the excavation. The top of the excavation should be a minimum of 15 feet from the edge of existing improvements. Excavations steeper than those recommended or closer than 15 feet from an existing surface improvement should be shored in accordance with applicable OSHA codes and regulations.

7.5.2 The stability of the excavations is dependent on the design and construction of the shoring system and site conditions. Therefore, Geocon Incorporated cannot be responsible for site safety and the stability of the proposed excavations.

7.6 Seismic Design Criteria – 2019 California Building Code

7.6.1 Table 7.6.1 summarizes site-specific design criteria obtained from the 2019 California Building Code (CBC; Based on the 2018 International Building Code [IBC] and ASCE 7-16), Chapter 16 Structural Design, Section 1613 Earthquake Loads. We used the computer program *U.S. Seismic Design Maps*, provided by the Structural Engineers Association

(SEA) to calculate the seismic design parameters. The short spectral response uses a period of 0.2 second. We evaluated the Site Class based on the discussion in Section 1613.2.2 of the 2019 CBC and Table 20.3-1 of ASCE 7-16. The values presented herein are for the risk-targeted maximum considered earthquake (MCE_R). Sites designated as Site Class D, E and F may require additional analyses if requested by the project structural engineer and client.

TABLE 7.6.1
2019 CBC SEISMIC DESIGN PARAMETERS

Parameter	Value	2019 CBC Reference
Site Class	C	Section 1613.2.2
MCE_R Ground Motion Spectral Response Acceleration – Class B (short), S_S	1.114g	Figure 1613.2.1(1)
MCE_R Ground Motion Spectral Response Acceleration – Class B (1 sec), S_1	0.398g	Figure 1613.2.1(2)
Site Coefficient, F_A	1.200	Table 1613.2.3(1)
Site Coefficient, F_V	1.500*	Table 1613.2.3(2)
Site Class Modified MCE_R Spectral Response Acceleration (short), S_{MS}	1.336g	Section 1613.2.3 (Eqn 16-36)
Site Class Modified MCE_R Spectral Response Acceleration – (1 sec), S_{M1}	0.598g*	Section 1613.2.3 (Eqn 16-37)
5% Damped Design Spectral Response Acceleration (short), S_{DS}	0.891g	Section 1613.2.4 (Eqn 16-38)
5% Damped Design Spectral Response Acceleration (1 sec), S_{D1}	0.398*	Section 1613.2.4 (Eqn 16-39)

*****Using the code-based values presented in this table, in lieu of a performing a ground motion hazard analysis, requires the exceptions outlined in ASCE 7-16 Section 11.4.8 be followed by the project structural engineer. Per Section 11.4.8 of ASCE/SEI 7-16, a ground motion hazard analysis should be performed for projects for Site Class “E” sites with Ss greater than or equal to 1.0g and for Site Class “D” and “E” sites with S1 greater than 0.2g. Section 11.4.8 also provides exceptions which indicates that the ground motion hazard analysis may be waived provided the exceptions are followed.

7.6.2 Table 7.6.2 presents the mapped maximum considered geometric mean (MCE_G) seismic design parameters for projects located in Seismic Design Categories of D through F in accordance with ASCE 7-16.

TABLE 7.6.2
ASCE 7-16 PEAK GROUND ACCELERATION

Parameter	Value	ASCE 7-16 Reference
Mapped MCE_G Peak Ground Acceleration, PGA	0.495g	Figure 22-7
Site Coefficient, F_{PGA}	1.2	Table 11.8-1
Site Class Modified MCE_G Peak Ground Acceleration, PGA_M	0.594g	Section 11.8.3 (Eqn 11.8-1)

7.6.3 Conformance to the criteria in Tables 7.6.1 and 7.6.2 for seismic design does not constitute any kind of guarantee or assurance that significant structural damage or ground failure will not occur in the event of a large earthquake. The primary goal of seismic design is to protect life, not to avoid all damage, since such design may be economically prohibitive.

7.6.4 The project structural engineer and architect should evaluate the appropriate Risk Category and Seismic Design Category for the planned structures. The values presented herein assume a Risk Category of II and resulting in a Seismic Design Category D. Table 7.6.3 presents a summary of the risk categories in accordance with ASCE 7-16.

TABLE 7.6.3
ASCE 7-16 RISK CATEGORIES

Risk Category	Building Use	Examples
I	Low risk to Human Life at Failure	Barn, Storage Shelter
II	Nominal Risk to Human Life at Failure (Buildings Not Designated as I, III or IV)	Residential, Commercial and Industrial Buildings
III	Substantial Risk to Human Life at Failure	Theaters, Lecture Halls, Dining Halls, Schools, Prisons, Small Healthcare Facilities, Infrastructure Plants, Storage for Explosives/Toxins
IV	Essential Facilities	Hazardous Material Facilities, Hospitals, Fire and Rescue, Emergency Shelters, Police Stations, Power Stations, Aviation Control Facilities, National Defense, Water Storage

7.7 Preliminary Foundation and Concrete Slabs-On-Grade Recommendations

7.7.1 The foundation recommendations herein are for the proposed residential structures. The foundation recommendations have been separated into three categories based on the maximum and differential fill thickness and expansion index. The foundation category criteria are presented in Table 7.7.1. Based on review of the laboratory test results performed during our investigation, we expect majority of the soil encountered on site is planned to possess a “very low” expansion potential (expansion index of 20 or less). Recommended foundation categories for the subject building pads will be provided after fine grading is completed and we re-evaluate the expansion index of the fill material in the upper 3 to 4 feet during the regrading operations.

TABLE 7.7.1
FOUNDATION CATEGORY CRITERIA

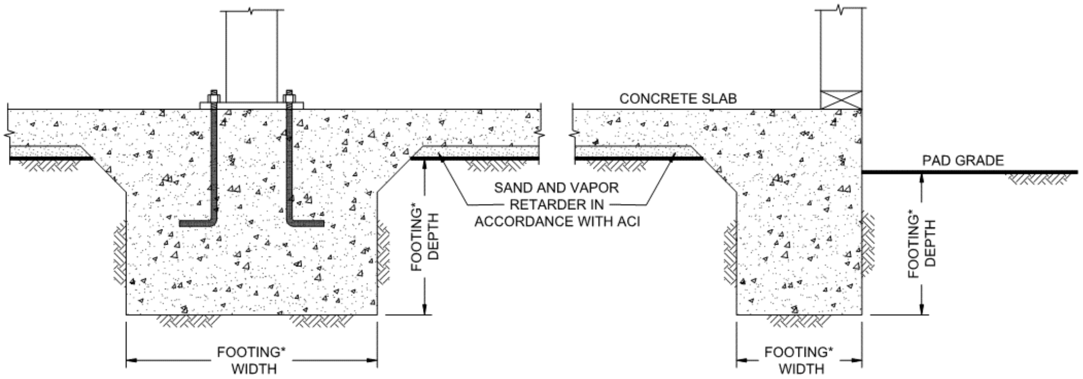
Foundation Category	Maximum Fill Thickness, T (feet)	Differential Fill Thickness, D (feet)	Expansion Index (EI)
I	T<20	--	EI≤50
II	20≤T<50	10≤D<20	50<EI≤90
III	T≥50	D≥20	90<EI≤130

7.7.2 Table 7.7.2 presents minimum foundation and interior concrete slab design criteria for conventional foundation systems. The grading of building pads should be such that the upper 3 feet of finish grade soils should have an expansion index of 90 or less.

TABLE 7.7.2
CONVENTIONAL FOUNDATION RECOMMENDATIONS BY CATEGORY

Foundation Category	Minimum Footing Embedment Depth (inches)	Continuous Footing Reinforcement	Interior Slab Reinforcement
I	12	Two No. 4 bars, one top and one bottom	6 x 6 - 10/10 welded wire mesh at slab mid-point
II	18	Four No. 4 bars, two top and two bottom	No. 3 bars at 24 inches on center, both directions
III	24	Four No. 5 bars, two top and two bottom	No. 3 bars at 18 inches on center, both directions

7.7.3 The embedment depths presented in Table 7.7.2 should be measured from the lowest adjacent pad grade for both interior and exterior footing. The foundations should be embedded in accordance with the recommendations herein and the Wall/Column Footing Dimension Detail. The embedment depths should be measured from the lowest adjacent pad grade for both interior and exterior footings. Footings should be deepened such that the bottom outside edge of the footing is at least 7 feet horizontally from the face of the slope (unless designed with a post-tensioned foundation system as discussed herein).



Wall/Column Footing Dimension Detail

7.7.4 The bearing capacity values presented herein are for dead plus live loads and may be increased by one-third when considering transient loads due to wind or seismic forces.

7.7.5 The concrete slab-on-grade should be a minimum of 4 inches thick for Foundation Categories I and II and 5 inches thick for Foundation Category III.

7.7.6 Slabs that may receive moisture-sensitive floor coverings or may be used to store moisture-sensitive materials should be underlain by a vapor retarder. The vapor retarder design should be consistent with the guidelines presented in the American Concrete Institute's (ACI) *Guide for Concrete Slabs that Receive Moisture-Sensitive Flooring Materials* (ACI 302.2R-06). In addition, the membrane should be installed in accordance with manufacturer's recommendations and ASTM requirements and installed in a manner that prevents puncture. The vapor retarder used should be specified by the project architect or developer based on the type of floor covering that will be installed and if the structure will possess a humidity-controlled environment.

7.7.7 Placement of 3 inches and 4 inches of sand is common practice in Southern California for 5-inch and 4-inch thick slabs, respectively. The foundation engineer should provide appropriate concrete mix design criteria and curing measures that may be utilized to assure proper curing of the slab to reduce the potential for rapid moisture loss and subsequent cracking and/or slab curl. We suggest that the foundation engineer present concrete mix design and proper curing methods on the foundation plans. It is critical that the foundation contractor understands and follows the recommendations presented on the foundation plans.

7.7.8 As an alternative to the conventional foundation recommendations, consideration should be given to the use of post-tensioned concrete slab and foundation systems for the support of the proposed structures. If a post-tensioned system is being used, the proposed buildings would be designated with a Foundation Category once grading is completed. The post-tensioned systems should be designed by a structural engineer experienced in post-tensioned slab design and design criteria of the Post-Tensioning Institute (PTI) DC 10.5-12 *Standard Requirements for Design and Analysis of Shallow Post-Tensioned Concrete Foundations on Expansive Soils* or *WRI/CRSI Design of Slab-on-Ground Foundations*, as required by the 2019 California Building Code (CBC Section 1808.6.2). Although this procedure was developed for expansive soil conditions, it can also be used to reduce the potential for foundation distress due to differential fill settlement. The post-tensioned design should incorporate the geotechnical parameters presented in Table 7.7.3 for the particular Foundation Category designated. The parameters presented in Table 7.7.3 are based on the guidelines presented in the PTI DC 10.5 design manual.

TABLE 7.7.3
POST-TENSIONED FOUNDATION SYSTEM DESIGN PARAMETERS

Post-Tensioning Institute (PTI) DC10.5 Design Parameters	Foundation Category		
	I	II	III
Thornthwaite Index	-20	-20	-20
Equilibrium Suction	3.9	3.9	3.9
Edge Lift Moisture Variation Distance, e_M (Feet)	5.3	5.1	4.9
Edge Lift, y_M (Inches)	0.61	1.10	1.58
Center Lift Moisture Variation Distance, e_M (Feet)	9.0	9.0	9.0
Center Lift, y_M (Inches)	0.30	0.47	0.66

7.7.9 We will provide the Foundation Category for each building to design the post-tensioned foundations once grading and additional laboratory testing is completed.

7.7.10 The foundations for the post-tensioned slabs should be embedded in accordance with the recommendations of the structural engineer. If a post-tensioned mat foundation system is planned, the slab should possess a thickened edge with a minimum width of 12 inches and extend below the clean sand or crushed rock layer.

7.7.11 If the structural engineer proposes a post-tensioned foundation design method other than PTI, DC 10.5:

- The deflection criteria presented in Table 7.7.3 are still applicable.
- Interior stiffener beams should be used for Foundation Categories II and III.
- The width of the perimeter foundations should be at least 12 inches.
- The perimeter footing embedment depths should be at least 12 inches, 18 inches and 24 inches for foundation categories I, II, and III, respectively. The embedment depths should be measured from the lowest adjacent pad grade.

7.7.12 Our experience indicates post-tensioned slabs may be susceptible to excessive edge lift from tensioning, regardless of the underlying soil conditions. Placing reinforcing steel at the bottom of the perimeter footings and the interior stiffener beams may mitigate this potential. The structural engineer should design the foundation system to reduce the potential of edge lift occurring for the proposed structures.

7.7.13 During the construction of the post-tension foundation system, the concrete should be placed monolithically. Under no circumstances should cold joints form between the footings/grade beams and the slab during the construction of the post-tension foundation system unless designed by the structural engineer.

7.7.14 Category I, II, or III foundations may be designed for an allowable soil bearing pressure of 2,000 pounds per square foot (psf) (dead plus live load). This bearing pressure may be increased by one-third for transient loads due to wind or seismic forces. The estimated maximum total and differential settlement for the planned structures due to foundation loads is 1 inch and ½ inch, respectively.

7.7.15 Isolated footings outside of the slab area, if present, should have the minimum embedment depth and width recommended for conventional foundations for a particular Foundation Category. The use of isolated footings, which are located beyond the perimeter of the building and support structural elements connected to the building, are not recommended for Category III. Where this condition cannot be avoided, the isolated footings should be connected to the building foundation system with grade beams. In addition, consideration should be given to connecting patio slabs, which exceed 5 feet in width, to the building foundation to reduce the potential for future separation to occur.

7.7.16 Interior stiffening beams should be incorporated into the design of the foundation system in accordance with the PTI design procedures.

7.7.17 Special subgrade presaturation is not deemed necessary prior to placing concrete; however, the exposed foundation and slab subgrade soil should be moisture conditioned, as necessary, to maintain a moist condition as would be expected in any such concrete placement.

7.7.18 Where buildings or other improvements are planned near the top of a slope 3:1 (horizontal:vertical) or steeper, special foundation and/or design considerations are recommended due to the tendency for lateral soil movement to occur.

- For fill slopes less than 20 feet high or cut slopes regardless of height, footings should be deepened such that the bottom outside edge of the footing is at least 7 feet horizontally from the face of the slope.

- When located next to a descending 3:1 (horizontal:vertical) fill slope or steeper, the foundations should be extended to a depth where the minimum horizontal distance is equal to H/3 (where H equals the vertical distance from the top of the fill slope to the base of the fill soil) with a minimum of 7 feet but need not exceed 40 feet. The horizontal distance is measured from the outer, deepest edge of the footing to the face of the slope. A post-tensioned slab and foundation system or mat foundation system can be used to reduce the potential for distress in the structures associated with strain softening and lateral fill extension. Specific design parameters or recommendations for either of these alternatives can be provided once the building location and fill slope geometry have been determined.

- If swimming pools are planned, Geocon Incorporated should be contacted for a review of specific site conditions.

- Swimming pools located within 7 feet of the top of cut or fill slopes are not recommended. Where such a condition cannot be avoided, the portion of the swimming pool wall within 7 feet of the slope face be designed assuming that the adjacent soil provides no lateral support. This recommendation applies to fill slopes up to 30 feet in height, and cut slopes regardless of height. For swimming pools located near the top of fill slopes greater than 30 feet in height, additional recommendations may be required and Geocon Incorporated should be contacted for a review of specific site conditions.

- Although other improvements, which are relatively rigid or brittle, such as concrete flatwork or masonry walls, may experience some distress if located near the top of a slope, it is generally not economical to mitigate this potential. It may be possible, however, to incorporate design measures which would permit some lateral soil movement without causing extensive distress. Geocon Incorporated should be consulted for specific recommendations.

7.7.19 The recommendations of this report are intended to reduce the potential for cracking of slabs and foundations due to expansive soil (if present), differential settlement of fill soil with varying thicknesses. However, even with the incorporation of the recommendations presented herein, foundations, stucco walls, and slabs-on-grade placed on such conditions may still exhibit some cracking due to soil movement and/or shrinkage. The occurrence of concrete shrinkage cracks is independent of the supporting soil characteristics. Their occurrence may be reduced by limiting the slump of the concrete, proper concrete placement and curing, and by the placement of crack control joints at periodic intervals, in particular, where re-entrant slab corners occur.

7.7.20 Concrete slabs should be provided with adequate crack-control joints, construction joints and/or expansion joints to reduce unsightly shrinkage cracking. The design of joints should consider criteria of the American Concrete Institute when establishing crack-control spacing. Additional steel reinforcing, concrete admixtures and/or closer crack control joint spacing should be considered where concrete-exposed finished floors are planned.

7.7.21 Geocon Incorporated should be consulted to provide additional design parameters as required by the structural engineer.

7.7.22 We should observe the foundation excavations prior to the placement of reinforcing steel to check that the exposed soil conditions are similar to those expected and that they have been extended to the appropriate bearing strata. If unexpected soil conditions are encountered, foundation modifications may be required.

7.8 Exterior Concrete Flatwork

7.8.1 Exterior concrete flatwork not subject to vehicular traffic should be constructed in accordance with the recommendations presented in Table 7.8. The recommended steel reinforcement would help reduce the potential for cracking.

TABLE 7.8
MINIMUM CONCRETE FLATWORK RECOMMENDATIONS

Expansion Index, EI	Minimum Steel Reinforcement* Options	Minimum Thickness
EI ≤ 90	6x6-W2.9/W2.9 (6x6-6/6) welded wire mesh	4 Inches
	No. 3 Bars 18 inches on center, Both Directions	

* In excess of 8 feet square.

7.8.2 The subgrade soil should be properly moisturized and compacted prior to the placement of steel and concrete. The subgrade soil should be compacted to a dry density of at least 90 percent of the laboratory maximum dry density near to slightly above optimum moisture content in accordance with ASTM D 1557.

7.8.3 Even with the incorporation of the recommendations of this report, the exterior concrete flatwork has a potential to experience some uplift due to expansive soil beneath grade. The steel reinforcement should overlap continuously in flatwork to reduce the potential for vertical offsets within flatwork. Additionally, flatwork should be structurally connected to the curbs, where possible, to reduce the potential for offsets between the curbs and the flatwork.

7.8.4 Concrete flatwork should be provided with crack control joints to reduce and/or control shrinkage cracking. Crack control spacing should be determined by the project structural engineer based upon the slab thickness and intended usage. Criteria of the American Concrete Institute (ACI) should be taken into consideration when establishing crack control spacing. Subgrade soil for exterior slabs not subjected to vehicle loads should be compacted in accordance with criteria presented in the grading section prior to concrete placement. Subgrade soil should be properly compacted and the moisture content of subgrade soil should be verified prior to placing concrete. Base materials will not be required below concrete improvements.

7.8.5 Where exterior flatwork abuts the structure at entrant or exit points, the exterior slab should be dowelled into the structure's foundation stemwall. This recommendation is intended to reduce the potential for differential elevations that could result from differential settlement or minor heave of the flatwork. Dowelling details should be designed by the project structural engineer.

7.9 Retaining Walls

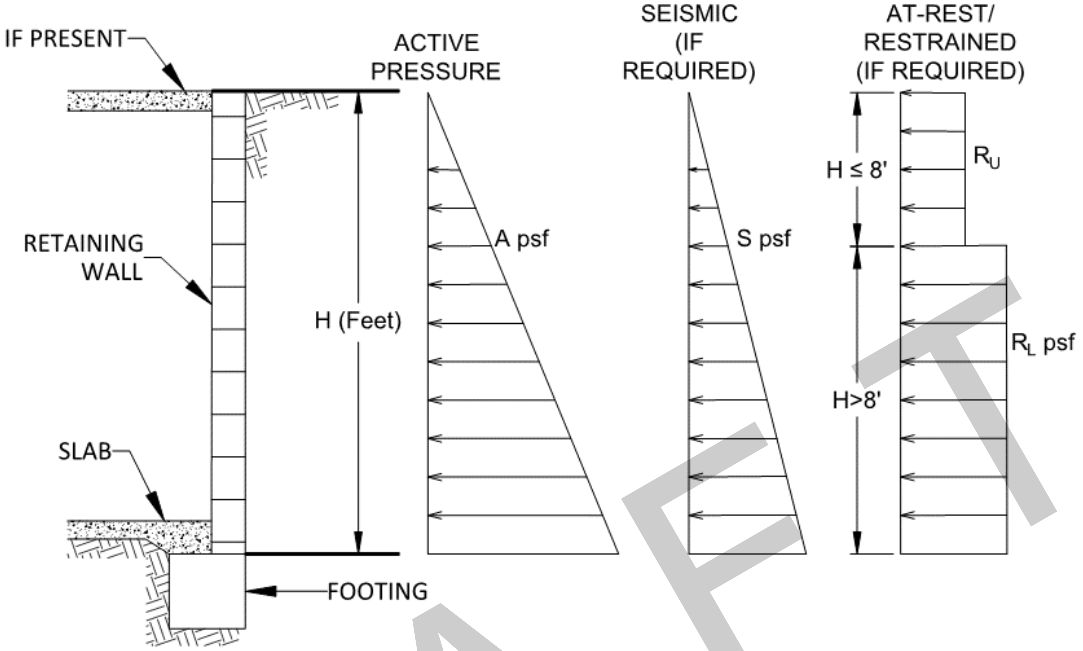
7.9.1 Retaining walls should be designed using the values presented in Table 7.9.1. Soil with an expansion index (EI) of greater than 90 should not be used as backfill material behind retaining walls.

TABLE 7.9.1
RETAINING WALL DESIGN RECOMMENDATIONS

Parameter	Value
Active Soil Pressure, A (Fluid Density, Level Backfill)	35 pcf
Active Soil Pressure, A (Fluid Density, 2:1 Sloping Backfill)	50 pcf
Seismic Pressure, S	15H psf
At-Rest/Restrained Walls Additional Uniform Pressure (0 to 8 Feet High)	7H psf
At-Rest/Restrained Walls Additional Uniform Pressure (8+ Feet High)	13H psf
Expected Expansion Index for the Subject Property	EI≤90

H equals the height of the retaining portion of the wall.

7.9.2 The project retaining walls should be designed as shown in the Retaining Wall Loading Diagram.



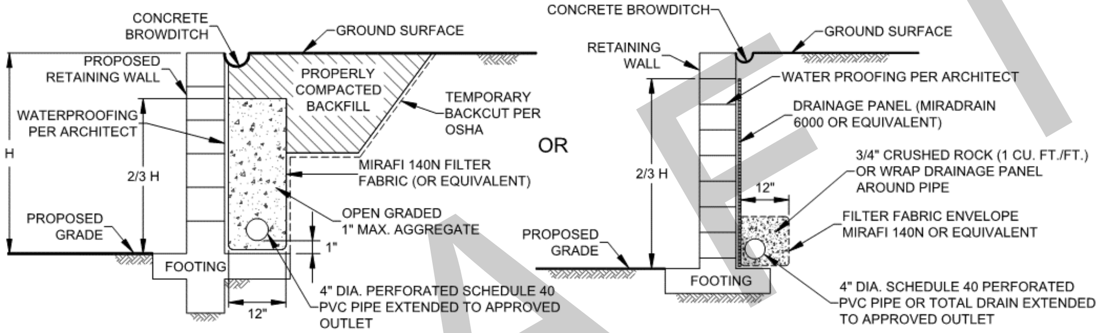
Retaining Wall Loading Diagram

7.9.3 Unrestrained walls are those that are allowed to rotate more than 0.001H (where H equals the height of the retaining portion of the wall) at the top of the wall. Where walls are restrained from movement at the top (at-rest condition), an additional uniform pressure should be applied to the wall. For retaining walls subject to vehicular loads within a horizontal distance equal to two-thirds the wall height, a surcharge equivalent to 2 feet of fill soil should be added.

7.9.4 The structural engineer should determine the Seismic Design Category for the project in accordance with Section 1613.3.5 of the 2019 CBC or Section 11.6 of ASCE 7-10. For structures assigned to Seismic Design Category of D, E, or F, retaining walls that support more than 6 feet of backfill should be designed with seismic lateral pressure in accordance with Section 1803.5.12 of the 2019 CBC. The seismic load is dependent on the retained height where H is the height of the wall, in feet, and the calculated loads result in pounds per square foot (psf) exerted at the base of the wall and zero at the top of the wall.

7.9.5 Retaining walls should be designed to ensure stability against overturning sliding, and excessive foundation pressure. Where a keyway is extended below the wall base with the intent to engage passive pressure and enhance sliding stability, it is not necessary to consider active pressure on the keyway.

7.9.6 Drainage openings through the base of the wall (weep holes) should not be used where the seepage could be a nuisance or otherwise adversely affect the property adjacent to the base of the wall. The recommendations herein assume a properly compacted granular (EI of 90 or less) free-draining backfill material with no hydrostatic forces or imposed surcharge load. The retaining wall should be properly drained as shown in the Typical Retaining Wall Drainage Detail. If conditions different than those described are expected, or if specific drainage details are desired, Geocon Incorporated should be contacted for additional recommendations.



Typical Retaining Wall Drainage Detail

7.9.7 The retaining walls may be designed using either the active and restrained (at-rest) loading condition or the active and seismic loading condition as suggested by the structural engineer. Typically, it appears the design of the restrained condition for retaining wall loading may be adequate for the seismic design of the retaining walls. However, the active earth pressure combined with the seismic design load should be reviewed and also considered in the design of the retaining walls.

7.9.8 In general, wall foundations should be designed in accordance with Table 7.9.2. The proximity of the foundation to the top of a slope steeper than 3:1 could impact the allowable soil bearing pressure. Therefore, retaining wall foundations should be deepened such that the bottom outside edge of the footing is at least 7 feet horizontally from the face of the slope.

TABLE 7.9.2
SUMMARY OF RETAINING WALL FOUNDATION RECOMMENDATIONS

Parameter	Value
Minimum Retaining Wall Foundation Width	12 inches
Minimum Retaining Wall Foundation Depth	12 Inches
Minimum Steel Reinforcement	Per Structural Engineer
Allowable Bearing Capacity	2,000 psf
Bearing Capacity Increase	500 psf per Foot of Depth
	300 psf per Foot of Width
Maximum Allowable Bearing Capacity	3,500 psf
Estimated Total Settlement	1 Inch
Estimated Differential Settlement	½ Inch in 40 Feet

7.9.9 The recommendations presented herein are generally applicable to the design of rigid concrete or masonry retaining walls. In the event that other types of walls (such as mechanically stabilized earth [MSE] walls, soil nail walls, or soldier pile walls) are planned, Geocon Incorporated should be consulted for additional recommendations.

7.9.10 Unrestrained walls will move laterally when backfilled and loading is applied. The amount of lateral deflection is dependent on the wall height, the type of soil used for backfill, and loads acting on the wall. The retaining walls and improvements above the retaining walls should be designed to incorporate an appropriate amount of lateral deflection as determined by the structural engineer.

7.9.11 Soil contemplated for use as retaining wall backfill, including import materials, should be identified in the field prior to backfill. At that time, Geocon Incorporated should obtain samples for laboratory testing to evaluate its suitability. Modified lateral earth pressures may be necessary if the backfill soil does not meet the required expansion index or shear strength. City or regional standard wall designs, if used, are based on a specific active lateral earth pressure and/or soil friction angle. In this regard, on-site soil to be used as backfill may or may not meet the values for standard wall designs. Geocon Incorporated should be consulted to assess the suitability of the on-site soil for use as wall backfill if standard wall designs will be used.

7.10 Lateral Loading

7.10.1 Table 7.10 should be used to help design the proposed structures and improvements to resist lateral loads for the design of footings or shear keys. The allowable passive pressure assumes a horizontal surface extending at least 5 feet, or three times the surface generating the passive pressure, whichever is greater. The upper 12 inches of material in areas not protected by floor slabs or pavement should not be included in design for passive resistance.

TABLE 7.10
SUMMARY OF LATERAL LOAD DESIGN RECOMMENDATIONS

Parameter	Value
Passive Pressure Fluid Density	350 pcf
Coefficient of Friction (Concrete and Soil)	0.35
Coefficient of Friction (Along Vapor Barrier)	0.2 to 0.25*

* Per manufacturer’s recommendations.

7.10.2 The passive and frictional resistant loads can be combined for design purposes. The lateral passive pressures may be increased by one-third when considering transient loads due to wind or seismic forces.

7.11 Preliminary Pavement Recommendations

7.11.1 We calculated the flexible pavement sections in general conformance with the *Caltrans Method of Flexible Pavement Design* (Highway Design Manual, Section 608.4) using an estimated Traffic Index (TI) of 5.0, 5.5, 6.0, and 7.0 for parking stalls, driveways, medium truck traffic areas, and heavy truck traffic areas, respectively. The project civil engineer and owner should review the pavement designations to determine appropriate locations for pavement thickness. The final pavement sections for the roadways should be based on the R-Value of the subgrade soil encountered at final subgrade elevation. Based on laboratory testing during our field investigation an R-Value of 27 and an assumed 78 R-Value for the subgrade soil and base materials, respectively, for the purposes of this preliminary analysis. Table 7.11.1 presents the preliminary flexible pavement sections.

TABLE 7.11.1
PRELIMINARY FLEXIBLE PAVEMENT SECTION

Location	Assumed Traffic Index	Assumed Subgrade R-Value	Asphalt Concrete (inches)	Class 2 Aggregate Base (inches)
Parking stalls for automobiles and light-duty vehicles	5.0	27	3	6
Driveways for automobiles and light-duty vehicles	5.5	27	3	8
Medium truck traffic areas	6.0	27	3.5	9
Driveways for heavy truck traffic	7.0	27	4	10

7.11.2 Prior to placing base materials, the upper 12 inches of the subgrade soil should be scarified, moisture conditioned as necessary, and recompacted to a dry density of at least 95 percent of the laboratory maximum dry density near to slightly above optimum moisture content as determined by ASTM D 1557. Similarly, the base material should be compacted to a dry density of at least 95 percent of the laboratory maximum dry density near to slightly above optimum moisture content. Asphalt concrete should be compacted to a density of at least 95 percent of the laboratory Hveem density in accordance with ASTM D 2726.

7.11.3 A rigid Portland cement concrete (PCC) pavement section should be placed in roadway aprons and cross gutters. We calculated the rigid pavement section in general conformance with the procedure recommended by the American Concrete Institute report ACI 330R-08 Guide for Design and Construction of Concrete Parking Lots using the parameters presented in Table 7.11.2.

TABLE 7.11.2
RIGID PAVEMENT DESIGN PARAMETERS

Design Parameter	Design Value
Modulus of subgrade reaction, k	50 pci
Modulus of rupture for concrete, M_R	500 psi
Concrete Compressive Strength	3,000 psi
Traffic Category, TC	A and C
Average daily truck traffic, ADTT	10 and 100

7.11.4 Based on the criteria presented herein, the PCC pavement sections should have a minimum thickness as presented in Table 7.11.3.

TABLE 7.11.3
RIGID VEHICULAR PAVEMENT RECOMMENDATIONS

Location	Portland Cement Concrete (inches)
Automobile Parking Stalls (TC=A)	6.0
Driveways (TC=C)	7.5

7.11.5 The PCC vehicular pavement should be placed over subgrade soil that is compacted to a dry density of at least 95 percent of the laboratory maximum dry density near to slightly above optimum moisture content.

7.11.6 The rigid pavement should also be designed and constructed incorporating the parameters presented in Table 7.11.4.

TABLE 7.11.4
ADDITIONAL RIGID PAVEMENT RECOMMENDATIONS

Subject	Value
Thickened Edge	1.2 Times Slab Thickness
	Minimum Increase of 2 Inches
	4 Feet Wide
Crack Control Joint Spacing	30 Times Slab Thickness
	Max. Spacing of 12 feet for 5.5-Inch-Thick
	Max. Spacing of 15 Feet for Slabs 6 Inches and Thicker
Crack Control Joint Depth	Per ACI 330R-08
	1 Inch Using Early-Entry Saws on Slabs Less Than 9 Inches Thick
Crack Control Joint Width	¼-Inch for Sealed Joints
	⅜-Inch is Common for Sealed Joints
	$^{1}/_{10}$- to $^{1}/_{8}$-Inch is Common for Unsealed Joints

7.11.7 Reinforcing steel will not be necessary within the concrete for geotechnical purposes with the possible exception of dowels at construction joints as discussed herein.

7.11.8 To control the location and spread of concrete shrinkage cracks, crack-control joints (weakened plane joints) should be included in the design of the concrete pavement slab. Crack-control joints should be sealed with an appropriate sealant to prevent the migration of water through the control joint to the subgrade materials. The depth of the crack-control joints should be determined by the referenced ACI report.

7.11.9 To provide load transfer between adjacent pavement slab sections, a butt-type construction joint should be constructed. The butt-type joint should be thickened by at least 20 percent at the edge and taper back at least 4 feet from the face of the slab. As an alternative to the butt-type construction joint, dowelling can be used between construction joints for pavements of 7 inches or thicker. As discussed in the referenced ACI guide, dowels should consist of smooth, 1-inch-diameter reinforcing steel 14 inches long embedded a minimum of 6 inches into the slab on either side of the construction joint. Dowels should be located at the midpoint of the slab, spaced at 12 inches on center and lubricated to allow joint movement while still transferring loads. In addition, tie bars should be installed as recommended in Section 3.8.3 of the referenced ACI guide. The structural engineer should provide other alternative recommendations for load transfer.

7.11.10 Concrete curb/gutter should be placed on soil subgrade compacted to a dry density of at least 90 percent of the laboratory maximum dry density near to slightly above optimum moisture content. Cross-gutters that receives vehicular should be placed on subgrade soil compacted to a dry density of at least 95 percent of the laboratory maximum dry density near to slightly above optimum moisture content. Base materials should not be placed below the curb/gutter, or cross-gutters so water is not able to migrate from the adjacent parkways to the pavement sections. Where flatwork is located directly adjacent to the curb/gutter, the concrete flatwork should be structurally connected to the curbs to help reduce the potential for offsets between the curbs and the flatwork.

7.12 Site Drainage and Moisture Protection

7.12.1 Adequate site drainage is critical to reduce the potential for differential soil movement, erosion and subsurface seepage. Under no circumstances should water be allowed to pond adjacent to footings. The site should be graded and maintained such that surface drainage is directed away from structures in accordance with 2019 CBC 1804.4 or other applicable standards. In addition, surface drainage should be directed away from the top of slopes into swales or other controlled drainage devices. Roof and pavement drainage should be directed into conduits that carry runoff away from the proposed structure.

7.12.2 Underground utilities should be leak free. Utility and irrigation lines should be checked periodically for leaks, and detected leaks should be repaired promptly. Detrimental soil movement could occur if water is allowed to infiltrate the soil for prolonged periods of time.

7.12.3 Landscaping planters adjacent to paved areas are not recommended due to the potential for surface or irrigation water to infiltrate the pavement's subgrade and base course. Area drains to collect excess irrigation water and transmit it to drainage structures or impervious above-grade planter boxes can be used. In addition, where landscaping is planned adjacent to the pavement, construction of a cutoff wall along the edge of the pavement that extends at least 6 inches below the bottom of the base material should be considered.

7.12.4 We should prepare a storm water management investigation report for the planned storm water management devices and it is presented as a separate report.

7.12.5 We understand the BMP devices on the northeast portion of the site will consist of a level gravel trench that will allow water to overflow the face of the slope and collect within an existing concrete brow ditch about 2 to 4 feet lower than the gravel trench. Some erosion should be expected in this area due to the flow of water over the slope face. Routine maintenance will likely be required for the performance of the gravel trench and the concrete brow ditch.

7.13 Grading and Foundation Plan Review

7.13.1 Geocon Incorporated should review the grading and building foundation plans for the project prior to final design submittal to evaluate if additional analyses and/or recommendations are required.

7.14 Testing and Observation Services During Construction

7.14.1 Geocon Incorporated should provide geotechnical testing and observation services during the grading operations, foundation construction, utility installation, retaining wall backfill and pavement installation. Table 7.14 presents the typical geotechnical observations we would expect for the proposed improvements.

TABLE 7.14
EXPECTED GEOTECHNICAL TESTING AND OBSERVATION SERVICES

Construction Phase	Observations	Expected Time Frame
Grading	Base of Removal	Part Time During Removals
	Geologic Logging	Part Time to Full Time
	Fill Placement and Soil Compaction Operations	Full Time
Foundations	Foundation Excavation Observations	Part Time
Utility Backfill	Fill Placement and Soil Compaction Operations	Part Time to Full Time
Retaining Wall Backfill	Fill Placement and Soil Compaction Operations	Part Time to Full Time
Subgrade for Sidewalks, Curb/Gutter and Pavement	Soil Compaction Operations	Part Time
Pavement Construction	Base Placement and Compaction	Part Time
	Asphalt Concrete Placement and Compaction	Full Time

LIMITATIONS AND UNIFORMITY OF CONDITIONS

1. The firm that performed the geotechnical investigation for the project should be retained to provide testing and observation services during construction to provide continuity of geotechnical interpretation and to check that the recommendations presented for geotechnical aspects of site development are incorporated during site grading, construction of improvements, and excavation of foundations. If another geotechnical firm is selected to perform the testing and observation services during construction operations, that firm should prepare a letter indicating their intent to assume the responsibilities of project geotechnical engineer of record. A copy of the letter should be provided to the regulatory agency for their records. In addition, that firm should provide revised recommendations concerning the geotechnical aspects of the proposed development, or a written acknowledgement of their concurrence with the recommendations presented in our report. They should also perform additional analyses deemed necessary to assume the role of Geotechnical Engineer of Record.

2. The recommendations of this report pertain only to the site investigated and are based on the assumption that the soil conditions do not deviate from those disclosed in the investigation. If any variations or undesirable conditions are encountered during construction, or if the proposed construction will differ from that anticipated herein, Geocon Incorporated should be notified so that supplemental recommendations can be given. The evaluation or identification of the potential presence of hazardous or corrosive materials was not part of the scope of services provided by Geocon Incorporated.

3. This report is issued with the understanding that it is the responsibility of the owner or their representative to ensure that the information and recommendations contained herein are brought to the attention of the architect and engineer for the project and incorporated into the plans, and the necessary steps are taken to see that the contractor and subcontractors carry out such recommendations in the field.

4. The findings of this report are valid as of the present date. However, changes in the conditions of a property can occur with the passage of time, whether they be due to natural processes or the works of man on this or adjacent properties. In addition, changes in applicable or appropriate standards may occur, whether they result from legislation or the broadening of knowledge. Accordingly, the findings of this report may be invalidated wholly or partially by changes outside our control. Therefore, this report is subject to review and should not be relied upon after a period of three years.

GEOCON LEGEND

Qvop	........VERY OLD PARALIC DEPOSITS
Tt	........TORREY SANDSTONE (Dotted Where Buried)
T-11 ▬	........APPROX. LOCATION OF EXPLORATORY TRENCH
I-4 ◉	........APPROX. LOCATION OF INFILTRATION TEST
B-4 ⌖	........APPROX. LOCATION OF DRY WELL INFILTRATION TEST
(1.0')	........APPROX. DEPTH TO FORMATIONAL MATERIALS (In Feet)
2 ⎿⏌ 2'	........APPROX. LOCATION OF GEOLOGIC CROSS SECTIONS

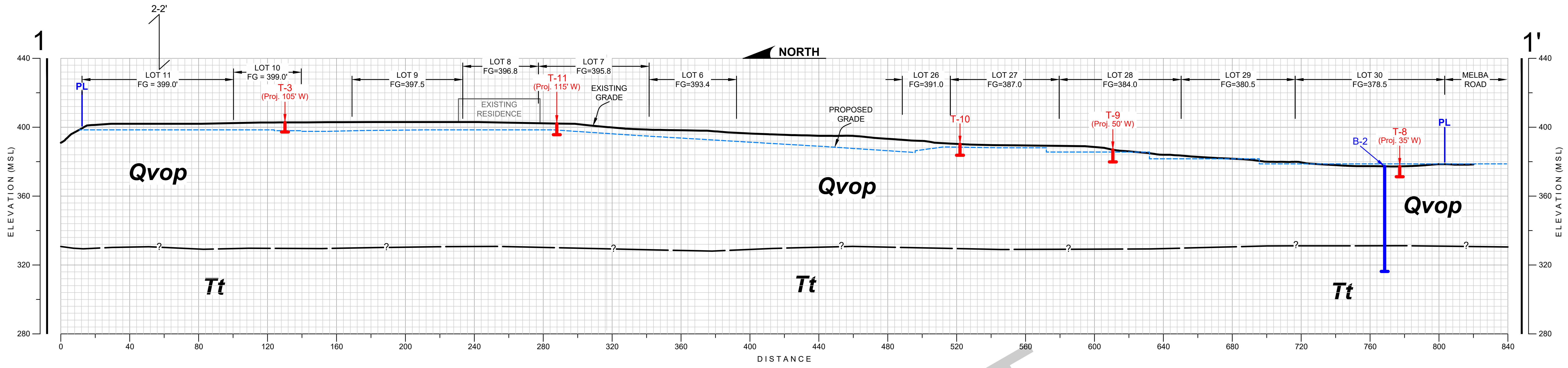
GEOLOGIC MAP

TORREY CREST
1220 - 1240 MELBA ROAD AND 1190 ISLAND VIEW LANE
ENCINITAS, CALIFORNIA

GEOCON
INCORPORATED
GEOTECHNICAL ■ ENVIRONMENTAL ■ MATERIALS
6960 FLANDERS DRIVE - SAN DIEGO, CALIFORNIA 92121 - 2974
PHONE 858 558-6900 - FAX 858 558-6159

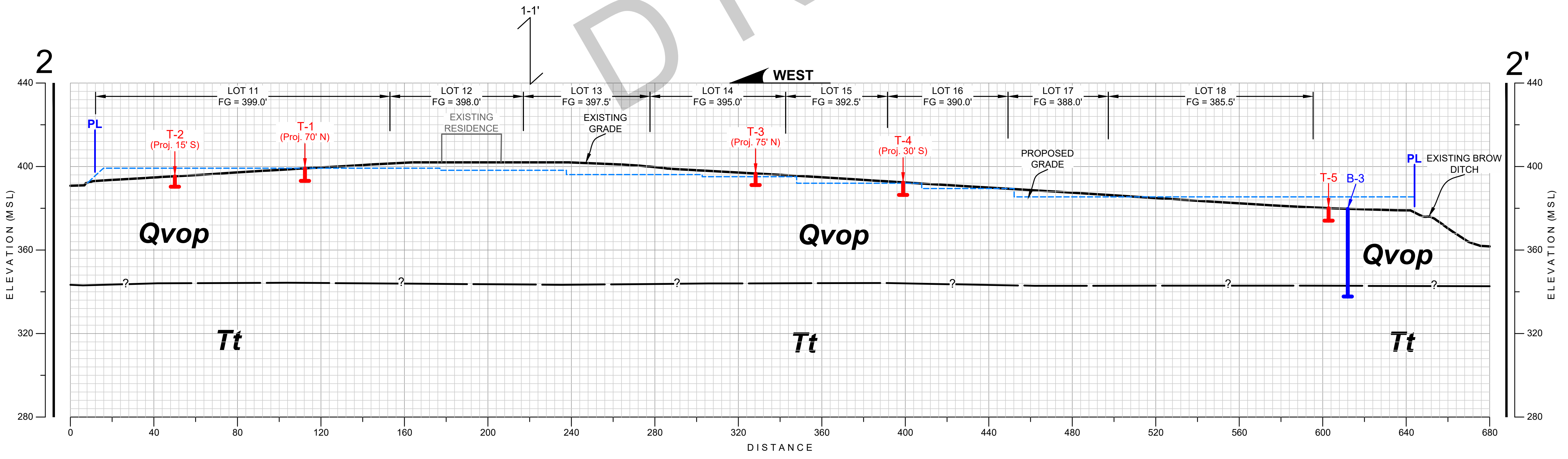
SCALE 1" = 40'
DATE 05 - 03 - 2022
PROJECT NO. G2438 - 52 - 01
FIGURE 1
SHEET 1 OF 1

Plotted:05/02/2022 2:25PM | By:ALVIN LADRILLONO | File Location:W:\1_GEOTECH\G2000\G2438-52-01\2022-03-21\G2438-52-01 Geo Map.30.dwg



GEOLOGIC CROSS-SECTION 1-1'

SCALE: 1" = 40' (Vert. = Horiz.)



GEOLOGIC CROSS-SECTION 2-2'

SCALE: 1" = 40' (Vert. = Horiz.)

GEOCON LEGEND

Qvop........VERY OLD PARALIC DEPOSITS

Tt........TORREY SANDSTONE

T-11 ┸........APPROX. LOCATION OF EXPLORATORY TRENCH

B-3 ┸........APPROX. LOCATION OF BORING

⁓?⁓........APPROX. LOCATION OF GEOLOGIC CONTACT
(Queried Where Uncertain)

GEOLOGIC CROSS - SECTIONS

TORREY CREST
1220 - 1240 MELBA ROAD AND 1190 ISLAND VIEW LANE
ENCINITAS, CALIFORNIA

GEOCON
INCORPORATED
GEOTECHNICAL ■ ENVIRONMENTAL ■ MATERIALS
6960 FLANDERS DRIVE - SAN DIEGO, CALIFORNIA 92121 - 2974
PHONE 858 558-6900 - FAX 858 558-6159

SCALE 1" = 40'
DATE 05 - 03 - 2022
PROJECT NO. G2438 - 52 - 01
FIGURE 2
SHEET 1 OF 1

Plotted:05/02/2022 2:30PM | By:ALVIN LADRILLONO | File Location:W:\1_GEOTECH\G2000\G2438-52-01\2022-03-21\G2438-52-01 XSections.30.dwg

APPENDIX A

APPENDIX A

FIELD INVESTIGATION

We performed our field investigation on August 30, 2019, consisting of the excavation of 14 backhoe trenches. The backhoe trenches were excavated to a maximum depth of 7 feet using a John Deer 310 rubber-tire backhoe equipped with 24-inch wide bucket. During the trenching operations, we logged and sampled the soil and geologic conditions encountered. The infiltration-test borings (I-1 through I-4) were hand-augured to a depth of approximately 4 feet Additionally, we performed drilling operations on June 16, 2021, through June 18, 2021.The Geologic Map, Figure 1, shows the approximate locations of the exploratory trenches, and borings. The boring and trench logs are presented in this Appendix. We located the borings and trenches in the field using a measuring tape and existing reference points; therefore, actual boring locations may deviate slightly. The geotechnical borings were drilled to a depth of approximately 60 to 66½ feet below existing grade using a Marl 5 and Marl 10 drill rig equipped with hollow-stem augers.

We obtained samples during our subsurface exploration in the borings using a Standard Penetration Test (SPT) sampler that are composed of steel and are driven to obtain samples. The SPT sampler has an inside diameter of 1.5 inches and an outside diameter of 2 inches. We obtained ring samples at appropriate intervals, placed them in moisture-tight containers, and transported them to the laboratory for testing. The type of sample is noted on the exploratory boring logs.

The samplers were driven 12 inches. The sampler is connected to A rods and driven into the bottom of the excavation using a 140-pound hammer with a 30-inch drop. Blow counts are recorded for every 6 inches the sampler is driven. The penetration resistances shown on the boring logs are shown in terms of blows per foot. The values indicated on the boring logs are the sum of the last 12 inches of the sampler. If the sampler was not driven for 12 inches, an approximate value is calculated in term of blows per foot or the final 6-inch interval is reported. These values are not to be taken as N-values as adjustments have not been applied. We estimated elevations shown on the boring logs either from a topographic map or by using a benchmark. Each excavation was backfilled as noted on the boring logs.

We visually examined, classified, and logged the soil encountered in the borings in general accordance with American Society for Testing and Materials (ASTM) practice for Description and Identification of Soils (Visual-Manual Procedure D 2488). The logs depict the soil and geologic conditions observed and the depth at which samples were obtained.

PROJECT NO. G2438-52-01

BORING B 1

ELEV. (MSL.) **376'** DATE COMPLETED **06-16-2021**

EQUIPMENT **MARL 10 W/ 8" HSA** BY: **M. ERTWINE**

DEPTH IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	MATERIAL DESCRIPTION	PENETRATION RESISTANCE (BLOWS/FT.)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
0				SM	**VERY OLD PARALIC DEPOSITS (Qvop)** Loose, dry, reddish brown, Silty SAND			
2					Dense, damp, light reddish brown, Silty, fine SAND			
4								
6								
8					-Becomes very dense			
10								
12								
14								
16								
18								
20					-Excavates to a silty to clayey fine sand			
22								
24								
26								
28								
30	B1-1			SM	Dense to medium dense, damp, reddish brown, Silty, fine to medium SAND	40		
32								
34								
36								
38								

Figure A-1,
Log of Boring B 1, Page 1 of 2

G2438-52-01.GPJ

SAMPLE SYMBOLS

▢ ... SAMPLING UNSUCCESSFUL	◧ ... STANDARD PENETRATION TEST	■ ... DRIVE SAMPLE (UNDISTURBED)
▩ ... DISTURBED OR BAG SAMPLE	◪ ... CHUNK SAMPLE	▼ ... WATER TABLE OR ▽ ... SEEPAGE

NOTE: THE LOG OF SUBSURFACE CONDITIONS SHOWN HEREON APPLIES ONLY AT THE SPECIFIC BORING OR TRENCH LOCATION AND AT THE DATE INDICATED. IT IS NOT WARRANTED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES.

PROJECT NO. G2438-52-01

BORING B 1

ELEV. (MSL.) **376'** DATE COMPLETED **06-16-2021**

EQUIPMENT **MARL 10 W/ 8" HSA** BY: **M. ERTWINE**

DEPTH IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	MATERIAL DESCRIPTION	PENETRATION RESISTANCE (BLOWS/FT.)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
40	B1-2				-Trace gravel clasts	30		
42								
44								
46								
48								
50	B1-3					68		
					TORREY SANDSTONE (Tt) Very dense, damp, light yellowish brown, Silty, fine grained SAND; trace gravel			
52								
54								
56								
58								
60				SM	Very dense, damp, yellowish brown, Silty, fine-grained SANDSTONE	95/10"		

REFUSAL AT 60.9 FEET
No groundwater
Backfilled with 21 ft³ of bentonite

Figure A-1,
Log of Boring B 1, Page 2 of 2

SAMPLE SYMBOLS

- ▨ ... SAMPLING UNSUCCESSFUL
- ◧ ... STANDARD PENETRATION TEST
- ■ ... DRIVE SAMPLE (UNDISTURBED)
- ⊠ ... DISTURBED OR BAG SAMPLE
- ◩ ... CHUNK SAMPLE
- ▼ ... WATER TABLE OR ▽ ... SEEPAGE

PROJECT NO. G2438-52-01

BORING B 2

ELEV. (MSL.) **380'** DATE COMPLETED **06-16-2021**

EQUIPMENT **MARL 10 W/ 8" HSA** BY: **M. ERTWINE**

DEPTH IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	MATERIAL DESCRIPTION	PENETRATION RESISTANCE (BLOWS/FT.)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
0					**VERY OLD PARALIC DEPOSITS (Qvop)** Medium dense to dense, moist, reddish brown, Silty, fine to medium SAND			
2								
4								
6								
8								
10								
12								
14								
16								
18								
20								
22								
24								
26								
28								
30					-Massive			
32								
34								
36								
38								

Figure A-2,
Log of Boring B 2, Page 1 of 2

SAMPLE SYMBOLS			
	▨ ... SAMPLING UNSUCCESSFUL	◧ ... STANDARD PENETRATION TEST	■ ... DRIVE SAMPLE (UNDISTURBED)
	⊠ ... DISTURBED OR BAG SAMPLE	◪ ... CHUNK SAMPLE	▼ ... WATER TABLE OR ▽ ... SEEPAGE

NOTE: THE LOG OF SUBSURFACE CONDITIONS SHOWN HEREON APPLIES ONLY AT THE SPECIFIC BORING OR TRENCH LOCATION AND AT THE DATE INDICATED. IT IS NOT WARRANTED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES.

PROJECT NO. G2438-52-01

BORING B 2

ELEV. (MSL.) **380'** DATE COMPLETED **06-16-2021**

EQUIPMENT **MARL 10 W/ 8" HSA** BY: **M. ERTWINE**

DEPTH IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	MATERIAL DESCRIPTION	PENETRATION RESISTANCE (BLOWS/FT.)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
40								
42								
44								
46								
48								
50	B2-1				-Becomes moist, very dense	79		
52								
54								
	B2-2				**TORREY SANDSTONE (Tt)** Dense, moist, yellowish brown, Silty, fine-to-coarse-grained SANDSTONE	51		
56								
58								
60								
62								
64					Very dense, moist, light yellowish to grayish brown, Silty, fine-to medium-grained SANDSTONE	82/11"		
66								
					BORING TERMINATED AT 66.4 FEET No groundwater Backfilled with 23 ft³ of bentonite grout			

Figure A-2,
Log of Boring B 2, Page 2 of 2

G2438-52-01.GPJ

SAMPLE SYMBOLS

▨ ... SAMPLING UNSUCCESSFUL

◧ ... STANDARD PENETRATION TEST

■ ... DRIVE SAMPLE (UNDISTURBED)

⊠ ... DISTURBED OR BAG SAMPLE

◪ ... CHUNK SAMPLE

▼ ... WATER TABLE OR ▽ ... SEEPAGE

NOTE: THE LOG OF SUBSURFACE CONDITIONS SHOWN HEREON APPLIES ONLY AT THE SPECIFIC BORING OR TRENCH LOCATION AND AT THE DATE INDICATED. IT IS NOT WARRANTED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES.

PROJECT NO. G2438-52-01

BORING B 3

ELEV. (MSL.) **380'** DATE COMPLETED **06-17-2021**

EQUIPMENT **MARL 5 W/ 8" HSA** BY: **M. ERTWINE**

DEPTH IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	MATERIAL DESCRIPTION	PENETRATION RESISTANCE (BLOWS/FT.)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
0					**VERY OLD PARALIC DEPOSITS (Qvop)** Loose, dry, reddish brown, Silty, fine SAND			
2								
4								
6								
8								
10					-Becomes very dense, excavates to a light reddish brown, silty, fine to medium sand			
12								
14								
16								
18								
20								
22								
24								
26								
28								
30	B3-1				Very dense to dense, moist, reddish brown, Silty to Clayey, fine to medium SAND	79		
32								
34								
36								
38								

Figure A-3,
Log of Boring B 3, Page 1 of 2

G2438-52-01.GPJ

SAMPLE SYMBOLS

▢ ... SAMPLING UNSUCCESSFUL	◧ ... STANDARD PENETRATION TEST	■ ... DRIVE SAMPLE (UNDISTURBED)
▩ ... DISTURBED OR BAG SAMPLE	◪ ... CHUNK SAMPLE	▼ ... WATER TABLE OR ▽ ... SEEPAGE

NOTE: THE LOG OF SUBSURFACE CONDITIONS SHOWN HEREON APPLIES ONLY AT THE SPECIFIC BORING OR TRENCH LOCATION AND AT THE DATE INDICATED. IT IS NOT WARRANTED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES.

GEOCON

PROJECT NO. G2438-52-01

BORING B 3

ELEV. (MSL.) **380'** DATE COMPLETED **06-17-2021**

EQUIPMENT **MARL 5 W/ 8" HSA** BY: **M. ERTWINE**

DEPTH IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	MATERIAL DESCRIPTION	PENETRATION RESISTANCE (BLOWS/FT.)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
40	B3-2					37		
42								
44								
46								
48								
50	B3-3				Very dense, moist, reddish brown, Silty to Clayey, fine to coarse SAND; trace gravel	65/11"		
					TORREY SANDSTONE (Tt) Dense, moist, light yellowish to gray brown, Silty, fine-grained SANDSTONE			
52								
54								
56								
58								
60	B3-4					85/9"		

BORING TERMINATED AT 61.3 FEET
No groundwater
Backfilled with 21 ft³ of bentonite grout

**Figure A-3,
Log of Boring B 3, Page 2 of 2**

G2438-52-01.GPJ

SAMPLE SYMBOLS

▨ ... SAMPLING UNSUCCESSFUL
◧ ... STANDARD PENETRATION TEST
■ ... DRIVE SAMPLE (UNDISTURBED)
⊠ ... DISTURBED OR BAG SAMPLE
◪ ... CHUNK SAMPLE
▼ ... WATER TABLE OR ▽ ... SEEPAGE

NOTE: THE LOG OF SUBSURFACE CONDITIONS SHOWN HEREON APPLIES ONLY AT THE SPECIFIC BORING OR TRENCH LOCATION AND AT THE DATE INDICATED. IT IS NOT WARRANTED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES.

GEOCON

BORING B 4

ELEV. (MSL.) **380'** DATE COMPLETED **06-18-2021**

EQUIPMENT **MARL 5 W/ 8" HSA** BY: **M. ERTWINE**

DEPTH IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	MATERIAL DESCRIPTION	PENETRATION RESISTANCE (BLOWS/FT.)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
0					**VERY OLD PARALIC DEPOSITS (Tt)** Medium dense, moist, reddish brown, Silty fine to medium SAND			
2								
4								
6					-Becomes very dense			
8								
10								
12								
14								
16								
18								
20					-Massive			
22								
24								
26								
28								
30								
32								
34								
36								
38								

Figure A-4,
Log of Boring B 4, Page 1 of 2

SAMPLE SYMBOLS			
	▨ ... SAMPLING UNSUCCESSFUL	◧ ... STANDARD PENETRATION TEST	■ ... DRIVE SAMPLE (UNDISTURBED)
	⊠ ... DISTURBED OR BAG SAMPLE	◪ ... CHUNK SAMPLE	▼ ... WATER TABLE OR ▽ ... SEEPAGE

NOTE: THE LOG OF SUBSURFACE CONDITIONS SHOWN HEREON APPLIES ONLY AT THE SPECIFIC BORING OR TRENCH LOCATION AND AT THE DATE INDICATED. IT IS NOT WARRANTED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES.

GEOCON

BORING B 4

ELEV. (MSL.) **380'** DATE COMPLETED **06-18-2021**

EQUIPMENT **MARL 5 W/ 8" HSA** BY: **M. ERTWINE**

DEPTH IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	MATERIAL DESCRIPTION	PENETRATION RESISTANCE (BLOWS/FT.)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
40								
42								
44								
46								
48								
50	B4-1			SC	Very dense, moist, dark reddish brown, Clayey, fine to coarse SAND	88		
52								
54								
				SM	**TORREY SANDSTONE (Tt)** Very dense, moist, light yellowish to grayish brown, Silty fine grained SANDSTONE			
56								
58								
60	B4-2					72/10"		
62								
64								

BORING TERMINATED AT 65 FEET
No groundwater
Backfilled with 22 ft³ of bentonite grout

Figure A-4,
Log of Boring B 4, Page 2 of 2

SAMPLE SYMBOLS

- ▨ ... SAMPLING UNSUCCESSFUL
- ☒ ... DISTURBED OR BAG SAMPLE
- ◧ ... STANDARD PENETRATION TEST
- ◩ ... CHUNK SAMPLE
- ■ ... DRIVE SAMPLE (UNDISTURBED)
- ▼ ... WATER TABLE OR ▽ ... SEEPAGE

NOTE: THE LOG OF SUBSURFACE CONDITIONS SHOWN HEREON APPLIES ONLY AT THE SPECIFIC BORING OR TRENCH LOCATION AND AT THE DATE INDICATED. IT IS NOT WARRANTED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES.

PROJECT NO. G2438-52-01

TRENCH T 1

ELEV. (MSL.) 399' DATE COMPLETED 08-30-2019

EQUIPMENT JD 310 BACKHOE BY: M. ERTWINE

DEPTH IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	MATERIAL DESCRIPTION	PENETRATION RESISTANCE (BLOWS/FT.)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
0				SM	**TOPSOIL** Loose, dry, grayish brown, Silty SAND; few organics			
	T1-1 ▨			SM	**VERY OLD PARALIC DEPOSITS (Qvop)** Medium dense, moist, reddish brown, Silty, fine grained SANDSTONE; friable; highly weathered; weakly cemented; trace rootlets			
2								
4	T1-2 ■			SM	Dense, moist, yellowish to reddish brown, Silty, fine- to medium-grained SANDSTONE; moderately weathered; moderately to strongly cemented		122.7	7.2
6					TRENCH TERMINATED AT 6 FEET Groundwater not encountered			

Figure A-1,
Log of Trench T 1, Page 1 of 1

G2438-52-01.GPJ

SAMPLE SYMBOLS	☐ ... SAMPLING UNSUCCESSFUL	◧ ... STANDARD PENETRATION TEST	■ ... DRIVE SAMPLE (UNDISTURBED)
	▨ ... DISTURBED OR BAG SAMPLE	◪ ... CHUNK SAMPLE	▼ ... WATER TABLE OR ▽ ... SEEPAGE

NOTE: THE LOG OF SUBSURFACE CONDITIONS SHOWN HEREON APPLIES ONLY AT THE SPECIFIC BORING OR TRENCH LOCATION AND AT THE DATE INDICATED. IT IS NOT WARRANTED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES.

PROJECT NO. G2438-52-01

TRENCH T 2

ELEV. (MSL.) **395'** DATE COMPLETED **08-30-2019**

EQUIPMENT **JD 310 BACKHOE** BY: **M. ERTWINE**

DEPTH IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	MATERIAL DESCRIPTION	PENETRATION RESISTANCE (BLOWS/FT.)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
0				SM	**TOPSOIL** Loose, dry, yellowish brown, Silty, fine SAND; trace organics			
				SM	**VERY OLD PARALIC DEPOSITS (Qvop)** Medium dense to dense, damp, light reddish brown, Silty, fine- to medium-grained SANDSTONE; highly weathered; weakly cemented; trace rootlets			
	T2-1 ▨							
2								
4	T2-2 ▨				-Becomes moderately weathered, moderately to strongly cemented		118.1	6.2
					PRACTICAL REFUSAL AT 5 FEET Groundwater not encountered			

Figure A-2,
Log of Trench T 2, Page 1 of 1

G2438-52-01.GPJ

SAMPLE SYMBOLS			
	☐ ... SAMPLING UNSUCCESSFUL	◧ ... STANDARD PENETRATION TEST	■ ... DRIVE SAMPLE (UNDISTURBED)
	▨ ... DISTURBED OR BAG SAMPLE	◪ ... CHUNK SAMPLE	▼ ... WATER TABLE OR ▽ ... SEEPAGE

NOTE: THE LOG OF SUBSURFACE CONDITIONS SHOWN HEREON APPLIES ONLY AT THE SPECIFIC BORING OR TRENCH LOCATION AND AT THE DATE INDICATED. IT IS NOT WARRANTED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES.

GEOCON

PROJECT NO. G2438-52-01

TRENCH T 3

ELEV. (MSL.) **397'** DATE COMPLETED **08-30-2019**

EQUIPMENT **JD 310 BACKHOE** BY: **M. ERTWINE**

DEPTH IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	MATERIAL DESCRIPTION	PENETRATION RESISTANCE (BLOWS/FT.)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
0				SM	**TOPSOIL** Loose, dry, yellowish brown, Silty, fine SAND; trace organics			
				SM	**VERY OLD PARALIC DEPOSITS (Qvop)** Medium dense, damp, yellowish brown, Silty, fine grained SANDSTONE; highly weathered; weakly cemented; trace rootlets; few krotovina			
	T3-1 ☒							
2								
4					-Becomes dense, reddish brown; moderately cemented			
					-Becomes strongly cemented			
					PRACTICAL REFUSAL AT 5 FEET Groundwater not encountered			

Figure A-3,
Log of Trench T 3, Page 1 of 1

G2438-52-01.GPJ

SAMPLE SYMBOLS

- ▢ ... SAMPLING UNSUCCESSFUL
- ◧ ... STANDARD PENETRATION TEST
- ■ ... DRIVE SAMPLE (UNDISTURBED)
- ☒ ... DISTURBED OR BAG SAMPLE
- ◪ ... CHUNK SAMPLE
- ▼ ... WATER TABLE OR ▽ ... SEEPAGE

NOTE: THE LOG OF SUBSURFACE CONDITIONS SHOWN HEREON APPLIES ONLY AT THE SPECIFIC BORING OR TRENCH LOCATION AND AT THE DATE INDICATED. IT IS NOT WARRANTED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES.

PROJECT NO. G2438-52-01

DEPTH IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	**TRENCH T 4** ELEV. (MSL.) **392'** DATE COMPLETED **08-30-2019** EQUIPMENT **JD 310 BACKHOE** BY: **M. ERTWINE**	PENETRATION RESISTANCE (BLOWS/FT.)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
					MATERIAL DESCRIPTION			
0				SM	**TOPSOIL** Loose, moist, yellowish brown, Silty, fine SAND; trace debris and organics			
				SM	**VERY OLD PARALIC DEPOSITS (Qvop)** Medium dense, damp, yellowish to reddish brown, Silty, fine grained SANDSTONE; trace rootlets; highly weathered; weakly cemented			
2								
					-Becomes dense, moist, reddish to grayish brown, fine- to medium-grained; moderately weathered; moderately cemented			
4								
6					PRACTICAL REFUSAL AT 6 FEET Groundwater not encountered			

Figure A-4,
Log of Trench T 4, Page 1 of 1

G2438-52-01.GPJ

SAMPLE SYMBOLS			
	▢ ... SAMPLING UNSUCCESSFUL	◧ ... STANDARD PENETRATION TEST	■ ... DRIVE SAMPLE (UNDISTURBED)
	⊠ ... DISTURBED OR BAG SAMPLE	◩ ... CHUNK SAMPLE	▼ ... WATER TABLE OR ▽ ... SEEPAGE

NOTE: THE LOG OF SUBSURFACE CONDITIONS SHOWN HEREON APPLIES ONLY AT THE SPECIFIC BORING OR TRENCH LOCATION AND AT THE DATE INDICATED. IT IS NOT WARRANTED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES.

PROJECT NO. G2438-52-01

TRENCH T 5

ELEV. (MSL.) **380'** DATE COMPLETED **08-30-2019**

EQUIPMENT **JD 310 BACKHOE** BY: **M. ERTWINE**

DEPTH IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	MATERIAL DESCRIPTION	PENETRATION RESISTANCE (BLOWS/FT.)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
0	T5-1 ☒			SM	**TOPSOIL** Loose, moist, yellowish brown, Silty SAND; trace organics			
2				SM	**VERY OLD PARALIC DEPOSITS (Qvop)** Medium dense, moist, light reddish brown, Silty, fine grained SANDSTONE; highly weathered; weakly cemented; trace rootlets			
	T5-2			SC	Dense, moist, light reddish brown mottled with grayish brown, Clayey, fine to medium SANDSTONE; moderately weathered			
4				SM	Dense, moist, reddish brown, Silty, fine- to medium-grained SANDSTONE; moderately weathered, moderately to strongly cemented			
	T5-3 ■						127.0	7.4
6					PRACTICAL REFUSAL AT 6 FEET Groundwater not encountered			

Figure A-5,
Log of Trench T 5, Page 1 of 1

G2438-52-01.GPJ

SAMPLE SYMBOLS			
	☐ ... SAMPLING UNSUCCESSFUL	◧ ... STANDARD PENETRATION TEST	■ ... DRIVE SAMPLE (UNDISTURBED)
	☒ ... DISTURBED OR BAG SAMPLE	◪ ... CHUNK SAMPLE	▼ ... WATER TABLE OR ▽ ... SEEPAGE

NOTE: THE LOG OF SUBSURFACE CONDITIONS SHOWN HEREON APPLIES ONLY AT THE SPECIFIC BORING OR TRENCH LOCATION AND AT THE DATE INDICATED. IT IS NOT WARRANTED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES.

GEOCON

PROJECT NO. G2438-52-01

TRENCH T 6

ELEV. (MSL.) **382'** DATE COMPLETED **08-30-2019**

EQUIPMENT **JD 310 BACKHOE** BY: **M. ERTWINE**

DEPTH IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	MATERIAL DESCRIPTION	PENETRATION RESISTANCE (BLOWS/FT.)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
0	T6-1			SM	**TOPSOIL** Loose, dry, yellowish brown, Silty, fine SAND; trace organics			
				SM	**VERY OLD PARALIC DEPOSITS (Qvop)** Medium dense, moist, light reddish brown, Silty, fine grained SANDSTONE; highly weathered; weakly cemented; trace rootlets			
2								
				SC	Dense, moist, reddish mottled grayish brown, Clayey, fine to medium SANDSTONE; moderately weathered; moderately cemented			
				SM	Dense, moist, reddish brown, Silty, fine- to medium-grained SANDSTONE; moderately weathered; strongly cemented			
4								
					PRACTICAL REFUSAL AT 5 FEET Groundwater not encountered			

Figure A-6,
Log of Trench T 6, Page 1 of 1

G2438-52-01.GPJ

SAMPLE SYMBOLS

- ☐ ... SAMPLING UNSUCCESSFUL
- ▨ ... DISTURBED OR BAG SAMPLE
- ◧ ... STANDARD PENETRATION TEST
- ◪ ... CHUNK SAMPLE
- ■ ... DRIVE SAMPLE (UNDISTURBED)
- ▼ ... WATER TABLE OR ▽ ... SEEPAGE

NOTE: THE LOG OF SUBSURFACE CONDITIONS SHOWN HEREON APPLIES ONLY AT THE SPECIFIC BORING OR TRENCH LOCATION AND AT THE DATE INDICATED. IT IS NOT WARRANTED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES.

PROJECT NO. G2438-52-01

TRENCH T 7

ELEV. (MSL.) 372' DATE COMPLETED 08-30-2019

EQUIPMENT JD 310 BACKHOE BY: M. ERTWINE

DEPTH IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	MATERIAL DESCRIPTION	PENETRATION RESISTANCE (BLOWS/FT.)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
0				SM	**TOPSOIL** Loose, moist, reddish brown, Silty, fine SAND; trace rootlets			
	T7-1	⊠		SM	**VERY OLD PARALIC DEPOSITS (Qvop)** Medium dense, damp, light reddish brown, Silty, fine grained SANDSTONE; highly weathered; weakly cemented; few rootlets			
2								
4	T7-2	⊠		SM	Dense, damp, reddish brown, Silty, fine grained SANDSTONE; moderately weathered; moderately to strongly cemented			
6					PRACTICAL REFUSAL AT 6 FEET Groundwater not encountered			

Figure A-7,
Log of Trench T 7, Page 1 of 1

G2438-52-01.GPJ

SAMPLE SYMBOLS

☐ ... SAMPLING UNSUCCESSFUL
◧ ... STANDARD PENETRATION TEST
■ ... DRIVE SAMPLE (UNDISTURBED)
⊠ ... DISTURBED OR BAG SAMPLE
◩ ... CHUNK SAMPLE
▼ ... WATER TABLE OR ▽ ... SEEPAGE

NOTE: THE LOG OF SUBSURFACE CONDITIONS SHOWN HEREON APPLIES ONLY AT THE SPECIFIC BORING OR TRENCH LOCATION AND AT THE DATE INDICATED. IT IS NOT WARRANTED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES.

GEOCON

PROJECT NO. G2438-52-01

TRENCH T 8

ELEV. (MSL.) **378'** DATE COMPLETED **08-30-2019**

EQUIPMENT **JD 310 BACKHOE** BY: **M. ERTWINE**

DEPTH IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	MATERIAL DESCRIPTION	PENETRATION RESISTANCE (BLOWS/FT.)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
0				SM	**TOPSOIL** Loose, moist, light brown, Silty, fine SAND; trace organics			
				SM	**VERY OLD PARALIC DEPOSITS (Qvop)** Medium dense, damp, light reddish brown, Silty, fine-grained SANDSTONE; highly weathered; weakly cemented			
2								
				SM/SC	Dense, moist, reddish brown, Silty to Clayey, fine- to medium-grained SANDSTONE; moderately weathered; moderately to strongly cemented			
4								
6					PRACTICAL REFUSAL AT 6 FEET Groundwater not encountered			

Figure A-8,
Log of Trench T 8, Page 1 of 1

G2438-52-01.GPJ

SAMPLE SYMBOLS

▢ ... SAMPLING UNSUCCESSFUL	◧ ... STANDARD PENETRATION TEST	■ ... DRIVE SAMPLE (UNDISTURBED)
☒ ... DISTURBED OR BAG SAMPLE	◪ ... CHUNK SAMPLE	▼ ... WATER TABLE OR ▽ ... SEEPAGE

NOTE: THE LOG OF SUBSURFACE CONDITIONS SHOWN HEREON APPLIES ONLY AT THE SPECIFIC BORING OR TRENCH LOCATION AND AT THE DATE INDICATED. IT IS NOT WARRANTED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES.

GEOCON

PROJECT NO. G2438-52-01

TRENCH T 9

ELEV. (MSL.) **388'** DATE COMPLETED **08-30-2019**

EQUIPMENT **JD 310 BACKHOE** BY: **M. ERTWINE**

DEPTH IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	MATERIAL DESCRIPTION	PENETRATION RESISTANCE (BLOWS/FT.)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
0				SM	**TOPSOIL** Loose, dry, yellowish brown, Silty, fine SAND; trace rootlets			
2	T9-1 ⊠			SM	**VERY OLD PARALIC DEPOSITS (Qvop)** Medium dense, damp, light reddish brown, Silty, fine-grained SANDSTONE; highly weathered; weakly cemented; trace rootlets			
4	T9-2 ⊠				-Becomes dense, reddish brown, fine- to medium-grained; moderately weathered; moderately cemented			
6					-Becomes mottled reddish to grayish brown; strongly cemented; difficult excavation			
	T9-3 ■						119.8	9.1
					PRACTICAL REFUSAL AT 7 FEET Groundwater not encountered			

Figure A-9,
Log of Trench T 9, Page 1 of 1

G2438-52-01.GPJ

SAMPLE SYMBOLS
- ▢ ... SAMPLING UNSUCCESSFUL
- ⊠ ... DISTURBED OR BAG SAMPLE
- ◧ ... STANDARD PENETRATION TEST
- ◩ ... CHUNK SAMPLE
- ■ ... DRIVE SAMPLE (UNDISTURBED)
- ▼ ... WATER TABLE OR ▽ ... SEEPAGE

NOTE: THE LOG OF SUBSURFACE CONDITIONS SHOWN HEREON APPLIES ONLY AT THE SPECIFIC BORING OR TRENCH LOCATION AND AT THE DATE INDICATED. IT IS NOT WARRANTED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES.

PROJECT NO. G2438-52-01

TRENCH T 10

ELEV. (MSL.) **390'** DATE COMPLETED **08-30-2019**

EQUIPMENT **JD 310 BACKHOE** BY: **M. ERTWINE**

DEPTH IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	MATERIAL DESCRIPTION	PENETRATION RESISTANCE (BLOWS/FT.)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
0				SM	**TOPSOIL** Loose, damp, yellowish brown, Silty, fine SAND;			
	T10-1	▨		SM	**VERY OLD PARALIC DEPOSITS (Qvop)** Medium dense, damp, light reddish brown, Silty, fine-grained SANDSTONE; highly weathered; weakly cemented; trace rootlets			
2					-Becomes dense, moist, reddish brown, fine- to medium-grained; moderately weathered; moderately cemented			
4								
6					-Becomes strongly cemented			
					PRACTICAL REFUSAL AT 6.5 FEET Groundwater not encountered			

Figure A-10,
Log of Trench T 10, Page 1 of 1

SAMPLE SYMBOLS	░ ... SAMPLING UNSUCCESSFUL	◧ ... STANDARD PENETRATION TEST	■ ... DRIVE SAMPLE (UNDISTURBED)
	▨ ... DISTURBED OR BAG SAMPLE	◩ ... CHUNK SAMPLE	▼ ... WATER TABLE OR ▽ ... SEEPAGE

NOTE: THE LOG OF SUBSURFACE CONDITIONS SHOWN HEREON APPLIES ONLY AT THE SPECIFIC BORING OR TRENCH LOCATION AND AT THE DATE INDICATED. IT IS NOT WARRANTED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES.

PROJECT NO. G2438-52-01

TRENCH T 11

ELEV. (MSL.) **395'** DATE COMPLETED **08-30-2019**

EQUIPMENT **JD 310 BACKHOE** BY: **M. ERTWINE**

DEPTH IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	MATERIAL DESCRIPTION	PENETRATION RESISTANCE (BLOWS/FT.)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
0	T11-1	☒		SM	**TOPSOIL** Loose, moist, yellowish brown, Silty, fine SAND; trace rootlets			
				SM	**VERY OLD PARALIC DEPOSITS (Qvop)** Medium dense, damp, light yellowish to reddish brown, Silty, fine- to medium-grained SANDSTONE; highly weathered; weakly cemented; trace rootlets			
2								
					-Becomes dense to very dense, moist, light reddish brown; moderately weathered; moderately to strongly cemented			
4								
6								
					PRACTICAL REFUSAL AT 6.5 FEET Groundwater not encountered			

Figure A-11,
Log of Trench T 11, Page 1 of 1

G2438-52-01.GPJ

SAMPLE SYMBOLS

▢ ... SAMPLING UNSUCCESSFUL
◧ ... STANDARD PENETRATION TEST
■ ... DRIVE SAMPLE (UNDISTURBED)
☒ ... DISTURBED OR BAG SAMPLE
◩ ... CHUNK SAMPLE
▼ ... WATER TABLE OR ▽ ... SEEPAGE

NOTE: THE LOG OF SUBSURFACE CONDITIONS SHOWN HEREON APPLIES ONLY AT THE SPECIFIC BORING OR TRENCH LOCATION AND AT THE DATE INDICATED. IT IS NOT WARRANTED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES.

APPENDIX B

APPENDIX B

LABORATORY TESTING

We performed laboratory tests in accordance with generally accepted test methods of the American Society for Testing and Materials (ASTM) or other suggested procedures. Selected soil samples were tested for in-place dry density/moisture content, maximum density/optimum moisture content, direct shear strength, expansion index, water-soluble sulfate, R-Value, unconfined compressive strength, and gradation characteristics. The results of our current laboratory tests are presented herein. The in-place dry density and moisture content of chunk samples tested are presented on the boring logs in Appendix A.

SUMMARY OF LABORATORY MAXIMUM DRY DENSITY AND OPTIMUM MOISTURE CONTENT TEST RESULTS
ASTM D 1557

Sample No.	Description (Geologic Unit)	Maximum Dry Density (pcf)	Optimum Moisture Content (% dry wt.)
T2-1	Reddish brown, Silty, fine to medium SAND	131.5	8.4
T7-1	Light reddish brown, Silty, fine to medium SAND	131.9	8.4

SUMMARY OF LABORATORY DIRECT SHEAR TEST RESULTS
ASTM D 3080

Sample No.	Depth (feet)	Geologic Unit	Dry Density (pcf)	Moisture Content (%)		Unit Peak [Ultimate[1]] Cohesion (psf)	Angle of Peak [Ultimate[1]] Shear Resistance (degrees)
				Initial	Final		
T2-1*	1-3	Qvop	118.1	8.8	13.3	650 [395]	31 [33]
T7-1*	1-3.5	Qvop	118.3	9.0	13.9	295 [380]	35 [30]

* Sample remolded to 90 percent the maximum dry density.

[1] End of test at about 0.25 inches of deflection.

SUMMARY OF LABORATORY EXPANSION INDEX TEST RESULTS
ASTM D 4829

Sample No.	Moisture Content (%)		Dry Density (pcf)	Expansion Index	2019 CBC Expansion Classification	ASTM Soil Expansion Classification
	Before Test	After Test				
T5-2	11.0	18.9	107.6	18	Non-Expansive	Very Low
T9-1	9.8	17.4	110.5	4	Non-Expansive	Very Low
T11-1	7.8	13.6	119.5	0	Non-Expansive	Very Low

SUMMARY OF LABORATORY WATER-SOLUBLE SULFATE TEST RESULTS
CALIFORNIA TEST NO. 417

Sample No.	Depth (feet)	Geologic Unit	Water-Soluble Sulfate (%)	ACI 318 Sulfate Exposure
B1-1	0-5	Qudf	0.004	S0
B5-1	0-5	Qudf	0.049	S0

SUMMARY OF LABORATORY RESISTANCE VALUE (R-VALUE) TEST RESULTS
ASTM D 2844

Sample No.	Depth (feet)	Description (Geologic Unit)	R-Value
T1-1	0.5 – 3	Reddish brown, Silty, fine SAND (Qvop)	27

SUMMARY OF LABORATORY UNCONFINED COMPRESSIVE STRENGTH TEST RESULTS
ASTM D 1558

Sample No.	Depth (feet)	Geologic Unit	Hand Penetrometer Reading/Unconfined Compression Strength (tsf) and Undrained Shear Strength (ksf)
T1-2	-4	Qvop	4.5+
T2-2	-4	Qvop	4.5+
T5-3	-5	Qvop	4.5+
T9-3	-6.5	Qvop	4.5+

APPENDIX C

APPENDIX C

RECOMMENDED GRADING SPECIFICATIONS

FOR

TORREY CREST
1220-1240 MELBA ROAD
ENCINITAS, CALIFORNIA

PROJECT NO. G2438-52-01

RECOMMENDED GRADING SPECIFICATIONS

1. GENERAL

1.1 These Recommended Grading Specifications shall be used in conjunction with the Geotechnical Report for the project prepared by Geocon. The recommendations contained in the text of the Geotechnical Report are a part of the earthwork and grading specifications and shall supersede the provisions contained hereinafter in the case of conflict.

1.2 Prior to the commencement of grading, a geotechnical consultant (Consultant) shall be employed for the purpose of observing earthwork procedures and testing the fills for substantial conformance with the recommendations of the Geotechnical Report and these specifications. The Consultant should provide adequate testing and observation services so that they may assess whether, in their opinion, the work was performed in substantial conformance with these specifications. It shall be the responsibility of the Contractor to assist the Consultant and keep them apprised of work schedules and changes so that personnel may be scheduled accordingly.

1.3 It shall be the sole responsibility of the Contractor to provide adequate equipment and methods to accomplish the work in accordance with applicable grading codes or agency ordinances, these specifications and the approved grading plans. If, in the opinion of the Consultant, unsatisfactory conditions such as questionable soil materials, poor moisture condition, inadequate compaction, and/or adverse weather result in a quality of work not in conformance with these specifications, the Consultant will be empowered to reject the work and recommend to the Owner that grading be stopped until the unacceptable conditions are corrected.

2. DEFINITIONS

2.1 **Owner** shall refer to the owner of the property or the entity on whose behalf the grading work is being performed and who has contracted with the Contractor to have grading performed.

2.2 **Contractor** shall refer to the Contractor performing the site grading work.

2.3 **Civil Engineer** or **Engineer of Work** shall refer to the California licensed Civil Engineer or consulting firm responsible for preparation of the grading plans, surveying and verifying as-graded topography.

2.4 **Consultant** shall refer to the soil engineering and engineering geology consulting firm retained to provide geotechnical services for the project.

2.5 **Soil Engineer** shall refer to a California licensed Civil Engineer retained by the Owner, who is experienced in the practice of geotechnical engineering. The Soil Engineer shall be responsible for having qualified representatives on-site to observe and test the Contractor's work for conformance with these specifications.

2.6 **Engineering Geologist** shall refer to a California licensed Engineering Geologist retained by the Owner to provide geologic observations and recommendations during the site grading.

2.7 **Geotechnical Report** shall refer to a soil report (including all addenda) which may include a geologic reconnaissance or geologic investigation that was prepared specifically for the development of the project for which these Recommended Grading Specifications are intended to apply.

3. MATERIALS

3.1 Materials for compacted fill shall consist of any soil excavated from the cut areas or imported to the site that, in the opinion of the Consultant, is suitable for use in construction of fills. In general, fill materials can be classified as *soil* fills, *soil-rock* fills or *rock* fills, as defined below.

3.1.1 **Soil fills** are defined as fills containing no rocks or hard lumps greater than 12 inches in maximum dimension and containing at least 40 percent by weight of material smaller than ¾ inch in size.

3.1.2 **Soil-rock fills** are defined as fills containing no rocks or hard lumps larger than 4 feet in maximum dimension and containing a sufficient matrix of soil fill to allow for proper compaction of soil fill around the rock fragments or hard lumps as specified in Paragraph 6.2. **Oversize rock** is defined as material greater than 12 inches.

3.1.3 **Rock fills** are defined as fills containing no rocks or hard lumps larger than 3 feet in maximum dimension and containing little or no fines. Fines are defined as material smaller than ¾ inch in maximum dimension. The quantity of fines shall be less than approximately 20 percent of the rock fill quantity.

3.2 Material of a perishable, spongy, or otherwise unsuitable nature as determined by the Consultant shall not be used in fills.

3.3 Materials used for fill, either imported or on-site, shall not contain hazardous materials as defined by the California Code of Regulations, Title 22, Division 4, Chapter 30, Articles 9 and 10; 40CFR; and any other applicable local, state or federal laws. The Consultant shall not be responsible for the identification or analysis of the potential presence of hazardous materials. However, if observations, odors or soil discoloration cause Consultant to suspect the presence of hazardous materials, the Consultant may request from the Owner the termination of grading operations within the affected area. Prior to resuming grading operations, the Owner shall provide a written report to the Consultant indicating that the suspected materials are not hazardous as defined by applicable laws and regulations.

3.4 The outer 15 feet of *soil-rock* fill slopes, measured horizontally, should be composed of properly compacted *soil* fill materials approved by the Consultant. *Rock* fill may extend to the slope face, provided that the slope is not steeper than 2:1 (horizontal:vertical) and a soil layer no thicker than 12 inches is track-walked onto the face for landscaping purposes. This procedure may be utilized provided it is acceptable to the governing agency, Owner and Consultant.

3.5 Samples of soil materials to be used for fill should be tested in the laboratory by the Consultant to determine the maximum density, optimum moisture content, and, where appropriate, shear strength, expansion, and gradation characteristics of the soil.

3.6 During grading, soil or groundwater conditions other than those identified in the Geotechnical Report may be encountered by the Contractor. The Consultant shall be notified immediately to evaluate the significance of the unanticipated condition.

4. CLEARING AND PREPARING AREAS TO BE FILLED

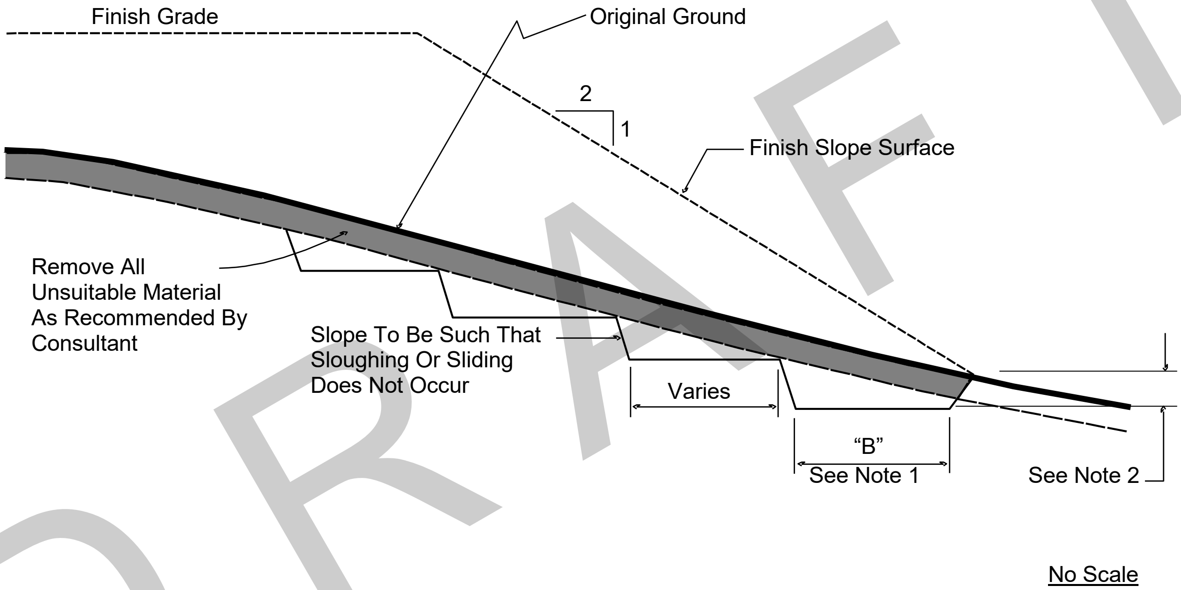
4.1 Areas to be excavated and filled shall be cleared and grubbed. Clearing shall consist of complete removal above the ground surface of trees, stumps, brush, vegetation, man-made structures, and similar debris. Grubbing shall consist of removal of stumps, roots, buried logs and other unsuitable material and shall be performed in areas to be graded. Roots and other projections exceeding 1½ inches in diameter shall be removed to a depth of 3 feet below the surface of the ground. Borrow areas shall be grubbed to the extent necessary to provide suitable fill materials.

4.2 Asphalt pavement material removed during clearing operations should be properly disposed at an approved off-site facility or in an acceptable area of the project evaluated by Geocon and the property owner. Concrete fragments that are free of reinforcing steel may be placed in fills, provided they are placed in accordance with Section 6.2 or 6.3 of this document.

4.3 After clearing and grubbing of organic matter and other unsuitable material, loose or porous soils shall be removed to the depth recommended in the Geotechnical Report. The depth of removal and compaction should be observed and approved by a representative of the Consultant. The exposed surface shall then be plowed or scarified to a minimum depth of 6 inches and until the surface is free from uneven features that would tend to prevent uniform compaction by the equipment to be used.

4.4 Where the slope ratio of the original ground is steeper than 5:1 (horizontal:vertical), or where recommended by the Consultant, the original ground should be benched in accordance with the following illustration.

TYPICAL BENCHING DETAIL



DETAIL NOTES: (1) Key width "B" should be a minimum of 10 feet, or sufficiently wide to permit complete coverage with the compaction equipment used. The base of the key should be graded horizontal, or inclined slightly into the natural slope.

(2) The outside of the key should be below the topsoil or unsuitable surficial material and at least 2 feet into dense formational material. Where hard rock is exposed in the bottom of the key, the depth and configuration of the key may be modified as approved by the Consultant.

4.5 After areas to receive fill have been cleared and scarified, the surface should be moisture conditioned to achieve the proper moisture content, and compacted as recommended in Section 6 of these specifications.

5. COMPACTION EQUIPMENT

5.1 Compaction of *soil* or *soil-rock* fill shall be accomplished by sheepsfoot or segmented-steel wheeled rollers, vibratory rollers, multiple-wheel pneumatic-tired rollers, or other types of acceptable compaction equipment. Equipment shall be of such a design that it will be capable of compacting the *soil* or *soil-rock* fill to the specified relative compaction at the specified moisture content.

5.2 Compaction of *rock* fills shall be performed in accordance with Section 6.3.

6. PLACING, SPREADING AND COMPACTION OF FILL MATERIAL

6.1 *Soil* fill, as defined in Paragraph 3.1.1, shall be placed by the Contractor in accordance with the following recommendations:

6.1.1 *Soil* fill shall be placed by the Contractor in layers that, when compacted, should generally not exceed 8 inches. Each layer shall be spread evenly and shall be thoroughly mixed during spreading to obtain uniformity of material and moisture in each layer. The entire fill shall be constructed as a unit in nearly level lifts. Rock materials greater than 12 inches in maximum dimension shall be placed in accordance with Section 6.2 or 6.3 of these specifications.

6.1.2 In general, the *soil* fill shall be compacted at a moisture content at or above the optimum moisture content as determined by ASTM D 1557.

6.1.3 When the moisture content of *soil* fill is below that specified by the Consultant, water shall be added by the Contractor until the moisture content is in the range specified.

6.1.4 When the moisture content of the *soil* fill is above the range specified by the Consultant or too wet to achieve proper compaction, the *soil* fill shall be aerated by the Contractor by blading/mixing, or other satisfactory methods until the moisture content is within the range specified.

6.1.5 After each layer has been placed, mixed, and spread evenly, it shall be thoroughly compacted by the Contractor to a relative compaction of at least 90 percent. Relative compaction is defined as the ratio (expressed in percent) of the in-place dry density of the compacted fill to the maximum laboratory dry density as determined in accordance with ASTM D 1557. Compaction shall be continuous over the entire area, and compaction equipment shall make sufficient passes so that the specified minimum relative compaction has been achieved throughout the entire fill.

6.1.6 Where practical, soils having an Expansion Index greater than 50 should be placed at least 3 feet below finish pad grade and should be compacted at a moisture content generally 2 to 4 percent greater than the optimum moisture content for the material.

6.1.7 Properly compacted *soil* fill shall extend to the design surface of fill slopes. To achieve proper compaction, it is recommended that fill slopes be over-built by at least 3 feet and then cut to the design grade. This procedure is considered preferable to track-walking of slopes, as described in the following paragraph.

6.1.8 As an alternative to over-building of slopes, slope faces may be back-rolled with a heavy-duty loaded sheepsfoot or vibratory roller at maximum 4-foot fill height intervals. Upon completion, slopes should then be track-walked with a D-8 dozer or similar equipment, such that a dozer track covers all slope surfaces at least twice.

6.2 *Soil-rock* fill, as defined in Paragraph 3.1.2, shall be placed by the Contractor in accordance with the following recommendations:

6.2.1 Rocks larger than 12 inches but less than 4 feet in maximum dimension may be incorporated into the compacted *soil* fill, but shall be limited to the area measured 15 feet minimum horizontally from the slope face and 5 feet below finish grade or 3 feet below the deepest utility, whichever is deeper.

6.2.2 Rocks or rock fragments up to 4 feet in maximum dimension may either be individually placed or placed in windrows. Under certain conditions, rocks or rock fragments up to 10 feet in maximum dimension may be placed using similar methods. The acceptability of placing rock materials greater than 4 feet in maximum dimension shall be evaluated during grading as specific cases arise and shall be approved by the Consultant prior to placement.

6.2.3 For individual placement, sufficient space shall be provided between rocks to allow for passage of compaction equipment.

6.2.4 For windrow placement, the rocks should be placed in trenches excavated in properly compacted *soil* fill. Trenches should be approximately 5 feet wide and 4 feet deep in maximum dimension. The voids around and beneath rocks should be filled with approved granular soil having a Sand Equivalent of 30 or greater and should be compacted by flooding. Windrows may also be placed utilizing an "open-face" method in lieu of the trench procedure, however, this method should first be approved by the Consultant.

6.2.5 Windrows should generally be parallel to each other and may be placed either parallel to or perpendicular to the face of the slope depending on the site geometry. The minimum horizontal spacing for windrows shall be 12 feet center-to-center with a 5-foot stagger or offset from lower courses to next overlying course. The minimum vertical spacing between windrow courses shall be 2 feet from the top of a lower windrow to the bottom of the next higher windrow.

6.2.6 Rock placement, fill placement and flooding of approved granular soil in the windrows should be continuously observed by the Consultant.

6.3 *Rock* fills, as defined in Section 3.1.3, shall be placed by the Contractor in accordance with the following recommendations:

6.3.1 The base of the *rock* fill shall be placed on a sloping surface (minimum slope of 2 percent). The surface shall slope toward suitable subdrainage outlet facilities. The *rock* fills shall be provided with subdrains during construction so that a hydrostatic pressure buildup does not develop. The subdrains shall be permanently connected to controlled drainage facilities to control post-construction infiltration of water.

6.3.2 *Rock* fills shall be placed in lifts not exceeding 3 feet. Placement shall be by rock trucks traversing previously placed lifts and dumping at the edge of the currently placed lift. Spreading of the *rock* fill shall be by dozer to facilitate *seating* of the rock. The *rock* fill shall be watered heavily during placement. Watering shall consist of water trucks traversing in front of the current rock lift face and spraying water continuously during rock placement. Compaction equipment with compactive energy comparable to or greater than that of a 20-ton steel vibratory roller or other compaction equipment providing suitable energy to achieve the required compaction or deflection as recommended in Paragraph 6.3.3 shall be utilized. The number of passes to be made should be determined as described in Paragraph 6.3.3. Once a *rock* fill lift has been covered with *soil* fill, no additional *rock* fill lifts will be permitted over the *soil* fill.

6.3.3 Plate bearing tests, in accordance with ASTM D 1196, may be performed in both the compacted *soil* fill and in the *rock* fill to aid in determining the required minimum number of passes of the compaction equipment. If performed, a minimum of three plate bearing tests should be performed in the properly compacted *soil* fill (minimum relative compaction of 90 percent). Plate bearing tests shall then be performed on areas of *rock* fill having two passes, four passes and six passes of the compaction equipment, respectively. The number of passes required for the *rock* fill shall be determined by comparing the results of the plate bearing tests for the *soil* fill and the *rock* fill and by evaluating the deflection variation with number of passes. The required number of passes of the compaction equipment will be performed as necessary until the plate bearing deflections are equal to or less than that determined for the properly compacted *soil* fill. In no case will the required number of passes be less than two.

6.3.4 A representative of the Consultant should be present during *rock* fill operations to observe that the minimum number of "passes" have been obtained, that water is being properly applied and that specified procedures are being followed. The actual number of plate bearing tests will be determined by the Consultant during grading.

6.3.5 Test pits shall be excavated by the Contractor so that the Consultant can state that, in their opinion, sufficient water is present and that voids between large rocks are properly filled with smaller rock material. In-place density testing will not be required in the *rock* fills.

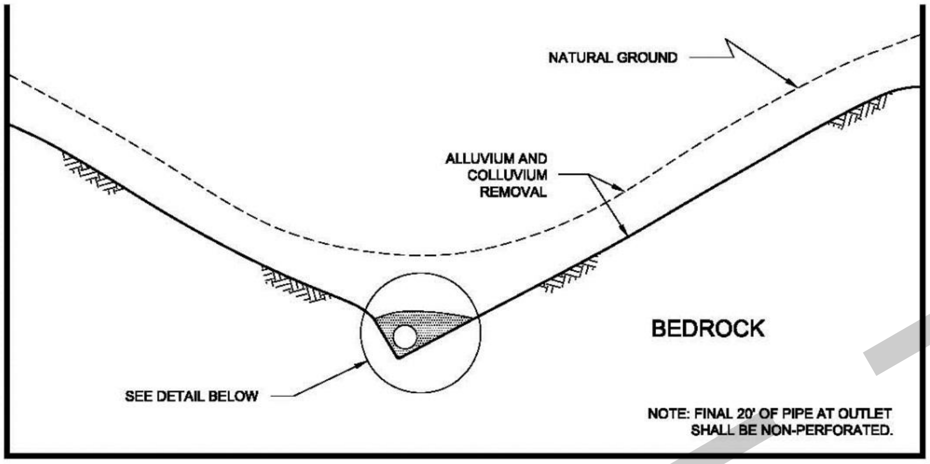
6.3.6 To reduce the potential for "piping" of fines into the *rock* fill from overlying *soil* fill material, a 2-foot layer of graded filter material shall be placed above the uppermost lift of *rock* fill. The need to place graded filter material below the *rock* should be determined by the Consultant prior to commencing grading. The gradation of the graded filter material will be determined at the time the *rock* fill is being excavated. Materials typical of the *rock* fill should be submitted to the Consultant in a timely manner, to allow design of the graded filter prior to the commencement of *rock* fill placement.

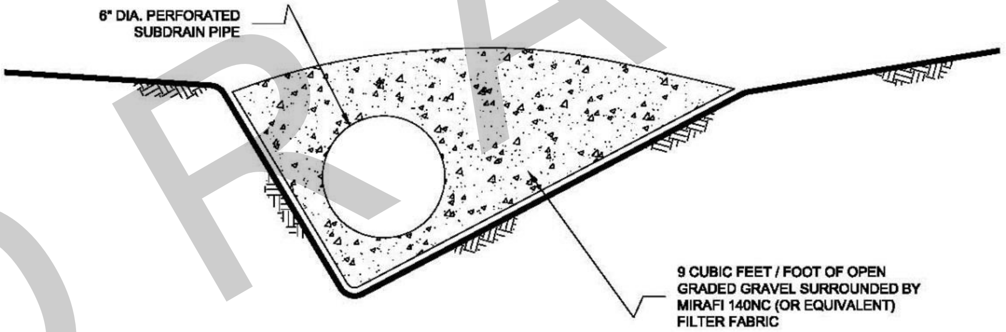
6.3.7 *Rock* fill placement should be continuously observed during placement by the Consultant.

7. SUBDRAINS

7.1 The geologic units on the site may have permeability characteristics and/or fracture systems that could be susceptible under certain conditions to seepage. The use of canyon subdrains may be necessary to mitigate the potential for adverse impacts associated with seepage conditions. Canyon subdrains with lengths in excess of 500 feet or extensions of existing offsite subdrains should use 8-inch-diameter pipes. Canyon subdrains less than 500 feet in length should use 6-inch-diameter pipes.

TYPICAL CANYON DRAIN DETAIL





NOTES:

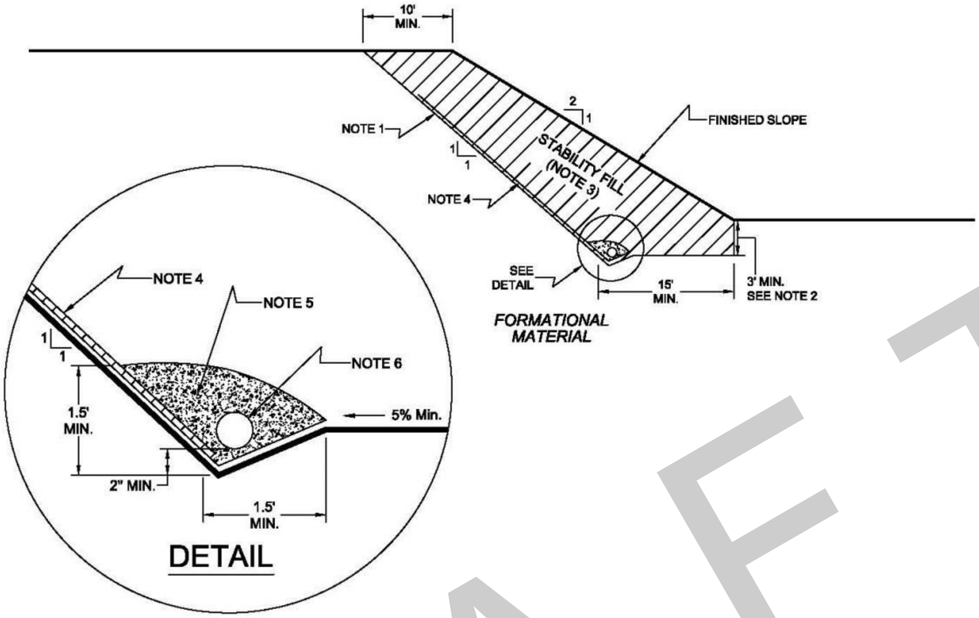
1......6-INCH DIAMETER, SCHEDULE 80 PVC PERFORATED PIPE FOR FILLS IN EXCESS OF 100-FEET IN DEPTH OR A PIPE LENGTH OF LONGER THAN 500 FEET.

2......6-INCH DIAMETER, SCHEDULE 40 PVC PERFORATED PIPE FOR FILLS LESS THAN 100-FEET IN DEPTH OR A PIPE LENGTH SHORTER THAN 500 FEET.

NO SCALE

7.2 Slope drains within stability fill keyways should use 4-inch-diameter (or lager) pipes.

TYPICAL STABILITY FILL DETAIL



NOTES:

1.....EXCAVATE BACKCUT AT 1:1 INCLINATION (UNLESS OTHERWISE NOTED).

2.....BASE OF STABILITY FILL TO BE 3 FEET INTO FORMATIONAL MATERIAL, SLOPING A MINIMUM 5% INTO SLOPE.

3.....STABILITY FILL TO BE COMPOSED OF PROPERLY COMPACTED GRANULAR SOIL.

4.....CHIMNEY DRAINS TO BE APPROVED PREFABRICATED CHIMNEY DRAIN PANELS (MIRADRAIN G200N OR EQUIVALENT) SPACED APPROXIMATELY 20 FEET CENTER TO CENTER AND 4 FEET WIDE. CLOSER SPACING MAY BE REQUIRED IF SEEPAGE IS ENCOUNTERED.

5.....FILTER MATERIAL TO BE 3/4-INCH, OPEN-GRADED CRUSHED ROCK ENCLOSED IN APPROVED FILTER FABRIC (MIRAFI 140NC).

6.....COLLECTOR PIPE TO BE 4-INCH MINIMUM DIAMETER, PERFORATED, THICK-WALLED PVC SCHEDULE 40 OR EQUIVALENT, AND SLOPED TO DRAIN AT 1 PERCENT MINIMUM TO APPROVED OUTLET.

NO SCALE

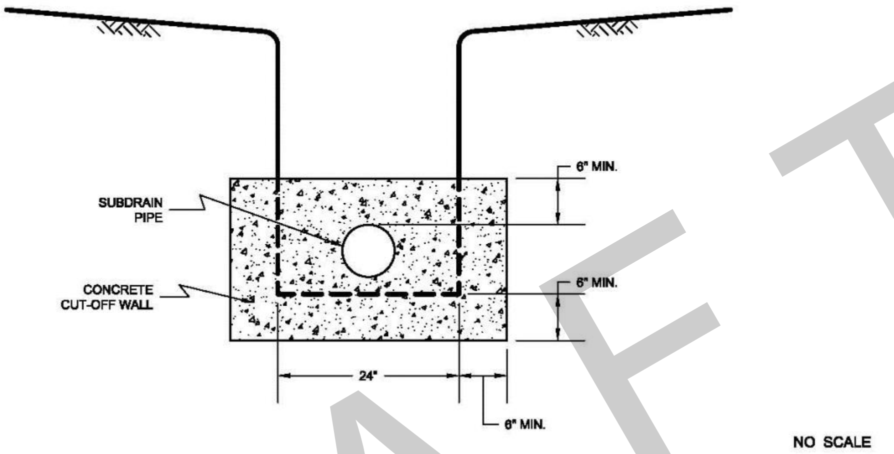
7.3 The actual subdrain locations will be evaluated in the field during the remedial grading operations. Additional drains may be necessary depending on the conditions observed and the requirements of the local regulatory agencies. Appropriate subdrain outlets should be evaluated prior to finalizing 40-scale grading plans.

7.4 *Rock* fill or *soil-rock* fill areas may require subdrains along their down-slope perimeters to mitigate the potential for buildup of water from construction or landscape irrigation. The subdrains should be at least 6-inch-diameter pipes encapsulated in gravel and filter fabric. *Rock* fill drains should be constructed using the same requirements as canyon subdrains.

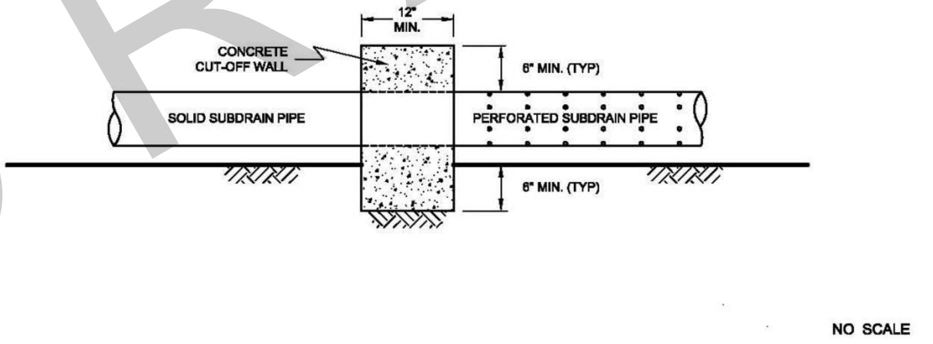
7.5 Prior to outletting, the final 20-foot segment of a subdrain that will not be extended during future development should consist of non-perforated drainpipe. At the non-perforated/ perforated interface, a seepage cutoff wall should be constructed on the downslope side of the pipe.

TYPICAL CUT OFF WALL DETAIL

FRONT VIEW

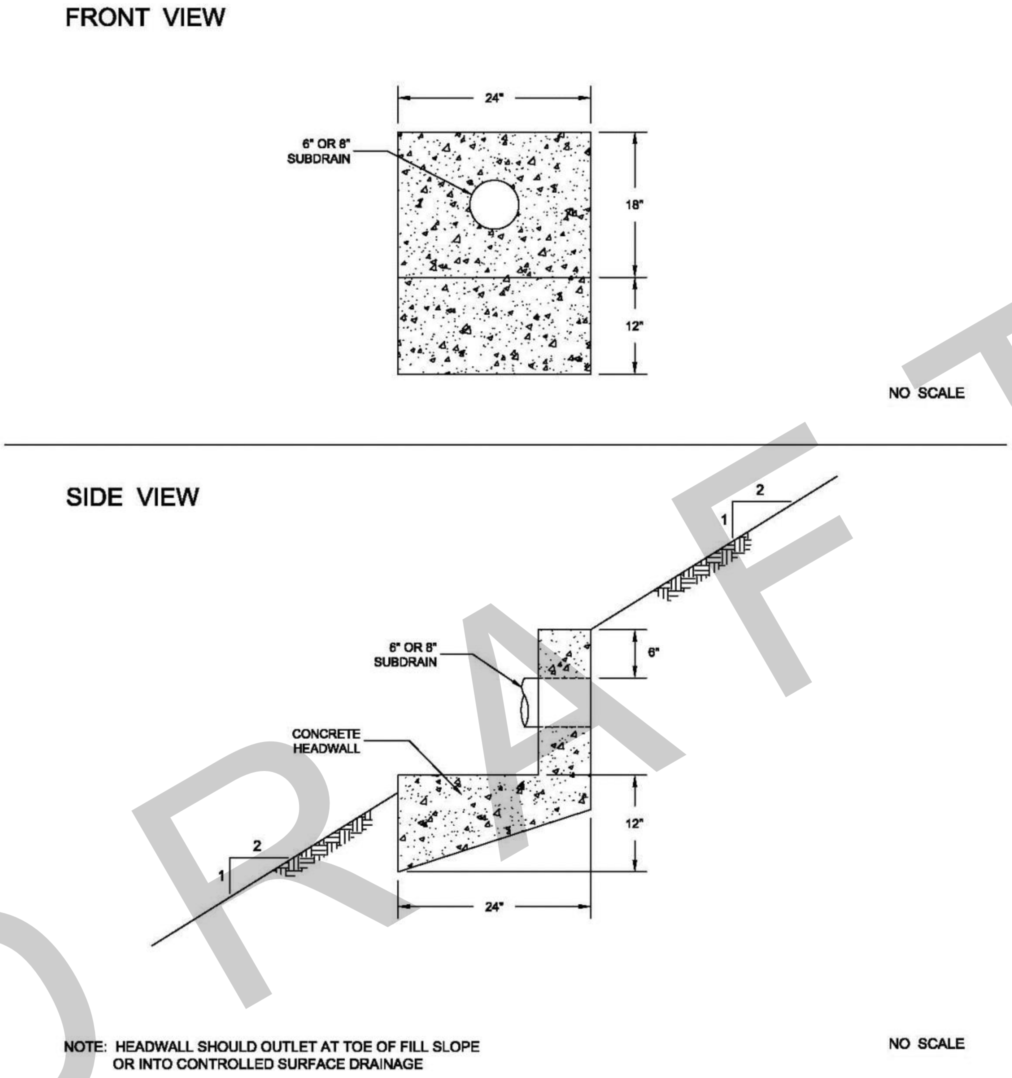


SIDE VIEW



7.6 Subdrains that discharge into a natural drainage course or open space area should be provided with a permanent headwall structure.

TYPICAL HEADWALL DETAIL



7.7 The final grading plans should show the location of the proposed subdrains. After completion of remedial excavations and subdrain installation, the project civil engineer should survey the drain locations and prepare an “as-built” map showing the drain locations. The final outlet and connection locations should be determined during grading operations. Subdrains that will be extended on adjacent projects after grading can be placed on formational material and a vertical riser should be placed at the end of the subdrain. The grading contractor should consider videoing the subdrains shortly after burial to check proper installation and functionality. The contractor is responsible for the performance of the drains.

8. OBSERVATION AND TESTING

8.1 The Consultant shall be the Owner's representative to observe and perform tests during clearing, grubbing, filling, and compaction operations. In general, no more than 2 feet in vertical elevation of *soil* or *soil-rock* fill should be placed without at least one field density test being performed within that interval. In addition, a minimum of one field density test should be performed for every 2,000 cubic yards of *soil* or *soil-rock* fill placed and compacted.

8.2 The Consultant should perform a sufficient distribution of field density tests of the compacted *soil* or *soil-rock* fill to provide a basis for expressing an opinion whether the fill material is compacted as specified. Density tests shall be performed in the compacted materials below any disturbed surface. When these tests indicate that the density of any layer of fill or portion thereof is below that specified, the particular layer or areas represented by the test shall be reworked until the specified density has been achieved.

8.3 During placement of *rock* fill, the Consultant should observe that the minimum number of passes have been obtained per the criteria discussed in Section 6.3.3. The Consultant should request the excavation of observation pits and may perform plate bearing tests on the placed *rock* fills. The observation pits will be excavated to provide a basis for expressing an opinion as to whether the *rock* fill is properly seated and sufficient moisture has been applied to the material. When observations indicate that a layer of *rock* fill or any portion thereof is below that specified, the affected layer or area shall be reworked until the *rock* fill has been adequately seated and sufficient moisture applied.

8.4 A settlement monitoring program designed by the Consultant may be conducted in areas of *rock* fill placement. The specific design of the monitoring program shall be as recommended in the Conclusions and Recommendations section of the project Geotechnical Report or in the final report of testing and observation services performed during grading.

8.5 We should observe the placement of subdrains, to check that the drainage devices have been placed and constructed in substantial conformance with project specifications.

8.6 Testing procedures shall conform to the following Standards as appropriate:

8.6.1 Soil and Soil-Rock Fills:

8.6.1.1 Field Density Test, ASTM D 1556, *Density of Soil In-Place By the Sand-Cone Method.*

8.6.1.2 Field Density Test, Nuclear Method, ASTM D 6938, *Density of Soil and Soil-Aggregate In-Place by Nuclear Methods (Shallow Depth).*

8.6.1.3 Laboratory Compaction Test, ASTM D 1557, *Moisture-Density Relations of Soils and Soil-Aggregate Mixtures Using 10-Pound Hammer and 18-Inch Drop*.

8.6.1.4. Expansion Index Test, ASTM D 4829, *Expansion Index Test*.

9. PROTECTION OF WORK

9.1 During construction, the Contractor shall properly grade all excavated surfaces to provide positive drainage and prevent ponding of water. Drainage of surface water shall be controlled to avoid damage to adjoining properties or to finished work on the site. The Contractor shall take remedial measures to prevent erosion of freshly graded areas until such time as permanent drainage and erosion control features have been installed. Areas subjected to erosion or sedimentation shall be properly prepared in accordance with the Specifications prior to placing additional fill or structures.

9.2 After completion of grading as observed and tested by the Consultant, no further excavation or filling shall be conducted except in conjunction with the services of the Consultant.

10. CERTIFICATIONS AND FINAL REPORTS

10.1 Upon completion of the work, Contractor shall furnish Owner a certification by the Civil Engineer stating that the lots and/or building pads are graded to within 0.1 foot vertically of elevations shown on the grading plan and that all tops and toes of slopes are within 0.5 foot horizontally of the positions shown on the grading plans. After installation of a section of subdrain, the project Civil Engineer should survey its location and prepare an *as-built* plan of the subdrain location. The project Civil Engineer should verify the proper outlet for the subdrains and the Contractor should ensure that the drain system is free of obstructions.

10.2 The Owner is responsible for furnishing a final as-graded soil and geologic report satisfactory to the appropriate governing or accepting agencies. The as-graded report should be prepared and signed by a California licensed Civil Engineer experienced in geotechnical engineering and by a California Certified Engineering Geologist, indicating that the geotechnical aspects of the grading were performed in substantial conformance with the Specifications or approved changes to the Specifications.

LIST OF REFERENCES

1. *2019 California Building Code, California Code of Regulations, Title 24, Part 2, based on the 2018 International Building Code,* prepared by California Building Standards Commission, dated July 2019.

2. *ACI 318-14, Building Code Requirements for Structural Concrete* and *Commentary on Building Code Requirements for Structural Concrete*, prepared by the American Concrete Institute, dated September 2014.

3. American Concrete Institute, *ACI 330-08, Guide for the Design and Construction of Concrete Parking Lots*, dated June 2008.

4. ASCE 7-16, *Minimum Design Loads and Associated Criteria for Buildings and Other Structures*, 2017.

5. California Department of Conservation, Division of Mines and Geology, *Probabilistic Seismic Hazard Assessment for the State of California*, Open File Report 96-08, 1996.

6. Historical Aerial Photos. *http://www.historicaerials.com*.

7. Jennings, C. W., 1994, California Division of Mines and Geology, *Fault Activity Map of California and Adjacent Areas*, California Geologic Data Map Series Map No. 6.

8. Kennedy, M. P. and S. S. Tan, 2007, *Geologic Map of the Oceanside 30'x60' Quadrangle, California*, USGS Regional Map Series Map No. 2, Scale 1:100,000.

9. Legg, M. R., J. C. Borrero, and C. E. Synolakis (2002), *Evaluation of Tsunami Risk to Southern California Coastal Cities*, 2002 NEHRP Professional Fellowship Report, dated January.

10. SEAOC web application, *OSHPD Seismic Design Maps*, https://seismicmaps.org/.

11. Unpublished reports, aerial photographs, and maps on file with Geocon Incorporated.

12. USGS computer program, Seismic Hazard Curves and Uniform Hazard Response Spectra, http://geohazards.usgs.gov/designmaps/us/application.php.

13. Unpublished reports and maps on file with Geocon Incorporated.

14. 1953 stereoscopic aerial photographs of the subject site and surrounding areas (AXN-8M-80 and 81).

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E-2

Off-Site Descending Slope Consultation

GEOCON
INCORPORATED
GEOTECHNICAL ■ ENVIRONMENTAL ■ MATERIALS

Project No. G2438-52-01
June 28, 2023

Torrey Pacific Corporation
171 Saxony Road, Suite 109
Encinitas, California 92024

Attention: Mr. Brian Staver

Subject: OFF-SITE DESCENDING SLOPE CONSULTATION
TORREY CREST – 1220-1240 MELBA ROAD AND 1190 ISLAND VIEW LANE
ENCINITAS, CALIFORNIA

References:

1. *Geotechnical Investigation, Torrey Crest 1220-1240 Melba Road and 1190 Island View Lane, Encinitas, California,* prepared by Geocon Incorporated, revised April 5, 2023 (Project No. G2438-52-01).

2. *Storm Water Management Investigation, Torrey Crest 1220-1240 Melba Road and 1190 Island View Lane, Encinitas, California,* prepared by Geocon Incorporated, revised March 21, 2022 (Project No. G2438-52-01).

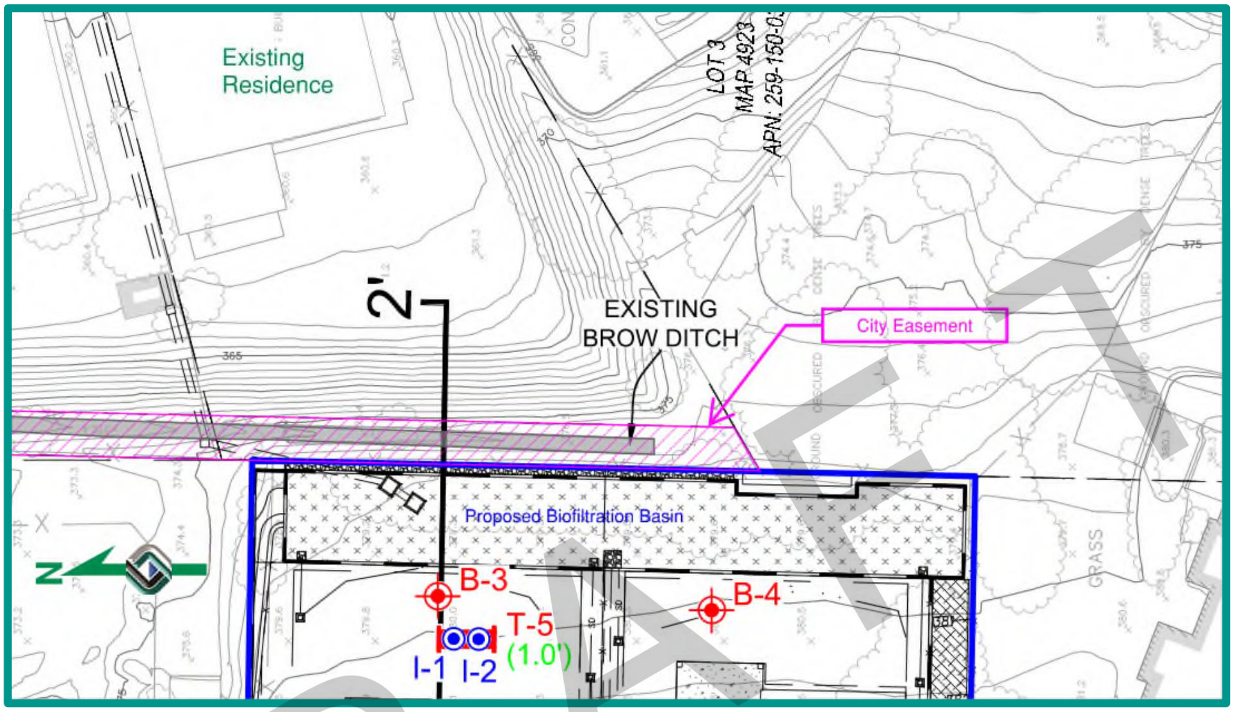
Dear Mr. Staver:

In accordance with your request, we prepared this letter to provide consultation services regarding the descending slope that exists east of the subject development. The discussion presented herein is based on a site visit and discussions with neighbors on June 22, 2023.

SITE DESCRIPTION

Based on a review of our referenced report and our site visit, a slope descends on the eastern portion of the site to a single-family residence located at 246 Witham Road. The slope is about 18 feet high and is inclined at about 1.5:1 (horizontal to vertical). A city easement exists at the top of the slope that is about 8 to 10 feet wide that is relatively flat and possesses a concrete brow ditch that drains to the north. The easement continues north and crosses several properties.

The proposed residential development is located to the west of the existing residence and the city easement. The proposed improvements located near the top of the slope include a biofiltration basin to help with storm water management for the proposed development. The basin will be embedded about 5 feet below the existing grades and walls will extend up about 5 feet above existing elevations to provide the required grades for the basin. The basin will also be lined (waterproofed) as recommended in our referenced Storm Water Management Investigation dated March 21, 2022. We understand the basin will be lined with either an appropriate liner or concrete. The Site Plan shows an excerpt of the subject areas from our Geologic Map presented in our referenced report dated April 9, 2023.



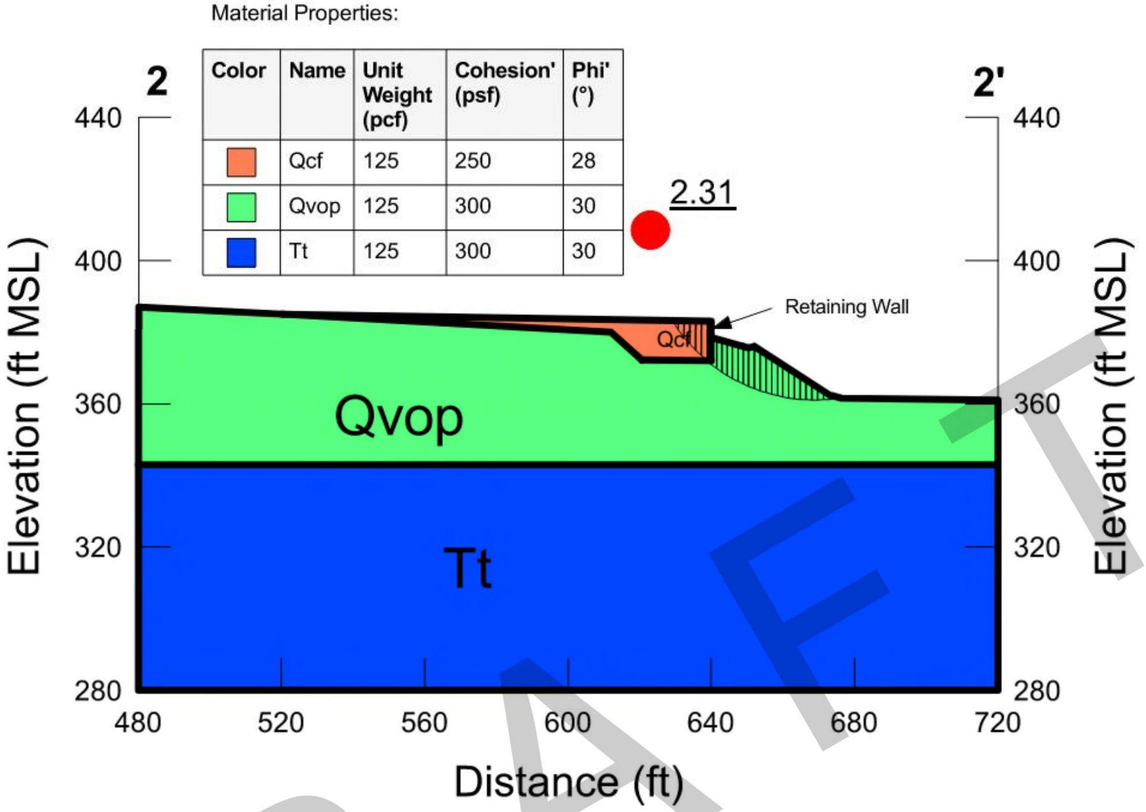
Site Plan (Excerpt from Geologic Map)

The descending slope exposed formational materials of the Very Old Paralic Deposits. The slope face consists of cemented zones and relatively loose to medium dense, silty sand. The slope appears to not be landscaped and consists of natural shrubs and grasses. Ice plant is located along the base of the slope. A small retaining wall exists at the base of the slope that consists of broken pieces of concrete with a maximum height of about 1 to 2 feet. The slope does not appear to be irrigated.

SLOPE STABILITY ANALYSES

We performed slope stability analyses using the two-dimensional computer program GeoStudio 2018 created by Geo-Slope International Ltd. We selected Cross-Section 2-2' to perform the slope stability analyses. We calculated the factor of safety for the planned slopes for rotational-mode and block-mode analyses using the Spencer's method.

We used average drained direct shear strength parameters based on laboratory tests and our experience with similar soil types in nearby areas for the slope stability analyses. Our calculations indicate the existing slope with the proposed development possesses a calculated factor of safety (FOS) of at least 1.5 under static conditions. Output of the computer program including the calculated factor of safety and the failure surface is presented herein.



We also calculated the surficial slope stability analysis for the existing sloping conditions as summarized in the following table.

SURFICIAL SLOPE STABILITY EVALUATION

Parameter	Value
Slope Height, H	∞
Vertical Depth of Saturation, Z	3 Feet
Slope Inclination, I (Horizontal to Vertical)	1.5:1 (26.6 Degrees)
Total Soil Unit Weight, γ	125 pcf
Water Unit Weight, γ_W	62.4 pcf
Friction Angle, ϕ	30 Degrees
Cohesion, C	300 psf
Factor of Safety = $(C+(\gamma+\gamma_W)Z\cos^2 I \tan\phi)/(\gamma Z \sin I \cos I)$	2.2

CONCLUSIONS

Based on the discussion herein and the results of the slope stability analyses, the existing slope possesses a minimum factor of safety of at least 1.5 in accordance with the guidelines of the City of Encinitas. Therefore, the proposed development is acceptable from a geotechnical engineering standpoint. The proposed development will help control the flow of water toward the neighboring properties to the east by installing the proposed basin that will be waterproofed and connected to the storm drain system.

The existing slope exposes the Very Old Paralic Deposits that consists of cemented materials and weathered, relatively loose silty sand. The loose sandy portion of the slope possesses an abundant amount of krotovina (animal burrows). Water from rain events likely fills the voids, saturates the materials, and causes an increase in erosion. The property owner can employ a geotechnical engineer/ landscape architect/contractor to provide recommendations for stabilizing the surficial stability of the slope, if desired. We would expect the slopes would be abated to handle additional animal burrows, be landscaped with drought-tolerant vegetation having variable root depths and requiring minimal landscape irrigation. In addition, slopes should be drained and properly maintained to reduce erosion.

If you have any questions regarding this letter, or if we may be of further service, please contact the undersigned at your convenience.

Very truly yours,

GEOCON INCORPORATED

Shawn Foy Weedon
GE 2714

REGISTERED PROFESSIONAL ENGINEER
SHAWN WEEDON
No. 2714
GEOTECHNICAL
STATE OF CALIFORNIA

SFW:arm

(e-mail) Addressee

G

Preliminary Hydrology Report

PRELIMINARY HYDROLOGY STUDY

FOR

TORREY CREST
TENTATIVE MAP / COASTAL DEVELOPMENT PERMIT / DESIGN REVIEW
1220-1240 MELBA ROAD / 1190 ISLAND VIEW LANE

CASE NUMBERS: MULTI-004309-2021; SUB-004310-2021; DR-004311-2021; CDPNF-004312-2021; CPP-004313-2021; SRVRQST-004316-2021

CITY OF ENCINITAS, CA

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TORREY PACIFIC CORPORATION
1106 SECOND STREET #115
ENCINITAS, CA 92024
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Prepared: January 2021
Revised: July 2021
Revised: March 2022
Revised: October 2022
Revised: May 2023
Revised: October 2023
Revised: January 2024

TYLER G LAWSON
No. 80356
Exp. 12/31/24
CIVIL

TYLER G. LAWSON, RCE 80356

2-26-24
DATE

TABLE OF CONTENTS

1.0 EXECUTIVE SUMMARY

1.1 Introduction

This Preliminary Hydrology Study for the proposed Torrey Crest development at 1220-1240 Melba Road and 1190 Island View Lane in the City of Encinitas has been prepared to analyze the hydrologic and hydraulic characteristics of the existing and proposed project site. This report intends to present both the methodology and the calculations used for determining the runoff from the project site in both the pre-developed (existing) conditions and the post-developed (proposed) conditions produced by the 100-year, 6-hour storm. For hydromodification management and compliance including analysis of the 2-year, 6-hour storm event up to the 10-year, 6-hour storm event, refer to the project Storm Water Quality Management Plan (SWQMP) prepared by Pasco, Laret, Suiter & Associates.

1.2 Existing Conditions

The subject property is located along Melba Road just south of Oak Crest Middle School in the City of Encinitas. The site is zoned Residential 3 (R-3) and is bound by single-family residential developments to the east and west. Oak Crest Middle School borders the subject property to the north and Melba Road to the south. Existing parcels (APN's 259-181-03, & -04-00) at the northwest corner of the property also contain panhandle portions that connect to the Balour Drive right-of-way further west. The existing site consists single-family residences, most of which are currently occupied, as well as hardscape and landscape surface improvements typical of this type development and the surrounding neighborhood. The site is located within the Batiquitos Lagoon Hydrologic Sub-Area of the San Marcos Creek Hydrologic Area within the Carlsbad Watershed (904.51).

The site itself contains 34 feet of elevation change within the proposed disturbed area. An existing single-family residence and structures toward the center-north portion of the property sit on the property's high point, with drainage falling away in all directions from this location. Existing drainage can be considered urban but runoff primarily drains via sheet flow as there do not appear to be any existing onsite storm drain.

While the site appears to ultimately discharge to two major watersheds and receiving bodies, runoff in the existing condition discharges from the property from 5 main locations (Drainage basins EX-1 through -5). The two discharge locations that eventually are routed to Moonlight State Beach are Drainage basins EX-1 and EX-2. Drainage basin EX-1 discharges from the southwest corner of the property to Melba Road, where it continues west past the intersection of Balour Drive to a low spot at the intersection of Melba Road and Evergreen Drive near Ocean Knoll Elementary. From here, it is routed northwest through the canyon north, eventually reaching infrastructure in Encinitas Boulevard. Drainage basin EX-2 appears to leave the site from the northwest and along Island View Lane (heading west to Balour Drive). Once in Balour Drive, it is routed south to the intersection of Guadalajara Drive before continuing west to an existing curb inlet located at Guadalajara Drive and Avenida de San Clemente. The portion of the subject property under Island View Lane, a 15-ft x 690-ft parcel, is undisturbed by the project and has been excluded from this analysis. Runoff leaving to the west along both Melba Road and Island View Lane continue downstream towards Encinitas Boulevard, ultimately draining to the Pacific Ocean via Moonlight State Beach.

The remaining discharge locations from the property (EX-3, EX-4, and EX-5) are ultimately routed to San Marcos Creek and the Batiquitos Lagoon. Drainage basin EX-3 discharges to the northeast corner of the site towards Witham Road into an existing brow ditch within a public drainage easement. The ditch drains to the north through neighboring properties before outletting via an 18" storm drain connected to a curb outlet in a water line easement to the Witham Road curb face, where it further continues north to a storm drain inlet at Witham Road and Beechtree Drive. Drainage basin EX-4 discharges in a similar situation at the northeast corner, but south of the existing drainage ditch, where it travels through the adjacent properties, heads south on Witham Road and east on Crest Drive, and enters a curb inlet at the Hickoryhill Drive intersection. Lastly, basin EX-5 discharges east of the property onto adjacent lots and eventually makes its way down to Crest Drive to confluence with basin EX-4. Runoff leaving the site to the northeast towards Witham Road as well as the drainage reaching Crest Drive eventually confluence in the storm drain infrastructure at the intersection of Encinitas Boulevard with N. El Camino Real. This system ultimately continues to route drainage north to an outlet to the natural Encinitas Creek channel on the north side of Garden View Lane. This channel then eventually discharges into San Marcos Creek, a tributary of the Batiquitos Lagoon.

Based on an analysis of the existing topography, the subject property accepts offsite runon from a portion of some adjacent properties to the east, both 1250 and 1274 Melba Road, which is conveyed onto the property and discharges at the Melba Road curb face along with the drainage basin EX-1 outlet. The remainder of 1250 and 1274 Melba Road, as well as other properties further east, drain away from the subject property and towards Crest Drive. Existing slopes and improvements for Oak Crest Middle School to the north prevent any discharge onto the site via the northern property boundary, and Melba Road and the properties to the west are at lower elevations downstream. The limits of the analysis can be contained to the area within the property boundary plus the applicable portions of 1250 and 1274 Melba Road, because the site sits on a local high point topographically compared to most of the surrounding properties.

The existing site is comprised of 6.646 gross acres and is 18.4% impervious. In accordance with Section 6.202 of the City of Encinitas Engineering Design Manual (EDM), hydrologic soil group D is assumed for this analysis. Additionally, the Storm Water Management Investigation prepared by the project's geotechnical engineer determined that the surface layer should be classified as soil group D. Runoff coefficients for each sub-drainage basin were determined from section 6.203.1 of the City of Encinitas EDM, using a value of 0.45 for all pervious areas. Using the Rational Method Procedure outlined in the San Diego County Hydrology Manual, a peak flow rate and time of concentration were calculated for each of the existing drainage basins for the 100-year, 6-hour storm event. Table 1 below summarizes the results of the Rational Method calculations.

EXISTING DRAINAGE FLOWS			
DRAINAGE AREA	DRAINAGE AREA (ACRES)	Q_{100} (CFS)	I_{100} (IN/HR)
EX-1	3.32 Ac	8.46	4.81
EX-2	0.75 Ac	2.02	4.99
EX-3	0.99 Ac	2.23	5.01
EX-4	0.65 Ac	1.58	5.06
EX-5	0.96 Ac	2.59	4.57

Table 1. Existing Condition Peak Drainage Flow Rates

Table 1 above lists the peak flow rates for the project site in the existing condition for the respective rainfall events. Refer to pre-project hydrology calculations included in Section 3.1 of this report for a detailed analysis of the existing drainage basin, as well as a pre-project hydrology node map included in the appendix of this report for pre-project drainage basin delineation and discharge locations leaving the subject property.

1.3 Proposed Project

The proposed project includes the demolition of all existing onsite improvements and the construction of 30 new residential lots plus two (2) private road lots, 30 new single-family detached homes plus one proposed ADU, along with miscellaneous surface, grading, and utility improvements typical of this type of construction. A new private road will provide vehicular access to each lot, entering the property off of Melba Road to the south, with an emergency vehicle turnaround in the cul-de-sac to the north. The proposed lot pad elevations range from 378.5 in the southwest part of the property to 399.0 toward the northern portion of the site as can be seen on the Preliminary Grading Plan submitted as part of the Tentative Map / Coastal Development Permit / Design Review application under separate cover.

Similar to the existing condition, the project site will continue to ultimate discharge to two major watersheds and receiving bodies. Pre-project, 61% of the gross surface area drains to Moonlight State Beach (EX-1, EX-2, and the undisturbed area under Island View Lane). Post-project, 61% of the gross surface area continues to drain to Moonlight State Beach (PR-1, PR-2, and the undisturbed area under Island View Lane). Pre-project, 39% of the gross surface area continues to drain to Batiquitos Lagoon (EX-3, EX-4, EX-5). Post project, 39% of the gross surface area continues to drain to Batiquitos Lagoon (PR-3 and PR-4). Additionally, two (2) small self-mitigating areas that drain offsite in the rear yards of Lots 1 and 26 to accommodate existing topography around large Torrey Pine trees have been included in the onsite analysis.

Runoff from the post-project condition discharges from the property at two main locations: PR-1 to Melba Road via the southwest corner of the property and PR-4 to Witham Road via the northeast corner of the property. This will serve to minimize cross-lot drainage onto neighboring properties as much as feasible and help alleviate existing drainage concerns on the neighboring properties. Two (2) small (both less than a tenth of an acre) self-mitigating areas will remain post-project: PR-2, PR-3 (area east of Witham Basin). Two (2) small self-mitigating areas that drain offsite in the rear yards of Lots 1 and 26 to accommodate existing topography around large Torrey Pine trees have been included in the onsite analysis for PR-1.

As outlined above, while the pre-project and post-project surface areas remain consistent, the composition of the existing versus proposed drainage areas do not map directly. The following is a description of which proposed drainage area each existing drainage area drains to:

EX-1: The majority drains to PR-1, while a small portion drains to PR-4. Runon from a portion of 1250 and 1274 Melba Road – delineated as basin OFF-1 – will be conveyed directly to the Melba Road curb face, bypassing the subject property and any treatment. A small self-mitigating area that drains offsite in the rear yard of lot 1 to accommodate existing topography around two (2) large Torrey Pine trees has been included in the onsite analysis for PR-1. The purpose of including this area – considered as part of PR-1 – is to adequately size the detention system to treat this area in the event it eventually drains to the front of Lot 1. The self-mitigating area on Lot 1 drains in a similar manner pre- and post-project.

EX-2: The majority drains to PR-4, a small portion drains to PR-2. A proper drainage channel does not exist along Island View Lane to the northwest, so the project avoids discharging water to the basin EX-2 outlet location other than the small self-mitigating area, PR-2. This PR-2 drainage basin is a small (less than a tenth of an acre) self-mitigating area.

EX-3: The majority drains to PR-4. A small portion drains to PR-3, a small self-mitigating area that drains in a similar manner pre- and post-project.

EX-4: All of runoff drains to PR-4.

EX-5: The majority drains to PR-1, while a small portion drains to PR-4. A small self-mitigating area that drains offsite in the rear yard of lot 26 to accommodate existing topography around a large Torrey Pine tree has been included in the onsite analysis for PR-1. The purpose of including this area – considered as part of PR-1 – is to adequately size the detention system to treat this area in the event it eventually drains to the front of Lot 26. The self-mitigating area on Lot 26 drains in a similar manner pre- and post-project.

For the 39% of the site that drains to Batiquitos Lagoon, 38% of that part drains via a brow ditch in a public drainage easement to an existing 18" storm drain in a water easement to Witham Road where it travels north on the west side of the street to the intersection of Witham Road and Beechtree Drive. The remaining 62% of the water that flows from the project site to Batiquitos Lagoon confluences at the intersection of Witham Road and Crest Drive where it travels east on the north side of the street to the intersection of Crest Drive and Hickoryhill Drive.

It was the strong recommendation of the City of Encinitas engineering staff to not continue to discharge a material amount of stormwater into the existing brow ditch conveyance system in the post-project condition that currently takes storm water from EX-3. This public drainage easement and ditch run through the rear yards of several properties along Witham Road, and present access and maintenance challenges for the City of Encinitas Public Works Department to ensure proper drainage and conveyance over the long term. Section 6.201 of the City of Encinitas Engineering Design Manual (EDM) provides the City Engineer discretion to eliminate existing cross-lot drainage if an alternate solution is feasible. Existing drainage areas EX-4 and EX-5 drain across adjacent lots.

To improve these existing conditions the applicant negotiated a new easement area for storm water across an existing lot on Witham Road at 240 Witham Road. The purchase of this new easement allows the project to propose a way for stormwater to continue to flow to Batiquitos Lagoon. It allows the project to minimize the diversion of stormwater along the way to Batiquitos Lagoon because the easement area drains to a part of Witham Road that flows east to Crest Drive where it confluences with the curb that conveys 62% of the existing stormwater from the project site toward Batiquitos Lagoon (EX-4 and EX-5). The project proposes to route treated runoff through an 18" HDPE private storm drain pipe with watertight joints to two modified 3-inch by 3-feet SDRSD D-25 curb outlet connected to a SDRSD D-9 cleanout. To accommodate the elimination of most existing cross-lot drainage conditions, all lots aside from the self-mitigating areas will be graded to drain from the rear to the face of the private road. Once runoff reaches the private road the grading of the road will direct the water to proposed curb inlets adjacent to the two proposed biofiltration and detention systems. Runoff from PR-1 and PR-4 will outlet at the curb faces along Melba Road and Witham Road respectively.

The onsite HMP-sized flow-control biofiltration detention basins and BMP systems ("Basin") provides pollutant control as well as hydromodification management and mitigation of the 100-year, 6-hour storm event peak flow rate. The Basins will serve to capture, treat, and detain storm water and are composed of a cross-section of an engineered soil, storage layer, and hydraulic mulch on the surface. Runoff from higher frequency, lower intensity storm events will first be filtered through the Basin section and enter a detention system located beneath the Basin. Basin PR-1 biofiltration basin is equipped with five Brooks Boxes: one 12" x 12", one 18" x 18", one 24" x 24" and two 36" x 36" with two 3" x 19" midflow orifices. Basin PR-2 biofiltration is equipped with six Brooks Boxes: five 36" x 36" and one 24" x 24" with three 3" x 23" midflow orifices. The basins emergency outlet structures will convey stormwater during high intensity storm events, providing additional capacity and sized to convey the unmitigated peak flows assuming a 50% clogging factor.

Similar to the existing condition, runoff leaving PR-1 in the southwest corner of the site continues downstream, entering existing public storm drain infrastructure and eventually reaching storm drain improvements in Encinitas Boulevard north of St. John School before out letting in Moonlight State Beach. Drainage area EX-2 in the existing condition was excluded from the peak flow analysis in the proposed condition to ensure discharge leaving the property to Melba Road and ultimately draining to Moonlight State Beach is mitigated to the peak flow draining to that watershed determined in the pre-project condition.

Similar to the existing condition, runoff leaving from PR-4 basin the northeast corner of the site continues downstream, entering existing public storm drain improvements in Crest Drive near Hickoryhill Drive that connect to improvements in El Camino Real before out letting to Batiquitos Lagoon. As discussed in the existing conditions section, runoff from EX-3 confluences with runoff from EX-4 and EX-5 in the public buried storm drain infrastructure at the intersection of Encinitas Boulevard and N. El Camino Real. The proposed routing of runoff from EX-3 to Witham Road at Crest Drive results in a micro diversion as runoff will continue downstream the same way as the existing condition once runoff reaches the intersection of Encinitas Boulevard and N. El Camino Real; therefore, runoff from EX-3 has been included in the analysis of basin PR-4. Runoff basin EX-2 will be excluded from the drainage analysis in the proposed condition to ensure discharge leaving the property to Witham Road and ultimately draining to Batiquitos Lagoon is mitigated to the peak flow draining to the watershed determined in the pre-project condition.

Based on the proposed amount of pervious and impervious surfaces, runoff coefficients for the proposed project site were determined based on Section 6.203.1 of the City of Encinitas Engineering Design Manual. This analysis includes an anticipated future hardscape contingency for each lot to ensure the Basins are sized to handle runoff in the event homeowners want to add patios or other surface improvements. As mentioned in the existing conditions section, per Section 6.202 of the City of Encinitas EDM, hydrologic soil type D is assumed for the proposed condition. Refer to section 3.2 of this report, as well as the post-development hydrology map included in Appendix A, for additional analysis and a summary of runoff coefficients used. Using the Rational Method Procedure outlined in the San Diego County Hydrology Manual, a peak flow rate and time of concentration were calculated for the 100-year, 6-hour storm event for the major drainage basin in the proposed condition. Table 2 below summarizes the results of the Rational Method calculations.

PROPOSED DRAINAGE FLOWS			
DRAINAGE AREA	DRAINAGE AREA (ACRES)	Q_{100} (CFS)	I_{100} (IN/HR)
*PR-1	4.04 Ac	15.34	5.21
PR-2	0.02 Ac	0.07	7.38
PR-3	0.02 Ac	0.06	7.38
PR-4	2.60 Ac	8.82	4.65

Table 2. Proposed Condition Peak Drainage Flow Rates

*PR-1 drainage area value includes confluence of PR-1 with OFF-1 at the southwest corner of the site.

Refer to post-development hydrology calculations included in Section 3.2 of this report for detailed analyses of the proposed drainage basin as well as a post-development hydrology node map included in Appendix A of this report for post-development drainage delineation, path of travel, and discharge locations.

Refer to Section 3.3 of this report for a discussion of the detention components of the site. This analysis takes into account the proposed detention, pollutant removal, and hydromodification management facilities proposed onsite. The totality of the detention system as mentioned above includes a pre-treatment biofiltration basin with impermeable liner, proprietary StormTrap detention storage system (or equivalent), or a gravel storage layer. The results of the detention analysis provide a resultant, mitigated peak runoff leaving the site in addition to the detained time to peak (see Appendix B for results of the dynamic detention analysis performed using HydroCAD-10 software). Based on this analysis, the proposed onsite detention facility accommodates the increase in peak runoff generated in the post-project condition, mitigating peak flows to below pre-project conditions. The site has been designed and graded in a way to minimize earthwork to the greatest extent feasible and maintain historic drainage patterns, while also alleviating existing cross-lot drainage concerns and preventing water from entering a substandard drainage conveyance system on the surface just off the northeast corner of the property.

For a discussion regarding hydromodification management requirements and compliance, refer to the project Storm Water Quality Management Plan (SWQMP) under separate cover. An impermeable liner is proposed beneath and along the sides of the Basin cross-sections, as it was deemed infeasible to infiltrate into the underlying topsoil / Very Old Paralic Deposits (Qvop) layer by the project geotechnical engineer.

To comply with City of Encinitas' storm water standards and the Regional Municipal Separate Storm Sewer System (MS4) Permit, the project will implement various source control and site design BMP's required of all development projects. Runoff from proposed hardscape areas will be directed to landscaped areas in an effort to disperse drainage to pervious surfaces. Landscaping will remove sediment and particulate-bound pollutants from storm water and will assist in decreasing peak runoff by slightly increasing the site's overall time of concentration. Additional site design and source control measures will be implemented as applicable.

1.4 Conclusions

Based upon the hydrology calculations performed for the project site, there is an increase in peak runoff in the post-project condition compared to the existing condition due to the increase in hardscape without detention. Including the design of the detention system, the post-project peak runoff is less than the pre-project condition. See tables below for a summary of pre- and post-project peak flow rates by drainage area and cumulatively.

Peak Flow Rate Comparison Table (100 Year, 6 Hour)			
Pre-Project		Post-Project (Unmitigated)	
Drainage Area	Peak Flow (CFS)	Drainage Area	Peak Flow (CFS)
EX-1	8.46	PR-1 and OFF-1 [portion EX-1; EX-5]	15.34
EX-2	2.02	PR-2	0.07
EX-3	2.23	PR-3	0.06
EX-4	1.58	PR-4 [EX-2; EX-3; EX-4; portion EX-1 and EX-5]	8.82
EX-5	2.59	-	0.0
TOTAL	16.88	TOTAL	24.29

Peak Flow Rate Comparison Table (100 Year, 6 Hour)			
Pre-Project		Post-Project (Mitigated)	
Drainage Area	Peak Flow (CFS)	Drainage Area	Peak Flow (CFS)
EX-1	8.46	PR-1 and OFF-1 [portion EX-1; EX-5]	6.33
EX-2	2.02	PR-2	0.07
EX-3	2.23	PR-3	0.06
EX-4	1.58	PR-4 [EX-2; EX-3; EX-4; portion EX-1 and EX-5]	0.18
EX-5	2.59	-	0.0
TOTAL	16.88	TOTAL	6.64

Offsite Peak Flow Rate Comparison Table (100 Year, 6 Hour)	
Description	Peak Flow (CFS)
Pre-Project	16.88
Post-Project (Unmitigated)	24.29
Post-Project (Mitigated)	6.64

The proposed development and resulting peak runoff will not have an adverse effect on the downstream watershed. It is also worth noting that both of the proposed storm water basins have been designed with additional catch basins – conservatively assuming to reach a level of 50 percent clogging over time - as shown on the project preliminary grading plans under separate cover to continue to mitigate the post-project Q_{100} peak runoff to below the pre-project Q_{100} in the event the basins are not properly maintained over time and drainage through the basin's layers are failing. This design has been incorporated as an additional fail-safe measure to alleviate concerns of the basins not functioning as intended and designed over time.

1.5 References

"San Diego County Hydrology Manual", revised June 2003, County of San Diego, Department of Public Works, Flood Control Section.

"San Diego County Hydraulic Design Manual", revised September 2014, County of San Diego, Department of Public Works, Flood Control Section

"*Engineering Design Manual Chapter 6: Drainage Design Requirements*", revised 2009, City of Encinitas

"*Engineering Design Manual Chapter 7: BMP Design Manual*", revised February 2016, City of Encinitas

Soil Survey Staff, Natural Resources Conservation Service, United States Department of Agriculture. Web Soil Survey. Available online at http://websoilsurvey.nrcs.usda.gov. Accessed June 16, 2020

"*Storm Water Management Investigation: Torrey Crest, 1220-1240 Melba Road and 1190 Island View Lane Encinitas, California*" revised March 21, 2022 by Geocon, Inc.

2.0 METHODOLOGY

2.1 Introduction

The hydrologic model used to perform the hydrologic analysis presented in this report utilizes the Rational Method (RM) equation, Q=CIA. The RM formula estimates the peak rate of runoff based on the variables of area, runoff coefficient, and rainfall intensity. The rainfall intensity (I) is equal to:

$$I = 7.44 \times P_6 \times D^{-0.645}$$

Where:

I = Intensity (in/hr)
P_6 = 6-hour precipitation (inches)
D = duration (minutes – use Tc)

Using the Time of Concentration (Tc), which is the time required for a given element of water that originates at the most remote point of the basin being analyzed to reach the point at which the runoff from the basin is being analyzed. Rainfall intensity (I) used in the Rational Method calculation is a function of the Time of Concentration (Tc) - it is worth noting that the rainfall intensity equation used in the City of Encinitas is more conservative than methodologies used by other jurisdictions such as the City of San Diego. The RM equation determines the storm water runoff rate (Q) for a given basin in terms of flow (typically in cubic feet per second (cfs) but sometimes as gallons per minute (gpm)). The RM equation is as follows:

$$Q = CIA$$

Where:

Q= flow (in cfs)
C = runoff coefficient, ratio of rainfall that produces storm water runoff (runoff vs. infiltration/evaporation/absorption/etc)
I = average rainfall intensity for a duration equal to the Tc for the area, in inches per hour.
A = drainage area contributing to the basin in acres.

The RM equation assumes that the storm event being analyzed delivers precipitation to the entire basin uniformly, and therefore the peak discharge rate will occur when a raindrop that falls at the most remote portion of the basin arrives at the point of analysis. The RM also assumes that the fraction of rainfall that becomes runoff or the runoff coefficient C is not affected by the storm intensity, I, or the precipitation zone number.

2.2 County of San Diego Criteria

As defined by the County Hydrology Manual dated June 2003, the rational method is the preferred equation for determining the hydrologic characteristics of basins up to approximately one square mile in size. The County of San Diego has developed its own tables, nomographs, and methodologies for analyzing storm water runoff for areas within the county. The County has also developed precipitation isopluvial contour maps that show even lines of rainfall anticipated from a given storm event (i.e. 100-year, 6-hour storm).

The County has also illustrated in detail the methodology for determining the time of concentration, in particular the initial time of concentration. The County has adopted the Federal Aviation Agency's (FAA) overland time of flow equation. This equation essentially limits the flow path length for the initial time of concentration to lengths under 100 feet, and is dependent on land use and slope. The time of concentration minimum is 5 minutes per the County of San Diego requirements.

2.3 City of Encinitas Standards

One of the variables of the RM equation is the runoff coefficient, C. The runoff coefficient is dependent only to pervious or impervious surfaces, the City of Encinitas has developed runoff coefficients for pervious and impervious surfaces and are to be applied to drainage basins located within the City of Encinitas.

The City of Encinitas has additional requirements for hydrology reports which are outlined in the Grading, Erosion and Sediment Control Ordinance. Please refer to this manual for further details. Additionally, Chapter 6 of the City of Encinitas Engineering Design Manual contains additional information regarding Drainage Design Requirements. Please refer to this manual for further details.

2.4 Runoff Coefficient Determination

As stated in section 2.3, the runoff coefficient is dependent only upon surface type, pervious or impervious. Section 6.203.1 of the City of Encinitas Engineering Design Manual outlines the runoff coefficient value to be used for each surface type in hydrology studies. Per Section 6.202 of the City of Encinitas Engineering Design Manual, all hydrology studies shall assume soil group 'D'. Additionally, the project's "Storm Water Management Investigation" by the project geotechnical engineer determined soil group 'D'.

2.5 AES Rational Method Computer Model

The Rational Method computer program developed by Advanced Engineering Software (AES) satisfies the County of San Diego design criteria, therefore it is the computer model used for this study. The AES hydrologic model is capable of creating independent node-link models of each interior drainage basin and linking these sub-models together at confluence points to determine peak flow rates. The program utilizes base information input by the user to perform calculations for up to 15 hydrologic processes. The required base information includes drainage basin area, storm water facility locations and sizes, land uses, flow patterns, and topographic elevations. The hydrologic conditions were analyzed in accordance with the 2003 County of San Diego Hydrology Manual, and 2009 City of Encinitas Engineering Design Manual criteria as follows:

Design Storm	100-year, 6-hour
100-year, 6-hour Precipitation	2.8 inches
Rainfall Intensity	Based on the 2003 County of San Diego Hydrology Manual criteria
Runoff Coefficient	Weighted Runoff Coefficients per Section 6.203.1 of City of Encinitas Engineering Design Manual

2.5.1 AES Computer Model Code Information

0: Enter Comment
2: Initial Subarea Analysis
3: Pipe/Box/Culvert Travel Time
5: Open Channel Travel Time
7: User-Specified hydrology data at Node
8: Addition of sub-area runoff to Main Stream
10: Copy Main Stream data onto a Memory Bank
11: Confluence Memory Bank data with Main Stream
13: Clear the Main Stream

**Note: AES was used as part of the Rational Method Analysis for this project in the proposed condition.

3.0 HYDROLOGY MODEL OUTPUT

3.1 Existing Condition Hydrologic Model Output (100-Year Event)

Pre-Development:

$Q = CIA$ *Rational Method Equation
$P_{100} = 2.8$ in *100-Year, 6-Hour Rainfall Precipitation

Total Site

Total Gross Site = 289,479 sf → 6.65 Acres
Analyzed Area = 283,163 sf → 6.50 Acres
Impervious Area = 42,667 sf → 0.98 Acres
Pervious Area = 240,496 sf → 5.52 Acres

C_{PRE}, Weighted Runoff Coefficient,

- 0.45, runoff coefficient for pervious area per EDM 6.203.1
- 0.90, runoff coefficient for impervious area per EDM 6.203.1

Drainage Basin EX-1

Basin Area = 144,662 sf → 3.32 Acres
Impervious Area = 24,387 sf → 0.56 Ac
Pervious Area = 120,275 sf → 2.76 Ac

- 0.45, runoff coefficient for pervious area per EDM 6.203.1
- 0.90, runoff coefficient for impervious area per EDM 6.203.1

$$C_{PRE} = \frac{0.9 \text{ x } 24{,}387 \text{ sf} + 0.45 \text{ x } 120{,}275 \text{ sf}}{144{,}662 \text{ sf}} = 0.53$$

$C_{PRE} = 0.53$

$Tc = Ti + Tt$
$Ti =$ **7.0 min** (5% for $L_1 = 100'$) *Per SDCHM Table 3-2 for ~2.9 DU/AC
$Tt \Rightarrow L_2 = 470'$, $\Delta E = 27'$

$Tt = [\{11.9(L_2/5{,}280)\text{^}3\}/\Delta E]\text{^}0.385$
$Tt = [\{11.9*(470/5{,}280)\text{^}3\}/27]\text{^}0.385 = 0.045$
$Tt = 0.045 \text{ x } 60 =$ **2.7 min**

$Tc = 7.0$ min + 2.7 min = **<u>9.7 min</u>**

$I = 7.44 \text{ x } P_{100} \text{ x } 9.7^{-0.645}$
$I = 7.44 \text{ x } 2.8 \text{ x } 9.7^{-0.645} \approx$ <u>4.81 in/hr</u>

$Q = C_{PRE} \text{ x } I_{100} \text{ x } A$ *Q based on Rational Method equation

<u>Exiting site to SW and discharging on the surface to Melba Road</u>
T_C = <u>9.7 min</u> (See above calculation for Tc)
Q_{100} = <u>8.46 cfs</u> ($Q_{100} = 0.53$ x 4.81 in/hr x 3.32 Ac**)**

Drainage Basin EX-2

Basin Area = 32,639 sf → 0.75 Acres
Impervious Area = 6,511 sf ➔ 0.15 Ac
Pervious Area = 26,128 sf ➔ 0.60 Ac

- 0.45, runoff coefficient for pervious area per EDM 6.203.1
- 0.90, runoff coefficient for impervious area per EDM 6.203.1

$$C_{PRE} = \frac{0.9 \text{ x } 6{,}511 \text{ sf} + 0.45 \text{ x } 26{,}128 \text{ sf}}{32{,}639 \text{ sf}} = 0.54$$

$C_{PRE} = 0.54$

Tc = Ti + Tt
Ti = **8.1 min** (3% for L_1 = 100') *Per SDCHM Table 3-2 for ~2.9 DU/AC
Tt => L_2 = 145', ΔE = 8'
Tt = [{11.9(L_2/5,280)^3}/ΔE]^0.385
Tt = [{11.9(145/5,280)^3}/8]^0.385 = 0.018
Tt = 0.018 x 60 = **1.1 min**
Tc = 8.1 min + 1.1 min = **9.2 min**

$I = 7.44 \text{ x } P_{100} \text{ x } 9.2^{-0.645}$
$I = 7.44 \text{ x } 2.8 \text{ x } 9.2^{-0.645} \approx \underline{4.99 \text{ in/hr}}$

$Q = C_{PRE} \text{ x } I_{100} \text{ x } A$ *Q based on Rational Method equation

Exiting site to NW and discharging to adjacent driveway on Island View Lane
T_C = 9.2 min (See above calculation for Tc)
Q_{100} = 2.02 cfs (Q_{100} = 0.54 x 4.99 in/hr x 0.75 Ac**)**

Drainage Basin EX-3

Basin Area = 43,278 sf → 0.993 Acres
Impervious Area = 55 sf ➔ 0.003 Ac
Pervious Area = 43,223 sf ➔ 0.99 Ac

- 0.45, runoff coefficient for pervious area per EDM 6.203.1
- 0.90, runoff coefficient for impervious area per EDM 6.203.1

$$C_{PRE} = \frac{0.9 \text{ x } 55 \text{ sf} + 0.45 \text{ x } 43{,}223 \text{ sf}}{43{,}278 \text{ sf}} = 0.45$$

$C_{PRE} = 0.45$

Tc = Ti + Tt

Ti = **7.0 min** (5% for L_1 = 100’) *Per SDCHM Table 3-2 for ~2.9 DU/AC
Tt => L_2 = 346’, ΔE = 19.5’
Tt = [{11.9(L_2/5,280)^3}/ΔE]^0.385
Tt = [{11.9*(330/5,280)^3}/18.5]^0.385 = 0.034
Tt = 0.034 x 60 = **2.1 min**
Tc = 7.0 min + 2.1 min = **9.1 min**

I = 7.44 x P_{100} x $9.1^{-0.645}$
I = 7.44 x 2.8 x $9.1^{-0.645}$ ≈ 5.01 in/hr

Q = C_{PRE} x I_{100} x A *Q based on Rational Method equation

Exiting site to NE and entering adjacent brow ditch to convey runoff north
T_C = **9.1 min** (See above calculation for Tc)
Q_{100} = 2.01 cfs (Q_{100} = 0.45 x 5.01 in/hr x 0.993 Ac**)**

Drainage Basin EX-4

Basin Area = 28,314 sf → 0.65 Acres
Impervious Area = 1,658 sf ➔ 0.04 Ac
Pervious Area = 26,656 sf ➔ 0.61 Ac

- 0.45, runoff coefficient for pervious area per EDM 6.203.1
- 0.90, runoff coefficient for impervious area per EDM 6.203.1

$$C_{PRE} = \frac{0.9 \text{ x } 1{,}658 \text{ sf} + 0.45 \text{ x } 26{,}656 \text{ sf}}{28{,}314 \text{ sf}} = 0.48$$

C_{PRE} = 0.48

Tc = Ti + Tt
Ti = **7.0 min** (5% for L_1 = 100’) *Per SDCHM Table 3-2 for ~2.9 DU/AC
Tt => L_2 = 330’, ΔE = 20.1’
Tt = [{11.9(L_2/5,280)^3}/ΔE]^0.385
Tt = [{11.9*(330/5,280)^3}/20.1]^0.385 = 0.033
Tt = 0.033 x 60 = **2.0 min**
Tc = 7.0 min + 2.0 min = **9.0 min**

I = 7.44 x P_{100} x $9.0^{-0.645}$
I = 7.44 x 2.8 x $9.0^{-0.645}$ ≈ 5.06 in/hr

Q = C_{PRE} x I_{100} x A *Q based on Rational Method equation

Exiting site to NE and entering adjacent brow ditch to convey runoff north
T_C = **9.0 min** (See above calculation for Tc)
Q_{100} = 1.58 cfs (Q_{100} = 0.48 x 5.06 in/hr x 0.65 Ac**)**

<u>Drainage Basin EX-5</u>
Basin Area = 41,763 sf → 0.96 Acres
Impervious Area = 12,557 sf ➔ 0.29 Ac
Pervious Area = 29,206 sf ➔ 0.67 Ac

- 0.45, runoff coefficient for pervious area per EDM 6.203.1
- 0.90, runoff coefficient for impervious area per EDM 6.203.1

$$C_{PRE} = \frac{0.9 \text{ x } 12{,}557 \text{ sf} + 0.45 \text{ x } 29{,}206 \text{ sf}}{41{,}763 \text{ sf}} = 0.59$$

$C_{PRE} = 0.59$

Tc = Ti + Tt
Ti = **8.1 min** (3% for L_1 = 100') *Per SDCHM Table 3-2 for ~2.9 DU/AC
Tt => L_2 = 295', ΔE = 8.5'

$$Tt = [\{11.9 * (L_2/5{,}280)^3\} / \Delta E]^{0.385}$$
$$Tt = [\{11.9 * (295/5{,}280)^3\} / 8.5]^{0.385} = 0.041$$

Tt = 0.041 x 60 = **2.4 min**
Tc = 8.1 min + 2.4 min = **<u>10.5 min</u>**

$I = 7.44 \text{ x } P_{100} \text{ x } 10.5^{-0.645}$
$I = 7.44 \text{ x } 2.8 \text{ x } 10.5^{-0.645} \approx$ <u>4.57 in/hr</u>

$Q = C_{PRE} \text{ x } I_{100} \text{ x } A$ *Q based on Rational Method equation

<u>Entering existing catch basin at southwest corner of site</u>
T_C = <u>10.5 min</u> (See above calculation for Tc)
Q_{100} = <u>2.59 cfs</u> (Q_{100} = 0.59 x 4.07 in/hr x 0.96 Ac**)**

Summary of Pre-Project Flows

Peak Runoff Generated (Moonlight Beach Watershed)

Total Area = 177,301 sf (EX-1 + EX-2) → 4.07 Acres

$\mathbf{Q_{100}} = \underline{\mathbf{Q_{EX\text{-}1} + Q_{EX\text{-}2}}}$

$= \underline{\mathbf{10.48\ cfs}}$

Peak Runoff Generated (San Marcos Creek / Batiquitos Lagoon Watershed)

Total Area = 113,355 sf (EX-3 + EX-4 + EX-5) → 2.60 Acres

$\mathbf{Q_{100}} = \underline{\mathbf{Q_{EX\text{-}3} + Q_{EX\text{-}4} + Q_{EX\text{-}5}}}$

$= \underline{\mathbf{6.40\ cfs}}$

Total Peak Runoff Generated (Existing Condition)

Total Area = 290,656 sf (EX-1 + EX-2 + EX-3 + EX-4 + EX-5) → 6.67 Acres

$\mathbf{Q_{100}} = \underline{\mathbf{Q_{EX\text{-}1} + Q_{EX\text{-}2} + Q_{EX\text{-}3} + Q_{EX\text{-}4} + Q_{EX\text{-}5}}}$

$= \underline{\mathbf{10.48 + 6.40 = 16.88\ cfs}}$

3.2 Proposed Undetained Condition Hydrologic Model Output (100-Year Event)

Post-Project (Without Detention):

Q = CIA *Rational Method Equation
P_{100} = 2.8 in *100-Year, 6-Hour Rainfall Precipitation

Total Basin
Total Gross Site = 289,479 sf → 6.646 Acres
Disturbed Area = 273,457 sf → 6.278 Acres

Basin PR-1
Total Area = 158,562 sf → 3.53 Acres
Impervious Area = 104,047 sf ➔ 2.39 Ac
Pervious Area = 54,515 sf ➔ 1.25 Ac

- 0.45, runoff coefficient for pervious area per EDM 6.203.1
- 0.90, runoff coefficient for impervious area per EDM 6.203.1

$$C_{POST} = \frac{0.9 \text{ x } 104{,}047 \text{ sf} + 0.45 \text{ x } 54{,}515 \text{ sf}}{158{,}962 \text{ sf}} = 0.75$$

C_{POST} = 0.75 *Weighted Runoff Coefficient for Total Basin

C_{POST} = 0.75 *Weighted Runoff Coeff. for Total Basin
Q = C_{POST} x I_{100} x A *Q based on flow to existing catch basin

Entering southwestern BMP
T_C = 8.56 min (See attached AES calculations)
Q_{100} = 13.96 cfs (See attached AES calculations)

Basin PR-2 (Entire Drainage Basin)

Total Area = 811 sf ➔ 0.02 Acres
Impervious Area = 0 sf ➔ 0.00 Ac
Pervious Area = 811 sf ➔ 0.02 Acres

- 0.45, runoff coefficient for pervious area per EDM 6.203.1
- 0.90, runoff coefficient for impervious area per EDM 6.203.1

$$C_{POST} = \frac{0.9 \text{ x } 0 \text{ sf} + 0.45 \text{ x } 811 \text{ sf}}{811 \text{ sf}} = 0.45$$

C_{POST} = 0.45 *Weighted Runoff Coefficient for Total Basin

Tc = **<u>5.0 Min</u>** * Minimum T_C per SDCHM

$P_6 = 2.8$
$I = 7.44 \times P_6 \times D^{-0.645}$
$I = 7.44 \times 2.8 \times 5.0^{-0.645} \approx \underline{7.38 \text{ in/hr}}$

<u>Drainage to Crest Drive</u>
Q_{100} = 0.45 x 7.38 in/hr x 0.02 Ac = <u>0.07 cfs</u>

<u>Basin PR-3</u>

Total Area = 937 sf ➔ 0.02 Acres
Impervious Area = 0 sf ➔ 0.00 Ac
Pervious Area = 937 sf ➔ 0.02 Acres

- 0.45, runoff coefficient for pervious area per EDM 6.203.1
- 0.90, runoff coefficient for impervious area per EDM 6.203.1

$$C_{POST} = \frac{0.9 \times 0 \text{ sf} + 0.45 \times 937 \text{ sf}}{937 \text{ sf}} = 0.45$$

Tc = **<u>5.0 Min</u>** * Minimum T_C per SDCHM

$P_6 = 2.8$
$I = 7.44 \times P_6 \times D^{-0.645}$
$I = 7.44 \times 2.8 \times 5.0^{-0.645} \approx \underline{7.38 \text{ in/hr}}$

<u>Drainage to Crest Drive</u>
Q_{100} = 0.45 x 7.38 in/hr x 0.02 Ac = <u>0.06 cfs</u>

<u>Basin PR-4</u>
Basin PR-4 Area = 113,286 sf ➔ 2.60 Acres
Impervious Area = 70,687 sf ➔ 1.62 Ac
Pervious Area = 42,599 sf ➔ 0.98 Acres

- 0.45, runoff coefficient for pervious area per EDM 6.203.1
- 0.90, runoff coefficient for impervious area per EDM 6.203.1

$$C_{POST} = \frac{0.9 \times 70{,}687 \text{ sf} + 0.45 \times 42{,}599 \text{ sf}}{113{,}286 \text{ sf}} = 0.73$$

$C_{POST} = 0.73$ *Weighted Runoff Coeff. for Total Basin
$Q = C_{POST} \times I_{100} \times A$ *Q based on flow to biofiltration basin

Entering northeastern BMP
T_C = 10.23 min (See attached AES calculations)
Q_{100} = 8.82 cfs (See attached AES calculations)

Basin OFF-1 (Entire Drainage Basin)

Total Area = 17,499 sf ➔ 0.40 Acres

Cn, Weighted Runoff Coefficient,
- 0.45, runoff coefficient for pervious area per EDM 6.203.1
- 0.90, runoff coefficient for impervious area per EDM 6.203.1

$$Cn = \frac{0.90 \text{ x } 5{,}385 \text{ sf} + 0.45 \text{ x } 7{,}100 \text{ sf}}{9{,}984 \text{ sf}} = 0.59$$

Tc = **5.0 Min** * Minimum T_C per SDCHM

$P_6 = 2.8$
$I = 7.44 \text{ x } P_6 \text{ x } D^{-0.645}$
$I = 7.44 \text{ x } 2.8 \text{ x } 5.0^{-0.645} \approx 7.38$ in/hr

Draining to Melba Road's curb and gutter
Q_{100} = 0.59 x 7.38 in/hr x 0.40 Ac = 1.74 cfs

Summary of Post-Project Flows Without Detention

Peak Runoff Generated (Proposed Condition)
Total Area = 158,562 sf (PR-1) → 3.64 Acres
$Q_{100} = Q_{PR-1}$
= 13.96 cfs

Total Area = 811 sf (PR-2) →0.02 Acres
$Q_{100} = Q_{PR-2}$
= 0.07 cfs < 2.02 cfs for Basin EX-2

Total Area = 957 sf (PR-3) → 0.02 Acres
$Q_{100} = Q_{PR-3}$
= 0.06 cfs

Total Area = 113,286 sf (PR-4) → 2.62 Acres
$Q_{100} = Q_{PR-4}$
= 8.82 cfs

Total Area = 17,499 sf (OFF-1) → 0.40 Acres
$Q_{100} = Q_{OFF-1}$
= 1.74 cfs

Total Peak Runoff Generated (Moonlight Beach Watershed)

Total Area = 176,061 sf (PR-1 + OFF-1) → 4.04 Acres

Q_{100} = **$\underline{Q_{PR-1} + Q_{OFF-1}}$**
= **13.96 cfs + 1.74 cfs**
= **15.32 cfs** (Confluenced see AES)

Total Peak Runoff Generated (San Marcos Creek / Batiquitos Lagoon Watershed)

Total Area = 114,223 sf (PR-3 + PR-4) → 2.62 Acres

Q_{100} = **$\underline{Q_{PR-4}}$**
= **8.88 cfs**

3.3 Detention Analysis (100-Year Event)

The onsite HMP-sized flow-control biofiltration basin and BMP systems ("Basin") provide pollutant control as well as hydromodification management and mitigation of the 100-year, 6-hour storm event peak flow rate. The 100-year storm event detention analysis was performed using HydroCAD-10 software as well as Advanced Engineering Software (A.E.S). HydroCAD-10 has the ability to route the 100-year, 6-hour storm event inflow hydrograph through the biofiltration facility, and based on the facility cross sectional geometry, stage-storage, and outlet structure data, calculate the detained peak flow rate and detained time to peak. The inflow runoff hydrograph to the biofiltration basin was modeled using RatHydro which is a Rational Method Design Storm Hydrograph software that creates a hydrograph using the results of the Rational Method calculations.

The two HMP-sized flow-control and pollutant removal facilities consist of a pre-treatment biofiltration basin with surface area square footage per plan. Basin PR-1 biofiltration basin consist of 18 inches of engineered soil and as well as a 33 inches storage layer consisting of 3/8" and 3/4" crushed rock gravel along with an impermeable liner to prevent infiltration into the surrounding topsoil and Very Old Paralic Deposit (Qvop) layer. Basin PR-2 biofiltration basin consist of 18 inches of engineer soil along with a 78 inches StormTrap detention system (or equivalent). Runoff generated during high-frequency, low-intensity storm events will be biofiltered through the engineered soil and storage layers. Runoff will be mitigated to comply with HMP low-flow requirements by infiltrating through the engineered soil and storage layers, as well as with an orifice plate connected to the inside of the overflow catch basin, restricting flow leaving the site.

In larger storm events, runoff not filtered through the engineered soil and storage layers will be conveyed via overflow outlet structures. Basin PR-1 biofiltration basin is equipped with five Brooks Boxes: one 12" x 12", one 18" x 18", one 24" x 24" and two 36" x 36" with two 3" x 19" midflow orifices. Basin PR-2 biofiltration is equipped with six Brooks Boxes: five 36" x 36" and one 24" x 24" with three 3" x 23" midflow orifices. The outlet structures on each basin have been designed to mitigate the post-project Q_{100} to below the pre-project Q_{100} peak flow rate with the basins functioning as intended. Additionally, both of the proposed basins have been designed with additional outlet structures – conservatively assuming to reach a level of 50 percent clogging over time - as shown on the project preliminary grading plans under separate cover to continue to mitigate the post-project Q_{100} peak runoff to below the pre-project Q_{100} in the event the basins are not properly maintained over time and drainage through the basin's layers are failing. Runoff conveyed via the outlet structure will bypass the soil layers and be conveyed directly to a proposed 18-inch PVC drainpipe to direct discharge offsite, ultimately outletting to the Melba Road or Witham Road curb face through a curb outlet drainage channel.

PROPOSED DRAINAGE FLOWS (MIT)			
DRAINAGE AREA	DRAINAGE AREA (ACRES)	Q_{100} (CFS)	I_{100} (IN/HR)
*PR-1 (Mit)	4.04	6.33	-
PR-2	0.02	0.10	7.38
PR-3	0.004	0.06	7.38
PR-4	2.60	0.18	-
TOTAL	6.68	6.63	-

Table 3. Proposed Condition Peak Drainage Flow Rates (Mitigated)

*PR-1 Mitigated value includes confluence of PR-1 with OFF-1 at the southwest corner of the site.

Table 3 above lists the peak flow rates for the project site in the proposed, mitigated condition after being routed through the biofiltration basin. Based on the results of the HydroCAD-10 analysis, the HMP biofiltration facility, detention system, and outlet structure provide mitigation for the 100-year, 6-hour storm event peak flow rate. Runoff leaving the site continues to flow to the southwest or northwest to outlet to the curb face along Melba Road or Witham Road respectively. The resulting total peak discharge leaving the site to the Moonlight Beach watershed confluence with the offsite basin is 6.33 cfs, which is mitigated at or below the pre-development Q_{100} of 8.46 cfs discharging to the same ultimate receiving water body. The resulting total peak discharge leaving the site to San Marcos Creek / Batiquitos Lagoon Watershed is 0.24 cfs below the pre-development Q_{100} of 6.40 cfs. Refer to Appendix A of this Hydrology Report and also to Appendix B for the HydroCAD-10 detailed output, which shows the effect of the detention characteristics of the biofiltration basins on the resulting peak discharge and time of concentration leaving the subject property.

3.3.1 Proposed Detained Condition Output Summary (100-Year Event)

Summary of Pre-Project Flows

Peak Runoff Generated (Moonlight Beach Watershed)

Total Area = 177,301 sf (EX-1 + EX-2) → 4.07 Acres

$\mathbf{Q_{100}} = \underline{\mathbf{Q_{EX-1} + Q_{EX-2}}}$

$= \underline{\mathbf{10.48\ cfs}}$

Peak Runoff Generated (San Marcos Creek / Batiquitos Lagoon Watershed)

Total Area = 113,355 sf (EX-3 + EX-4 + EX-5) → 2.60 Acres

$\mathbf{Q_{100}} = \underline{\mathbf{Q_{EX-3} + Q_{EX-4} + Q_{EX-5}}}$

$= \underline{\mathbf{6.40\ cfs}}$

**Total runoff leaving the project site in the existing condition to the Batiquitos Lagoon watershed not included in the proposed drainage analysis discharging to Melba Road.

Total Peak Runoff Generated (Existing Condition)

Total Area = 290,656 sf (EX-1 + EX-2 + EX-3 + EX-4 + EX-5) → 6.67 Acres

$\mathbf{Q_{100}} = \underline{\mathbf{Q_{EX-1} + Q_{EX-2} + Q_{EX-3} + Q_{EX-4} + Q_{EX-5}}}$

$= \underline{\mathbf{10.48\ cfs + 6.40\ cfs = 16.48\ cfs}}$

Summary of Post-Project Flows With Detention (Mitigated)

Peak Runoff Generated (Moonlight Beach Watershed)

Total Area = 176,061 sf (PR-1 + OFF-1) → 4.04 Acres

$\mathbf{Q_{100}} = \underline{\mathbf{Q_{PR-1} + Q_{OFF-1}}}$

= **5.35 cfs + 1.74 cfs = 6.33 cfs (see attached AES calculations)***

*6.33 cfs in the existing condition draining to Melba Road at Evergreen Drive prior to discharging to the canyon east and north of Ocean Knoll Elementary and then routing to Encinitas Boulevard, reduced to 8.25 cfs in the post-project condition with detention.

Peak Runoff Generated (San Marcos Creek / Batiquitos Lagoon Watershed)

Total Area = 114,223 sf (PR-3 + PR-4) → 2.62 Acres

$\mathbf{Q_{100}} = \underline{\mathbf{Q_{PR-3} + Q_{PR-4}}}$

= **0.06 + 0.18 cfs = 0.24 cfs****

**2.01 cfs in the existing condition draining to the existing brow ditch within a public drainage easement outletting to the Witham Road curb face via an 18” storm drain connected to a curb outlet in a water line easement, reduced to 0.06 cfs in the post-project condition with detention. 1.58 cfs in the existing condition traveling through adjacent properties at the northeast corner of the property, heading south to Witham Road and then northeast on Crest Drive, and entering a curb inlet at the Hickoryhill Drive intersection, reduced to 0.18 cfs in the post-project condition with detention. 2.55 cfs in the existing condition traveling through adjacent properties at the Midwest corner of the property, heading west toward Crest Drive, and also entering the curb inlet at the Hickoryhill Drive, reduced to 0.0 cfs in the post-project condition.

3.4 Hydromodification Analysis

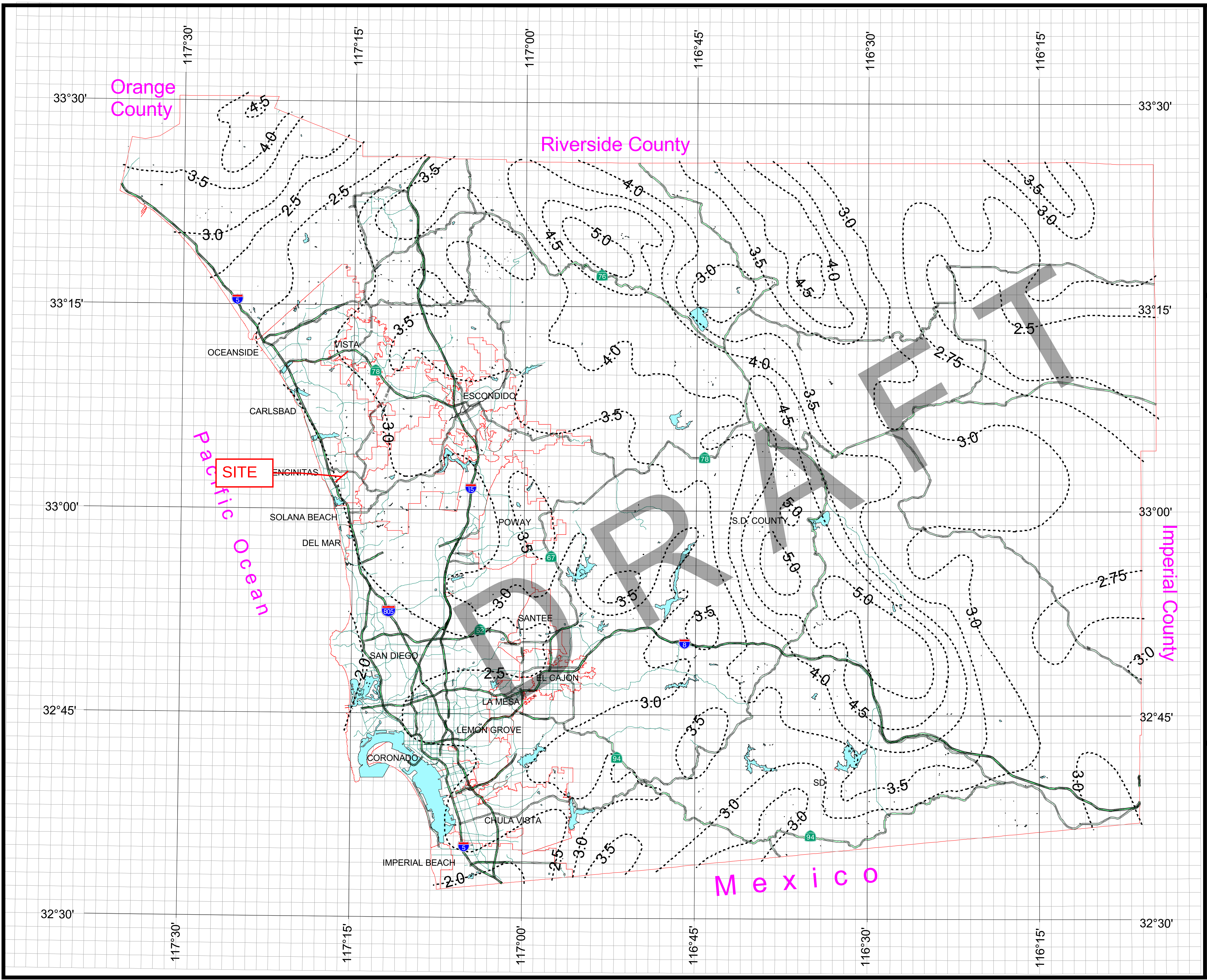
Refer to the project Storm Water Quality Management Plan (SWQMP) prepared by Pasco, Laret, Suiter & Associates under separate cover for discussion of hydromodification management strategy and compliance to satisfy the requirements of the MS4 Permit.

3.5 Storm Water Pollutant Control

To meet the requirements of the MS4 Permit, the HMP bioretention facility is designed to treat onsite storm water pollutants contained in the volume of runoff from a 24-hour, 85th percentile storm event by slowly infiltrating runoff through an engineered soil layer. Refer to the project Storm Water Quality Management Plan (SWQMP) prepared by Pasco, Laret, Suiter & Associates under separate cover for discussion of pollutant control.

Appendix A

HYDROLOGY SUPPORT MATERIAL



County of San Diego Hydrology Manual

Rainfall Isopluvials

100 Year Rainfall Event - 6 Hours

- - - - - -	Isopluvial (inches)

DPW GIS
Department of Public Works
Geographic Information Services

SanGIS
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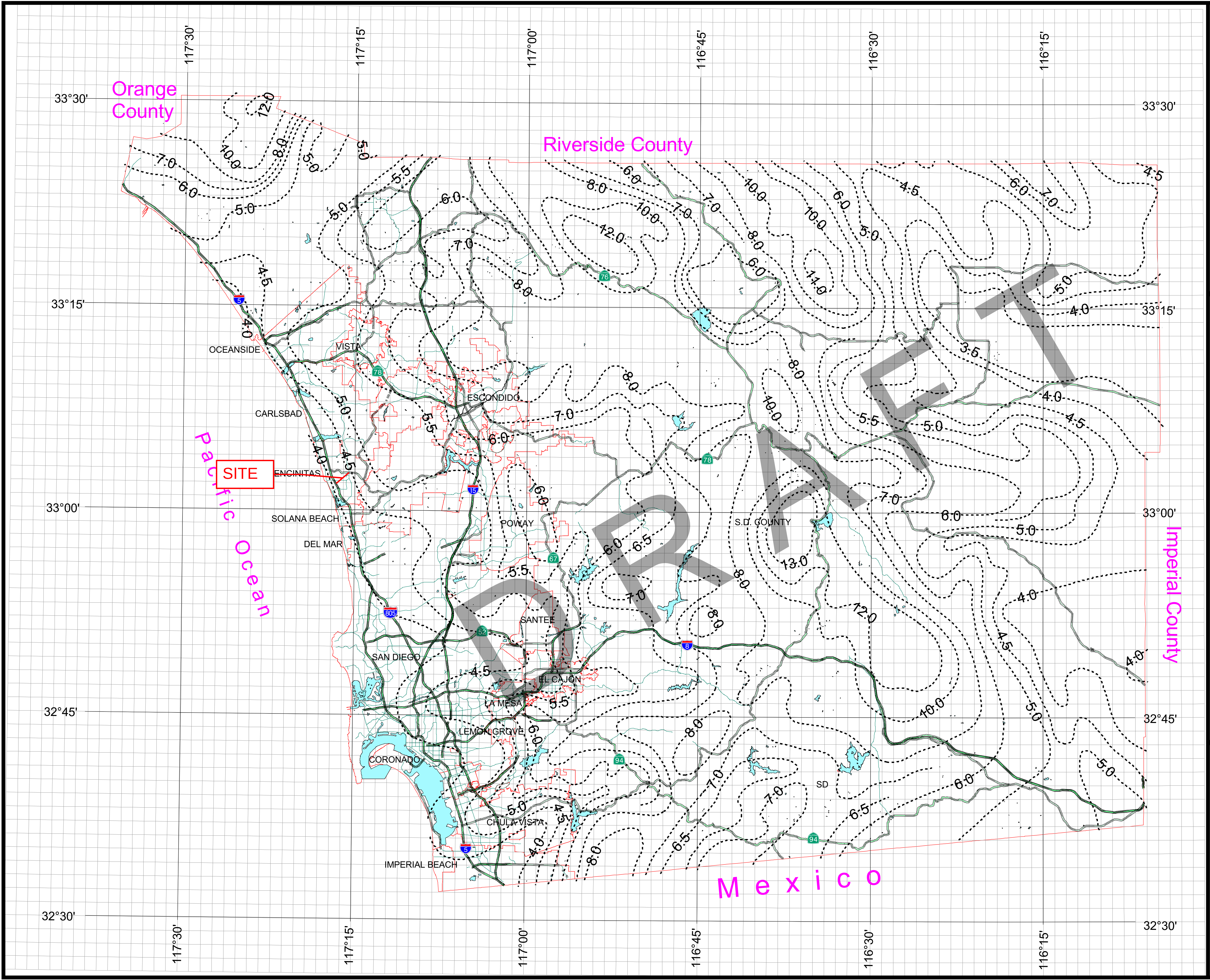


County of San Diego Hydrology Manual

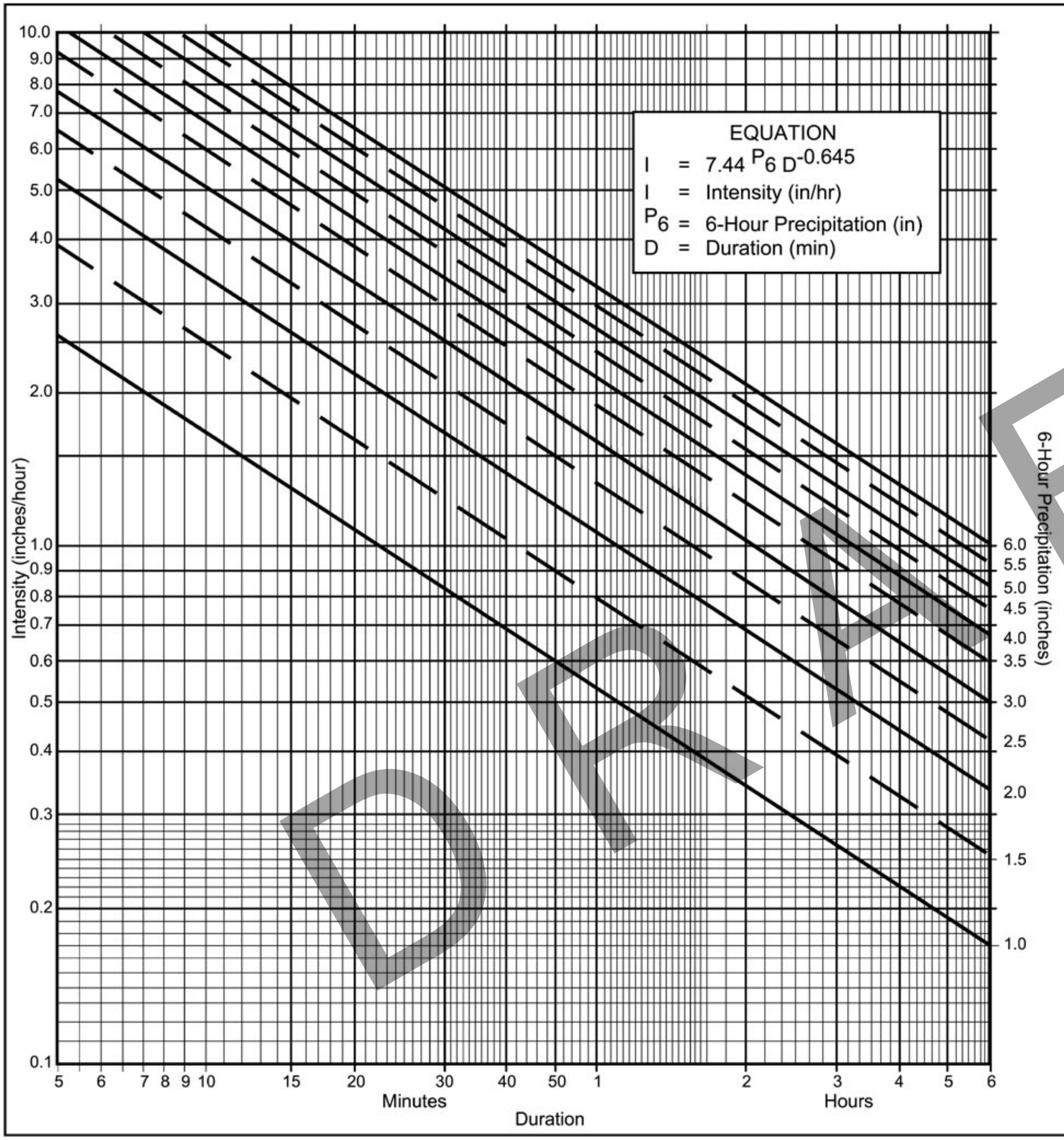
Rainfall Isopluvials

100 Year Rainfall Event - 24 Hours

- - - - - - Isopluvial (inches)

DPW GIS
Department of Public Works
Geographic Information Services

SanGIS
We Have San Diego Covered!



EQUATION

$I = 7.44\ P_6\ D^{-0.645}$

I = Intensity (in/hr)

P_6 = 6-Hour Precipitation (in)

D = Duration (min)

Directions for Application:

(1) From precipitation maps determine 6 hr and 24 hr amounts for the selected frequency. These maps are included in the County Hydrology Manual (10, 50, and 100 yr maps included in the Design and Procedure Manual).

(2) Adjust 6 hr precipitation (if necessary) so that it is within the range of 45% to 65% of the 24 hr precipitation (not applicable to Desert).

(3) Plot 6 hr precipitation on the right side of the chart.

(4) Draw a line through the point parallel to the plotted lines.

(5) This line is the intensity-duration curve for the location being analyzed.

Application Form:

(a) Selected frequency _______ year

(b) P_6 = _______ in., P_{24} = _______, $\frac{P_6}{P_{24}}$ = _______ %$^{(2)}$

(c) Adjusted $P_6^{(2)}$ = _______ in.

(d) t_x = _______ min.

(e) I = _______ in./hr.

Note: This chart replaces the Intensity-Duration-Frequency curves used since 1965.

P6	**1**	**1.5**	**2**	**2.5**	**3**	**3.5**	**4**	**4.5**	**5**	**5.5**	**6**
Duration	I	I	I	I	I	I	I	I	I	I	I
5	2.63	3.95	5.27	6.59	7.90	9.22	10.54	11.86	13.17	14.49	15.81
7	2.12	3.18	4.24	5.30	6.36	7.42	8.48	9.54	10.60	11.66	12.72
10	1.68	2.53	3.37	4.21	5.05	5.90	6.74	7.58	8.42	9.27	10.11
15	1.30	1.95	2.59	3.24	3.89	4.54	5.19	5.84	6.49	7.13	7.78
20	1.08	1.62	2.15	2.69	3.23	3.77	4.31	4.85	5.39	5.93	6.46
25	0.93	1.40	1.87	2.33	2.80	3.27	3.73	4.20	4.67	5.13	5.60
30	0.83	1.24	1.66	2.07	2.49	2.90	3.32	3.73	4.15	4.56	4.98
40	0.69	1.03	1.38	1.72	2.07	2.41	2.76	3.10	3.45	3.79	4.13
50	0.60	0.90	1.19	1.49	1.79	2.09	2.39	2.69	2.98	3.28	3.58
60	0.53	0.80	1.06	1.33	1.59	1.86	2.12	2.39	2.65	2.92	3.18
90	0.41	0.61	0.82	1.02	1.23	1.43	1.63	1.84	2.04	2.25	2.45
120	0.34	0.51	0.68	0.85	1.02	1.19	1.36	1.53	1.70	1.87	2.04
150	0.29	0.44	0.59	0.73	0.88	1.03	1.18	1.32	1.47	1.62	1.76
180	0.26	0.39	0.52	0.65	0.78	0.91	1.04	1.18	1.31	1.44	1.57
240	0.22	0.33	0.43	0.54	0.65	0.76	0.87	0.98	1.08	1.19	1.30
300	0.19	0.28	0.38	0.47	0.56	0.66	0.75	0.85	0.94	1.03	1.13
360	0.17	0.25	0.33	0.42	0.50	0.58	0.67	0.75	0.84	0.92	1.00

Intensity-Duration Design Chart - Template

FIGURE

3-1

Table 3-1
RUNOFF COEFFICIENTS FOR URBAN AREAS

Land Use		Runoff Coefficient "C"				
			Soil Type			
NRCS Elements	County Elements	% IMPER.	A	B	C	D
Undisturbed Natural Terrain (Natural)	Permanent Open Space	0*	0.20	0.25	0.30	0.35
Low Density Residential (LDR)	Residential, 1.0 DU/A or less	10	0.27	0.32	0.36	0.41
Low Density Residential (LDR)	Residential, 2.0 DU/A or less	20	0.34	0.38	0.42	0.46
Low Density Residential (LDR)	Residential, 2.9 DU/A or less	25	0.38	0.41	0.45	0.49
Medium Density Residential (MDR)	Residential, 4.3 DU/A or less	30	0.41	0.45	0.48	0.52
Medium Density Residential (MDR)	Residential, 7.3 DU/A or less	40	0.48	0.51	0.54	0.57
Medium Density Residential (MDR)	Residential, 10.9 DU/A or less	45	0.52	0.54	0.57	0.60
Medium Density Residential (MDR)	Residential, 14.5 DU/A or less	50	0.55	0.58	0.60	0.63
High Density Residential (HDR)	Residential, 24.0 DU/A or less	65	0.66	0.67	0.69	0.71
High Density Residential (HDR)	Residential, 43.0 DU/A or less	80	0.76	0.77	0.78	0.79
Commercial/Industrial (N. Com)	Neighborhood Commercial	80	0.76	0.77	0.78	0.79
Commercial/Industrial (G. Com)	General Commercial	85	0.80	0.80	0.81	0.82
Commercial/Industrial (O.P. Com)	Office Professional/Commercial	90	0.83	0.84	0.84	0.85
Commercial/Industrial (Limited I.)	Limited Industrial	90	0.83	0.84	0.84	0.85
Commercial/Industrial (General I.)	General Industrial	95	0.87	0.87	0.87	0.87

*The values associated with 0% impervious may be used for direct calculation of the runoff coefficient as described in Section 3.1.2 (representing the pervious runoff coefficient, Cp, for the soil type), or for areas that will remain undisturbed in perpetuity. Justification must be given that the area will remain natural forever (e.g., the area is located in Cleveland National Forest).

DU/A = dwelling units per acre

NRCS = National Resources Conservation Service

Note that the Initial Time of Concentration should be reflective of the general land-use at the upstream end of a drainage basin. A single lot with an area of two or less acres does not have a significant effect where the drainage basin area is 20 to 600 acres.

Table 3-2 provides limits of the length (Maximum Length (L_M)) of sheet flow to be used in hydrology studies. Initial T_i values based on average C values for the Land Use Element are also included. These values can be used in planning and design applications as described below. Exceptions may be approved by the "Regulating Agency" when submitted with a detailed study.

Table 3-2

MAXIMUM OVERLAND FLOW LENGTH (L_M) & INITIAL TIME OF CONCENTRATION (T_i)

Element*	DU/ Acre	.5%		1%		2%		3%		5%		10%	
		L_M	T_i	L_M	T_i	L_M	T_i	L_M	T_i	L_M	T_i	L_M	T_i
Natural		50	13.2	70	12.5	85	10.9	100	10.3	100	8.7	100	6.9
LDR	1	50	12.2	70	11.5	85	10.0	100	9.5	100	8.0	100	6.4
LDR	2	50	11.3	70	10.5	85	9.2	100	8.8	100	7.4	100	5.8
LDR	2.9	50	10.7	70	10.0	85	8.8	95	8.1	100	7.0	100	5.6
MDR	4.3	50	10.2	70	9.6	80	8.1	95	7.8	100	6.7	100	5.3
MDR	7.3	50	9.2	65	8.4	80	7.4	95	7.0	100	6.0	100	4.8
MDR	10.9	50	8.7	65	7.9	80	6.9	90	6.4	100	5.7	100	4.5
MDR	14.5	50	8.2	65	7.4	80	6.5	90	6.0	100	5.4	100	4.3
HDR	24	50	6.7	65	6.1	75	5.1	90	4.9	95	4.3	100	3.5
HDR	43	50	5.3	65	4.7	75	4.0	85	3.8	95	3.4	100	2.7
N. Com		50	5.3	60	4.5	75	4.0	85	3.8	95	3.4	100	2.7
G. Com		50	4.7	60	4.1	75	3.6	85	3.4	90	2.9	100	2.4
O.P./Com		50	4.2	60	3.7	70	3.1	80	2.9	90	2.6	100	2.2
Limited I.		50	4.2	60	3.7	70	3.1	80	2.9	90	2.6	100	2.2
General I.		50	3.7	60	3.2	70	2.7	80	2.6	90	2.3	100	1.9

*See Table 3-1 for more detailed description

SHEET 1 OF 2

EXISTING HYDROLOGY EXHIBIT

TORREY CREST

1220-1240 MELBA ROAD / 1190 ISLAND VIEW LANE

MATCHLINE: SEE SHEET 2 FOR CONTINUATION

LEGEND

PROPERTY BOUNDARY	——— — ———
CENTERLINE OF ROAD	——— — ———
RIGHT-OF-WAY BOUNDARY	—————
ADJACENT PROPERTY LINE	— — — —
EXISTING CONTOUR LINE	- - - - -
EXISTING PATH OF TRAVEL	· · → · · · → ·
EXISTING DIRECTION OF FLOW	→
EXISTING MAJOR DRAINAGE BASIN BOUNDARY	▬ ▬ ▬
EXISTING IMPERVIOUS AREA	▨

PLAN VIEW - EXISTING NODE MAP

SCALE: 1" = 20' HORIZONTAL

BASIN EX-2 - AREA CALCULATIONS

TOTAL BASIN EX-2 AREA	32,639 SF (0.75 AC)
C_{PRE}	0.54
Q100	2.02 CFS

BASIN EX-3 - AREA CALCULATIONS

TOTAL BASIN EX-3 AREA	43,278 SF (0.99 AC)
C_{PRE}	0.45
Q100	2.23 CFS

BASIN EX-4 - AREA CALCULATIONS

TOTAL BASIN EX-4 AREA	28,314 SF (0.65 AC)
C_{PRE}	0.48
Q100	1.58 CFS

PROJECT SITE - AREA CALCULATIONS

SUBJECT PROPERTY GROSS AREA	289,479 SF (6.65 AC)
SUBJECT PROPERTY IMPERVIOUS AREA	39,852 SF
TOTAL ANALYZED AREA	290,656 SF (6.67 AC)
TOTAL EXISTING IMPERVIOUS AREA	45,168 SF (1.04 AC)
TOTAL EXISTING PERVIOUS AREA	245,524 SF (5.64 AC)
% IMPERVIOUS	18.4%

GRAPHIC SCALE: 1" = 20'

20 0 20 40 60

EXISTING HYDROLOGY EXHIBIT
1220-1240 MELBA ROAD
CITY OF ENCINITAS

PASCO LARET SUITER
& ASSOCIATES
San Diego | Solana Beach | Orange County
Phone 858.259.8212 | www.plsaengineering.com

EXISTING HYDROLOGY EXHIBIT

1220-1240 MELBA ROAD / 1190 ISLAND VIEW LANE

LEGEND

- PROPERTY BOUNDARY
- CENTERLINE OF ROAD
- RIGHT-OF-WAY BOUNDARY
- ADJACENT PROPERTY LINE
- EXISTING CONTOUR LINE
- EXISTING PATH OF TRAVEL
- EXISTING DIRECTION OF FLOW
- EXISTING MAJOR DRAINAGE BASIN BOUNDARY
- EXISTING IMPERVIOUS AREA ▨

BASIN EX-1 - AREA CALCULATIONS

TOTAL BASIN EX-1 AREA	144,662 SF (3.32 AC)
C_{PRE}	0.53
Q100	8.46 CFS

BASIN EX-5 - AREA CALCULATIONS

TOTAL BASIN EX-5 AREA	41,763 SF (0.96 AC)
C_{PRE}	0.59
Q100	2.55 CFS

PLAN VIEW - EXISTING NODE MAP

SCALE: 1" = 20' HORIZONTAL

GRAPHIC SCALE: 1" = 20'

20 0 20 40 60

PASCO LARET SUITER
& ASSOCIATES
San Diego | Solana Beach | Orange County
Phone 858.259.8212 | www.plsaengineering.com

MATCHLINE: SEE SHEET 2 FOR CONTINUATION

PLAN VIEW - POST-DEVELOPED NODE MAP

SCALE: 1" = 20' HORIZONTAL

GRAPHIC SCALE: 1" = 20'

20 0 20 40 60

BASIN PR-1- AREA CALCULATIONS

TOTAL BASIN PR-1.1 AREA	158,562 SF (3.64 AC)
Cn	0.75
Q100 (UNMITIGATED)	13.96 CFS
Q100 (MITIGATED)	6.33 CFS

BASIN PR-4 - AREA CALCULATIONS

TOTAL BASIN PR-1.2 AREA	114,153 SF (2.62 AC)
Cn	0.73
Q100 (UNMITIGATED)	8.82 CFS
Q100 (MITIGATED)	0.18 CFS

PROPOSED HYDROLOGY EXHIBIT
1220-1240 MELBA ROAD
CITY OF ENCINITAS

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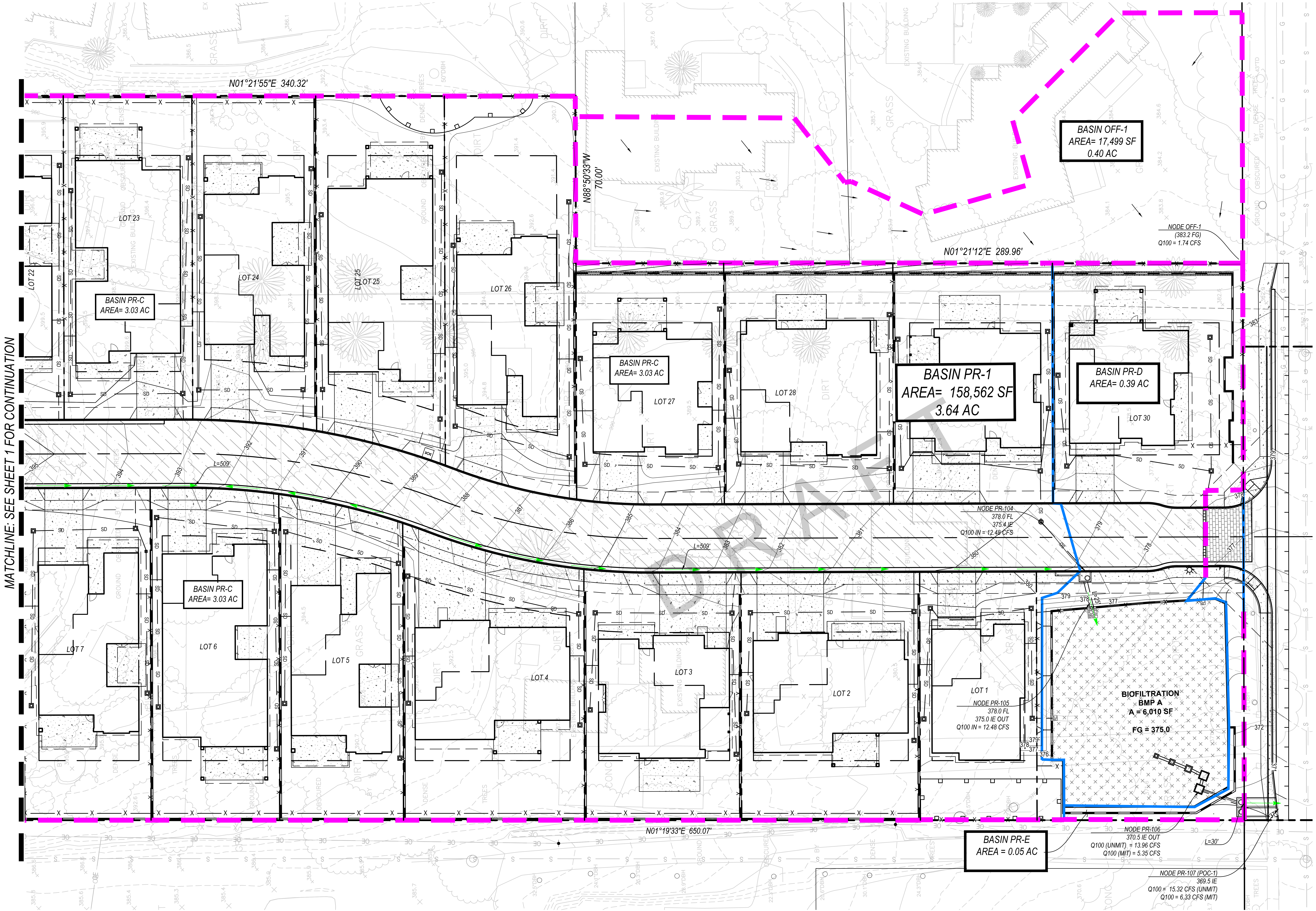
SHEET 2 OF 2

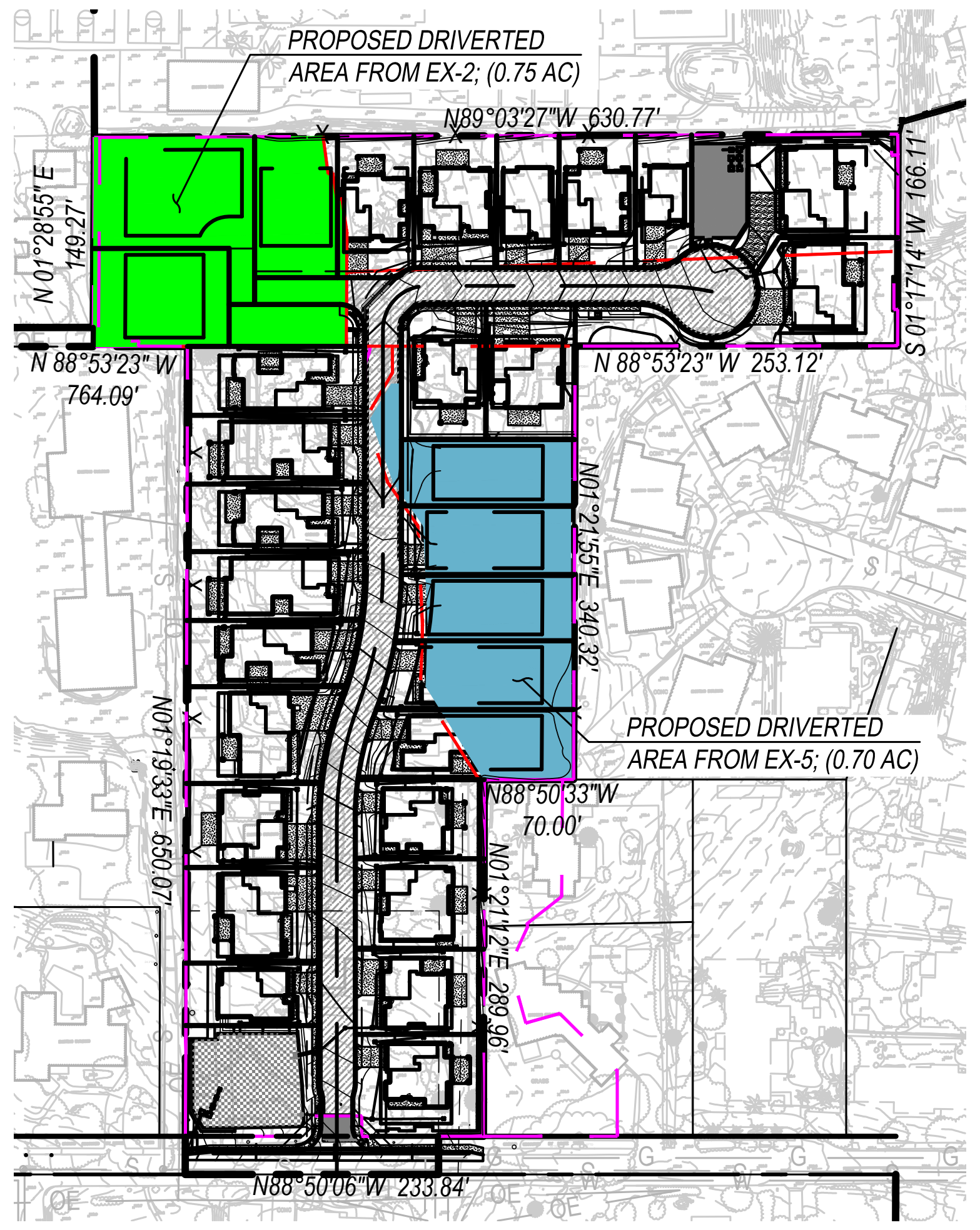


PLAN VIEW - POST-DEVELOPED NODE MAP

SCALE: 1" = 20' HORIZONTAL

LEGEND

PROPERTY BOUNDARY	━━ ━ ━ ━━
CENTERLINE OF ROAD	—— — ——
RIGHT-OF-WAY BOUNDARY	━━━━━━
ADJACENT PROPERTY LINE	— — — —
EXISTING CONTOUR LINE	- - - - - - -
PROPOSED CONTOUR LINE	——————
PROPOSED PATH OF TRAVEL	→
PROPOSED DIRECTION OF FLOW	→ →
PROPOSED MAJOR DRAINAGE BASIN BOUNDARY	▬ ▬ ▬ ▬
EXISTING MAJOR DRAINAGE BASIN BOUNDARY	▬ ▬ ▬ ▬
PROPOSED SUB-DRAINAGE / AES NODE BASIN BOUNDARY	━━━━━━
PROPOSED DIVERTED AREA TO MOONLIGHT BEACH WATERSHED	🟦
PROPOSED DIVERTED AREA SAN MARCOS CREEK / BATIQUITOS LAGOON WATERSHED	🟩



KEY MAP - DIVERTED BASIN AREAS

SCALE: 1" = 150'

BASIN PR-1- AREA CALCULATIONS

TOTAL BASIN PR-1.1 AREA	158,562 SF (3.64 AC)
Cn	0.75
Q100 (UNMITIGATED)	13.96 CFS
Q100 (MITIGATED)	6.33 CFS

BASIN OFF-1 - AREA CALCULATIONS

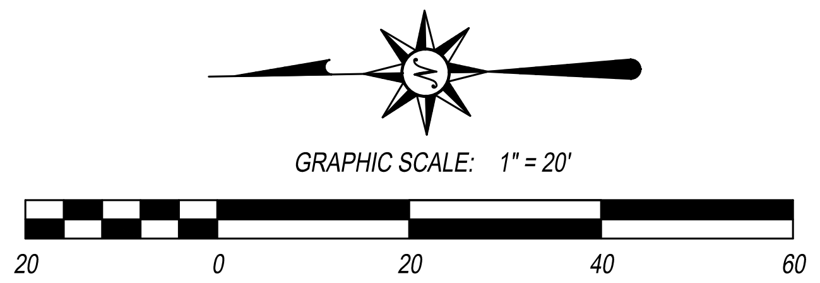
TOTAL BASIN OFF-1 AREA	17,499 SF (0.40 AC)
Cn	0.59
Q100	1.74 CFS

POC-1 - AREA CALCULATIONS

TOTAL BASIN OFF-1 AREA	176,061 SF (4.04 AC)
Q100	15.32 CFS
Q100 (MITIGATED)	5.35 CFS

BASIN PR-4 - AREA CALCULATIONS

TOTAL BASIN PR-1.2 AREA	114,153 SF (2.62 AC)
Cn	0.73
Q100 (UNMITIGATED)	8.82 CFS
Q100 (MITIGATED)	0.18 CFS



PROPOSED HYDROLOGY EXHIBIT
1220-1240 MELBA ROAD
CITY OF ENCINITAS

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____________________________________________________________________________
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            RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
            Reference: SAN DIEGO COUNTY FLOOD CONTROL DISTRICT
                         2003,1985,1981 HYDROLOGY MANUAL
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             Ver. 23.0 Release Date: 07/01/2016  License ID 1452

                           Analysis prepared by:

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                          Cardiff, California 92007
                                 858-259-8212

 ************************** DESCRIPTION OF STUDY **************************
* PASCO LARET SUITER & ASSOCIATES                                          *
* BASIN PR-1 POST DEVELOPMENT HYDROLOGY                                    *
* PLSA 3086                                                                *
 **************************************************************************

  FILE NAME: 3086-PR1.DAT
  TIME/DATE OF STUDY: 12:46 03/20/2023
----------------------------------------------------------------------------
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
----------------------------------------------------------------------------
  2003 SAN DIEGO MANUAL CRITERIA

  USER SPECIFIED STORM EVENT(YEAR) = 100.00
  6-HOUR DURATION PRECIPITATION (INCHES) =   2.800
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  12.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.95
  SAN DIEGO HYDROLOGY MANUAL "C"-VALUES USED FOR RATIONAL METHOD
  NOTE: USE MODIFIED RATIONAL METHOD PROCEDURES FOR CONFLUENCE ANALYSIS
  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  =========  =================  ======   ===== ====== ===== =======
  1   14.0      1.0    0.018/0.018/0.020   0.50    1.50 0.0313 0.125 0.0150

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth =  0.50 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  0.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*

****************************************************************************
```

```
  FLOW PROCESS FROM NODE    101.00 TO NODE    102.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .7500
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    70.00
  UPSTREAM ELEVATION(FEET) =    397.70
  DOWNSTREAM ELEVATION(FEET) =    397.00
  ELEVATION DIFFERENCE(FEET) =      0.70
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    5.271
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.130
  SUBAREA RUNOFF(CFS) =      0.21
  TOTAL AREA(ACRES) =      0.04   TOTAL RUNOFF(CFS) =      0.21

****************************************************************************
  FLOW PROCESS FROM NODE    102.00 TO NODE    103.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    397.00  DOWNSTREAM(FEET) =    395.60
  CHANNEL LENGTH THRU SUBAREA(FEET) =    75.00   CHANNEL SLOPE =  0.0187
  CHANNEL BASE(FEET) =    5.00   "Z" FACTOR =  50.000
  MANNING'S FACTOR = 0.030   MAXIMUM DEPTH(FEET) =   0.50
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.168
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .7500
  S.C.S. CURVE NUMBER (AMC II) =   0
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       0.51
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   0.94
  AVERAGE FLOW DEPTH(FEET) =   0.07   TRAVEL TIME(MIN.) =   1.33
  Tc(MIN.) =    6.60
  SUBAREA AREA(ACRES) =     0.13       SUBAREA RUNOFF(CFS) =    0.60
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.750
  TOTAL AREA(ACRES) =       0.2         PEAK FLOW RATE(CFS) =       0.79

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.09   FLOW VELOCITY(FEET/SEC.) =   0.97
  LONGEST FLOWPATH FROM NODE    101.00 TO NODE    103.00 =     145.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    103.00 TO NODE    104.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  1 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) =  395.60  DOWNSTREAM ELEVATION(FEET) =  378.00
  STREET LENGTH(FEET) =   509.00   CURB HEIGHT(INCHES) =  6.0
```

```
  STREET HALFWIDTH(FEET) = 14.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =   1.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.018
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.018

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       6.72
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.35
    HALFSTREET FLOOD WIDTH(FEET) =   12.51
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.43
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.56
  STREET FLOW TRAVEL TIME(MIN.) =   1.92   Tc(MIN.) =    8.51
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.234
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .7500
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.750
  SUBAREA AREA(ACRES) =    3.03      SUBAREA RUNOFF(CFS) =   11.81
  TOTAL AREA(ACRES) =        3.2        PEAK FLOW RATE(CFS) =      12.48

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.38   HALFSTREET FLOOD WIDTH(FEET) =  14.00
  FLOW VELOCITY(FEET/SEC.) =  4.72   DEPTH*VELOCITY(FT*FT/SEC.) =   1.79
  LONGEST FLOWPATH FROM NODE    101.00 TO NODE    104.00 =     654.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    104.00 TO NODE    105.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   375.40  DOWNSTREAM(FEET) =   375.00
  FLOW LENGTH(FEET) =    25.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  14.2 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   8.35
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      12.48
  PIPE TRAVEL TIME(MIN.) =   0.05    Tc(MIN.) =    8.56
  LONGEST FLOWPATH FROM NODE    101.00 TO NODE    105.00 =     679.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    105.00 TO NODE    105.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
```

```
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.214
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .7500
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.7500
  SUBAREA AREA(ACRES) =    0.39   SUBAREA RUNOFF(CFS) =    1.53
  TOTAL AREA(ACRES) =        3.6   TOTAL RUNOFF(CFS) =      13.96
  TC(MIN.) =    8.56

****************************************************************************
  FLOW PROCESS FROM NODE    106.00 TO NODE    107.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   370.50  DOWNSTREAM(FEET) =   369.50
  FLOW LENGTH(FEET) =    30.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  11.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  11.60
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      13.96
  PIPE TRAVEL TIME(MIN.) =   0.04    Tc(MIN.) =    8.61
  LONGEST FLOWPATH FROM NODE    101.00 TO NODE    107.00 =     709.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    108.00 TO NODE    108.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.197
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .7500
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.7500
  SUBAREA AREA(ACRES) =    0.05   SUBAREA RUNOFF(CFS) =    0.19
  TOTAL AREA(ACRES) =        3.6   TOTAL RUNOFF(CFS) =      14.11
  TC(MIN.) =    8.61

****************************************************************************
  FLOW PROCESS FROM NODE    109.00 TO NODE    109.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =    8.61
  RAINFALL INTENSITY(INCH/HR) =   5.20
  TOTAL STREAM AREA(ACRES) =     3.64
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     14.11
```

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****************************************************************************
  FLOW PROCESS FROM NODE    110.00 TO NODE    107.00 IS CODE =   7
----------------------------------------------------------------------------
  >>>>>USER SPECIFIED HYDROLOGY INFORMATION AT NODE<<<<<
============================================================================
  USER-SPECIFIED VALUES ARE AS FOLLOWS:
  TC(MIN) =   5.00   RAIN INTENSITY(INCH/HOUR) =  7.38
  TOTAL AREA(ACRES) =     0.40   TOTAL RUNOFF(CFS) =      1.74

****************************************************************************
  FLOW PROCESS FROM NODE    111.00 TO NODE    111.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =    5.00
  RAINFALL INTENSITY(INCH/HR) =   7.38
  TOTAL STREAM AREA(ACRES) =     0.40
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      1.74

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1       14.11     8.61        5.197         3.64
      2        1.74     5.00        7.377         0.40

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
      1        9.94     5.00       7.377
      2       15.34     8.61       5.197

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      15.34   Tc(MIN.) =    8.61
  TOTAL AREA(ACRES) =        4.0
  LONGEST FLOWPATH FROM NODE    101.00 TO NODE    111.00 =     709.00 FEET.
============================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)     =        4.0  TC(MIN.) =      8.61
  PEAK FLOW RATE(CFS)   =      15.34
============================================================================
============================================================================
  END OF RATIONAL METHOD ANALYSIS
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            RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
            Reference: SAN DIEGO COUNTY FLOOD CONTROL DISTRICT
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             Ver. 23.0 Release Date: 07/01/2016  License ID 1452

                           Analysis prepared by:

                      PASCO LARET SUITER & ASSOCIATES
                        535 NORTH HIGHWAY 101, STE A
                           SOLANA BEACH, CA 92075
                                858-259-8212

 ************************** DESCRIPTION OF STUDY **************************
 * PASCO LARET SUITER & ASSOCIATES                                          *
 * BASIN PR-1 POST DEVELOPMENT HYDROLOGY    DETAINED                        *
 * PLSA 3086                                                                *
 **************************************************************************

  FILE NAME: 3086PD00.DAT
  TIME/DATE OF STUDY: 11:32 05/03/2023
----------------------------------------------------------------------------
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
----------------------------------------------------------------------------
  2003 SAN DIEGO MANUAL CRITERIA

  USER SPECIFIED STORM EVENT(YEAR) = 100.00
  6-HOUR DURATION PRECIPITATION (INCHES) =   2.800
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  12.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.95
  SAN DIEGO HYDROLOGY MANUAL "C"-VALUES USED FOR RATIONAL METHOD
  NOTE: USE MODIFIED RATIONAL METHOD PROCEDURES FOR CONFLUENCE ANALYSIS
  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)      (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  =========  =================  ======  =====  ====== ===== =======
  1   14.0      1.0    0.018/0.018/0.020   0.50    1.50 0.0312 0.125 0.0150

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth =  0.50 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  0.0 (FT*FT/S)
   *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
    OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*

****************************************************************************
  FLOW PROCESS FROM NODE    101.00 TO NODE    102.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
   *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .7500
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    70.00
  UPSTREAM ELEVATION(FEET) =    397.70
  DOWNSTREAM ELEVATION(FEET) =    397.00
  ELEVATION DIFFERENCE(FEET) =      0.70
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    5.271
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.130
  SUBAREA RUNOFF(CFS) =      0.21
  TOTAL AREA(ACRES) =      0.04   TOTAL RUNOFF(CFS) =      0.21

****************************************************************************
  FLOW PROCESS FROM NODE    102.00 TO NODE    103.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    397.00  DOWNSTREAM(FEET) =    395.60
```

```
  CHANNEL LENGTH THRU SUBAREA(FEET) =    75.00   CHANNEL SLOPE =  0.0187
  CHANNEL BASE(FEET) =    5.00   "Z" FACTOR =  50.000
  MANNING'S FACTOR = 0.030   MAXIMUM DEPTH(FEET) =   0.50
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.168
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .7500
  S.C.S. CURVE NUMBER (AMC II) =   0
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       0.51
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   0.94
  AVERAGE FLOW DEPTH(FEET) =   0.07   TRAVEL TIME(MIN.) =   1.33
  Tc(MIN.) =    6.60
  SUBAREA AREA(ACRES) =     0.13       SUBAREA RUNOFF(CFS) =    0.60
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.750
  TOTAL AREA(ACRES) =        0.2         PEAK FLOW RATE(CFS) =       0.79

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.09   FLOW VELOCITY(FEET/SEC.) =   0.97
  LONGEST FLOWPATH FROM NODE    101.00 TO NODE    103.00 =     145.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    103.00 TO NODE    104.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  1 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) =  395.60  DOWNSTREAM ELEVATION(FEET) =  378.00
  STREET LENGTH(FEET) =   509.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 14.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =   1.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.018
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.018

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       6.72
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.35
    HALFSTREET FLOOD WIDTH(FEET) =   12.51
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.43
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.56
  STREET FLOW TRAVEL TIME(MIN.) =   1.92   Tc(MIN.) =    8.51
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.234
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .7500
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.750
  SUBAREA AREA(ACRES) =    3.01      SUBAREA RUNOFF(CFS) =   11.81
  TOTAL AREA(ACRES) =        3.2        PEAK FLOW RATE(CFS) =      12.48

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.38   HALFSTREET FLOOD WIDTH(FEET) =  14.00
  FLOW VELOCITY(FEET/SEC.) =  4.72   DEPTH*VELOCITY(FT*FT/SEC.) =   1.79
  LONGEST FLOWPATH FROM NODE    101.00 TO NODE    104.00 =     654.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    104.00 TO NODE    105.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   375.40  DOWNSTREAM(FEET) =   375.00
  FLOW LENGTH(FEET) =    25.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  14.2 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   8.35
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      12.48
  PIPE TRAVEL TIME(MIN.) =   0.05    Tc(MIN.) =    8.56
  LONGEST FLOWPATH FROM NODE    101.00 TO NODE    105.00 =     679.00 FEET.
```

```
****************************************************************************
  FLOW PROCESS FROM NODE    105.00 TO NODE    105.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.214
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .7500
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.7500
  SUBAREA AREA(ACRES) =    0.39   SUBAREA RUNOFF(CFS) =    1.53
  TOTAL AREA(ACRES) =        3.6   TOTAL RUNOFF(CFS) =      13.96
  TC(MIN.) =    8.56

****************************************************************************
  FLOW PROCESS FROM NODE    105.00 TO NODE    105.00 IS CODE =   7
----------------------------------------------------------------------------
  >>>>>USER SPECIFIED HYDROLOGY INFORMATION AT NODE<<<<<
============================================================================
  USER-SPECIFIED VALUES ARE AS FOLLOWS:
  TC(MIN) =  15.16   RAIN INTENSITY(INCH/HOUR) =  3.61
  TOTAL AREA(ACRES) =     3.60   TOTAL RUNOFF(CFS) =      5.35

****************************************************************************
  FLOW PROCESS FROM NODE    106.00 TO NODE    107.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   370.50  DOWNSTREAM(FEET) =   369.50
  FLOW LENGTH(FEET) =    30.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  12.0 INCH PIPE IS   8.5 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   9.05
  ESTIMATED PIPE DIAMETER(INCH) =  12.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       5.35
  PIPE TRAVEL TIME(MIN.) =   0.06    Tc(MIN.) =   15.22
  LONGEST FLOWPATH FROM NODE    101.00 TO NODE    107.00 =     709.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    107.00 TO NODE    108.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   15.22
  RAINFALL INTENSITY(INCH/HR) =   3.60
  TOTAL STREAM AREA(ACRES) =     3.60
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      5.35

****************************************************************************
  FLOW PROCESS FROM NODE    108.00 TO NODE    108.00 IS CODE =   7
----------------------------------------------------------------------------
  >>>>>USER SPECIFIED HYDROLOGY INFORMATION AT NODE<<<<<
============================================================================
  USER-SPECIFIED VALUES ARE AS FOLLOWS:
  TC(MIN) =   8.61   RAIN INTENSITY(INCH/HOUR) =  5.20
  TOTAL AREA(ACRES) =     0.05   TOTAL RUNOFF(CFS) =      0.19

****************************************************************************
  FLOW PROCESS FROM NODE    107.00 TO NODE    108.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =    8.61
  RAINFALL INTENSITY(INCH/HR) =   5.20
  TOTAL STREAM AREA(ACRES) =     0.05
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      0.19

  ** CONFLUENCE DATA **
```

```
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)    (INCH/HOUR)    (ACRE)
     1        5.35    15.22        3.599          3.60
     2        0.19     8.61        5.196          0.05

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1        3.22     8.61       5.196
     2        5.48    15.22       3.599

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =       5.48   Tc(MIN.) =   15.22
  TOTAL AREA(ACRES) =        3.6
  LONGEST FLOWPATH FROM NODE    101.00 TO NODE    108.00 =     709.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    109.00 TO NODE    109.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   15.22
  RAINFALL INTENSITY(INCH/HR) =   3.60
  TOTAL STREAM AREA(ACRES) =     3.65
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      5.48

****************************************************************************
  FLOW PROCESS FROM NODE    110.00 TO NODE    107.00 IS CODE =   7
----------------------------------------------------------------------------
  >>>>>USER SPECIFIED HYDROLOGY INFORMATION AT NODE<<<<<
============================================================================
  USER-SPECIFIED VALUES ARE AS FOLLOWS:
  TC(MIN) =   5.00   RAIN INTENSITY(INCH/HOUR) =  7.38
  TOTAL AREA(ACRES) =     0.40   TOTAL RUNOFF(CFS) =      1.74

****************************************************************************
  FLOW PROCESS FROM NODE    111.00 TO NODE    111.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =    5.00
  RAINFALL INTENSITY(INCH/HR) =   7.38
  TOTAL STREAM AREA(ACRES) =     0.40
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      1.74

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)    (INCH/HOUR)    (ACRE)
     1        5.48    15.22        3.599          3.65
     2        1.74     5.00        7.377          0.40

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1        4.41     5.00       7.377
     2        6.33    15.22       3.599

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =       6.33   Tc(MIN.) =   15.22
  TOTAL AREA(ACRES) =        4.0
  LONGEST FLOWPATH FROM NODE    101.00 TO NODE    111.00 =     709.00 FEET.
============================================================================
```

```
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)     =         4.0  TC(MIN.) =     15.22
  PEAK FLOW RATE(CFS)   =        6.33
============================================================================
============================================================================
  END OF RATIONAL METHOD ANALYSIS
```

```
****************************************************************************

            RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
            Reference: SAN DIEGO COUNTY FLOOD CONTROL DISTRICT
                         2003,1985,1981 HYDROLOGY MANUAL
         (c) Copyright 1982-2016 Advanced Engineering Software (aes)
             Ver. 23.0 Release Date: 07/01/2016  License ID 1452

                           Analysis prepared by:





 ************************** DESCRIPTION OF STUDY **************************
* PASCO LARET SUITER & ASSOCIATES                                          *
* BASIN PR-2 POST DEVELOPMENT HYDORLOGY                                    *
* PLSA 3086                                                                *
 **************************************************************************

  FILE NAME: 3086-PR2.DAT
  TIME/DATE OF STUDY: 14:28 12/05/2023
----------------------------------------------------------------------------
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
----------------------------------------------------------------------------
  2003 SAN DIEGO MANUAL CRITERIA

  USER SPECIFIED STORM EVENT(YEAR) = 100.00
  6-HOUR DURATION PRECIPITATION (INCHES) =   2.800
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  12.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.95
  SAN DIEGO HYDROLOGY MANUAL "C"-VALUES USED FOR RATIONAL METHOD
  NOTE: USE MODIFIED RATIONAL METHOD PROCEDURES FOR CONFLUENCE ANALYSIS
  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  =========  =================  ======   ===== ====== ===== =======
  1   14.0      1.0    0.018/0.018/0.020   0.50    1.50 0.0312 0.125 0.0150

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth =  0.50 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  0.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*

****************************************************************************
```

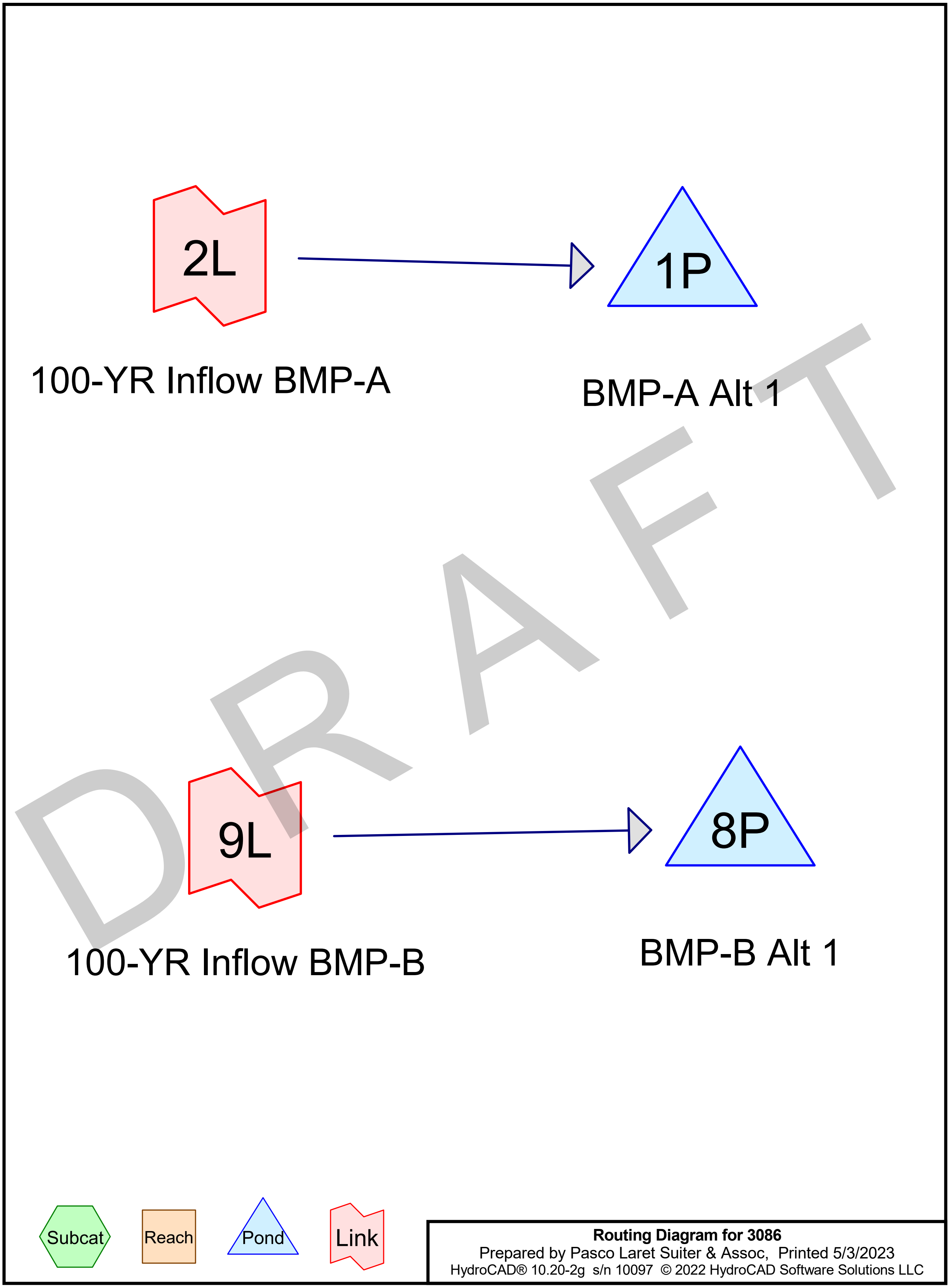
```
  FLOW PROCESS FROM NODE    201.00 TO NODE    202.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .7300
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    70.00
  UPSTREAM ELEVATION(FEET) =    399.00
  DOWNSTREAM ELEVATION(FEET) =    398.30
  ELEVATION DIFFERENCE(FEET) =      0.70
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    5.572
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.879
  SUBAREA RUNOFF(CFS) =      0.30
  TOTAL AREA(ACRES) =      0.06   TOTAL RUNOFF(CFS) =      0.30

****************************************************************************
  FLOW PROCESS FROM NODE    202.00 TO NODE    203.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    398.30  DOWNSTREAM(FEET) =    394.80
  CHANNEL LENGTH THRU SUBAREA(FEET) =   180.00   CHANNEL SLOPE =  0.0194
  CHANNEL BASE(FEET) =    5.00   "Z" FACTOR =  50.000
  MANNING'S FACTOR = 0.030   MAXIMUM DEPTH(FEET) =   0.50
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.196
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .7300
  S.C.S. CURVE NUMBER (AMC II) =   0
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       0.72
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   0.99
  AVERAGE FLOW DEPTH(FEET) =   0.08   TRAVEL TIME(MIN.) =   3.04
  Tc(MIN.) =    8.61
  SUBAREA AREA(ACRES) =     0.22       SUBAREA RUNOFF(CFS) =    0.83
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.730
  TOTAL AREA(ACRES) =        0.3         PEAK FLOW RATE(CFS) =       1.06

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.10   FLOW VELOCITY(FEET/SEC.) =   1.12
  LONGEST FLOWPATH FROM NODE    201.00 TO NODE    203.00 =     250.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    203.00 TO NODE    204.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  1 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) =  394.80  DOWNSTREAM ELEVATION(FEET) =  386.00
  STREET LENGTH(FEET) =   282.00   CURB HEIGHT(INCHES) =  6.0
```

```
  STREET HALFWIDTH(FEET) = 14.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =   1.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.018
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.018

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       4.35
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.27
    HALFSTREET FLOOD WIDTH(FEET) =    7.74
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.32
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.89
  STREET FLOW TRAVEL TIME(MIN.) =   1.42   Tc(MIN.) =   10.03
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.709
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .7300
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.730
  SUBAREA AREA(ACRES) =    1.91      SUBAREA RUNOFF(CFS) =    6.57
  TOTAL AREA(ACRES) =        2.2        PEAK FLOW RATE(CFS) =       7.53

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.31   HALFSTREET FLOOD WIDTH(FEET) =   9.99
  FLOW VELOCITY(FEET/SEC.) =  3.72   DEPTH*VELOCITY(FT*FT/SEC.) =   1.15
  LONGEST FLOWPATH FROM NODE    201.00 TO NODE    204.00 =     532.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    204.00 TO NODE    205.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   386.00  DOWNSTREAM(FEET) =   381.50
  FLOW LENGTH(FEET) =   126.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  15.0 INCH PIPE IS   8.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  10.26
  ESTIMATED PIPE DIAMETER(INCH) =  15.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       7.53
  PIPE TRAVEL TIME(MIN.) =   0.20    Tc(MIN.) =   10.23
  LONGEST FLOWPATH FROM NODE    201.00 TO NODE    205.00 =     658.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    205.00 TO NODE    205.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
```

```
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.648
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .7300
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.7300
  SUBAREA AREA(ACRES) =    0.41   SUBAREA RUNOFF(CFS) =    1.39
  TOTAL AREA(ACRES) =        2.6   TOTAL RUNOFF(CFS) =       8.82
  TC(MIN.) =   10.23
============================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)     =        2.6  TC(MIN.) =     10.23
  PEAK FLOW RATE(CFS)   =       8.82
============================================================================
============================================================================
  END OF RATIONAL METHOD ANALYSIS

↑
```

Appendix B

DETENTION CALCULATIONS



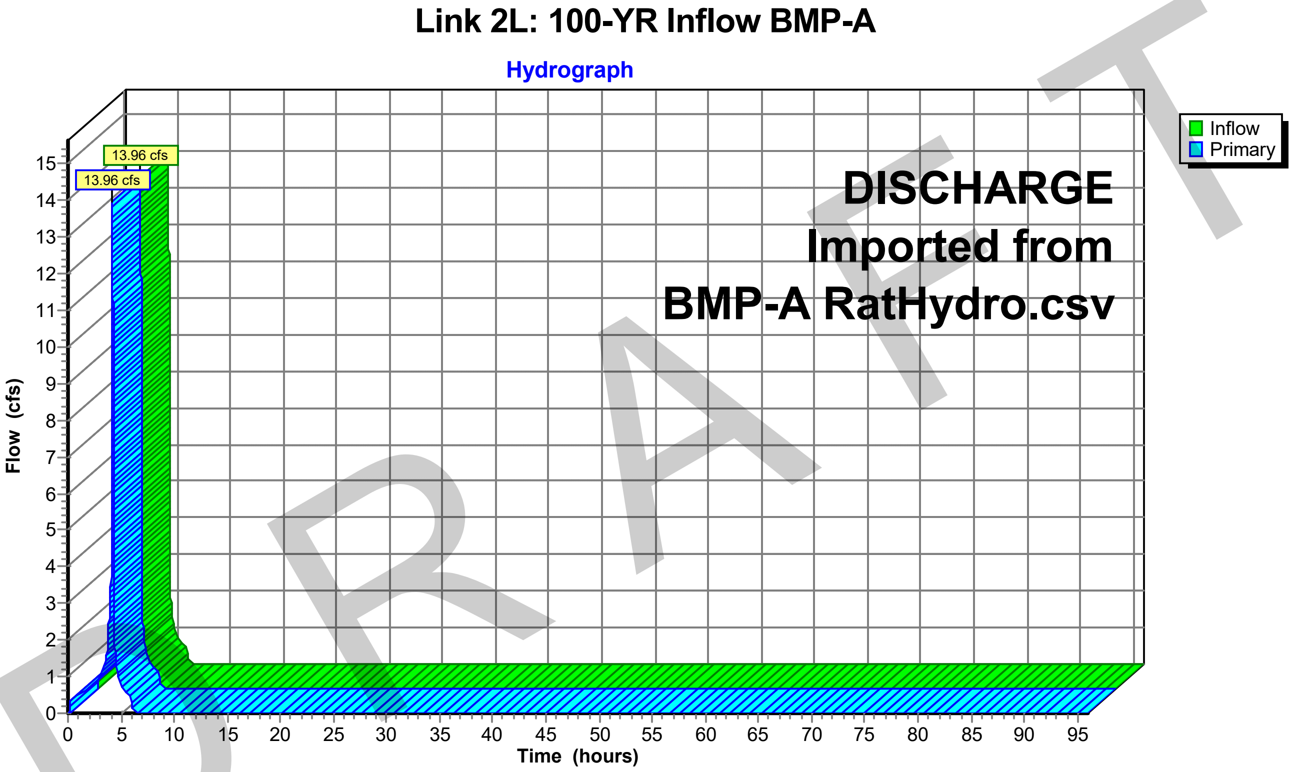
Routing Diagram for 3086
Prepared by Pasco Laret Suiter & Assoc, Printed 5/3/2023
HydroCAD® 10.20-2g s/n 10097 © 2022 HydroCAD Software Solutions LLC

Summary for Link 2L: 100-YR Inflow BMP-A

Inflow = 13.96 cfs @ 4.20 hrs, Volume= 26,978 cf
Primary = 13.96 cfs @ 4.20 hrs, Volume= 26,978 cf, Atten= 0%, Lag= 0.0 min
Routed to Pond 1P : BMP-A Alt 1

Primary outflow = Inflow, Time Span= 0.00-96.00 hrs, dt= 0.001 hrs

DISCHARGE Imported from BMP-A RatHydro.csv



Summary for Pond 1P: BMP-A Alt 1

Inflow = 13.96 cfs @ 4.20 hrs, Volume= 26,978 cf
Outflow = 5.35 cfs @ 4.31 hrs, Volume= 26,362 cf, Atten= 62%, Lag= 6.6 min
Primary = 5.35 cfs @ 4.31 hrs, Volume= 26,362 cf
Routed to nonexistent node 17P

Routing by Dyn-Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.001 hrs
Peak Elev= 376.48' @ 4.31 hrs Surf.Area= 6,010 sf Storage= 17,593 cf

100-yr storm water surface elevation does not exceed 18" of ponding in the mitigated condition (Peak Elev = 376.48', BMP FG = 375.0')

Plug-Flow detention time= 442.8 min calculated for 26,361 cf (98% of inflow)
Center-of-Mass det. time= 439.7 min (658.5 - 218.8)

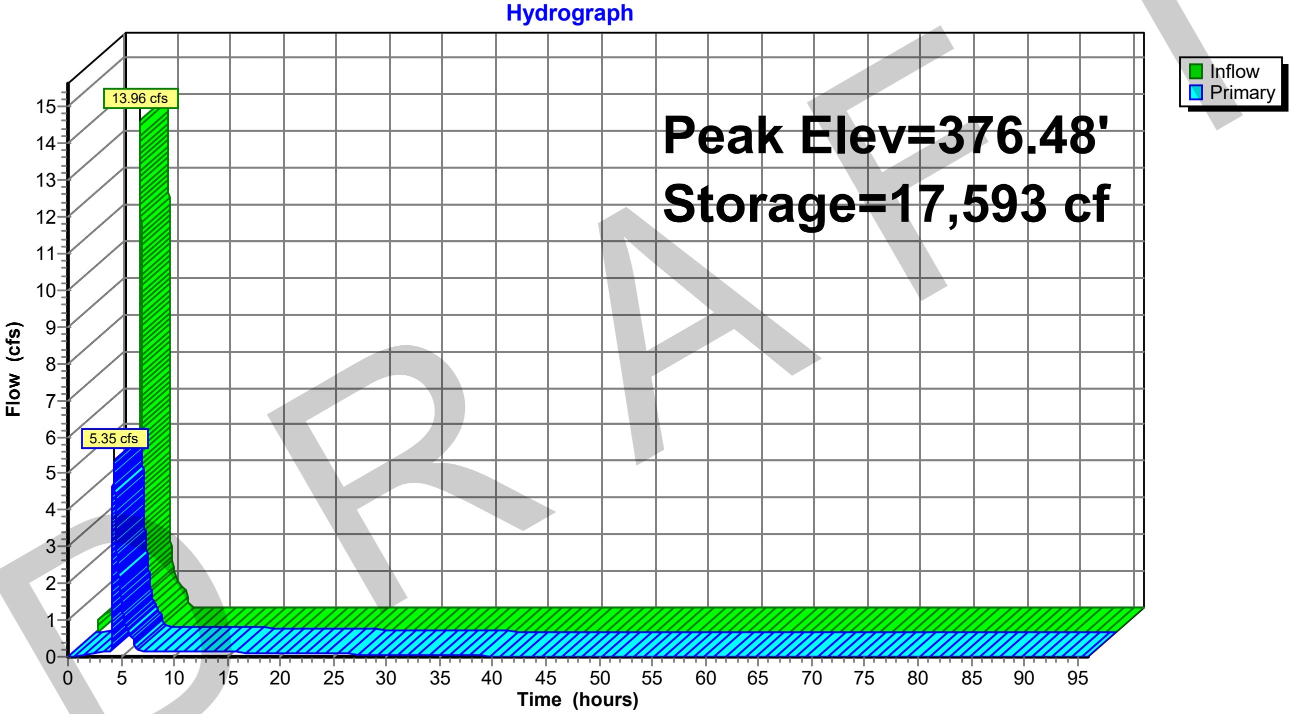
Volume	Invert	Avail.Storage	Storage Description
#1	370.50'	20,735 cf	**BMP-A (Conic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
370.50	6,010	0.00	0	0	6,010
373.25	6,010	40.00	6,611	6,611	6,766
375.00	6,010	20.00	2,104	8,715	7,247
377.00	6,010	100.00	12,020	20,735	7,796

Device	Routing	Invert	Outlet Devices
#1	Primary	370.50'	**18.000" Round Culvert** L= 18.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 370.50' / 370.41' S= 0.0050 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf
#2	Device 1	370.75'	**1.675" Vert. Orifice** C= 0.600 Limited to weir flow at low heads
#3	Device 1	375.50'	**19.000" W x 3.000" H Vert. Orifice X 2.00** C= 0.600 Limited to weir flow at low heads
#4	Device 1	376.00'	**12.000" x 12.000" Horiz. Grate X 0.50** C= 0.600 in 12.000" x 12.000" Grate (100% open area) Limited to weir flow at low heads
#5	Device 1	376.50'	**18.000" x 18.000" Horiz. Grate X 0.50** C= 0.600 in 18.000" x 18.000" Grate (100% open area) Limited to weir flow at low heads
#6	Device 1	376.50'	**24.000" x 24.000" Horiz. Grate X 0.50** C= 0.600 in 24.000" x 24.000" Grate (100% open area) Limited to weir flow at low heads
#7	Device 1	376.70'	**36.000" x 36.000" Horiz. Grate X 0.50** C= 0.600 in 36.000" x 36.000" Grate (100% open area) Limited to weir flow at low heads
#8	Device 1	376.70'	**36.000" x 36.000" Horiz. Grate X 0.50** C= 0.600 in 36.000" x 36.000" Grate (100% open area) Limited to weir flow at low heads
#9	Device 2	370.50'	**5.000 in/hr Infiltration through soil over Surface area below 375.00'**

Primary OutFlow Max=5.35 cfs @ 4.31 hrs HW=376.48' (Free Discharge)
- **1=Culvert** (Passes 5.35 cfs of 19.45 cfs potential flow)
  - **2=Orifice** (Orifice Controls 0.18 cfs @ 11.45 fps)
    - **9=Infiltration through soil** (Passes 0.18 cfs of 0.70 cfs potential flow)
  - **3=Orifice** (Orifice Controls 3.52 cfs @ 4.44 fps)
  - **4=Grate** (Orifice Controls 1.66 cfs @ 1.66 fps)
  - **5=Grate** (Controls 0.00 cfs)
  - **6=Grate** (Controls 0.00 cfs)
  - **7=Grate** (Controls 0.00 cfs)
  - **8=Grate** (Controls 0.00 cfs)

Pond 1P: BMP-A Alt 1

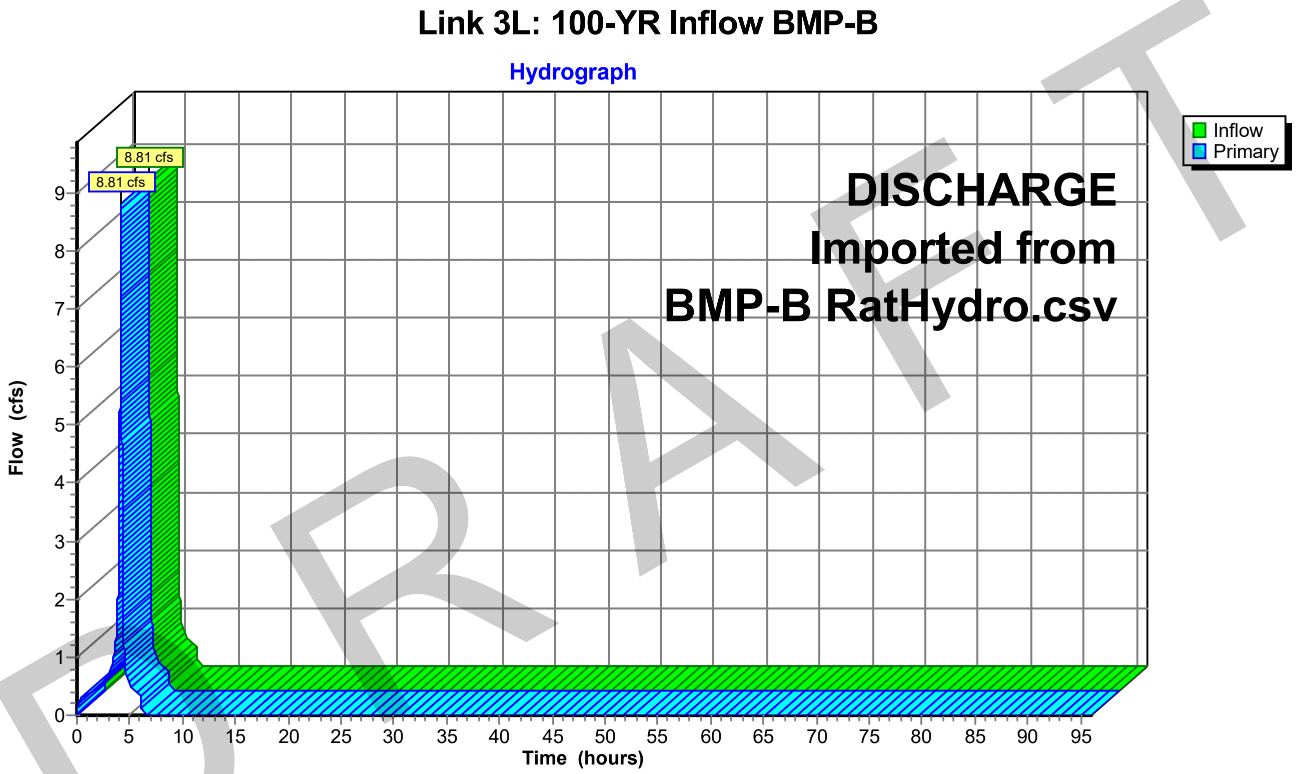


Summary for Link 3L: 100-YR Inflow BMP-B

Inflow = 8.81 cfs @ 4.17 hrs, Volume= 19,212 cf
Primary = 8.81 cfs @ 4.17 hrs, Volume= 19,212 cf, Atten= 0%, Lag= 0.0 min
Routed to Pond 3P : BMP-B Alt 1

Primary outflow = Inflow, Time Span= 0.00-96.00 hrs, dt= 0.001 hrs

DISCHARGE Imported from BMP-B RatHydro.csv



Summary for Pond 3P: BMP-B Alt 1

Inflow = 8.81 cfs @ 4.17 hrs, Volume= 19,212 cf
Outflow = 0.18 cfs @ 6.07 hrs, Volume= 18,463 cf, Atten= 98%, Lag= 114.0 min
Primary = 0.18 cfs @ 6.07 hrs, Volume= 18,463 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.001 hrs
Peak Elev= 379.21' @ 6.07 hrs Surf.Area= 3,030 sf Storage= 17,156 cf

Plug-Flow detention time= 1,056.6 min calculated for 18,463 cf (96% of inflow)
Center-of-Mass det. time= 1,051.4 min (1,267.3 - 215.9)

Volume	Invert	Avail.Storage	Storage Description
#1	373.25'	25,831 cf	**BMP-B (Conic)** Listed below (Recalc)

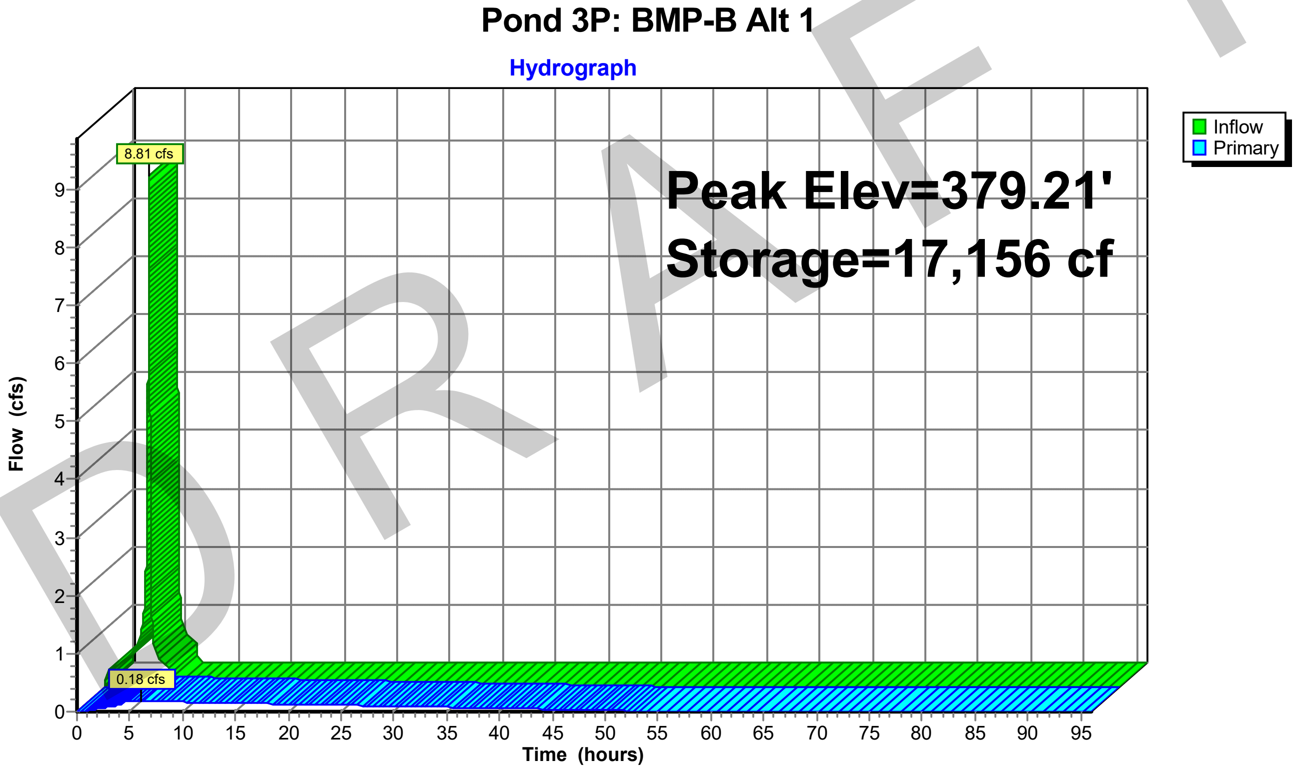
Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
373.25	3,030	0.00	0	0	3,030
379.75	3,030	95.00	18,710	18,710	4,298
381.50	3,030	20.00	1,061	19,771	4,640
383.50	3,030	100.00	6,060	25,831	5,030

Device	Routing	Invert	Outlet Devices
#1	Primary	373.50'	**6.000" Round 6" Culvert** L= 18.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 373.50' / 373.32' S= 0.0100 '/' Cc= 0.900 n= 0.013, Flow Area= 0.20 sf
#2	Device 1	373.50'	**1.700" Vert. Orifice** C= 0.600 Limited to weir flow at low heads
#3	Device 1	382.00'	**23.000" W x 3.000" H Vert. Midflow Orifice X 3.00** C= 0.600 Limited to weir flow at low heads
#4	Device 1	383.00'	**24.000" x 24.000" Horiz. Grate X 0.50** C= 0.600 in 24.000" x 24.000" Grate (100% open area) Limited to weir flow at low heads
#5	Primary	373.25'	**18.000" Round 18" Culvert** L= 10.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 373.25' / 373.15' S= 0.0100 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf
#6	Device 5	383.25'	**36.000" x 36.000" Horiz. Grate X 0.50** C= 0.600 in 36.000" x 36.000" Grate (100% open area) Limited to weir flow at low heads
#7	Device 5	383.25'	**36.000" x 36.000" Horiz. Grate X 0.50** C= 0.600 in 36.000" x 36.000" Grate (100% open area) Limited to weir flow at low heads
#8	Device 5	383.25'	**36.000" x 36.000" Horiz. Grate X 0.50** C= 0.600 in 36.000" x 36.000" Grate (100% open area) Limited to weir flow at low heads
#9	Device 5	383.25'	**36.000" x 36.000" Horiz. Grate X 0.50** C= 0.600 in 36.000" x 36.000" Grate (100% open area) Limited to weir flow at low heads
#10	Device 5	383.25'	**36.000" x 36.000" Horiz. Grate X 0.50** C= 0.600 in 36.000" x 36.000" Grate (100% open area)

```
                                 Limited to weir flow at low heads
   #11   Device 2        373.25'  5.000 in/hr Infiltration through soil over Surface area below 381.50'
```

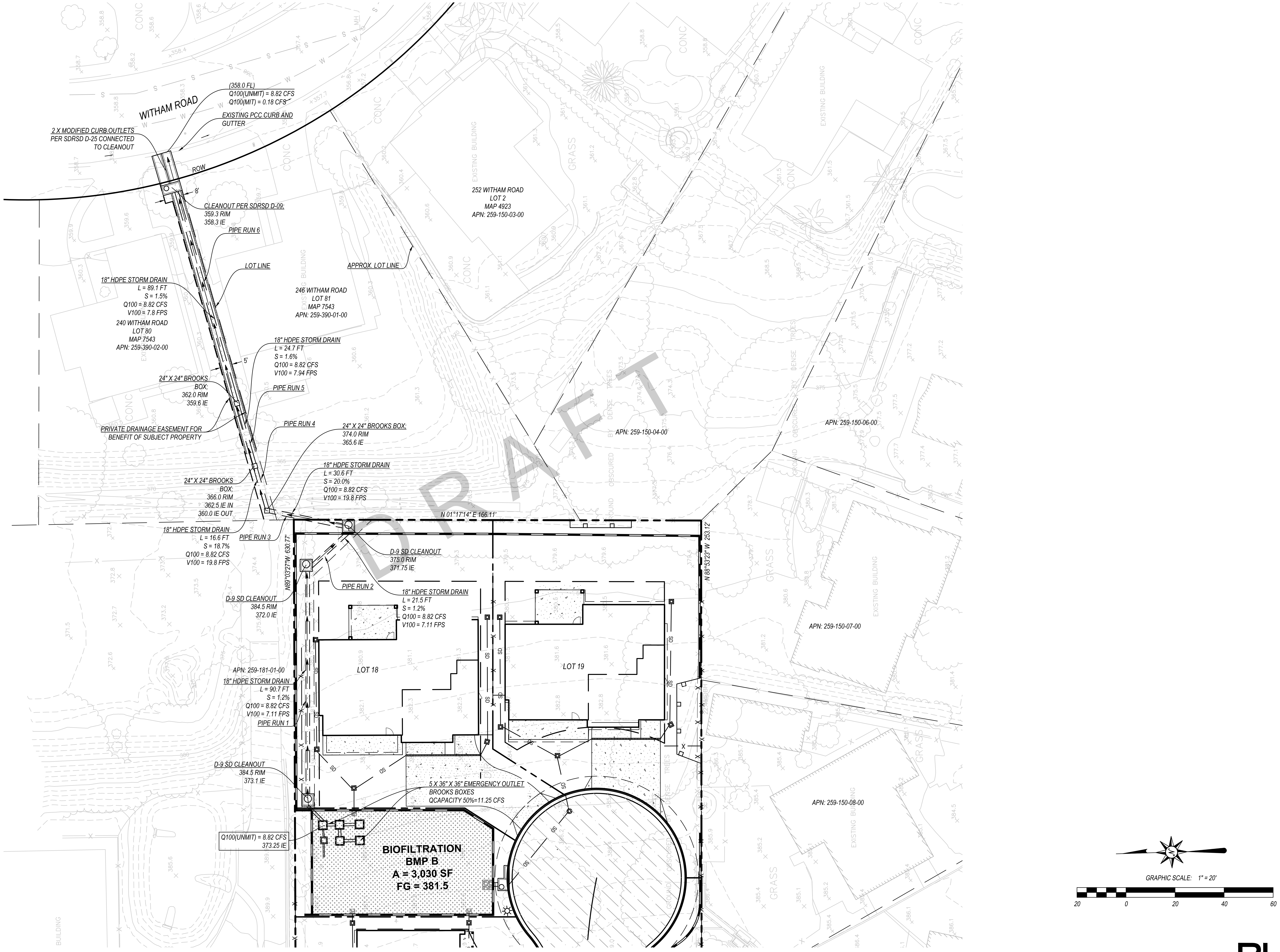
Primary OutFlow Max=0.18 cfs @ 6.07 hrs HW=379.21' (Free Discharge)

```
↑—1=6" Culvert  (Passes 0.18 cfs of 2.14 cfs potential flow)
│  ↑—2=Orifice  (Orifice Controls 0.18 cfs @ 11.43 fps)
│  │  ↑—11=Infiltration through soil  (Passes 0.18 cfs of 0.35 cfs potential flow)
│  ├—3=Midflow Orifice  ( Controls 0.00 cfs)
│  └—4=Grate  ( Controls 0.00 cfs)
└—5=18" Culvert  (Passes 0.00 cfs of 19.42 cfs potential flow)
   ↑—6=Grate  ( Controls 0.00 cfs)
   ├—7=Grate  ( Controls 0.00 cfs)
   ├—8=Grate  ( Controls 0.00 cfs)
   ├—9=Grate  ( Controls 0.00 cfs)
   └—10=Grate  ( Controls 0.00 cfs)
```



Appendix C

PRELIMINARY HYDRAULIC SUPPORT MATERIAL



PLAN VIEW - WITHAM BASIN PRELIM HYDRAULICS

SCALE: 1" = 20' HORIZONTAL

PLSA
PLSAENGINEERING.COM

Channel Report

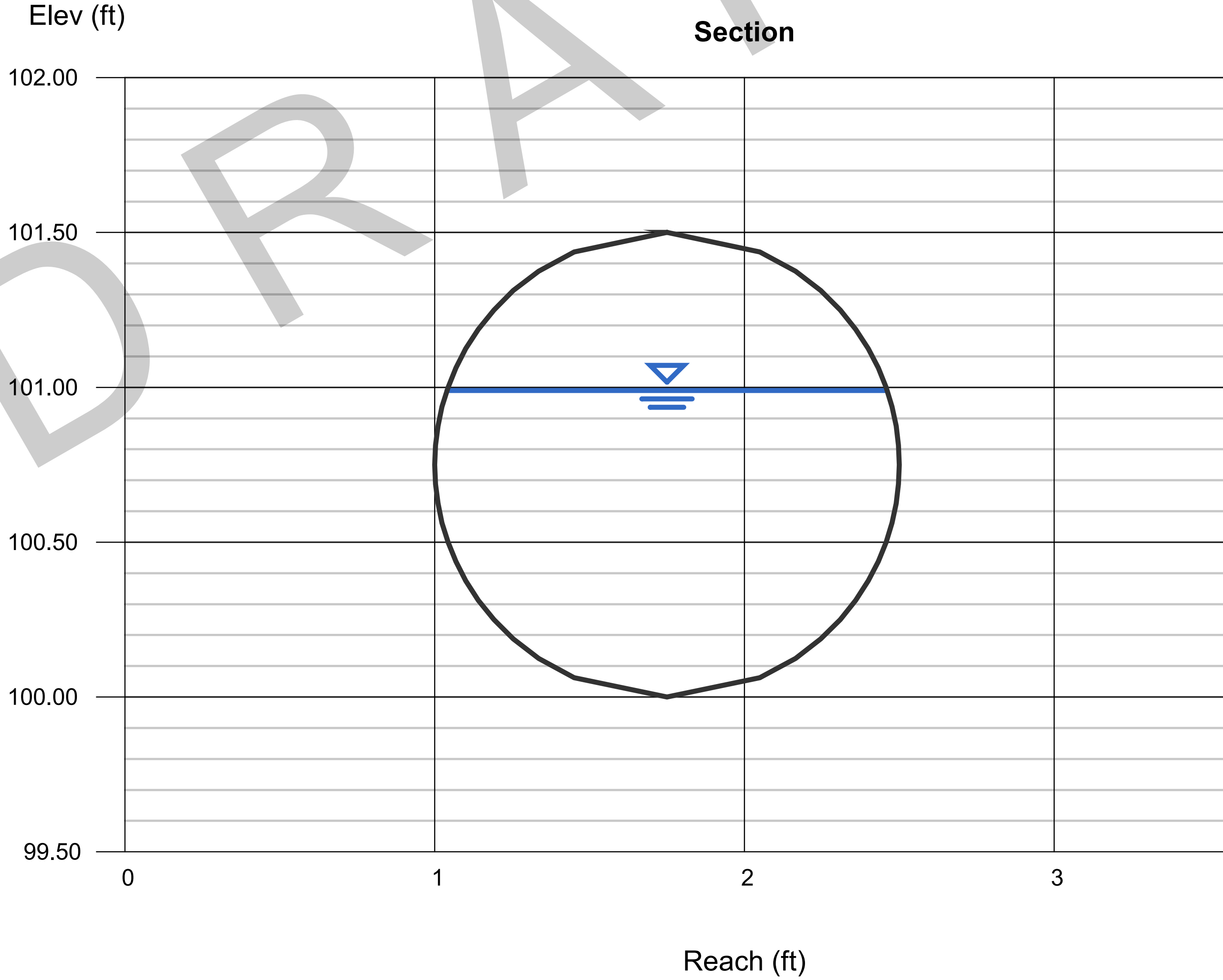
PIPE RUN 1 - 18-INCH HDPE @1.2 PERCENT

Circular
Diameter (ft) = 1.50

Invert Elev (ft) = 100.00
Slope (%) = 1.20
N-Value = 0.013

Calculations
Compute by: Known Q
Known Q (cfs) = 8.82

Highlighted
Depth (ft) = 0.99
Q (cfs) = 8.820
Area (sqft) = 1.24
Velocity (ft/s) = 7.11
Wetted Perim (ft) = 2.85
Crit Depth, Yc (ft) = 1.15
Top Width (ft) = 1.42
EGL (ft) = 1.78



Channel Report

Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc. Monday, Jan 8 2024

PIPE RUN 2 - 18-INCH HDPE @1.2 PERCENT

Circular

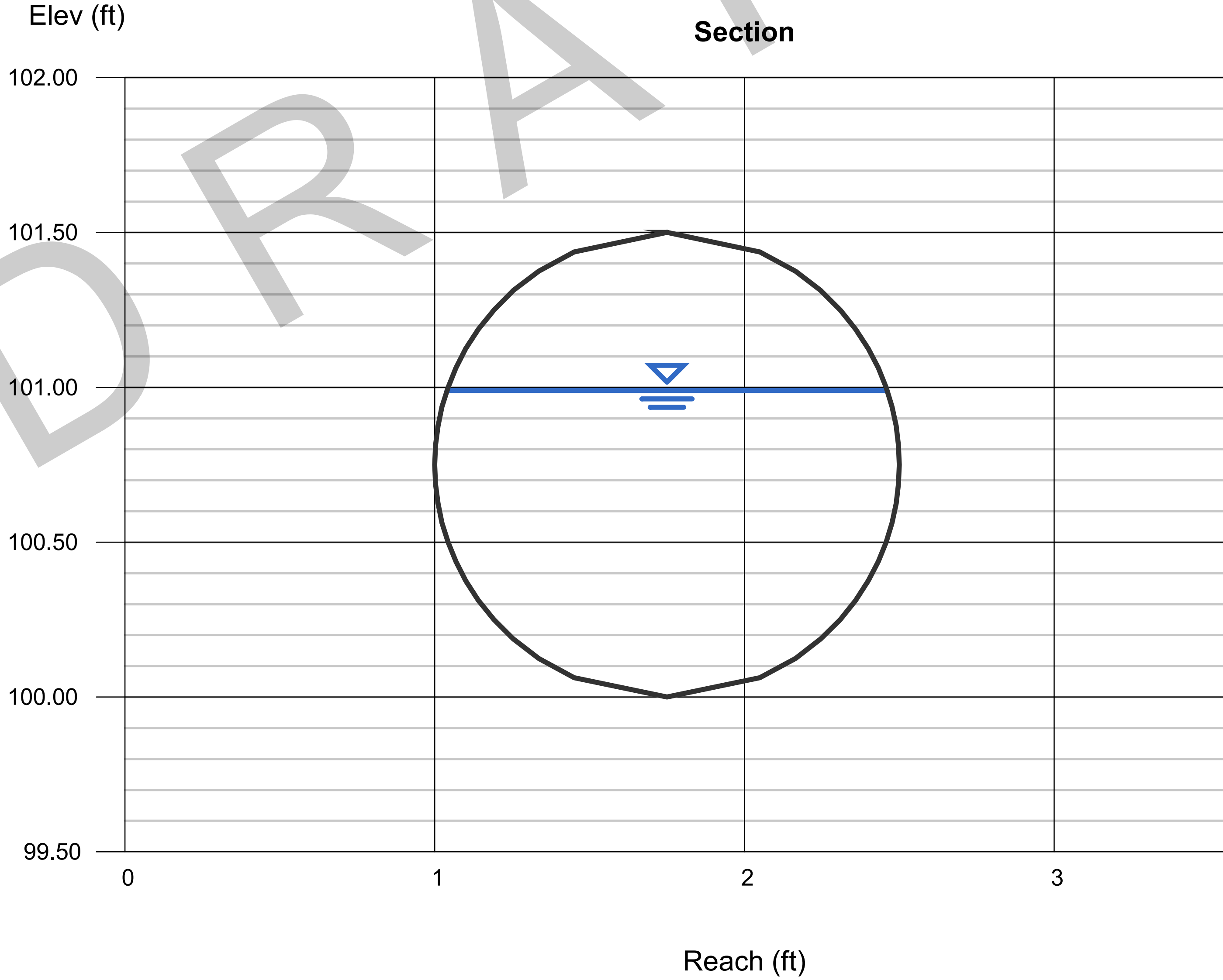
Diameter (ft)	= 1.50
Invert Elev (ft)	= 100.00
Slope (%)	= 1.20
N-Value	= 0.013

Calculations

Compute by:	Known Q
Known Q (cfs)	= 8.82

Highlighted

Depth (ft)	= 0.99
Q (cfs)	= 8.820
Area (sqft)	= 1.24
Velocity (ft/s)	= 7.11
Wetted Perim (ft)	= 2.85
Crit Depth, Yc (ft)	= 1.15
Top Width (ft)	= 1.42
EGL (ft)	= 1.78



Channel Report

PIPE RUN 3 - 18-INCH HDPE @20 PERCENT

Circular

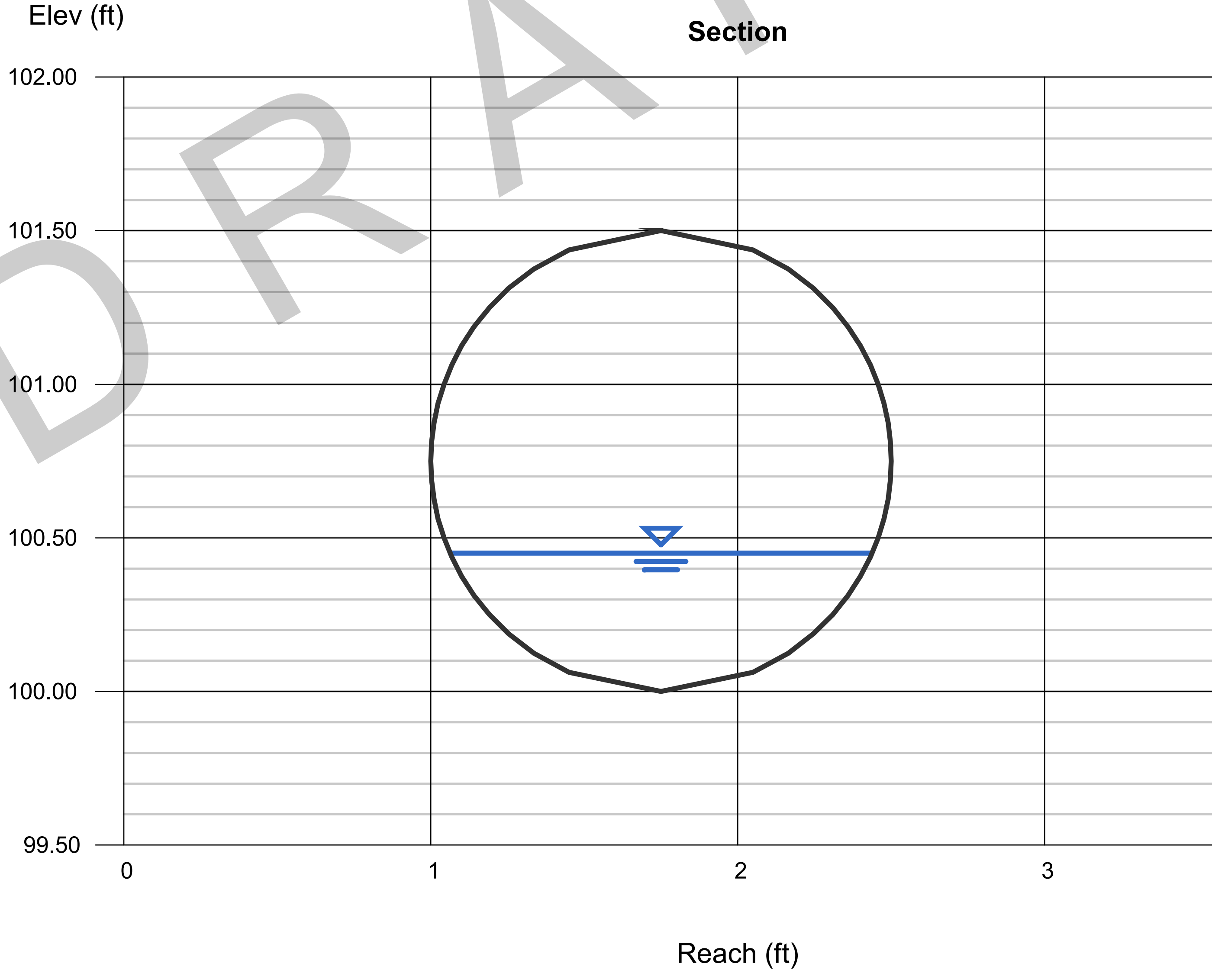
Diameter (ft)	= 1.50
Invert Elev (ft)	= 100.00
Slope (%)	= 20.00
N-Value	= 0.013

Calculations

Compute by:	Known Q
Known Q (cfs)	= 8.82

Highlighted

Depth (ft)	= 0.45
Q (cfs)	= 8.820
Area (sqft)	= 0.45
Velocity (ft/s)	= 19.75
Wetted Perim (ft)	= 1.74
Crit Depth, Yc (ft)	= 1.15
Top Width (ft)	= 1.38
EGL (ft)	= 6.52



Channel Report

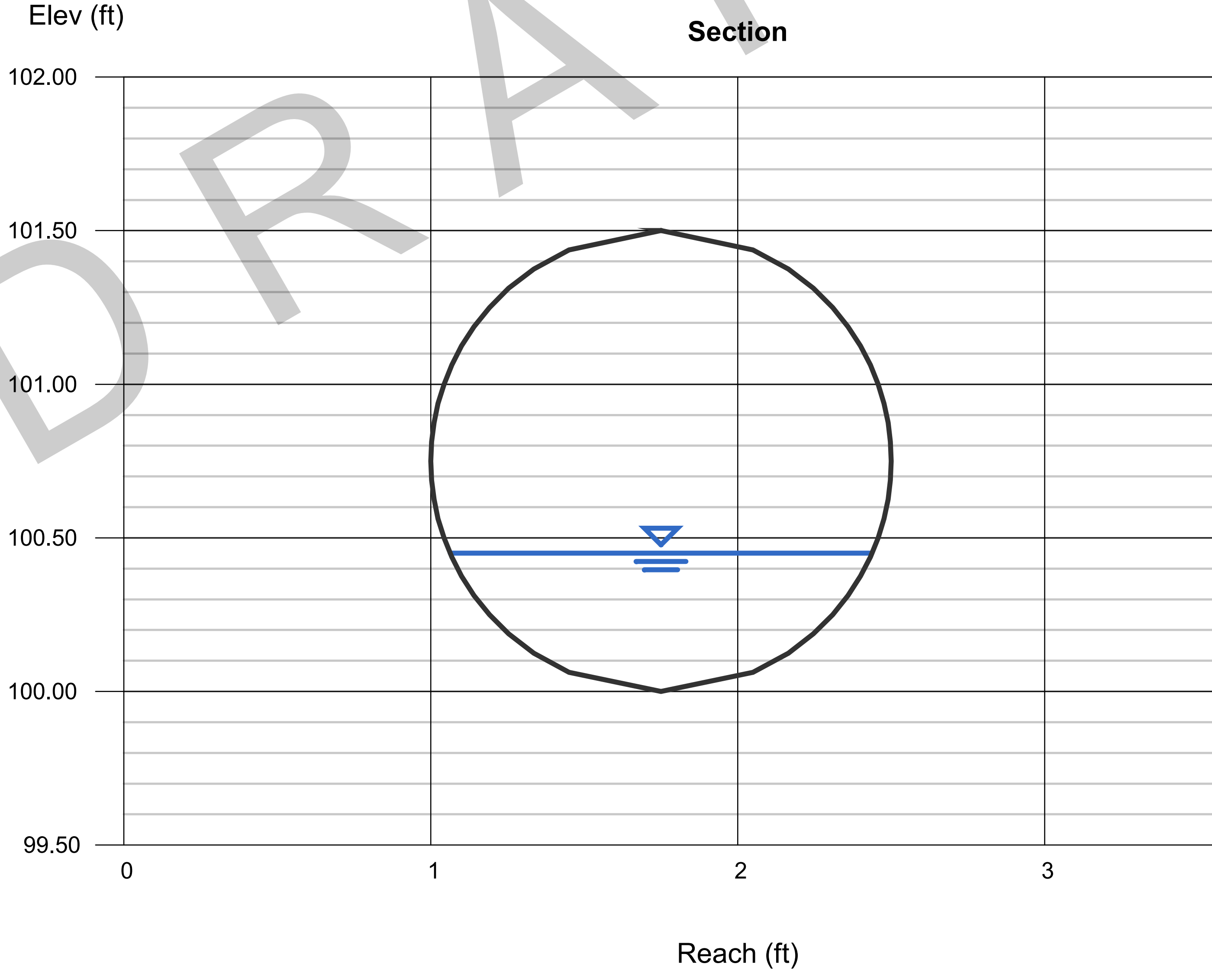
PIPE RUN 4 - 18-INCH HDPE @18.7 PERCENT

Circular
Diameter (ft) = 1.50

Invert Elev (ft) = 100.00
Slope (%) = 18.70
N-Value = 0.013

Calculations
Compute by: Known Q
Known Q (cfs) = 8.82

Highlighted
Depth (ft) = 0.45
Q (cfs) = 8.820
Area (sqft) = 0.45
Velocity (ft/s) = 19.75
Wetted Perim (ft) = 1.74
Crit Depth, Yc (ft) = 1.15
Top Width (ft) = 1.38
EGL (ft) = 6.52



Channel Report

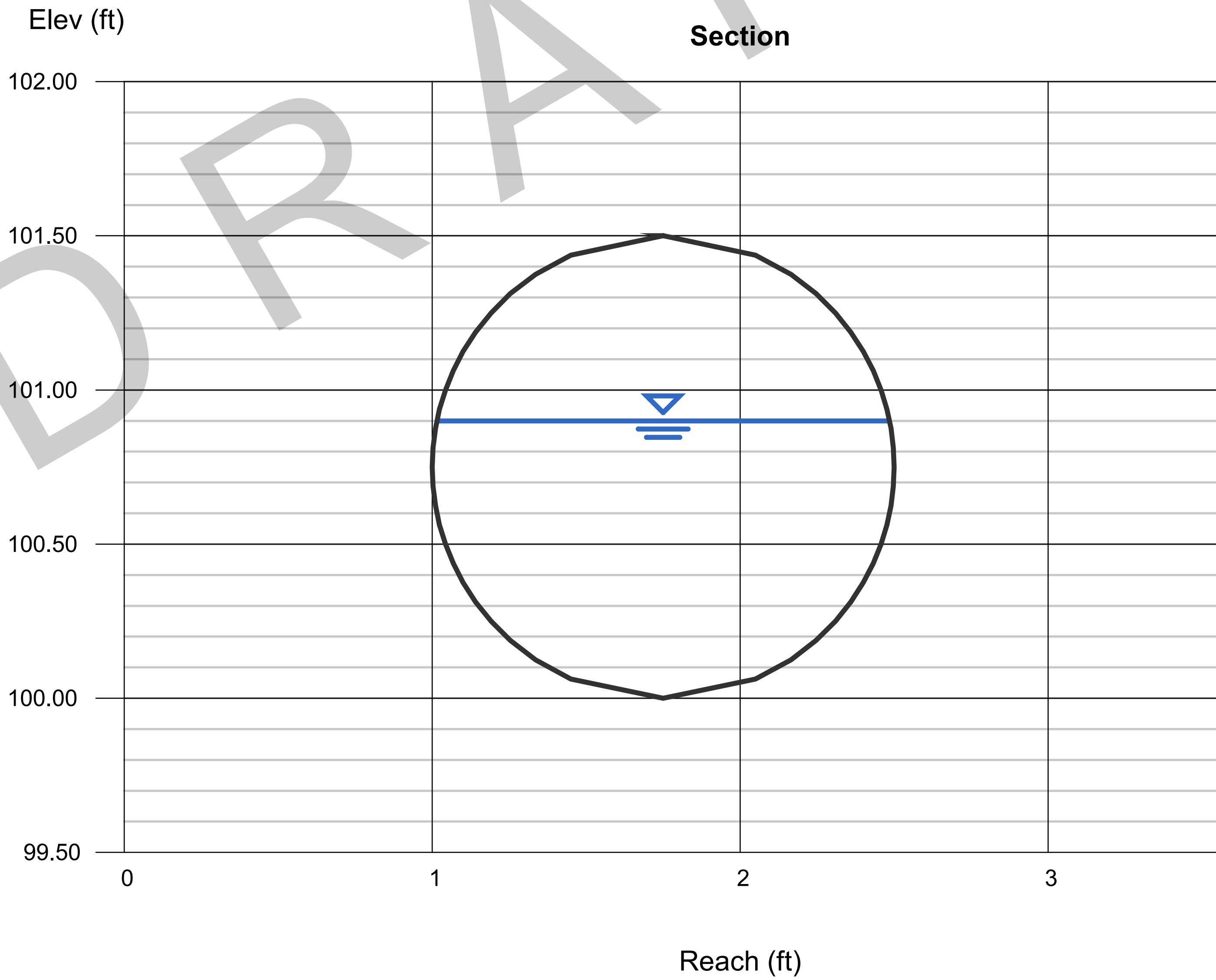
PIPE RUN 5 - 18-INCH HDPE @1.6 PERCENT

Circular
Diameter (ft) = 1.50

Invert Elev (ft) = 100.00
Slope (%) = 1.60
N-Value = 0.013

Calculations
Compute by: Known Q
Known Q (cfs) = 8.82

Highlighted
Depth (ft) = 0.90
Q (cfs) = 8.820
Area (sqft) = 1.11
Velocity (ft/s) = 7.94
Wetted Perim (ft) = 2.66
Crit Depth, Yc (ft) = 1.15
Top Width (ft) = 1.47
EGL (ft) = 1.88



Channel Report

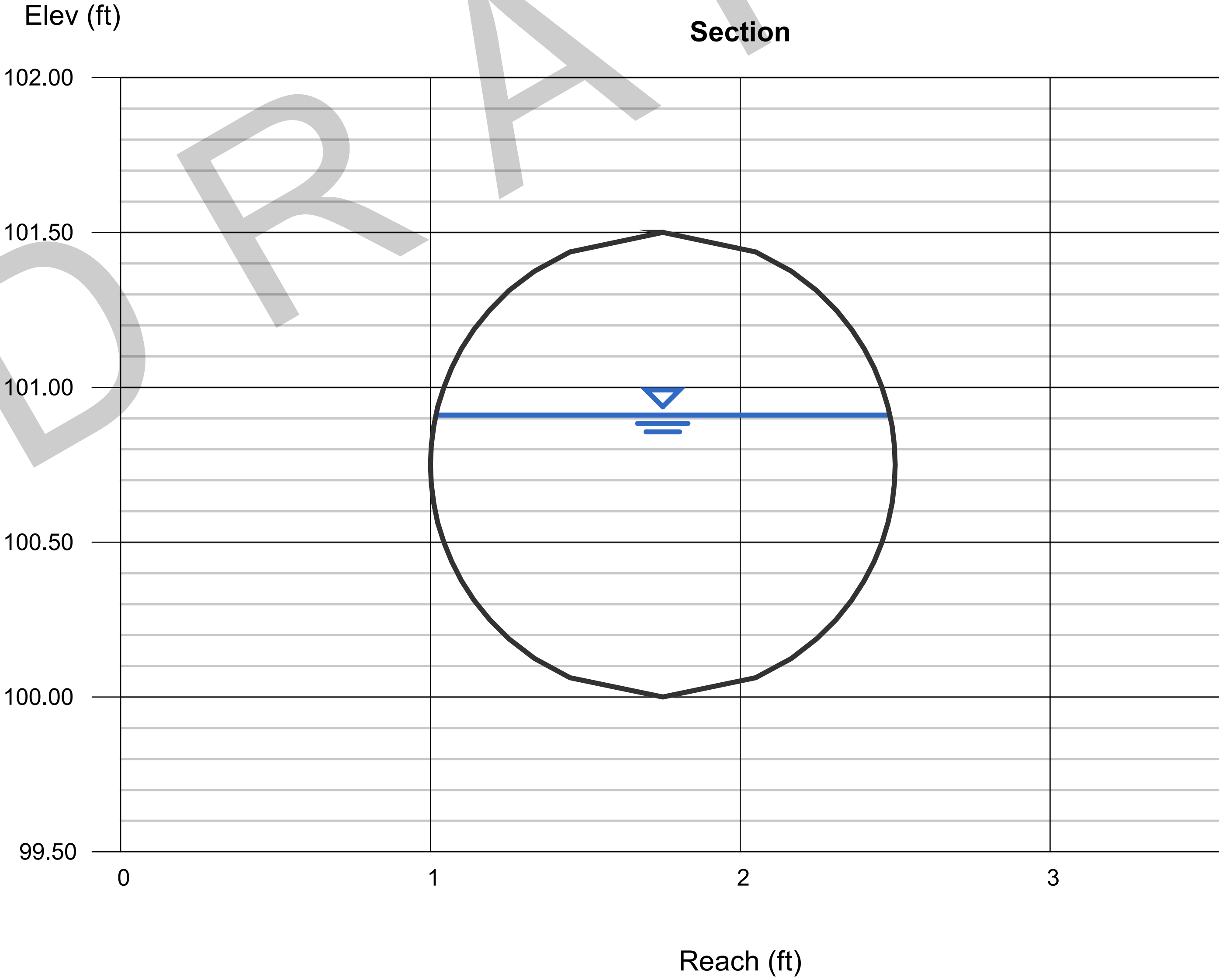
PIPE RUN 6 - 18-INCH HDPE @1.5 PERCENT

Circular
Diameter (ft) = 1.50

Invert Elev (ft) = 100.00
Slope (%) = 1.50
N-Value = 0.013

Calculations
Compute by: Known Q
Known Q (cfs) = 8.82

Highlighted
Depth (ft) = 0.91
Q (cfs) = 8.820
Area (sqft) = 1.13
Velocity (ft/s) = 7.83
Wetted Perim (ft) = 2.68
Crit Depth, Yc (ft) = 1.15
Top Width (ft) = 1.46
EGL (ft) = 1.86



WITHAM BASIN GRATED INLET CAPACITY CALCULATION

36-in Grated Inlet in Sag (Assumed 50% Clogging)

Cw	3	Unitless			L	3 ft
Pe	6.00	ft			W	3 ft
C0	0.67	Unitless	Ae	4.5		

*Pe assumes 50% clogging

Weir

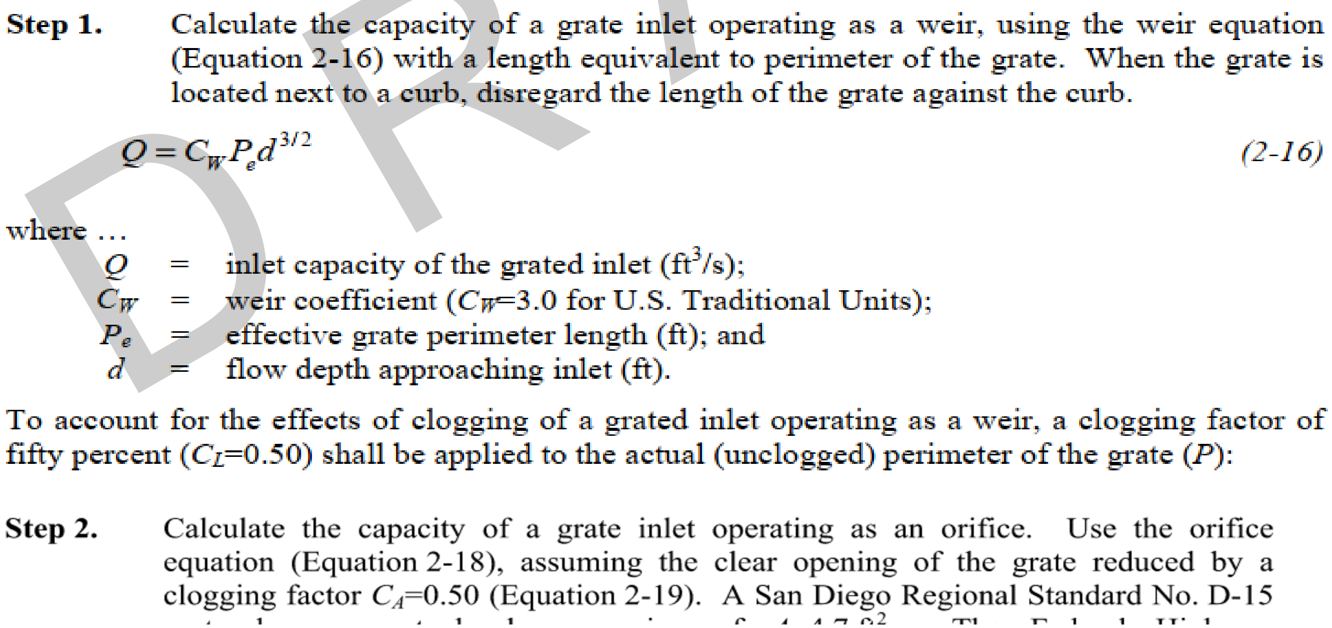
Q (cfs)	d (ft)
2.25	0.25
6.36	0.5
11.69	0.75
18.00	1
25.16	1.25
33.07	1.5

Orifice

Q (cfs)	d (ft)
12.10	0.25
17.11	0.5
20.95	0.75
24.20	1
27.05	1.25
29.63	1.5

*TWO 36" X 36" GRATED INLETS ASSUMING 50% CLOG RATE PROVIDE CAPACITY FOR 12.72 CFS

WITHAM Q100 (UNMIT) = 9.36 CFS
WITHAM Q100 (UNMIT) < GRATE CAPACITY



Step 1. Calculate the capacity of a grate inlet operating as a weir, using the weir equation (Equation 2-16) with a length equivalent to perimeter of the grate. When the grate is located next to a curb, disregard the length of the grate against the curb.

$$Q = C_W P_e d^{3/2} \tag{2-16}$$

where …

Q = inlet capacity of the grated inlet (ft^3/s);
C_W = weir coefficient (C_W=3.0 for U.S. Traditional Units);
P_e = effective grate perimeter length (ft); and
d = flow depth approaching inlet (ft).

To account for the effects of clogging of a grated inlet operating as a weir, a clogging factor of fifty percent (C_L=0.50) shall be applied to the actual (unclogged) perimeter of the grate (P):

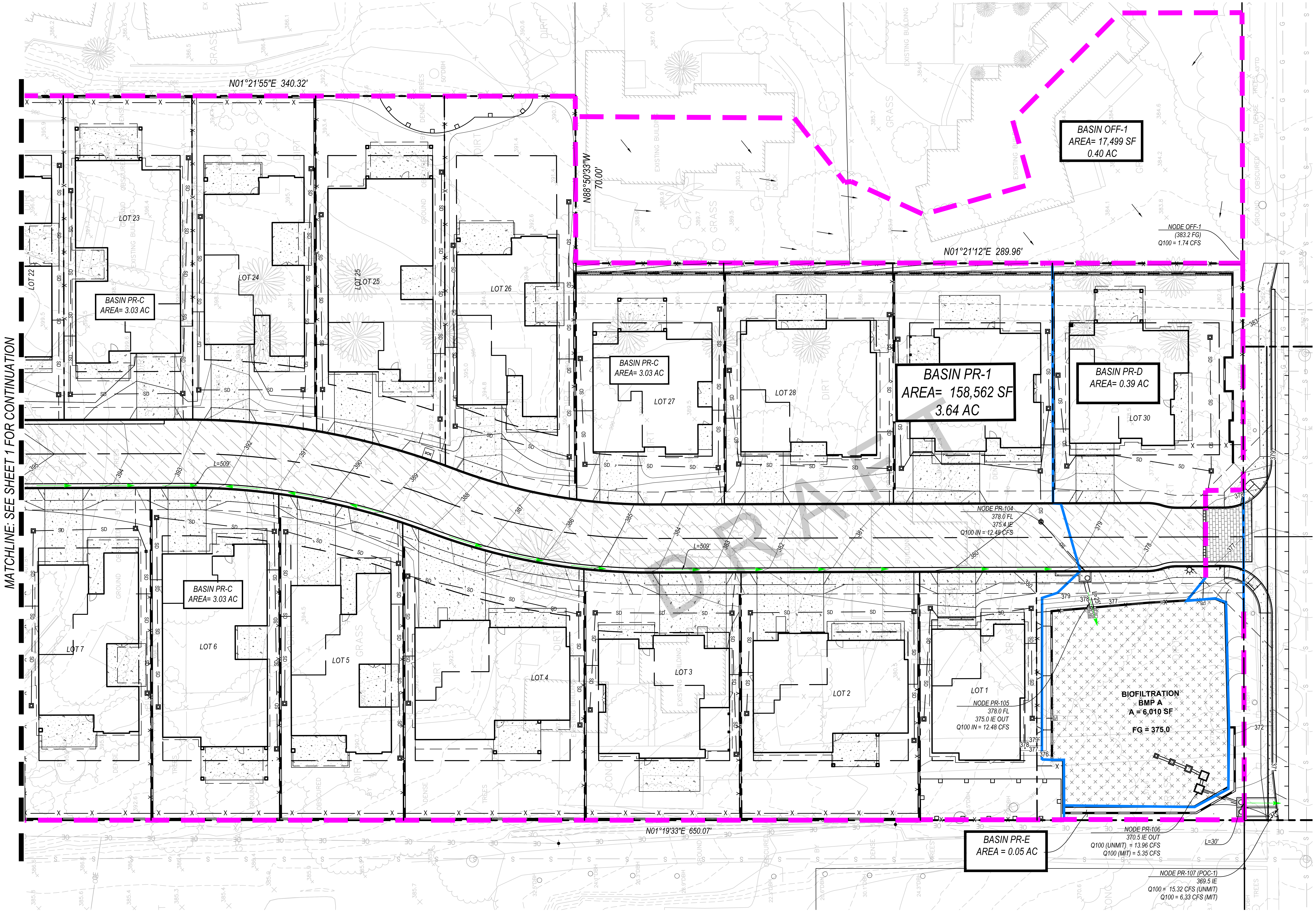
Step 2. Calculate the capacity of a grate inlet operating as an orifice. Use the orifice equation (Equation 2-18), assuming the clear opening of the grate reduced by a clogging factor C_A=0.50 (Equation 2-19). A San Diego Regional Standard No. D-15 grate has an actual clear opening of A=4.7 ft^2. The Federal Highway Administration's *Urban Drainage Design Manual* (HEC-22) provides guidance for other grate types and configurations.

$$Q = C_O A_e \left(2gd\right)^{1/2} \tag{2-18}$$

$$A_e = (1 - C_A)A \tag{2-19}$$

where …

Q = inlet capacity of the grated inlet (ft^3/s);
C_O = orifice coefficient (C_O=0.67 for U.S. Traditional Units);
g = gravitational acceleration (ft/s^2);
d = flow depth above inlet (ft);
A_e = effective (clogged) grate area (ft2);
C_A = area clogging factor (C_A=0.50); and
A = actual opening area of the grate inlet (i.e., the total area less the area of bars or vanes). The actual opening area for a San Diego Regional Standard No. D-15 grate is A=4.7 ft^2. The Federal Highway Administration's *Urban Drainage Design Manual* (HEC-22) provides guidance for other grate types and configurations.



LEGEND

PROPERTY BOUNDARY	━━ ━ ━ ━━
CENTERLINE OF ROAD	── ─ ──
RIGHT-OF-WAY BOUNDARY	━━━━━━
ADJACENT PROPERTY LINE	— — — —
EXISTING CONTOUR LINE	- - - - - -
PROPOSED CONTOUR LINE	──────
PROPOSED PATH OF TRAVEL	→
PROPOSED DIRECTION OF FLOW	→ →
PROPOSED MAJOR DRAINAGE BASIN BOUNDARY	▬ ▬ ▬ ▬
EXISTING MAJOR DRAINAGE BASIN BOUNDARY	▬ ▬ ▬ ▬
PROPOSED SUB-DRAINAGE / AES NODE BASIN BOUNDARY	━━━━━━
PROPOSED DIVERTED AREA TO MOONLIGHT BEACH WATERSHED	🟦
PROPOSED DIVERTED AREA SAN MARCOS CREEK / BATIQUITOS LAGOON WATERSHED	🟩

PLAN VIEW - POST-DEVELOPED NODE MAP

SCALE: 1" = 20' HORIZONTAL

BASIN PR-1- AREA CALCULATIONS

TOTAL BASIN PR-1.1 AREA	158,562 SF (3.64 AC)
Cn	0.75
Q100 (UNMITIGATED)	13.96 CFS
Q100 (MITIGATED)	6.33 CFS

BASIN OFF-1 - AREA CALCULATIONS

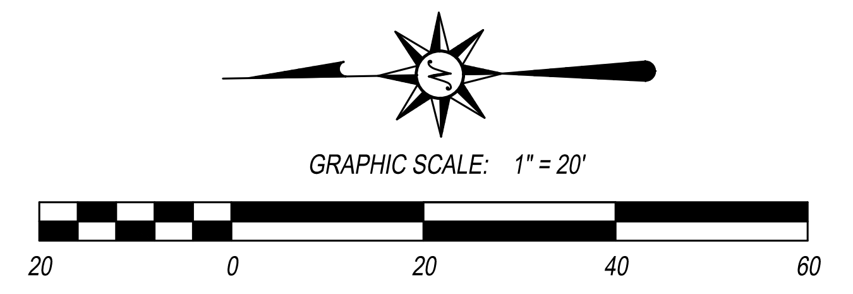
TOTAL BASIN OFF-1 AREA	17,499 SF (0.40 AC)
Cn	0.59
Q100	1.74 CFS

POC-1 - AREA CALCULATIONS

TOTAL BASIN OFF-1 AREA	176,061 SF (4.04 AC)
Q100	15.32 CFS
Q100 (MITIGATED)	5.35 CFS

BASIN PR-4 - AREA CALCULATIONS

TOTAL BASIN PR-1.2 AREA	114,153 SF (2.62 AC)
Cn	0.73
Q100 (UNMITIGATED)	8.82 CFS
Q100 (MITIGATED)	0.18 CFS



PROPOSED HYDROLOGY EXHIBIT
1220-1240 MELBA ROAD
CITY OF ENCINITAS

PLSA
PLSAENGINEERING.COM

Channel Report

Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc. Thursday, Mar 23 2023

18-IN HDPE @ 1.6%

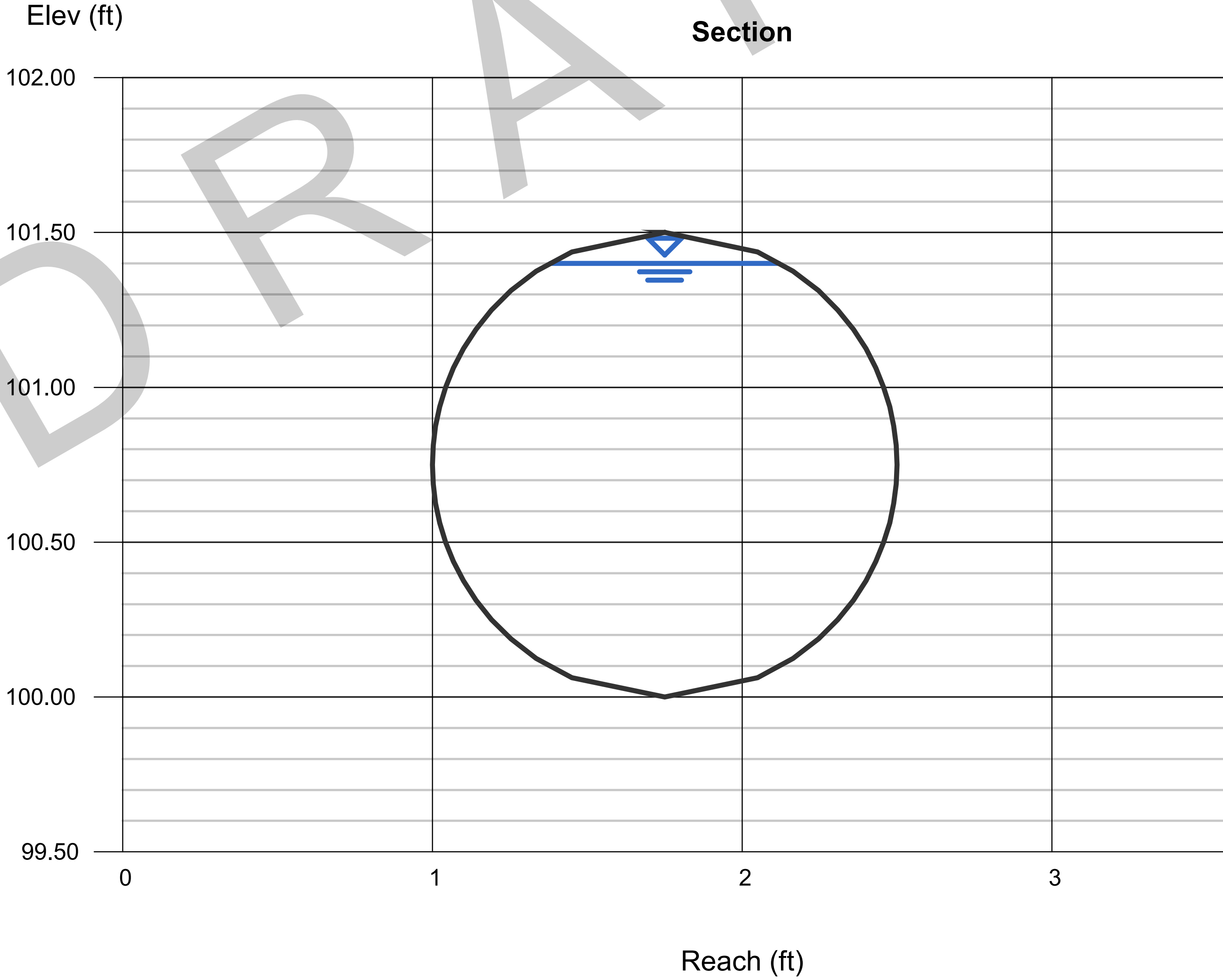
Circular
Diameter (ft) = 1.50

Invert Elev (ft) = 100.00
Slope (%) = 1.60
N-Value = 0.013

Calculations
Compute by: Known Depth
Known Depth (ft) = 1.40

Highlighted
Depth (ft) = 1.40
Q (cfs) = 14.29
Area (sqft) = 1.72
Velocity (ft/s) = 8.32
Wetted Perim (ft) = 3.93
Crit Depth, Yc (ft) = 1.39
Top Width (ft) = 0.75
EGL (ft) = 2.48

Minimum flow rate through 18-inch HDPE storm drain = 14.29 cfs
Witham Basin Q100 = 9.36 cfs



MELBA BASIN GRATED INLET CAPACITY CALCULATION

36-in Grated Inlet in Sag (Assumed 50% Clogging)

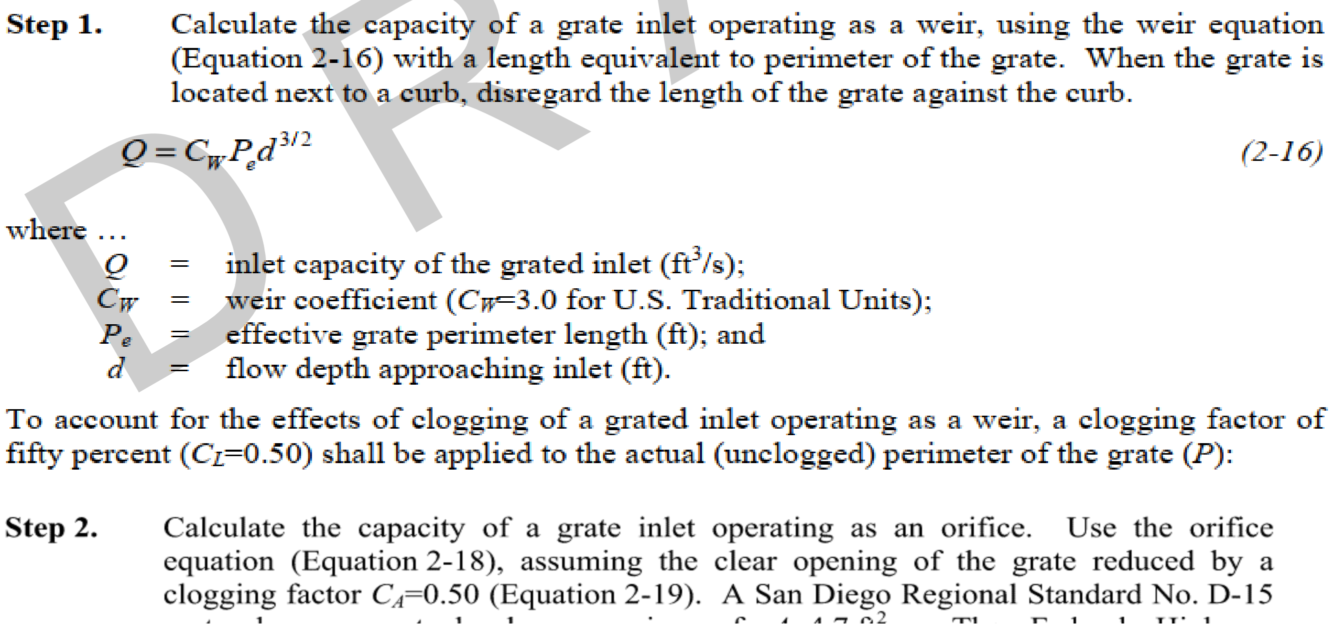
Cw	3	Unitless			L	3	ft
Pe	6.00	ft			W	3	ft
C0	0.67	Unitless	Ae	4.5			

*Pe assumes 50% clogging

Weir		Orifice	
Q (cfs)	d (ft)	Q (cfs)	d (ft)
2.25	0.25	12.10	0.25
6.36	0.5	17.11	0.5
11.69	0.75	20.95	0.75
18.00	1	24.20	1
25.16	1.25	27.05	1.25
33.07	1.5	29.63	1.5

*TWO 36" X 36" GRATED INLETS ASSUMING 50% CLOG RATE PROVIDE CAPACITY FOR 23.38 CFS

MELBA Q100 (UNMIT) = 13.96 CFS
MELBA Q100 (UNMIT) < GRATE CAPACITY



Step 1. Calculate the capacity of a grate inlet operating as a weir, using the weir equation (Equation 2-16) with a length equivalent to perimeter of the grate. When the grate is located next to a curb, disregard the length of the grate against the curb.

$$Q = C_W P_e d^{3/2} \qquad (2\text{-}16)$$

where …

Q = inlet capacity of the grated inlet (ft^3/s);
C_W = weir coefficient (C_W=3.0 for U.S. Traditional Units);
P_e = effective grate perimeter length (ft); and
d = flow depth approaching inlet (ft).

To account for the effects of clogging of a grated inlet operating as a weir, a clogging factor of fifty percent (C_L=0.50) shall be applied to the actual (unclogged) perimeter of the grate (P):

Step 2. Calculate the capacity of a grate inlet operating as an orifice. Use the orifice equation (Equation 2-18), assuming the clear opening of the grate reduced by a clogging factor C_A=0.50 (Equation 2-19). A San Diego Regional Standard No. D-15 grate has an actual clear opening of A=4.7 ft^2. The Federal Highway Administration's *Urban Drainage Design Manual* (HEC-22) provides guidance for other grate types and configurations.

$$Q = C_O A_e \left(2gd\right)^{1/2} \tag{2-18}$$

$$A_e = (1 - C_A) A \tag{2-19}$$

where …

Q = inlet capacity of the grated inlet (ft^3/s);
C_O = orifice coefficient (C_O=0.67 for U.S. Traditional Units);
g = gravitational acceleration (ft/s^2);
d = flow depth above inlet (ft);
A_e = effective (clogged) grate area (ft2);
C_A = area clogging factor (C_A=0.50); and
A = actual opening area of the grate inlet (i.e., the total area less the area of bars or vanes). The actual opening area for a San Diego Regional Standard No. D-15 grate is A=4.7 ft^2. The Federal Highway Administration's *Urban Drainage Design Manual* (HEC-22) provides guidance for other grate types and configurations.

Channel Report

SDRSD D-25 3-IN X 3-FT @2.0%

Rectangular
Bottom Width (ft) = 3.00
Total Depth (ft) = 0.25

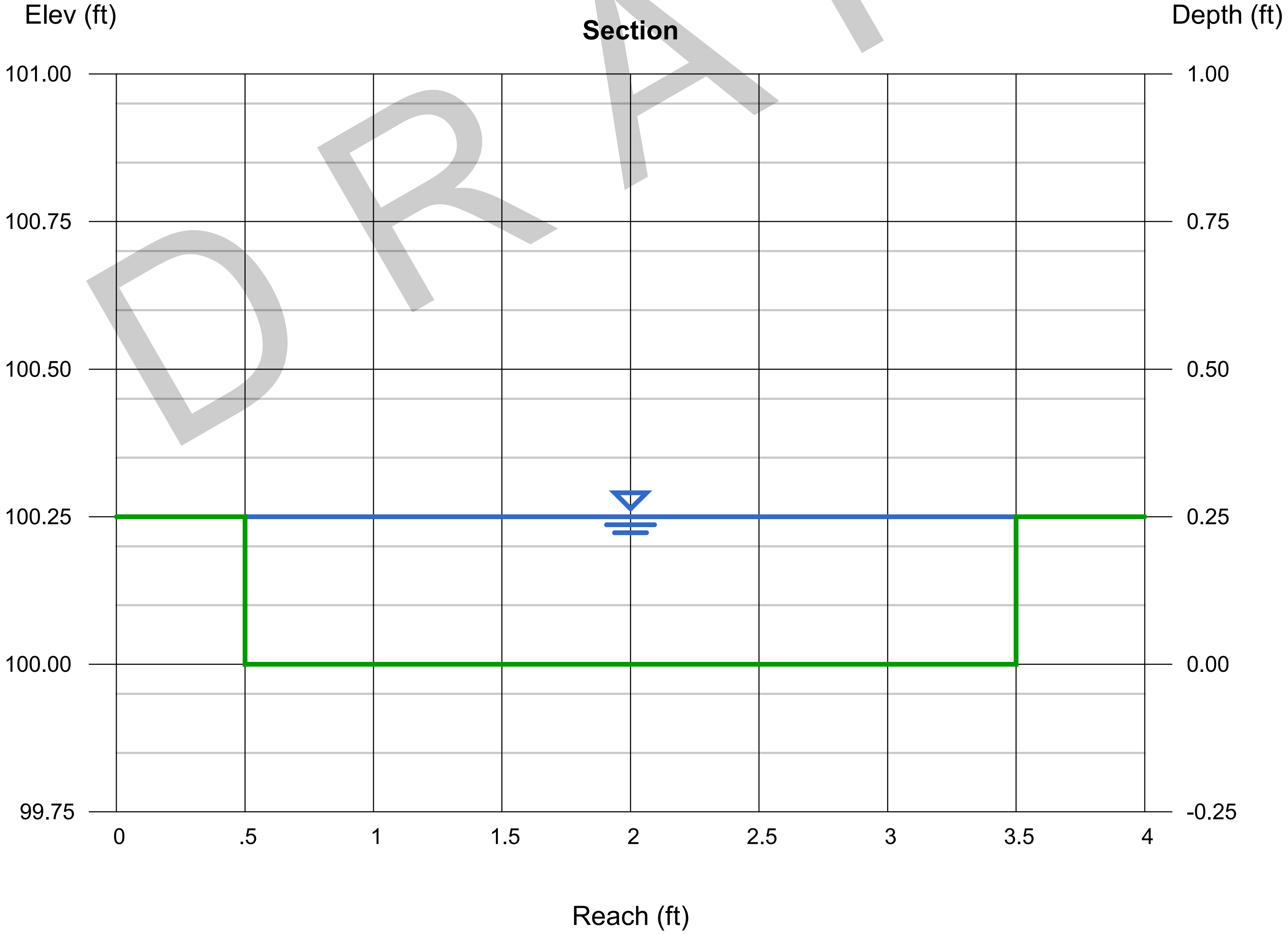
Invert Elev (ft) = 100.00
Slope (%) = 2.00
N-Value = 0.013

Calculations
Compute by: Known Depth
Known Depth (ft) = 0.25

Highlighted
Depth (ft) = 0.25
Q (cfs) = 4.339
Area (sqft) = 0.75
Velocity (ft/s) = 5.79
Wetted Perim (ft) = 3.50
Crit Depth, Yc (ft) = 0.25
Top Width (ft) = 3.00
EGL (ft) = 0.77

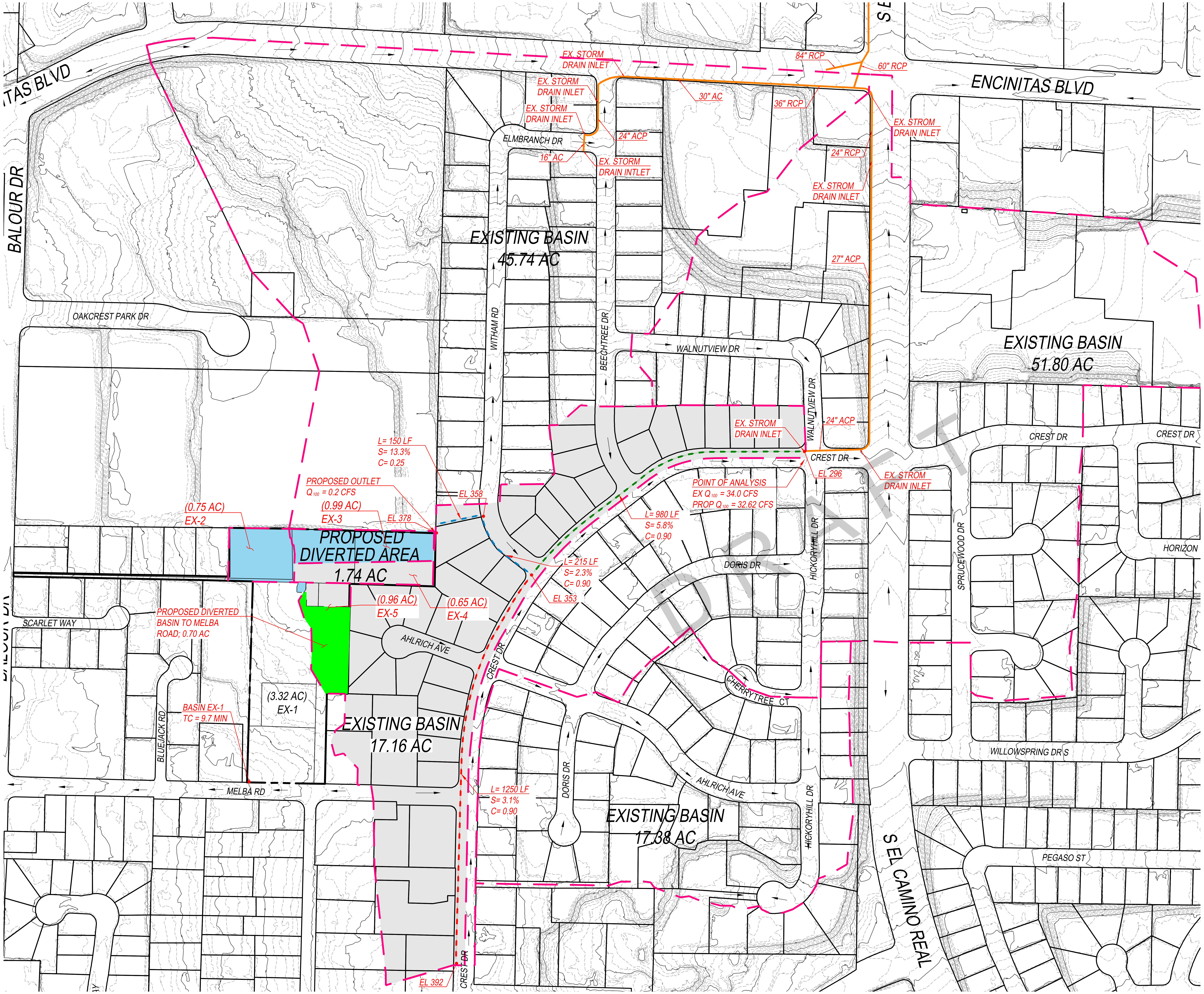
Melba Basin to have 2 * curb outlet = 4.34 cfs * 2
Melba Capacity = 8.68 cfs

Witham Basin to have 2 * curb outlet = 4.34 cfs * 2
Witham Capacity = 8.68 cfs



Appendix D

CREST DRIVE CURB AND GUTTER ANALYSIS



LEGEND

PROPPROPERY BOUNDARY	▬ ▬ ▬
EXISTING NATURAL FLOW DIRECTION	←
EXISTING DRAINAGE BASIN	▬ ▬
PROPOSED FLOW DIRECTION	- - -
PROPOSED DIVERTED AREA (TO CREST DRIVE)	🟦
PROPOSED DIVERTED AREA (TO MELBA ROAD)	🟩

PLAN VIEW - CREST DRIVE CURB AND GUTTER ANALYSIS
SCALE: 1" = 150'

0 150' 300' 450'
SCALE: 1"=150'

TYLER G LAWSON
No. 80356
Exp. 12/31/24

PREPARED BY:
PASCO LARET SUITER
& ASSOCIATES
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Phone 858.259.8212 | www.plsaengineering.com

PASCO LARET SUITER
& ASSOCIATES
CIVIL ENGINEERING + LAND PLANNING + LAND SURVEYING

March 29, 2023 PLSA 3086

APPENDIX

RATIONAL METHOD PARAMETERS AND CALCULATIONS

$Q = CIA$ *Rational Method Equation

Total Basin Area = 17.16 ac

Basin Land Use = Medium Density Residential (MDR), 4.3 DU/acre

Soil Type = Hydrologic Group “D” per USGS Soils Survey

EXISTING DRAINAGE BASIN:

Total Area: **A = 17.16 ac**

C_n, Weighted Runoff Coefficient

Assuming 4.3 DU/ac with Type D soils, per SDHM Table 3-1

$\mathbf{C_n = 0.52}$

T_c, Time of Concentration

$T_c = T_i + \Sigma T_t$

$T_i = \left(\frac{1.8\,(1.1 - C)\,\sqrt{D}}{\sqrt[3]{s}}\right)$ * Per SDHM Figure 3-3

C = 0.52

D = 100 * Maximum overland flow length per SDHM Table 3-2

s = 3.1

$T_i = \left(\frac{1.8\,(1.1 - 0.52)\,\sqrt{100}}{\sqrt[3]{3.1}}\right) = 2.5$ minutes

$\mathbf{T_i = 2.5}$ **minutes**

$T_t = \left(\frac{11.9\,L^3}{\Delta E}\right)^{0.385}$

Flow Path 1:

L = 1150 ft

ΔE = 36 ft

$T_{t1} = \left(\frac{11.9\,L^3}{\Delta E}\right)^{0.385} = \left(\frac{11.9\,(1150/5280)^3}{36}\right)^{0.385} = 6.7$ minutes

$\mathbf{T_{t1} = 6.7}$ **minutes**

<u>Flow Path 2:</u>

$L = 980$ ft

$\Delta E = 57$ ft

$$T_{t2} = \left(\frac{11.9\ L^3}{\Delta\ E}\right)^{0.385} = \left(\frac{11.9\ (980)^3}{57}\right)^{0.385} = 4.7 \text{ minutes}$$

T_{t2} = 4.7 minutes

$T_c = T_i + \Sigma T_t = T_i + T_{t1} + T_{t12}$

= 2.5 + 6.7 + 4.7

= 13.9 minutes

T_c = **13.9 minutes**

$I = 7.44 \times P_{100} \times D^{-0.645}$

$P_{100} = 2.8$ in *100-Year, 6-Hour Rainfall Precipitation per SDHM

$D = T_C = 14.4$ minutes

$I = 7.44 \times 2.8 \text{ in} \times 13.9^{-0.645} = 3.81$ in/hr

I = 3.81 in/hr

Q = C I A

$Q_{100} = 0.52 * 3.81$ in/hr * 17.16 acres

Q_{100} = 34.0 cfs *Pre-Development Flow to Existing Curb Inlet Crest Dr

PROPOSED DRAINAGE BASIN:

EX-4 contribution to existing condition

Q100 = 1.58 cfs

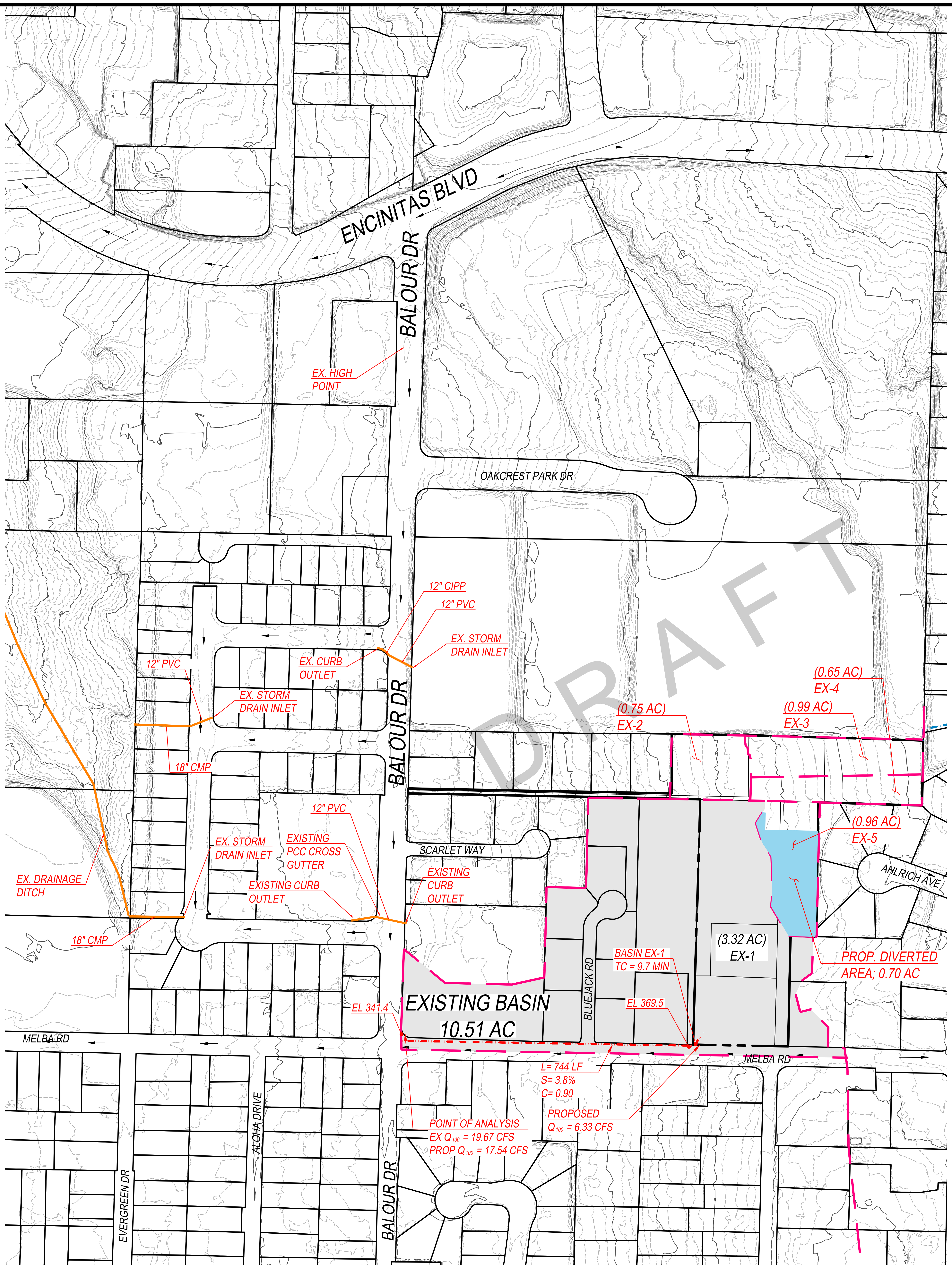
Total Additional Area: **A = 2.62 ac**

Additional runoff leaving project site**: Q_{100} = 0.2 cfs**

Q_{100} = 34.0 cfs (pre) + 0.2 cfs – 1.58 cfs

= 32.62 cfs *Post-Development Flow to Existing Curb Inlet Crest Drive

subject property drains through a buried storm drain in Lot 81
to outlet at curb face through modified curb outlet



PLAN VIEW - MELBA ROAD CURB AND GUTTER ANALYSIS

SCALE: 1" = 150'

LEGEND

PROPPROPERY BOUNDARY	━ ━ ━
EXISTING NATURAL FLOW DIRECTION	←
EXISTING DRAINAGE BASIN	━ ━
PROPOSED FLOW DIRECTION	- - -
PROPOSED DIVERTED BASIN	🟦

0 150' 300' 450'
SCALE: 1"=150'

TYLER G LAWSON
No. 80356
Exp. 12/31/24
CIVIL

PREPARED BY:
PASCO LARET SUITER
& ASSOCIATES
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Phone 858.259.8212 | www.plsaengineering.com

APPENDIX

RATIONAL METHOD PARAMETERS AND CALCULATIONS

$Q = CIA$ *Rational Method Equation

Total Basin Area = 10.51 ac

Basin Land Use = Medium Density Residential (MDR), 4.3 DU/acre

Soil Type = Hydrologic Group “D” per USGS Soils Survey

EXISTING DRAINAGE BASIN:

Total Area (including onsite basin EX-1): **A = 10.51 ac**

C_n, Weighted Runoff Coefficient

Assuming 4.3 DU/ac with Type D soils, per SDHM Table 3-1

C_n = 0.52

T_c, Time of Concentration (Melba Road)

$T_c = T_i + \Sigma T_t$

T_i = (EX-1 T_c; Hydrology Report, section 3.1)

= 9.7 mins

$$T_t = \left(\frac{11.9\ L^3}{\Delta\ E}\right)^{0.385}$$

Flow Path 1:

L = 744 ft

ΔE = 28.1 ft

$$T_{t1} = \left(\frac{11.9\ L^3}{\Delta\ E}\right)^{0.385} = \left(\frac{11.9\ (744/5280)^3}{28.1}\right)^{0.385} = 4.5 \text{ minutes}$$

T_{t1} = 4.5 minute

$T_c = T_i + T_{t1}$

= 9.7 + 4.5

= 14.2 minutes

T_c = **14.2 minutes**

$I = 7.44 \times P_{100} \times D^{-0.645}$

$P_{100} = 2.8$ in *100-Year, 6-Hour Rainfall Precipitation per SDHM

$D = T_C = 14.2$ minutes

$I = 7.44 \times 2.8 \text{ in} \times 14.2^{-0.645} = 3.76$ in/hr

$\mathbf{I = 3.76}$ **in/hr**

$Q = C\ I\ A$

$Q_{100} = 0.52 * 3.76$ in/hr * 10.51 acres

$\mathbf{Q_{100} = 19.67}$ **cfs** *Pre-Development Flow on Melba Road to Balour Drive

PROPOSED DRAINAGE BASIN:

EX-1 contribution to existing condition

$Q_{100} = 8.46$

Total Additional Area: **A = 3.64 ac**

Additional runoff leaving project site confluenced with OFF-1**: $\mathbf{Q_{100} = 6.33}$ cfs**

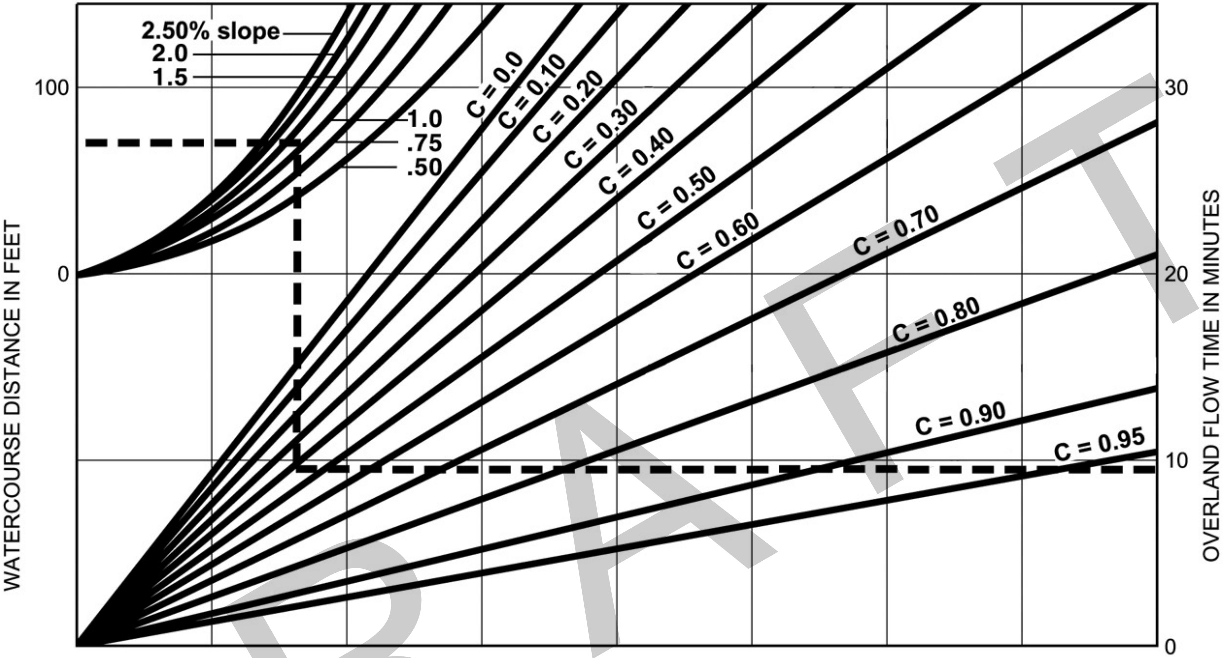
$\mathbf{Q_{100}}$ **= 19.67 cfs (pre) + 6.33 cfs – 8.46 cfs**

= 17.54 cfs *Post-Development Flow to Melba Road and Balour Drive Intersection.

Table 3-1
RUNOFF COEFFICIENTS FOR URBAN AREAS

Land Use		Runoff Coefficient "C"				
			Soil Type			
NRCS Elements	County Elements	% IMPER.	A	B	C	D
Undisturbed Natural Terrain (Natural)	Permanent Open Space	0*	0.20	0.25	0.30	0.35
Low Density Residential (LDR)	Residential, 1.0 DU/A or less	10	0.27	0.32	0.36	0.41
Low Density Residential (LDR)	Residential, 2.0 DU/A or less	20	0.34	0.38	0.42	0.46
Low Density Residential (LDR)	Residential, 2.9 DU/A or less	25	0.38	0.41	0.45	0.49
Medium Density Residential (MDR)	Residential, 4.3 DU/A or less	30	0.41	0.45	0.48	0.52
Medium Density Residential (MDR)	Residential, 7.3 DU/A or less	40	0.48	0.51	0.54	0.57
Medium Density Residential (MDR)	Residential, 10.9 DU/A or less	45	0.52	0.54	0.57	0.60
Medium Density Residential (MDR)	Residential, 14.5 DU/A or less	50	0.55	0.58	0.60	0.63
High Density Residential (HDR)	Residential, 24.0 DU/A or less	65	0.66	0.67	0.69	0.71
High Density Residential (HDR)	Residential, 43.0 DU/A or less	80	0.76	0.77	0.78	0.79
Commercial/Industrial (N. Com)	Neighborhood Commercial	80	0.76	0.77	0.78	0.79
Commercial/Industrial (G. Com)	General Commercial	85	0.80	0.80	0.81	0.82
Commercial/Industrial (O.P. Com)	Office Professional/Commercial	90	0.83	0.84	0.84	0.85
Commercial/Industrial (Limited I.)	Limited Industrial	90	0.83	0.84	0.84	0.85
Commercial/Industrial (General I.)	General Industrial	95	0.87	0.87	0.87	0.87

*The values associated with 0% impervious may be used for direct calculation of the runoff coefficient as described in Section 3.1.2 (representing the pervious runoff coefficient, Cp, for the soil type), or for areas that will remain undisturbed in perpetuity. Justification must be given that the area will remain natural forever (e.g., the area is located in Cleveland National Forest).
DU/A = dwelling units per acre
NRCS = National Resources Conservation Service



EXAMPLE:

Given: Watercourse Distance (D) = 70 Feet
Slope (s) = 1.3%
Runoff Coefficient (C) = 0.41
Overland Flow Time (T) = 9.5 Minutes

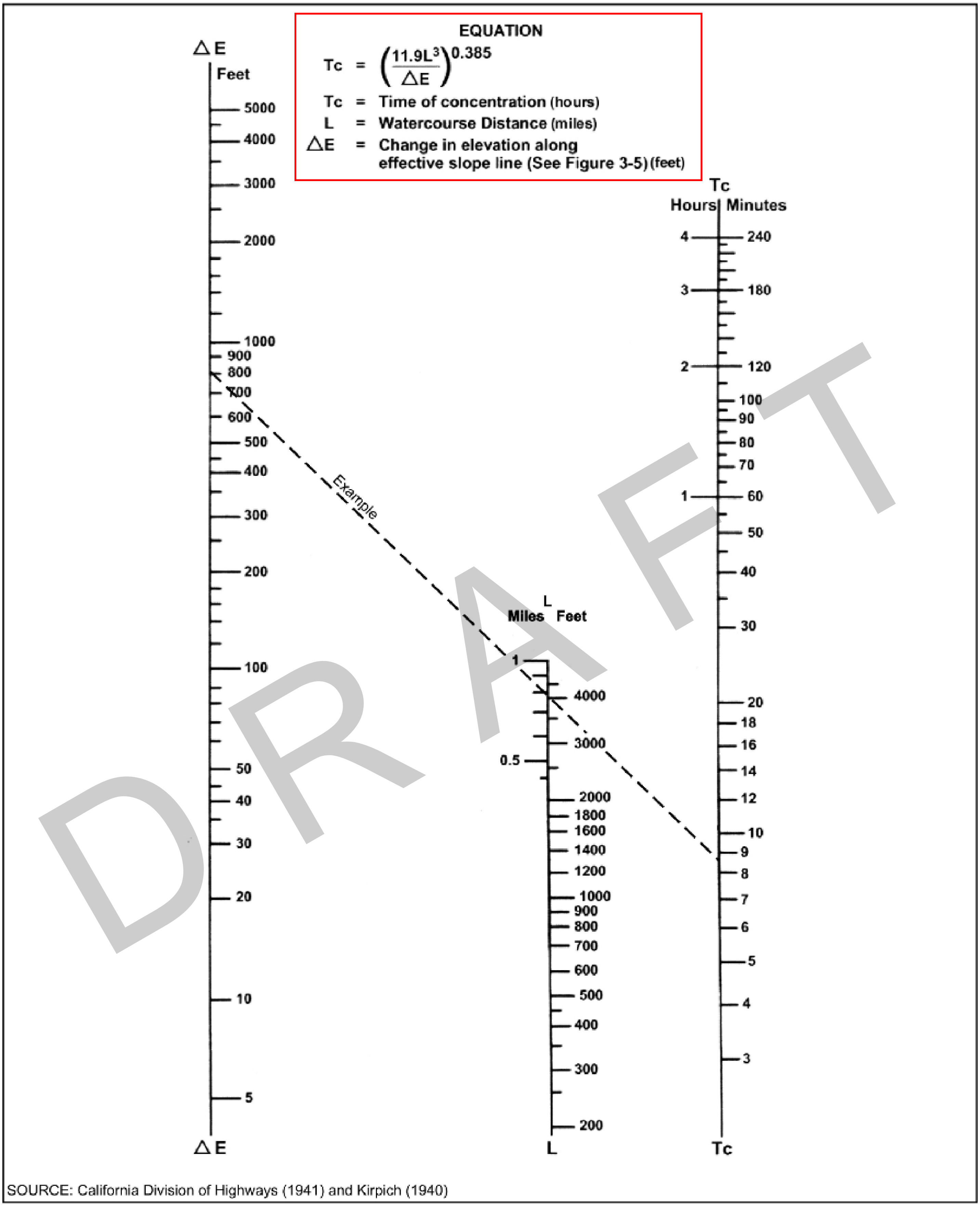
$$T = \frac{1.8\ (1.1\text{-}C)\ \sqrt{D}}{\sqrt[3]{s}}$$

SOURCE: Airport Drainage, Federal Aviation Administration, 1965

Rational Formula - Overland Time of Flow Nomograph

FIGURE

3-3



EQUATION

$$Tc = \left(\frac{11.9L^3}{\triangle E}\right)^{0.385}$$

Tc = Time of concentration (hours)

L = Watercourse Distance (miles)

$\triangle$E = Change in elevation along effective slope line (See Figure 3-5) (feet)

SOURCE: California Division of Highways (1941) and Kirpich (1940)

FIGURE

3-4

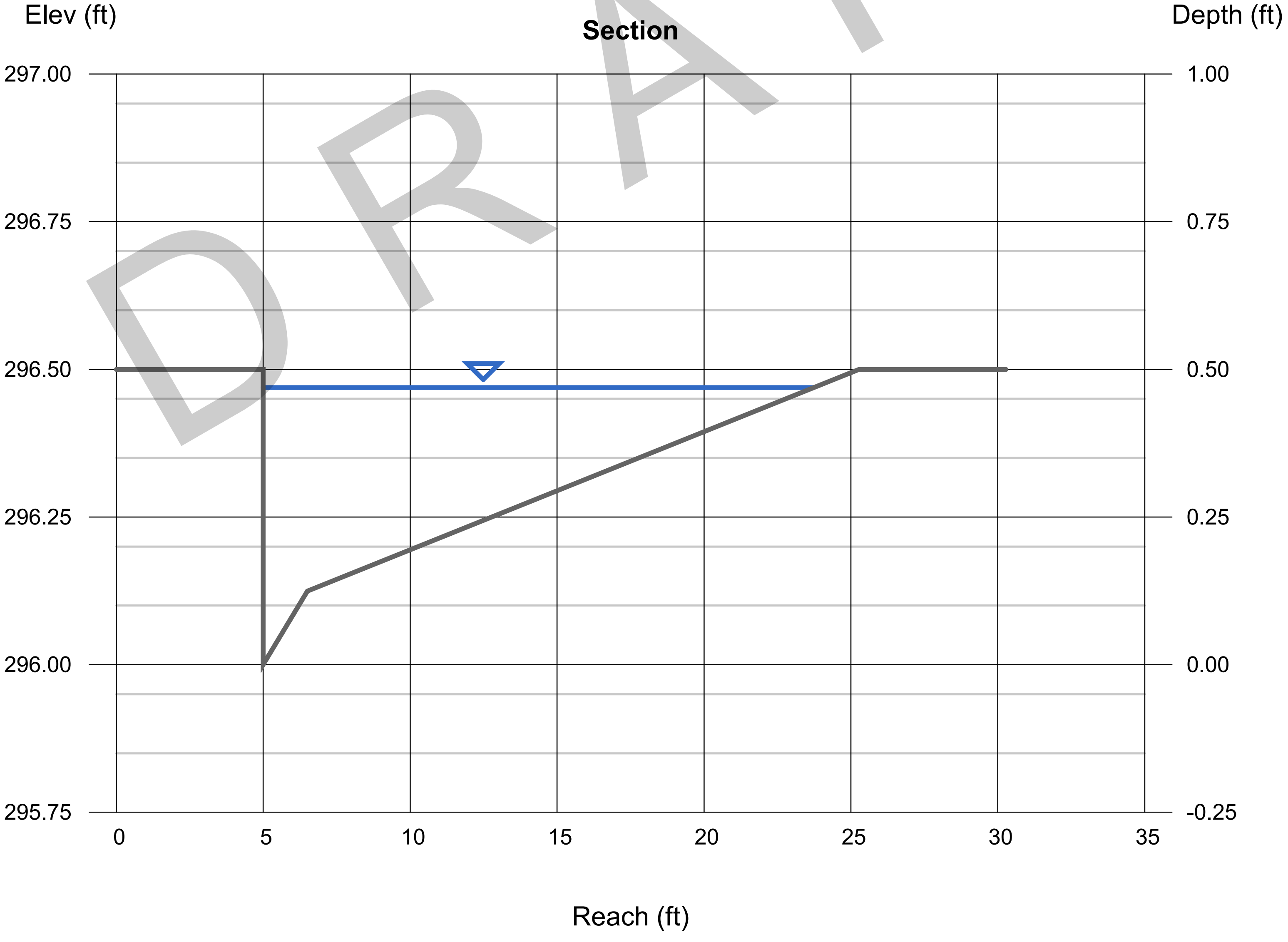
Nomograph for Determination of Time of Concentration (Tc) or Travel Time (Tt) for Natural Watersheds

Channel Report

EXISTING GUTTER FLOW TO INLET - CREST DRIVE

Gutter	
Cross Sl, Sx (ft/ft)	= 0.020
Cross Sl, Sw (ft/ft)	= 0.083
Gutter Width (ft)	= 1.50
Invert Elev (ft)	= 296.00
Slope (%)	= 5.80
N-Value	= 0.015
Calculations	
Compute by:	Known Q
Known Q (cfs)	= 34.00

Highlighted	
Depth (ft)	= 0.47
Q (cfs)	= 34.00
Area (sqft)	= 3.58
Velocity (ft/s)	= 9.50
Wetted Perim (ft)	= 19.20
Crit Depth, Yc (ft)	= 0.75
Spread Width (ft)	= 18.72
EGL (ft)	= 1.87



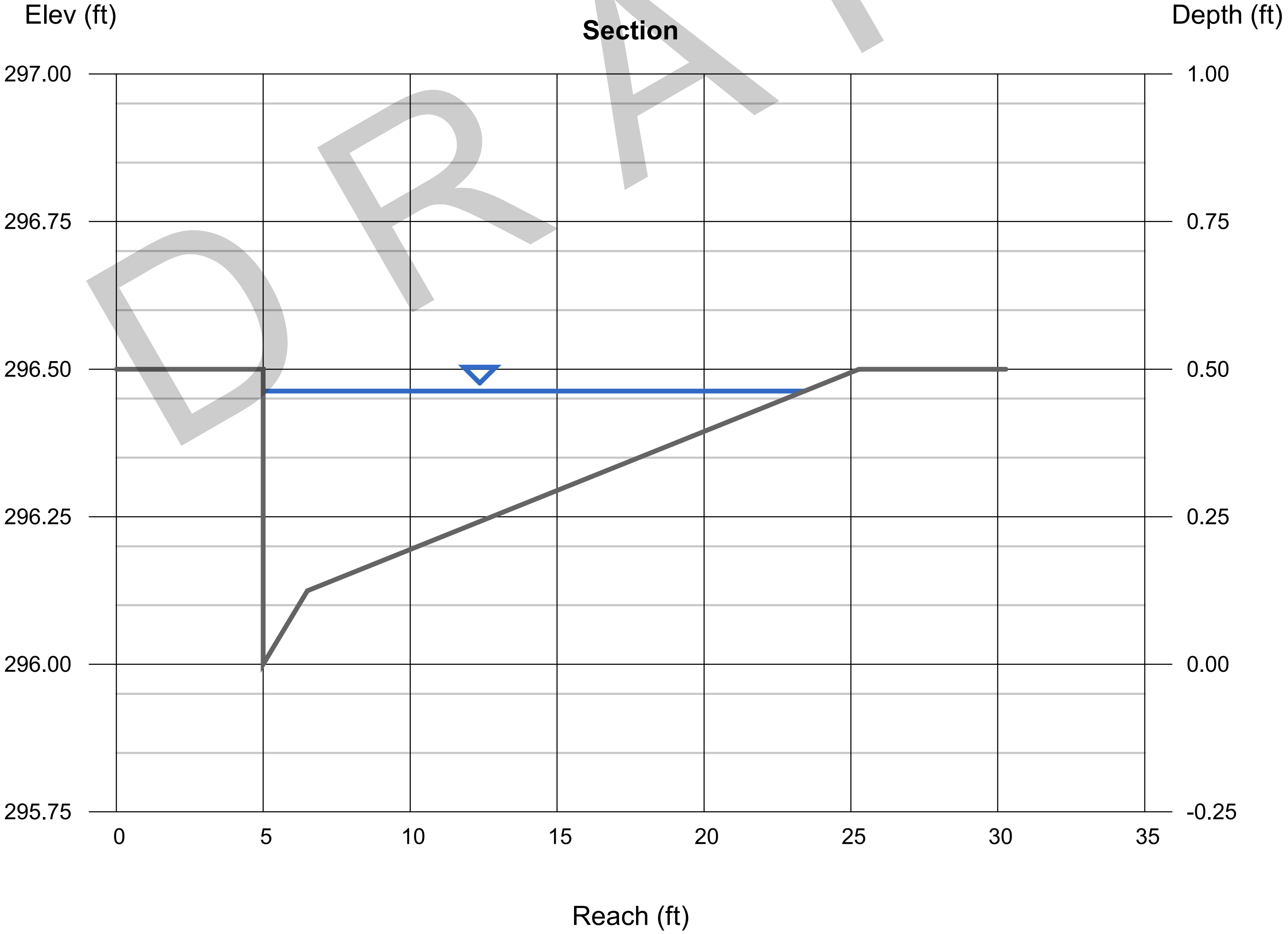
Channel Report

PROPOSED GUTTER FLOW TO INLET - CREST DRIVE

Gutter
Cross Sl, Sx (ft/ft) = 0.020
Cross Sl, Sw (ft/ft) = 0.083
Gutter Width (ft) = 1.50
Invert Elev (ft) = 296.00
Slope (%) = 5.80
N-Value = 0.015

Calculations
Compute by: Known Q
Known Q (cfs) = 32.62

Highlighted
Depth (ft) = 0.46
Q (cfs) = 32.62
Area (sqft) = 3.47
Velocity (ft/s) = 9.41
Wetted Perim (ft) = 18.90
Crit Depth, Yc (ft) = 0.74
Spread Width (ft) = 18.42
EGL (ft) = 1.84



Channel Report

24-IN ACP STORM DRAIN PER TM 3057-2

Circular

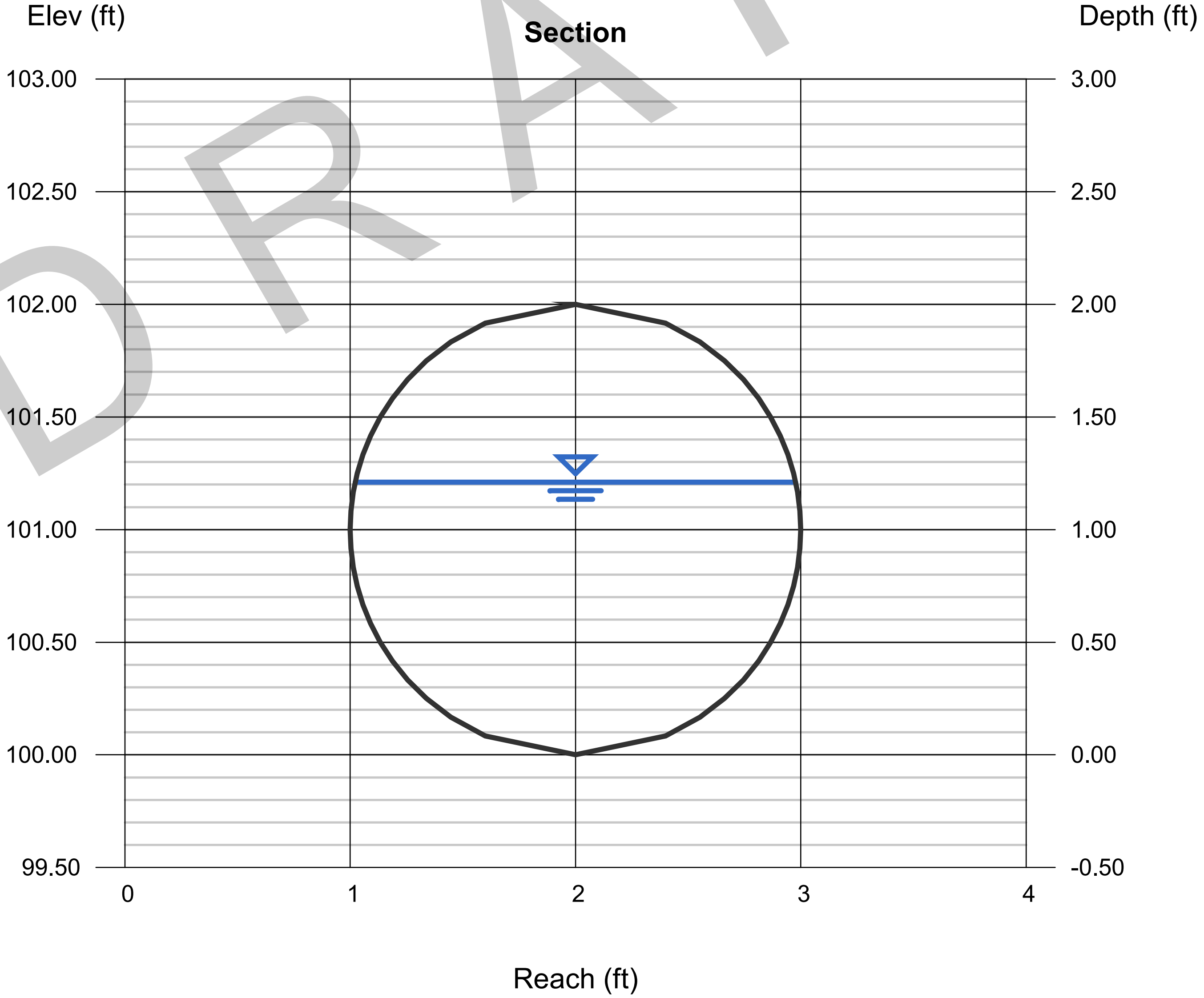
Diameter (ft)	= 2.00
Invert Elev (ft)	= 100.00
Slope (%)	= 3.23
N-Value	= 0.011

Calculations

Compute by:	Known Q
Known Q (cfs)	= 32.62

Highlighted

Depth (ft)	= 1.21
Q (cfs)	= 32.62
Area (sqft)	= 1.99
Velocity (ft/s)	= 16.37
Wetted Perim (ft)	= 3.57
Crit Depth, Yc (ft)	= 1.90
Top Width (ft)	= 1.95
EGL (ft)	= 5.38



Channel Report

EXISTING GUTTER FLOW TO INLET - MELBA ROAD

Gutter

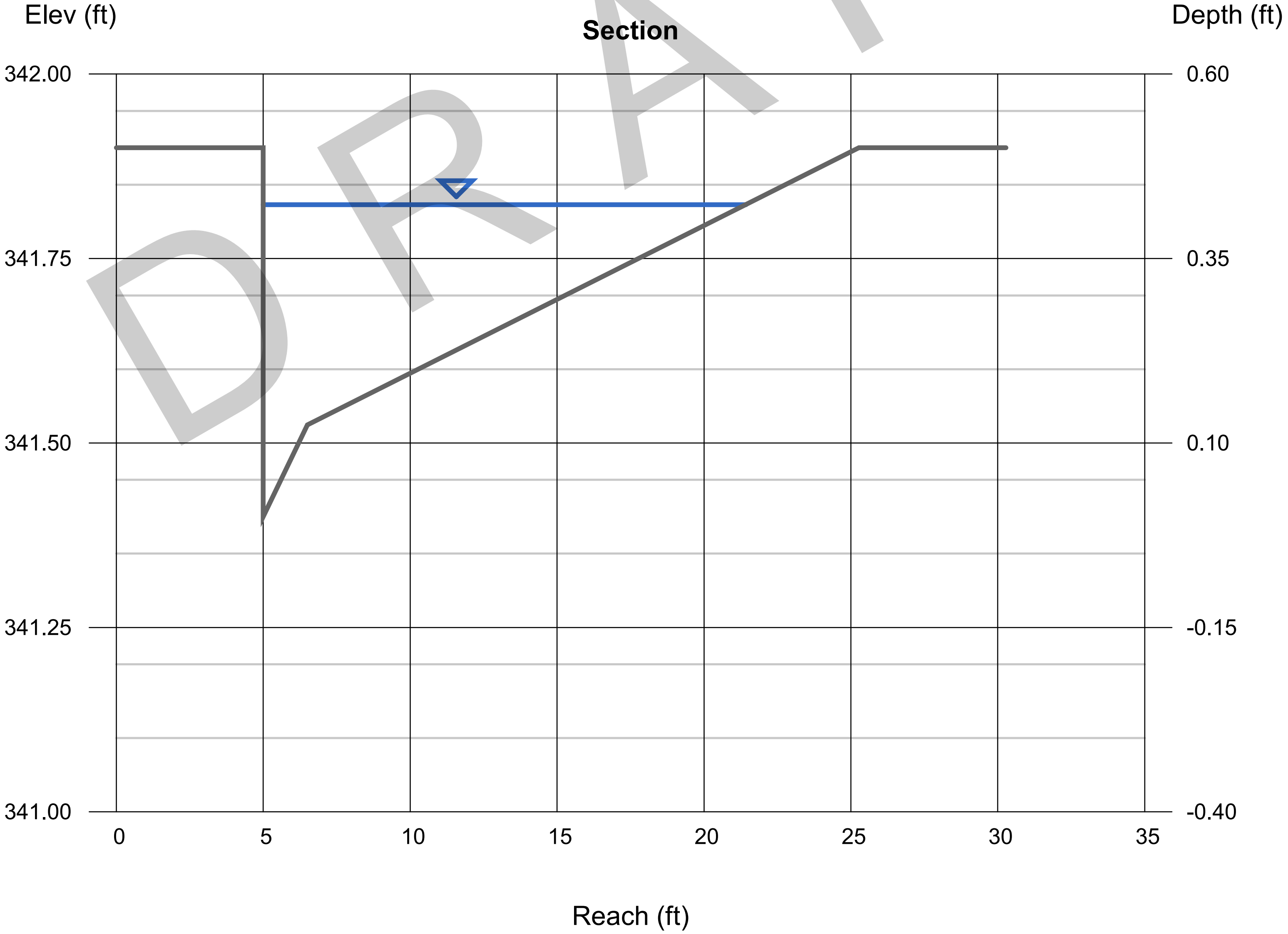
Cross Sl, Sx (ft/ft) = 0.020
Cross Sl, Sw (ft/ft) = 0.083
Gutter Width (ft) = 1.50
Invert Elev (ft) = 341.40
Slope (%) = 3.80
N-Value = 0.015

Calculations

Compute by: Known Q
Known Q (cfs) = 19.76

Highlighted

Depth (ft) = 0.42
Q (cfs) = 19.76
Area (sqft) = 2.77
Velocity (ft/s) = 7.14
Wetted Perim (ft) = 16.86
Crit Depth, Yc (ft) = 0.62
Spread Width (ft) = 16.42
EGL (ft) = 1.21



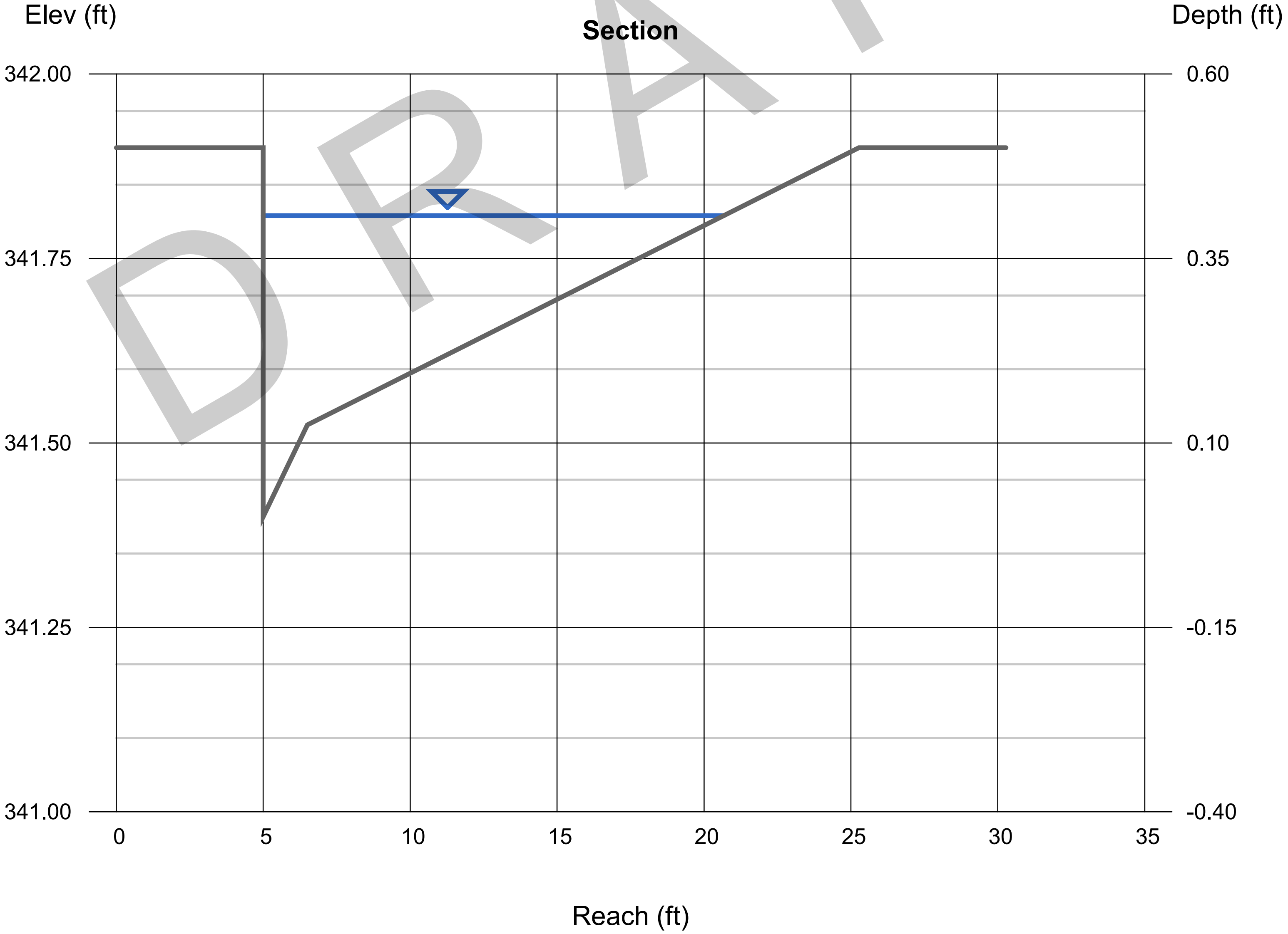
Channel Report

PROPOSED GUTTER FLOW TO INLET - MELBA ROAD

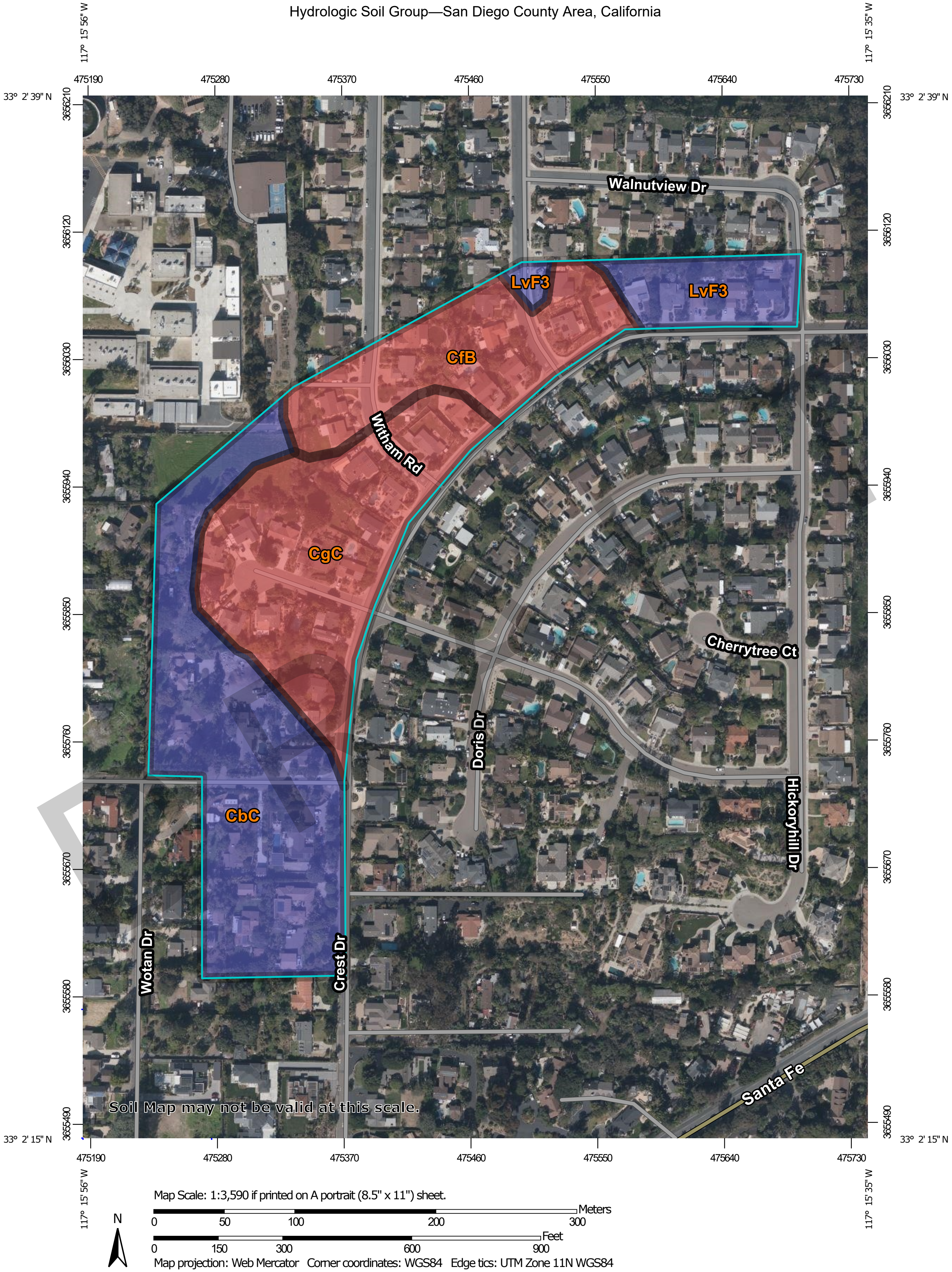
Gutter
Cross Sl, Sx (ft/ft) = 0.020
Cross Sl, Sw (ft/ft) = 0.083
Gutter Width (ft) = 1.50
Invert Elev (ft) = 341.40
Slope (%) = 3.80
N-Value = 0.015

Calculations
Compute by: Known Q
Known Q (cfs) = 17.54

Highlighted
Depth (ft) = 0.41
Q (cfs) = 17.54
Area (sqft) = 2.53
Velocity (ft/s) = 6.94
Wetted Perim (ft) = 16.09
Crit Depth, Yc (ft) = 0.59
Spread Width (ft) = 15.67
EGL (ft) = 1.16



Hydrologic Soil Group—San Diego County Area, California



Map Scale: 1:3,590 if printed on A portrait (8.5" x 11") sheet.

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 11N WGS84

MAP LEGEND

Area of Interest (AOI)

▢ Area of Interest (AOI)

Soils

Soil Rating Polygons

- 🟪 A
- 🟩 A/D
- 🟦 B
- 🟫 B/D
- 🟦 C
- 🟨 C/D
- 🟥 D
- ⬜ Not rated or not available

Soil Rating Lines

- 〰 A
- 〰 A/D
- 〰 B
- 〰 B/D
- 〰 C
- 〰 C/D
- 〰 D
- 〰 Not rated or not available

Soil Rating Points

- ■ A
- ■ A/D
- ■ B
- ■ B/D
- ■ C
- ■ C/D
- ■ D
- □ Not rated or not available

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: San Diego County Area, California
Survey Area Data: Version 15, May 27, 2020

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

Date(s) aerial images were photographed: Jan 23, 2020—Feb 13, 2020

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.

Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
CbC	Carlsbad gravelly loamy sand, 5 to 9 percent slopes	B	7.4	38.5%
CfB	Chesterton fine sandy loam, 2 to 5 percent slopes	D	3.9	20.0%
CgC	Chesterton-Urban land complex, 2 to 9 percent slopes	D	6.2	32.3%
LvF3	Loamy alluvial land-Huerhuero complex, 9 to 50 percent slopes, severely eroded	B	1.8	9.3%
Totals for Area of Interest			**19.3**	**100.0%**

Description

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

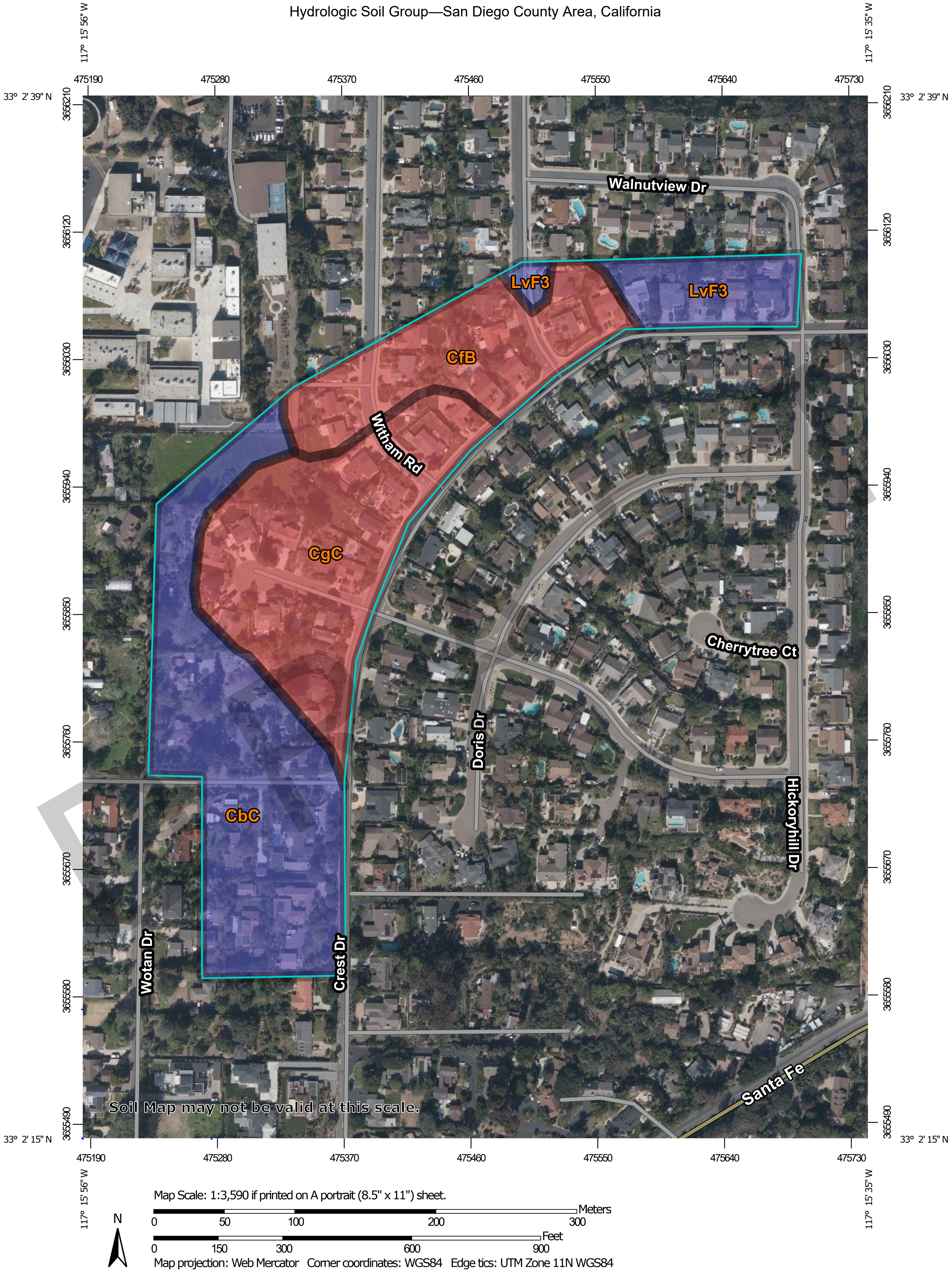
Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

Hydrologic Soil Group—San Diego County Area, California



Map Scale: 1:3,590 if printed on A portrait (8.5" x 11") sheet.

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 11N WGS84

MAP LEGEND

Area of Interest (AOI)

▭ Area of Interest (AOI)

Soils

Soil Rating Polygons

- ▭ A
- ▭ A/D
- ▭ B
- ▭ B/D
- ▭ C
- ▭ C/D
- ▭ D
- ▭ Not rated or not available

Soil Rating Lines

- 〰 A
- 〰 A/D
- 〰 B
- 〰 B/D
- 〰 C
- 〰 C/D
- 〰 D
- 〰 Not rated or not available

Soil Rating Points

- ■ A
- ■ A/D
- ■ B
- ■ B/D
- ■ C
- ■ C/D
- ■ D
- ■ Not rated or not available

Water Features

- 〰 Streams and Canals

Transportation

- ┼┼┼ Rails
- 〰 Interstate Highways
- 〰 US Routes
- 〰 Major Roads
- 〰 Local Roads

Background

- ■ Aerial Photography

MAP INFORMATION

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

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

Soil Survey Area: San Diego County Area, California
Survey Area Data: Version 15, May 27, 2020

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

Date(s) aerial images were photographed: Jan 23, 2020—Feb 13, 2020

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Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
CbC	Carlsbad gravelly loamy sand, 5 to 9 percent slopes	B	7.4	38.5%
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Description

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If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

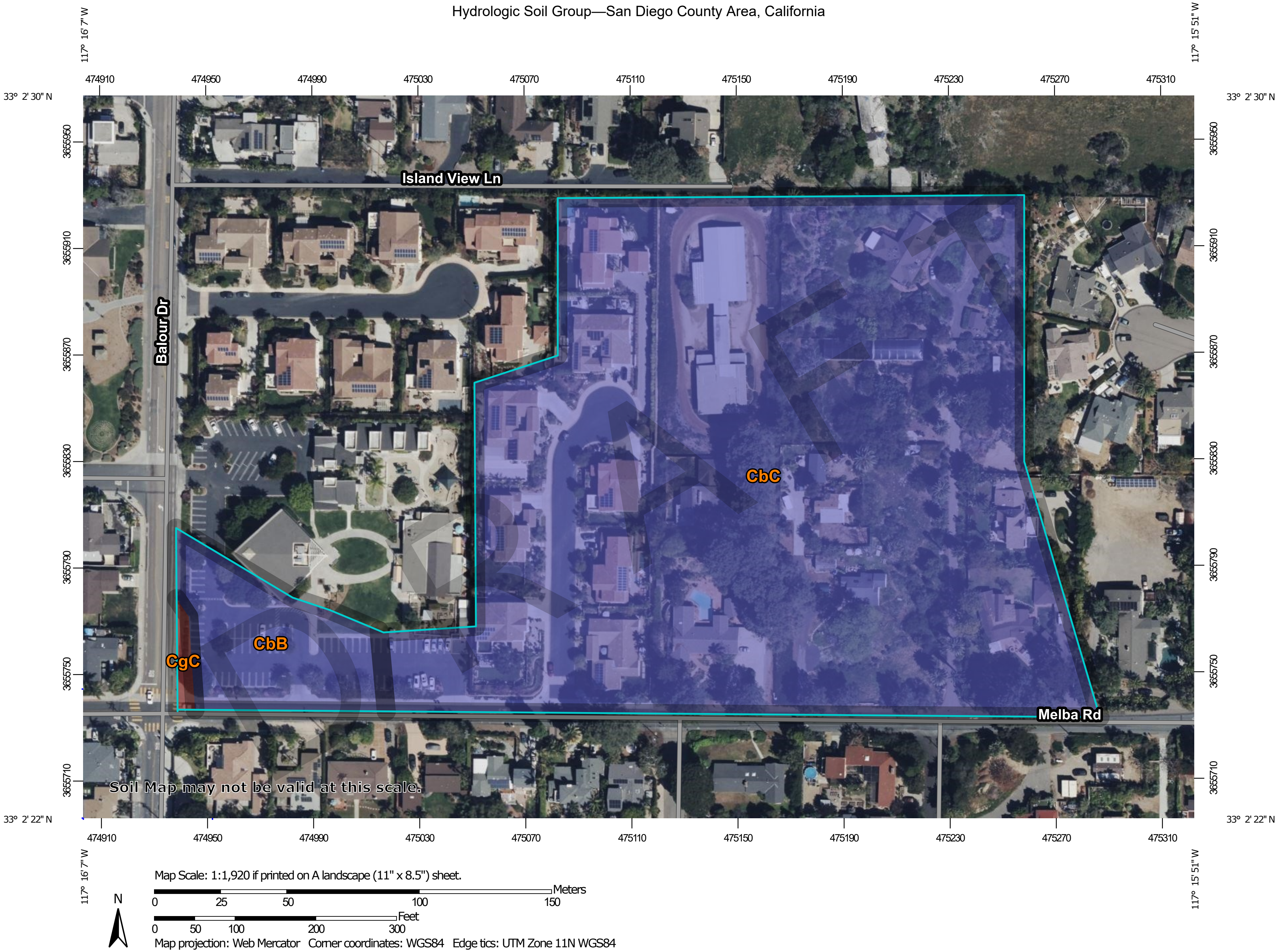
Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

Hydrologic Soil Group—San Diego County Area, California



Map Scale: 1:1,920 if printed on A landscape (11" x 8.5") sheet.

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 11N WGS84

MAP LEGEND

Area of Interest (AOI)

- ▭ Area of Interest (AOI)

Soils

Soil Rating Polygons

- 🟪 A
- 🟩 A/D
- 🟦 B
- 🟫 B/D
- 🟦 C
- 🟫 C/D
- 🟥 D
- ⬜ Not rated or not available

Soil Rating Lines

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- 〰 A/D
- 〰 B
- 〰 B/D
- 〰 C
- 〰 C/D
- 〰 D
- 〰 Not rated or not available

Soil Rating Points

- ■ A
- ■ A/D
- ■ B
- ■ B/D
- ■ C
- ■ C/D
- ■ D
- □ Not rated or not available

Water Features

- 〰 Streams and Canals

Transportation

- ┼┼┼ Rails
- 〰 Interstate Highways
- 〰 US Routes
- 〰 Major Roads
- 〰 Local Roads

Background

- ▨ Aerial Photography

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

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

Soil Survey Area: San Diego County Area, California
Survey Area Data: Version 18, Sep 14, 2022

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

Date(s) aerial images were photographed: Mar 14, 2022—Mar 17, 2022

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.

Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
CbB	Carlsbad gravelly loamy sand, 2 to 5 percent slopes	B	0.9	7.8%
CbC	Carlsbad gravelly loamy sand, 5 to 9 percent slopes	B	10.1	91.8%
CgC	Chesterton-Urban land complex, 2 to 9 percent slopes	D	0.1	0.5%
Totals for Area of Interest			**11.0**	**100.0%**

Description

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

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If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

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H-1

Stormwater Intake Form & Priority Development Project Stormwater Quality Management Plan

CITY OF ENCINITAS
STORMWATER INTAKE FORM AND PRIORITY DEVELOPMENT PROJECT STORMWATER QUALITY MANAGEMENT PLAN (SWQMP)

FOR:
TORREY CREST
CASE NO: MULTI -004309-2021; SUB-004310-2021; DR-004311-2021;
CDPNF-004312-2021 / CPP-004313-2021; SRVRQST-004316-2021

1220 – 1240 MELBA ROAD, 1190 ISLAND VIEW LANE
ENCINITAS, CA 92024
APN: 259-180-09, -10, -16, & -33-00; 259-181-02, -03, & -04-00

PREPARED BY:
TYLER G LAWSON
PASCO, LARET, SUITER & ASSOCIATES
535 N. HWY 101, SUITE A
SOLANA BEACH, CA 92075
PH: (858) 259-8212

PREPARED FOR:
TORREY PACIFIC CORPORATION
1106 SECOND STREET #115
ENCINITAS, CA 92024
PH: (760) 942-3256

DATE OF SWQMP:
2/26/2024
REVISION #7

REGISTERED PROFESSIONAL ENGINEER
TYLER G LAWSON
No. 80356
Exp. 12/31/24
CIVIL
STATE OF CALIFORNIA

TENTATIVE MAP PREPARED BY:
TYLER G LAWSON
PASCO, LARET, SUITER & ASSOCIATES
1911 SAN DIEGO AVENUE, SUITE 100
SAN DIEGO, CA 92110
PH: (858) 259-8212

TABLE OF CONTENTS

PREPARER'S CERTIFICATION

I hereby declare that I am the Engineer in Responsible Charge of design of storm water best management practices (BMPs) for this project, and that I have exercised responsible charge over the design of the BMPs as defined in Section 6703 of the Business and Professions Code, and that the design is consistent with the Priority Development Project (PDP) requirements of the City of Encinitas BMP Design Manual, which is a design manual for compliance with local City of Encinitas and regional MS4 Permit (California Regional Water Quality Control Board San Diego Region Order No. R9-2015-0100) requirements for storm water management.

I have read and understand that the City Engineer has adopted minimum requirements for managing urban runoff, including storm water, from land development activities, as described in the BMP Design Manual. I certify that this PDP SWQMP has been completed to the best of my ability and accurately reflects the project being proposed and the applicable BMPs proposed to minimize the potentially negative impacts of this project's land development activities on water quality. I understand and acknowledge that the plan check review of this PDP Storm Water Quality Management Plan (SWQMP) by the City Engineer is confined to a review and does not relieve me, as the Engineer in Responsible Charge of design of storm water BMPs for this project, of my responsibilities for project design.

PE #80356

Engineer of Work's Signature, PE Number

Engineer's Seal

REGISTERED PROFESSIONAL ENGINEER
TYLER G LAWSON
No. 80356
Exp. 12/31/24
CIVIL
STATE OF CALIFORNIA

Tyler G Lawson

Print Name

Pasco, Laret, Suiter, & Associates

Company

February 26, 2024

Date

PROJECT OWNER'S CERTIFICATION

This PDP SWQMP has been prepared for TORREY PACIFIC CORPORATION by PASCO, LARET, SUITER & ASSOCIATES. The PDP SWQMP is intended to comply with the PDP requirements of the City of Encinitas BMP Design Manual, which is a design manual for compliance with local City of Encinitas and regional MS4 Permit (California Regional Water Quality Control Board San Diego Region Order No. R9-2015-0100) requirements for storm water management.

The undersigned, while it owns the subject property, is responsible for the implementation of the provisions of this plan. Once the undersigned transfers its interests in the property, its successor-in-interest shall bear the aforementioned responsibility to implement the best management practices (BMPs) described within this plan, including ensuring on-going operation and maintenance of structural BMPs. A signed copy of this document shall be available on the subject property into perpetuity.

____
Project Owner's Signature

Dan Staver
Print Name

Torrey Pacific Corporation
Company

____
Date

SUBMITTAL RECORD

Use this table to keep a record of submittals of this PDP SWQMP. Each time the PDP SWQMP is re-submitted, provide the date and status of the project. In the fourth column, summarize the changes that have been made or indicate if response to plancheck comments is included. When applicable, insert response to plancheck comments behind this page.

Submittal Number	Date	Project Status	Summary of Changes
1	1/7/21	☑ Preliminary Design / Planning/ CEQA ☐ Final Design	Initial Submittal
2	7/26/21	☑ Preliminary Design / Planning/ CEQA ☐ Final Design	Resubmittal, revised 4 DMA's / BMP's to a single DMA / BMP
3	3/22/22	☑ Preliminary Design / Planning/ CEQA ☐ Final Design	Resubmittal
4	3/7/23	☑Preliminary Design / Planning/ CEQA ☐ Final Design	Resubmittal, Revised 3 DMA's / 2 BMP's
5	10/26/23	☑Preliminary Design / Planning/ CEQA Final Design	Resubmittal
6	2/26/24	☑Preliminary Design / Planning/ CEQA Final Design	Resubmittal

PROJECT IDENTIFICATION

Project/Applicant Name: Torrey Crest / Torrey Pacific Corporation	
Permit/Application Number: MULTI -004309-2021	Date: October 26, 2023
Site Address: 1220 – 1240 Melba Rd / 1190 Island View Ln	APN: 259-180-09, -10, -16, & -33-00; 259-181-02, -03, & -04-00
Scope of work/project description: Project proposes demolition of all existing onsite improvements and construction of 30x new single-family detached homes plus one proposed ADU, new private road with onstreet parking, and miscellaneous surface, grading, and utility improvements typical of this type of development.	

DETERMINATION OF PROJECT STATUS AND REQUIREMENTS

This form will identify permanent, post construction BMP requirements. Refer to City of Encinitas Stormwater BMP Design Manual for guidance.

Step 1: Is the project a "development project"? Development projects are defined as "construction, rehabilitation, redevelopment, or reconstruction of any public or private projects". See Section 1.3 and Table 1-2 of the manual for guidance. For example, interior remodels, roof replacements, and electrical and plumbing work are not development projects.	☑ Yes	***Go to Step 2.***
	☐ No	***Stop.*** Permanent BMP requirements do not apply. No SWQMP will be required. Provide discussion below.

If "No", provide discussion / justification explaining why the project is not a "development project":

Step 2: Complete questions below for Project Type Determination.

The project is (select one): ☐New Development ☑ Redevelopment

The total proposed, newly created and/or replaced impervious area is: ______174,610________ ft^2

Is the project in any of the following categories, (a) through (f) below?

Yes ☑	No ☐	(a)	New development projects or redevelopment projects that create and/or replaced 10,000 square feet or more of impervious surfaces (collectively over the entire project site). This includes commercial, industrial, residential, mixed-use, and public development projects.
Yes ☑	No ☐	(b)	Redevelopment projects that create and/or replace 5,000 square feet or more of impervious surface (collectively over the entire project site on an existing site of 10,000 square feet or more of impervious surfaces). This includes commercial, industrial, residential, mixed-use, and public development projects.
Yes ☐	No ☑	(c)	New and redevelopment projects that create and/or replace 5,000 square feet or more of impervious surface (collectively over the entire project site), and support one or more of the following uses: (i) Restaurants. This category is defined as a facility that sells prepared foods and drinks for consumption, including stationary lunch counters and

			refreshment stands selling prepared foods and drinks for immediate consumption (SIC code 5812). (ii) Hillside development projects. This category includes development on any natural slope that is twenty-five percent or greater. (iii) Parking lots. This category is defined as a land area or facility for the temporary parking or storage of motor vehicles used personally, for business, or for commerce. (iv) Streets, roads, highways, freeways, and driveways. This category is defined as any paved impervious surface used for the transportation of automobiles, trucks, motorcycles, and other vehicles.
Yes ☐	No ☑	(d)	New or redevelopment projects that create and/or replace 2,500 square feet or more of impervious surface (collectively over the entire project site), and discharge directly to an Environmentally Sensitive Area (ESA). "Discharge directly to" includes flow that is conveyed overland a distance of 200 feet or less from the project to the ESA, or conveyed in a pipe or open channel any distance as an isolated flow from the project to the ESA (i.e. not commingled with flows from adjacent lands). Note: ESAs are areas that include but are not limited to all Clean Water Act Section 303(d) impaired water bodies; areas designated as Areas of Special Biological Significance by the State Water Board and SDRWQCB; State Water Quality Protected Areas; water bodies designated with the RARE beneficial use by the State Water Board and SDRWQCB; and any other equivalent environmentally sensitive areas which have been identified by the Copermittees. See manual Section 1.4.2 for additional guidance.
Yes ☐	No ☑	(e)	New development projects, or redevelopment projects that create and/or replace 5,000 square feet or more of impervious surface, that support one or more of the following uses: (i) Automotive repair shops. This category is defined as a facility that is categorized in any one of the following SIC codes: 5013, 5014, 5541, 7532-7534, or 7536-7539. (ii) Retail gasoline outlets. This category includes retail gasoline outlets that meet the following criteria: (a) 5,000 square feet or more or (b) a projected Average Daily Traffic of 100 or more vehicles per day.
Yes ☑	No ☐	(f)	New or redevelopment projects that result in the disturbance of one or more acres of land and are expected to generate pollutants post construction. *Note: See manual Section 1.4.2 for additional guidance.*

Does the project meet the definition of one or more of the PDP categories (a) through (f) listed above?

☑ Yes – **The project is a Priority Development Project, the applicant shall provide PDP Post Construction BMPs and *continue to Step 3*.**

☐No – **The project is a Standard or Basic Project.** ***Stop here and complete the "City of Encinitas Stormwater Intake Form for All Developments and Standard Projects SWQMP".***

The following is for *redevelopment PDPs* only:

The area of existing (pre-project) impervious area at the project site is: _39,852___ ft² (A)
The total proposed newly created or replaced impervious area is: ______174,610__ ft² (B)
Percent impervious surface created or replaced (B/A)*100: _438_____%
The percent impervious surface created or replaced is (select one based on the above calculation):

☐ Less than or equal to fifty percent (50%) – only new and/or replaced impervious areas are considered PDP subject to treatment and HMP criteria
OR
☑ Greater than fifty percent (50%) – the entire site is a PDP; treatment and HMP criteria apply to entire site regardless of whether it is replaced

<table>
<tr><td rowspan="2"><u>Step 3 (PDPs only):</u>
Do hydromodification control requirements apply?
See Section 1.6 of the BMP Design Manual for guidance.</td><td>☑ Yes</td><td>PDP structural BMPs required for pollutant control (Chapter 5) and hydromodification control (Chapter 6).
<i>Go to Step 4.</i></td></tr>
<tr><td>☐ No</td><td>PDP structural BMPs required for pollutant control (Chapter 5) only.
Provide brief discussion of exemption to hydromodification control below.
<i>Go to “Site Information Checklist”</i></td></tr>
<tr><td colspan="3">Discussion / justification if hydromodification control requirements do <u>not</u> apply:</td></tr>
<tr><td rowspan="2"><u>Step 4 (PDPs subject to treatment and hydromodification controls):</u>
Does protection of critical coarse sediment yield areas apply based on review of City of Encinitas Potential Critical Coarse Sediment Yield Area Map?
See Section 6.2 of the BMP Design Manual for guidance.</td><td>☐ Yes</td><td>Management measures required for protection of critical coarse sediment yield areas (Chapter 6.2).
<i>Go to “Site Information Checklist”</i></td></tr>
<tr><td>☑ No</td><td>Management measures not required for protection of critical coarse sediment yield areas.
Provide brief discussion below.
<i>Go to “Site Information Checklist”</i></td></tr>
<tr><td colspan="3">Discussion / justification if management measures <u>not</u> required for protection of critical coarse sediment yield areas:

Project site does not contain any potential Critical Coarse Sediment Yield Areas per the City of Encinitas Potential Critical Coarse Sediment Yield Area Map in the City’s BMP Design Manual.

However, project site contains one small triangle located toward the NE corner of the property as seen on the City’s GIS. This area identified is not a potential CCSYA and is not subject to management measures for protection of critical coarse sediment yield areas – see discussion included on Page 15 of this report for additional analysis and determination.</td></tr>
</table>

SITE INFORMATION CHECKLIST

Project's Watershed (Complete Hydrologic Unit, Area, and Subarea Name with Numeric Identifier)	Carlsbad Hydrologic Unit, San Marcos Creek Hydrologic Area, Batiquitos Lagoon Sub-Area (905.41) & Escondido Creek Hydrologic Area (904.61)
Parcel Area (Total area of Assessor's Parcel(s) associated with the project)	6.65 Acres (289,479 Square Feet)
Area to be Disturbed by the Project (Project Area)	6.28 Acres (273,457 Square Feet)
Project Proposed Impervious Area (Subset of Project Area)	4.01 Acres (174,610 Square Feet)
Project Proposed Pervious Area (Subset of Project Area)	2.27 Acres (98,847 Square Feet)

Note: Proposed Impervious Area + Proposed Pervious Area = Area to be Disturbed by the Project. This may be less than the Parcel Area.

Description of Existing Site Condition

Current status of the site (select all that apply):

☑ Existing development

☑ Previously graded but not built out

☐ Demolition completed without new construction

☐ Agricultural or other non-impervious use

☐ Vacant, undeveloped/natural

Description / Additional Information:

The site consists of existing residences, both in use and vacant, as well as driveways and miscellaneous hardscape and landscape improvements typical of the surrounding area and properties, including manufactured slopes and vegetative cover. A portion of the property is also currently undeveloped.

Existing Land Cover includes (select all that apply):

☑ Vegetative Cover

☑ Non-Vegetated Pervious Areas

☑ Impervious Areas

Description / Additional Information:

Existing site consists of multiple structures and residences. Existing impervious areas consist of asphalt driveways and miscellaneous structures. Vegetative cover includes landscaped areas and planting on previously manufactured slopes.

Underlying soil belongs to Hydrologic Soil Group (select all that apply):

☐ NRCS Type A

☐ NRCS Type B

☐ NRCS Type C

☑ NRCS Type D (Per site investigation performed by Geocon, Inc.)

Approximate Depth to Groundwater (GW):

☐ GW Depth < 5 feet

☐ 5 feet < GW Depth < 10 feet

☐ 10 feet < GW Depth < 20 feet

☑ GW Depth > 20 feet

Existing Natural Hydrologic Features (select all that apply):

☐ Watercourses

☐ Seeps

☐ Springs

☐ Wetlands

☑ None

Description / Additional Information:

Description of Existing Site Drainage Patterns

How is storm water runoff conveyed from the site? At a minimum, this description should answer:

1) Is existing drainage conveyance natural or urban?
2) Is runoff from offsite conveyed through the site? If yes, quantify all offsite drainage areas, design flows, and locations where offsite flows enter the project site, and summarize how such flows are conveyed through the site.
3) Provide details regarding existing project site drainage conveyance network, including any existing storm drains, concrete channels, swales, detention facilities, storm water treatment facilities, natural or constructed channels. And
4) Identify all discharge locations from the existing project site along with a summary of conveyance system size and capacity for each of the discharge locations. Provide summary of the pre-project drainage areas and design flows to each of the existing runoff discharge locations.

Describe existing site drainage patterns:

The site itself contains 34 feet of elevation change within the proposed disturbed area. An existing single-family residence and structures toward the center-north portion of the property sit on the property's high point, with drainage falling away in all directions from this location. Existing drainage can be considered urban but runoff primarily drains via sheet flow as there do not appear to be any existing onsite storm drain.

While the site appears to ultimately discharge to two major watersheds and receiving bodies, runoff in the existing condition discharges from the property from 5 main locations (Drainage basins EX-1 through -5). The two discharge locations that eventually are routed to Moonlight Beach are Drainage basins EX-1 and EX-2. Drainage basin EX-1 discharges from the southwest corner of the property to Melba Road, where it continues west past the intersection of Balour Drive to a low spot at the intersection of Melba Road and Evergreen Drive near Ocean Knoll Elementary. From here, it is routed northwest through the canyon north, eventually reaching infrastructure in Encinitas Boulevard. Drainage basin EX-2 appears to leave the site from the northwest and along Island View Lane (heading west to Balour Drive). Once in Balour Drive, it is routed north to an existing curb inlet west of Oak Crest Middle School. The portion of the subject property under Island View Lane, a 15-ft x 690-ft parcel, is undisturbed by the project and has been excluded from this analysis. Runoff leaving to the west along both Melba Road and Island View Lane continue downstream towards Encinitas Boulevard, ultimately draining to the Pacific Ocean via Moonlight State Beach.

The remaining discharge locations from the property (EX-3, EX-4, and EX-5) are ultimately routed to San Marcos Creek and the Batiquitos Lagoon. Drainage basin EX-3 discharges to the northeast corner of the site towards Witham Road into an existing brow ditch within a public drainage easement. The ditch drains to the north through neighboring properties before outletting via an 18" storm drain connected to a curb outlet in a water line easement to the Witham Road curb face, where it further continues north to a storm drain inlet at Witham and Beechtree Drive. Drainage basin EX-4 discharges in a similar situation at the northeast corner, but south of the existing drainage ditch, where it travels through the adjacent properties, heads south on Witham Road and east on Crest Drive, and enters a curb inlet at the Hickoryhill Drive intersection. Lastly, basin EX-5 discharges east of the property onto adjacent lots and eventually makes its way down to Crest Drive to confluence with basin EX-4. Runoff leaving the site to the northeast towards Witham Road as well as the drainage reaching Crest Drive eventually reaches storm drain infrastructure at the intersection of Encinitas Boulevard with N. El Camino Real. This system ultimately continues to route drainage north to an outlet to the natural Encinitas Creek channel on the north side of Garden View Lane. This channel then eventually discharges into San Marcos Creek, a tributary of the Batiquitos Lagoon.

For continued discussion, see sheet 17 of 29.

Description of Proposed Site Development
Project Description / Proposed Land Use and/or Activities: Project proposes demolition of all existing onsite improvements and construction of 30-lot single-family residential detached homes plus one ADU with new private road, and miscellaneous surface, grading, storm water and utility improvements to support the new homes.
List/describe proposed impervious features of the project (e.g., buildings, roadways, parking lots, courtyards, athletic courts, other impervious features): Proposed impervious features of the project include the building footprints and roof areas, private road pavement, concrete sidewalk, driveways, and private walkways / porches.
List/describe proposed pervious features of the project (e.g., landscape areas): Pervious features of the project include graded slopes, landscape areas around the building footprint on each lot, proposed trees where shown on the project landscape plan, and centrally located biofiltration basin for storm water treatment.
Does the project include grading and changes to site topography? ☑ Yes ☐ No Description / Additional Information: Retaining walls and site grading are proposed to accommodate the new lots and to construct buildable pads. The site generally will continue to slope up from Melba Road to a high point located near the center of the property. The proposed site layout will have the lots south of the high point drain toward a BMP in the southeastern corner of the site. The lots north of the high point will drain to a BMP in the northwest corner. The project proposes ~22,000 CY of cut and ~6,500 CY of fill for ~15,500 CY of export, along with remedial grading.

Description of Proposed Site Drainage Patterns

Does the project include changes to site drainage (e.g., installation of new storm water conveyance systems)?

☑ Yes

☐ No

If yes, provide details regarding the proposed project site drainage conveyance network, including storm drains, concrete channels, swales, detention facilities, storm water treatment facilities, natural or constructed channels, and the method for conveying offsite flows through or around the proposed project site. Identify all discharge locations from the proposed project site along with a summary of the conveyance system size and capacity for each of the discharge locations. Provide a summary of pre- and post-project drainage areas and design flows to each of the runoff discharge locations. Reference the drainage study for detailed calculations.

Describe proposed site drainage patterns:

The project site can be consolidated into two major drainage basins in the proposed condition. The majority of runoff from EX-5 will be routed towards Melba Road to minimize cross-lot drainage onto neighboring properties as much as feasible. A small (less than a tenth of an acre) self-mitigating area will remain in EX-5 as part of PR-1. Within EX-1, runon from 1250 Melba Road – delineated as OFF-1 will be conveyed directly to the Melba Road curb face, by passing the site and any treatment. A small self-mitigating area that drains offsite in the rear yard of Lot 1 to accommodate existing topography around two large Torrey Pine trees will also remain as a part of PR-1. Basin PR-1 will be comprised of the onsite portion of EX-1 and the majority of EX-5.

Basin EX-2 drains toward Island View Lane where no existing storm drain infrastructure exist, runoff sheet flows through the adjacent lots. A small (less than a tenth of an acre) self-mitigating area will remain in EX-2, post project PR-2. For the case of basin EX-3 draining offsite to a brow ditch located within a public drainage easement off the northeast corner of the property, it was the strong recommendation of City of Encinitas engineering staff to prevent any proposed water from continuing to discharge into this conveyance system. Section 6.201 of the City of Encinitas Engineering Design Manual (EDM) provides the City Engineer discretion to eliminate existing cross-lot drainage if an alternate solution is feasible. A small self-mitigating area that drains offsite from EX-3 will remain as PR-3. This public drainage easement and ditch run through the rear yards of several properties along Witham Road, and present access and maintenance challenges for the City of Encinitas Public Works Department to ensure proper drainage and conveyance over the long term. In the existing condition, it is already prone to flooding due to poor maintenance of the channel. Similarly, EX-4 drains offsite in the northwest corner, but runoff drains south of the existing brow ditch. In the existing condition runoff sheet flows through adjacent lots until runoff reaches Witham Road. To improve the existing cross lot drainage conditions, runoff will be routed toward northwest corner. Basin PR-4 will be comprised of EX-2, the majority of EX-3 and all of EX-4.

For continued discussion, see sheet 18 of 31.

Identification and Narrative of Receiving Water and Pollutants of Concern
Describe flow path of storm water from the project site discharge location(s), through urban storm conveyance systems as applicable, to receiving creeks, rivers, and lagoons as applicable, and ultimate discharge to the Pacific Ocean (or bay, lagoon, lake or reservoir, as applicable): Storm water leaving a majority of the site will enter the existing public storm drain system eventually in Encinitas Blvd. This system will eventually discharge into Moonlight State Beach and ultimately the Pacific Ocean west of Coast Highway 101. The remainder of the site will discharge from the northeast of the project and heads northeast toward El Camino Real. Eventually, the storm drain system outlets to the natural Encinitas creek channel on the north side of Garden View Lane, which conveys to Batiquitos Lagoon via San Marcos Creek.
List any 303(d) impaired water bodies within the path of storm water from the project site to the Pacific Ocean (or bay, lagoon, lake or reservoir, as applicable), identify the pollutant(s)/stressor(s) causing impairment, and identify any TMDLs and/or Highest Priority Pollutants from the WQIP for the impaired water bodies:

303(d) Impaired Water Body	**Pollutant(s)/Stressor(s)**	**TMDLs / WQIP Highest Priority Pollutant**
Cottonwood Creek (outlet)	Trash	Indicator Bacteria
	Indicator Bacteria	
Pacific Ocean		

Identification of Project Site Pollutants*

***Identification of project site pollutants is only required if flow-thru treatment BMPs are implemented onsite in lieu of retention or biofiltration BMPs (note the project must also participate in an alternative compliance program unless prior lawful approval to meet earlier PDP requirements is demonstrated)**

Identify pollutants expected from the project site based on all proposed use(s) of the site (see BMP Design Manual Appendix B.6):

Pollutant	**Not Applicable to the Project Site**	**Expected from the Project Site**	**Also a Receiving Water Pollutant of Concern**
Sediment	x		
Nutrients	x		
Heavy Metals	x		
Organic Compounds	x		
Trash & Debris	x		
Oxygen Demanding Substances	x		
Oil & Grease	x		
Bacteria & Viruses	x		
Pesticides	x		

Hydromodification Management Requirements

Do hydromodification management requirements apply (see Section 1.6 of the BMP Design Manual)?

☑ Yes, hydromodification management flow control structural BMPs required.

☐ No, the project will discharge runoff directly to existing underground storm drains discharging directly to water storage reservoirs, lakes, enclosed embayments, or the Pacific Ocean.

☐ No, the project will discharge runoff directly to conveyance channels whose bed and bank are concrete-lined all the way from the point of discharge to water storage reservoirs, lakes, enclosed embayments, or the Pacific Ocean.

☐ No, the project will discharge runoff directly to an area identified as appropriate for an exemption by the WMAA for the watershed in which the project resides.

Description / Additional Information (to be provided if a 'No' answer has been selected above):

Critical Coarse Sediment Yield Areas*

*This section only required if hydromodification management requirements apply

Based on the maps provided within the WMAA, do potential critical coarse sediment yield areas exist within the project drainage boundaries?

☑ Yes

☐ No, no critical coarse sediment yield areas to be protected based on WMAA maps

If yes, have any of the optional analyses presented in Section 6.2 of the BMP Design Manual been performed?

☑ 6.2.1 Verification of Geomorphic Landscape Units (GLUs) Onsite

☐ 6.2.2 Downstream Systems Sensitivity to Coarse Sediment

☐ 6.2.3 Optional Additional Analysis of Potential Critical Coarse Sediment Yield Areas Onsite

☐ No optional analyses performed, the project will avoid critical coarse sediment yield areas identified based on WMAA maps

If optional analyses were performed, what was the final result?

☑ No critical coarse sediment yield areas to be protected based on verification of GLUs onsite

☐ Critical coarse sediment yield areas exist but additional analysis has determined that protection is not required. Documentation attached in Attachment 2.b of the SWQMP.

☐ Critical coarse sediment yield areas exist and require protection. The project will implement management measures described in Sections 6.2.4 and 6.2.5 as applicable, and the areas are identified on the SWQMP Exhibit.

Discussion / Additional Information:

Area identified on City's GIS map is not a potential Critical Coarse Sediment Yield Area. See discussion provided on Page 17 of 31 of this report.

Flow Control for Post-Project Runoff*

*This section only required if hydromodification management requirements apply

List and describe point(s) of compliance (POCs) for flow control for hydromodification management (see Section 6.3.1). For each POC, provide a POC identification name or number correlating to the project's HMP Exhibit and a receiving channel identification name or number correlating to the project's HMP Exhibit.

There are (2) point of compliance for flow control / hydromodification management leaving the subject property; POC-1 is located at the southwest corner of the property entering the Melba Road right-of-way. POC-2 is located at the northeast corner of the property discharging to Witham Road. Refer to the project's DMA and HMP exhibit for location.

Has a geomorphic assessment been performed for the receiving channel(s)?

☑ No, the low flow threshold is 0.1Q2 (default low flow threshold)

☐ Yes, the result is low flow threshold 0.1Q2

☐ Yes, the result is low flow threshold 0.3Q2

☐ Yes, the result is low flow threshold 0.5Q2

If a geomorphic assessment has been performed, provide title, date, and preparer:

Channel assessment has not been performed for project site. Thus, low-flow threshold of 0.1Q2 is assumed for the project.

Discussion / Additional Information: (optional)

Other Site Requirements and Constraints

When applicable, list other site requirements or constraints that will influence storm water management design, such as zoning requirements including setbacks and open space, or local codes governing minimum street width, sidewalk construction, allowable pavement types, and drainage requirements.

There are multiple site constraints that have influence on the storm water management design as well as the overall laying out of the site plan. First, as it relates to storm water, the project geotechnical engineer has identified low infiltration rates for the underlying topsoils, preventing any further infiltration in the post-project condition as part of the storm water strategy. See further discussion of BMP strategy, implementation, including the proposed storage system to comply with hydromodification low-flow requirements.

Optional Additional Information or Continuation of Previous Sections As Needed

Description of Existing Site Drainage Patterns

Existing drainage Basin EX-1, discharging from the southwest corner of the project site, has an area of approximately 3.32 acres and has a peak flow rate of 8.46 cfs. Existing drainage basin EX-2, discharging from the northwest corner of the project site has an area of approximately 0.75 acres and has a peak flow rate of 2.02 cfs. Existing drainage basin EX-3, discharging from the northeast corner of the project site, has an area of approximately 1.00 acres and a peak flow rate of 2.23 cfs. Existing drainage basin EX-4, discharging from the northeast corner of the project site, has an area of approximately 0.65 acres and a peak flow rate of 1.58 cfs. Existing drainage basin EX-5, discharging from the east of the project site, has an area of approximately 0.96 acres and a peak flow rate of 2.59 cfs. Refer to project Hydrology Report / Drainage Study prepared by Pasco, Laret, Suiter & Associates under separate cover for additional information.

Description of Proposed Site Drainage Patterns

The two onsite HMP-sized flow-control biofiltration detention basin and BMP system ("Basin") provides pollutant control as well as hydromodification management and mitigation of the 100-year, 6-hour storm event peak flow rate. Basin PR-1 and PR-4 will serve to capture, treat, and detain storm water and is composed of a cross-section of an engineered soil, storage layer, and hydraulic mulch on the surface. Runoff from higher frequency, lower intensity storm events will first be filtered through the Basin section to the storage layer that connects into the 36" x 36" emergency outlet brooks box.

During higher intensity storm events, water will pond on the surface of the Basin, and enter an overflow catch basin that will route water to the surface of Melba Road or Witham Road. Similar to the existing condition, runoff leaving from the southwest corner of the site continues downstream, entering existing public storm drain infrastructure and eventually reaching storm drain improvements in Encinitas Boulevard north of St. John School before outletting in Moonlight State Beach. Basin EX-5 in the existing condition was excluded from the drainage analysis for PR-1 to ensure discharge leaving the property to Melba Road and ultimately drainage to Moonlight State Beach is mitigated to the peak flow draining to that watershed determined in the pre-development condition. Runoff leaving the site from the northeast corner will outlet onto Witham Road drain south towards Crest Drive the continues to drain to the east until runoff reaches an existing curb inlet at the intersection of Crest Drive and Hickhoryhill Drive. Basin EX-2 in the existing condition was excluded from the drainage analysis in PR-4 to ensure discharge leaving the property to Witham Road, confluencing in the public buried storm drain infrastructure at the intersection of Encinitas Boulevard and N El Camino Real and ultimately draining to San Marcos Creek is mitigated to the peak flow draining to that watershed determined in the pre-development condition.

The total unmitigated, undetained peak flow rate for the 100-year, 6-hour storm event generated for the analyzed drainage area is 24.29 cfs. Based on the analysis included in this report, the proposed onsite detention facilities accommodate the increase in peak runoff generated in the proposed condition, mitigating peak flows to below pre-developed conditions. The site has been designed and graded in a way to minimize earthwork to the greatest extent feasible and maintain historic drainage patterns. Water leaving the subject property will continue to do so from the same points of discharge as in the existing condition. Refer to project Hydrology Report / Drainage Study prepared by Pasco, Laret, Suiter & Associates under separate cover for additional information.

This space provided for additional information or continuation of information from previous sections as needed.

Discussion of Critical Coarse Sediment Yield Areas

Priority Development Projects (PDPs) must satisfy critical coarse sediment yield area (CCSYA) requirements as addressed in Appendix H of the City of Encinitas BMP Design Manual.

Regional-level mapping of potential critical coarse sediment yield areas was prepared using regional data sets included from the Regional WMAA.

A small portion of the site was identified on the City of Encinitas' GIS as containing a potential Critical Coarse Sediment Yield Area (PCCSYA). Per Section 6.2.1 of the City of Encinitas BMP Design Manual, "GLU's (Geomorphic Landscape Units) are areas with a combination of open (undeveloped) land cover, high relative sediment production based on a normalized revised universal soil loss equation analysis, and coarse-grained geologic material (material that is expected to produce greater than 50% sand when weathered)."

However, per Appendix H of the City of Encinitas BMP Design Manual, the "regional data set .. may not conform to all site conditions, or does not reflect changes to particular areas that have occurred since the underlying data was developed. This means slopes, geology, or land cover at the project site can be mischaracterized in the regional data set."

Consistent with the City of Encinitas BMP Design Manual section 6.2 and Appendix H, a detailed project-level verification of site specific GLU's was conducted. None of the GLU's listed in Table 6-1 of the BMP manual are present, as the area in question does not contain a combination of slope, geology, and land cover as listed in Table 6-1 (slope in this area is less than 10%). Thus, the area identified on the City's GIS are Potential CCSYA's that become non-Critical Coarse Sediment Yield Areas. Thus, there are no critical coarse sediment yield areas to be protected based on verification of GLUs onsite.

Discussion of Green Streets Design Standards

SOURCE CONTROL BMP CHECKLIST

All development projects must implement source control BMPs SC-1 through SC-6 where applicable and feasible. See Chapter 4 and Appendix E of the manual for information to implement source control BMPs shown in this checklist.

Answer each category below pursuant to the following.

- "Yes" means the project will implement the source control BMP as described in Chapter 4 and/or Appendix E of the manual. Discussion / justification is not required.
- "No" means the BMP is applicable to the project but it is not feasible to implement. Discussion / justification must be provided.
- "N/A" means the BMP is not applicable at the project site because the project does not include the feature that is addressed by the BMP (e.g., the project has no outdoor materials storage areas). Discussion / justification may be provided.

Source Control Requirement	Applied?		
SC-1 Prevention of Illicit Discharges into the MS4	☑ Yes	☐ No	☐ N/A
SC-2 Storm Drain Stenciling or Signage	☑ Yes	☐ No	☐ N/A
SC-3 Protect Outdoor Materials Storage Areas from Rainfall, Run-On, Runoff, and Wind Dispersal	☐ Yes	☐ No	☑ N/A
SC-4 Protect Materials Stored in Outdoor Work Areas from Rainfall, Run-On, Runoff, and Wind Dispersal	☐ Yes	☐ No	☑ N/A
SC-5 Protect Trash Storage Areas from Rainfall, Run-On, Runoff, and Wind Dispersal	☐ Yes	☐ No	☑ N/A
SC-6 Additional BMPs Based on Potential Sources of Runoff Pollutants (must answer for each source listed below)			
☐ Onsite storm drain inlets	☑ Yes	☐ No	☐ N/A
☐ Interior floor drains and elevator shaft sump pumps drain to sewer	☑ Yes	☐ No	☐ N/A
☐ Interior parking garages drain to sewer	☑ Yes	☐ No	☐ N/A
☐ Need for future indoor & structural pest control	☐ Yes	☐ No	☑ N/A
☐ Landscape/outdoor pesticide use	☑ Yes	☐ No	☐ N/A
☐ Pools, spas, ponds, decorative fountains, and other water features	☑ Yes	☐ No	☐ N/A
☐ Food service	☐ Yes	☐ No	☑ N/A
☐ Refuse/Trash areas must be covered	☑ Yes	☐ No	☐ N/A
☐ Industrial processes	☐ Yes	☐ No	☑ N/A
☐ Outdoor storage of equipment or materials must be covered	☐ Yes	☐ No	☑ N/A
☐ Vehicle and equipment cleaning	☐ Yes	☐ No	☑ N/A
☐ Vehicle/equipment repair and maintenance	☐ Yes	☐ No	☑ N/A
☐ Fuel dispensing areas	☐ Yes	☐ No	☑ N/A
☐ Loading docks	☐ Yes	☐ No	☑ N/A
☐ Fire sprinkler test water	☑ Yes	☐ No	☐ N/A
☐ Miscellaneous drain or wash water	☐ Yes	☐ No	☑ N/A
☐ Plazas, sidewalks, and parking lots	☐ Yes	☐ No	☑ N/A

Discussion / justification if SC-1 through SC-6 not implemented. Justification must be provided for ALL "No" answers shown above.

Project has no permanent outdoor materials storage areas or materials stored in outdoor work areas. Project proposes pool equipment structure that will be covered.

SITE DESIGN BMP CHECKLIST

All development projects must implement site design BMPs SD-1 through SD-8 where applicable and feasible. See Chapter 4 and Appendix E of the manual for information to implement site design BMPs shown in this checklist.

Answer each category below pursuant to the following.

- "Yes" means the project will implement the site design BMP as described in Chapter 4 and/or Appendix E of the manual. Discussion / justification is not required.
- "No" means the BMP is applicable to the project but it is not feasible to implement. Discussion / justification must be provided.
- "N/A" means the BMP is not applicable at the project site because the project does not include the feature that is addressed by the BMP (e.g., the project site has no existing natural areas to conserve). Discussion / justification may be provided.

Source Control Requirement	Applied?		
SD-1 Maintain Natural Drainage Pathways and Hydrologic Features	☑ Yes	☐ No	☐ N/A
SD-2 Conserve Natural Areas, Soils, and Vegetation	☑ Yes	☐ No	☐ N/A
SD-3 Minimize Impervious Area	☑ Yes	☐ No	☐ N/A
SD-4 Minimize Soil Compaction	☐ Yes	☑ No	☐ N/A
SD-5 Impervious Area Dispersion - Directly Connected Impervious Areas (e.g. roof downspouts connected to street) are not allowed	☑ Yes	☐ No	☐ N/A
SD-6 Runoff Collection	☑ Yes	☐ No	☐ N/A
SD-7 Landscaping with Native or Drought Tolerant Species	☑ Yes	☐ No	☐ N/A
SD-8 Harvesting and Using Precipitation	☐ Yes	☑ No	☐ N/A

Discussion / justification if SD-1 through SD-8 not implemented. Justification must be provided for ALL "No" answers shown above.

SD-4: Minimizing soil compaction will be implemented to the greatest extent feasible, but will not occur under building footprints.

Project proposed to mass grade entire site, as well as develop and landscape. A full landscape plan is proposed to create appropriately landscaped areas.

SD-8: Harvesting and reuse deemed infeasible for this site

PDP STRUCTURAL BMPS

All PDPs must implement structural BMPs for storm water pollutant control (see Chapter 5 of the BMP Design Manual). Selection of PDP structural BMPs for storm water pollutant control must be based on the selection process described in Chapter 5. PDPs subject to hydromodification management requirements must also implement structural BMPs for flow control for hydromodification management (see Chapter 6 of the BMP Design Manual). Both storm water pollutant control and flow control for hydromodification management can be achieved within the same structural BMP(s).

PDP structural BMPs must be verified by the local jurisdiction at the completion of construction. This may include requiring the project owner or project owner's representative and engineer of record to certify construction of the structural BMPs (see Section 1.12 of the BMP Design Manual). PDP structural BMPs must be maintained into perpetuity (see Section 7 of the BMP Design Manual). The local jurisdiction will confirm the maintenance annually.

Use this section to provide narrative description of the general strategy for structural BMP implementation at the project site in the box below. Then complete the PDP structural BMP summary information sheet (page 3 of this form) for each structural BMP within the project (copy the BMP summary information page as many times as needed to provide summary information for each individual structural BMP).

Describe the general strategy for structural BMP implementation at the site. This information must describe how the steps for selecting and designing storm water pollutant control BMPs presented in Section 5.1 of the BMP Design Manual were followed, and the results (type of BMPs selected). For projects requiring hydromodification flow control BMPs, indicate whether pollutant control and flow control BMPs are integrated or separate.

The structural BMP chosen for this project is a biofiltration basin with impermeable liner (BF-1). After an initial site investigation and infiltration testing of the project topsoil / Very Old Paralic Deposits (Qvop) layer, the project geotechnical engineer identified low infiltration characteristics of the underlying soils, and recommended a “No Infiltration” condition along with using a liner for all BMP facilities.

PR-1 has a proposed structural BMP system consisting of a pre-treatment biofiltration basin with impermeable liner (BF-1), and a gravel storage layer. PR-4 has a proposed structural BMP system consisting of a pre-treatment biofiltration basin with impermeable liner (BF-1) and a proprietary StormTrap storage layer. Refer to Attachment 2d for additional details. The system will integrate both pollutant control measures with flow control for hydromodification management. The biofiltration pre-treatment basins have been sized to provide a minimum surface area of 3.0% of the contributing area times adjusted runoff factor draining to it to comply with water quality requirements per Appendix B of the City of Encinitas BMP Design Manual. There are no site design BMP’s proposed for the project for which the runoff factor can be adjusted.

The basin, and detention storage system has been sized to demonstrate compliance with HMP requirements using the Environmental Protection Agency’s (EPA) Storm Water Management Model (SWMM), including using the no infiltration.

STRUCTURAL BMP SUMMARY INFORMATION

Copy this page as necessary to provide information on each individual proposed structural BMP

Structural BMP ID No: BF-1	DMA No: 1 / DMA A
Construction Plan Sheet No: Civil Design Review / CDP Plan Sheets 4-7	

Type of structural BMP:

☐ Retention by harvest and use (HU-1)

☐ Retention by infiltration basin (INF-1)

☐ Retention by bioretention (INF-2)

☐ Retention by permeable pavement (INF-3)

  ☐ Partial retention by biofiltration with partial retention (PR-1)

☑ Biofiltration (BF-1)

☐ Biofiltration with Nutrient Sensitive Media Design (BF-2)

☐ Proprietary Biofiltration (BF-3) meeting all requirements of Appendix F

☐ Flow-thru treatment control with prior lawful approval to meet earlier PDP requirements (provide BMP type/description in discussion section below)

☐ Flow-thru treatment control included as pre-treatment/forebay for an onsite retention or biofiltration BMP (provide BMP type/description and indicate which onsite retention or biofiltration BMP it serves in discussion section below)

☐ Flow-thru treatment control with alternative compliance (provide BMP type/description in discussion section below)

☐ Detention pond or vault for hydromodification management

☑ Other (describe in discussion section below)

Purpose:

☐ Pollutant control only

☐ Hydromodification control only

☑ Combined pollutant control and hydromodification control

☐ Pre-treatment/forebay for another structural BMP

☐ Other (describe in discussion section below)

Who will inspect and certify construction of this BMP? Provide name and contact information for the party responsible to sign BMP verification forms required by the City Engineer (See Section 1.12 of the BMP Design Manual)	Tyler G Lawson Associate Principal Pasco, Laret, Suiter & Associates
Who will be the final owner of this BMP?	Torrey Pacific Corporation / HOA
Who will maintain this BMP into perpetuity?	Torrey Pacific Corporation / HOA
What is the funding mechanism for maintenance?	Torrey Pacific Corporation / HOA

Discussion (as needed):

The Homeowner's Association created with the new lots will be responsible for the maintenance of storm water facilities into perpetuity, as required by the City. The proposed structural BMP system consists of a pre-treatment biofiltration basin, with a gravel detention storage layer. Refer to Attachment 2d for additional details.

STRUCTURAL BMP SUMMARY INFORMATION

Copy this page as necessary to provide information on each individual proposed structural BMP

Structural BMP ID No: BF-1	DMA No: 2 / DMA B

Construction Plan Sheet No: Civil Design Review / CDP Plan Sheets 4-7

Type of structural BMP:

☐ Retention by harvest and use (HU-1)

☐ Retention by infiltration basin (INF-1)

☐ Retention by bioretention (INF-2)

☐ Retention by permeable pavement (INF-3)

    ☐ Partial retention by biofiltration with partial retention (PR-1)

☑ Biofiltration (BF-1)

☐ Biofiltration with Nutrient Sensitive Media Design (BF-2)

☐ Proprietary Biofiltration (BF-3) meeting all requirements of Appendix F

☐ Flow-thru treatment control with prior lawful approval to meet earlier PDP requirements (provide BMP type/description in discussion section below)

☐ Flow-thru treatment control included as pre-treatment/forebay for an onsite retention or biofiltration BMP (provide BMP type/description and indicate which onsite retention or biofiltration BMP it serves in discussion section below)

☐ Flow-thru treatment control with alternative compliance (provide BMP type/description in discussion section below)

☐ Detention pond or vault for hydromodification management

☑ Other (describe in discussion section below)

Purpose:

☐ Pollutant control only

☐ Hydromodification control only

☑ Combined pollutant control and hydromodification control

☐ Pre-treatment/forebay for another structural BMP

☐ Other (describe in discussion section below)

Who will inspect and certify construction of this BMP? Provide name and contact information for the party responsible to sign BMP verification forms required by the City Engineer (See Section 1.12 of the BMP Design Manual)	Tyler G Lawson Associate Principal Pasco, Laret, Suiter & Associates
Who will be the final owner of this BMP?	Torrey Pacific Corporation / HOA
Who will maintain this BMP into perpetuity?	Torrey Pacific Corporation / HOA
What is the funding mechanism for maintenance?	Torrey Pacific Corporation / HOA

Discussion (as needed):

The Homeowner's Association created with the new lots will be responsible for the maintenance of storm water facilities into perpetuity, as required by the City. The proposed structural BMP system consists of a pre-treatment biofiltration basin, proprietary StormTrap (or equivalent) detention storage system. Refer to Attachment 2d for additional details.

ATTACHMENT 1 - BACKUP FOR PDP POLLUTANT CONTROL BMPS

This is the cover sheet for Attachment 1.

Indicate which items are included behind this cover sheet:

Attachment	Contents	Checklist
Attachment 1a	DMA Exhibit (Required) See DMA Exhibit Checklist on the back of this Attachment cover sheet.	☑ Included
Attachment 1b	Tabular Summary of DMAs Showing DMA ID matching DMA Exhibit, DMA Area, and DMA Type (Required)* *Provide table in this Attachment OR on DMA Exhibit in Attachment 1a	☑ Included on DMA Exhibit in Attachment 1a ☐ Included as Attachment 1b, separate from DMA Exhibit
Attachment 1c	Form I-7, Harvest and Use Feasibility Screening Checklist (Required unless the entire project will use infiltration BMPs) Refer to Appendix B.3-1 of the BMP Design Manual to complete Form I-7.	☑ Included ☐ Not included because the entire project will use infiltration BMPs
Attachment 1d	Form I-8, Categorization of Infiltration Feasibility Condition (Required unless the project will use harvest and use BMPs) Refer to Appendices C and D of the BMP Design Manual to complete Form I-8.	☑ Included ☐ Not included because the entire project will use harvest and use BMPs
Attachment 1e	Pollutant Control BMP Design Worksheets / Calculations (Required) Refer to Appendices B and E of the BMP Design Manual for structural pollutant control BMP design guidelines	☑ Included

Use this checklist to ensure the required information has been included on the DMA Exhibit:

The DMA Exhibit must identify:

☑ Underlying hydrologic soil group
☑ Approximate depth to groundwater
☐ Existing natural hydrologic features (watercourses, seeps, springs, wetlands)
☑ Critical coarse sediment yield areas to be protected
☑ Existing topography and impervious areas
☑ Existing and proposed site drainage network and connections to drainage offsite
☑ Proposed demolition
☑ Proposed grading
☑ Proposed impervious features
☑ Proposed design features and surface treatments used to minimize imperviousness
☑ Drainage management area (DMA) boundaries, DMA ID numbers, and DMA areas (square footage or acreage), and DMA type (i.e., drains to BMP, self-retaining, or self-mitigating)
☑ Potential pollutant source areas and corresponding required source controls (see Chapter 4, Appendix E.1, and Form I-3B)
☑ Structural BMPs (identify location, type of BMP, and size/detail)

ATTACHMENT 2 - BACKUP FOR PDP HYDROMODIFICATION CONTROL MEASURES

This is the cover sheet for Attachment 2.

☐ Mark this box if this attachment is not included because the project is exempt from PDP hydromodification management requirements.

Indicate which items are included behind this cover sheet:

Attachment	**Contents**	**Checklist**
Attachment 2a	Hydromodification Management Exhibit (Required)	☑ Included See Hydromodification Management Exhibit Checklist on the back of this Attachment cover sheet.
Attachment 2b	Management of Critical Coarse Sediment Yield Areas (WMAA Exhibit is required, additional analyses are optional) See Section 6.2 of the BMP Design Manual.	☑ Exhibit showing project drainage boundaries marked on WMAA Critical Coarse Sediment Yield Area Map (Required) Optional analyses for Critical Coarse Sediment Yield Area Determination ☐ 6.2.1 Verification of Geomorphic Landscape Units Onsite ☐ 6.2.2 Downstream Systems Sensitivity to Coarse Sediment ☐ 6.2.3 Optional Additional Analysis of Potential Critical Coarse Sediment Yield Areas Onsite
Attachment 2c	Geomorphic Assessment of Receiving Channels (Optional) See Section 6.3.4 of the BMP Design Manual.	☐ Not performed ☑ Included ☐ Submitted as separate stand-alone document
Attachment 2d	Flow Control Facility Design, including Structural BMP Drawdown Calculations and Overflow Design Summary (Required) See Chapter 6 and Appendix G of the BMP Design Manual	☐ Included ☑ Submitted as separate stand-alone document
Attachment 2e	Vector Control Plan (Required when structural BMPs will not drain in 96 hours)	☐ Included ☑ Not required because BMPs will drain in less than 96 hours

Use this checklist to ensure the required information has been included on the Hydromodification Management Exhibit:

The Hydromodification Management Exhibit must identify:

☑ Underlying hydrologic soil group
☑ Approximate depth to groundwater
☐ Existing natural hydrologic features (watercourses, seeps, springs, wetlands)
☑ Critical coarse sediment yield areas to be protected
☑ Existing topography
☑ Existing and proposed site drainage network and connections to drainage offsite
☑ Proposed grading
☑ Proposed impervious features
☑ Proposed design features and surface treatments used to minimize imperviousness
☑ Point(s) of Compliance (POC) for Hydromodification Management
☑ Existing and proposed drainage boundary and drainage area to each POC (when necessary, create separate exhibits for pre-development and post-project conditions)
☑ Structural BMPs for hydromodification management (identify location, type of BMP, and size/detail)

ATTACHMENT 3 - STRUCTURAL BMP MAINTENANCE INFORMATION

This is the cover sheet for Attachment 3.

Indicate which items are included behind this cover sheet:

Attachment	Contents	Checklist
Attachment 3a	Structural BMP Maintenance Thresholds and Actions (Required)	☑ Included See Structural BMP Maintenance Information Checklist on the back of this Attachment cover sheet.
Attachment 3b	Draft Maintenance Agreement (when applicable)	☐ Included ☐ Not Applicable

Use this checklist to ensure the required information has been included in the Structural BMP Maintenance Information Attachment:

☐ **Preliminary Design / Planning / CEQA level submittal:**

Attachment 3a must identify:

☐ Typical maintenance indicators and actions for proposed structural BMP(s) based on Section 7.7 of the BMP Design Manual

Attachment 3b is not required for preliminary design / planning / CEQA level submittal.

☐ **Final Design level submittal:**

Attachment 3a must identify:

☐ Specific maintenance indicators and actions for proposed structural BMP(s). This shall be based on Section 7.7 of the BMP Design Manual and enhanced to reflect actual proposed components of the structural BMP(s)

☐ How to access the structural BMP(s) to inspect and perform maintenance

☐ Features that are provided to facilitate inspection (e.g., observation ports, cleanouts, silt posts, or other features that allow the inspector to view necessary components of the structural BMP and compare to maintenance thresholds)

☐ Manufacturer and part number for proprietary parts of structural BMP(s) when applicable

☐ Maintenance thresholds specific to the structural BMP(s), with a location-specific frame of reference (e.g., level of accumulated materials that triggers removal of the materials, to be identified based on viewing marks on silt posts or measured with a survey rod with respect to a fixed benchmark within the BMP)

☐ Recommended equipment to perform maintenance

☐ When applicable, necessary special training or certification requirements for inspection and maintenance personnel such as confined space entry or hazardous waste management

Attachment 3b: For private entity operation and maintenance, Attachment 3b shall include a draft maintenance agreement in the local jurisdiction's standard format (PDP applicant to contact the City Engineer to obtain the current maintenance agreement forms).

ATTACHMENT 4 - COPY OF PLAN SHEETS SHOWING PERMANENT STORM WATER BMPS

This is the cover sheet for Attachment 4.

Use this checklist to ensure the required information has been included on the plans:

The plans must identify:

☐ Structural BMP(s) with ID numbers matching Form I-6 Summary of PDP Structural BMPs

☐ The grading and drainage design shown on the plans must be consistent with the delineation of DMAs shown on the DMA exhibit

☐ Details and specifications for construction of structural BMP(s)

☐ Signage indicating the location and boundary of structural BMP(s) as required by the [City Engineer]

☐ How to access the structural BMP(s) to inspect and perform maintenance

☐ Features that are provided to facilitate inspection (e.g., observation ports, cleanouts, silt posts, or other features that allow the inspector to view necessary components of the structural BMP and compare to maintenance thresholds)

☐ Manufacturer and part number for proprietary parts of structural BMP(s) when applicable

☐ Maintenance thresholds specific to the structural BMP(s), with a location-specific frame of reference (e.g., level of accumulated materials that triggers removal of the materials, to be identified based on viewing marks on silt posts or measured with a survey rod with respect to a fixed benchmark within the BMP)

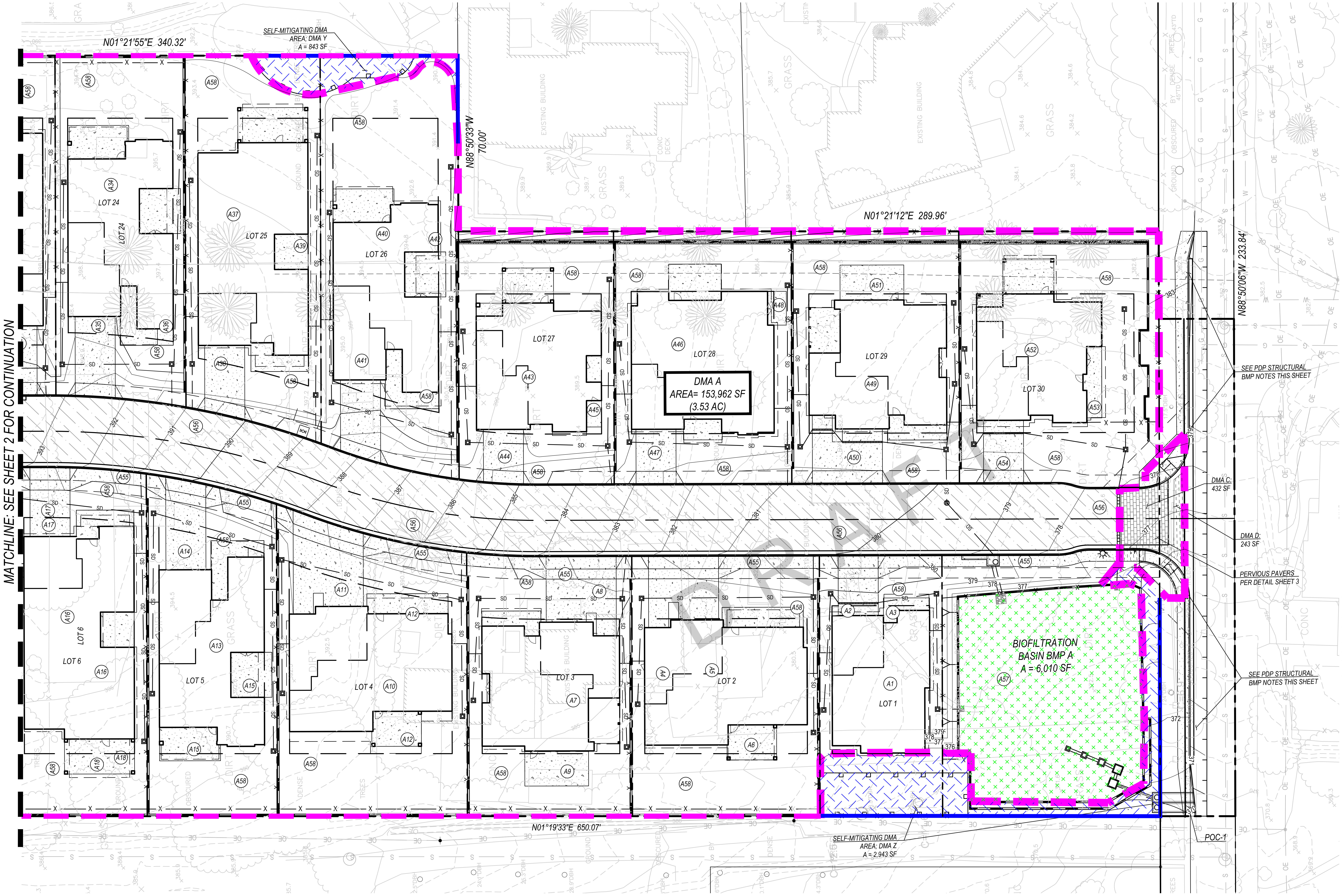
☐ Recommended equipment to perform maintenance

☐ When applicable, necessary special training or certification requirements for inspection and maintenance personnel such as confined space entry or hazardous waste management

☐ Include landscaping plan sheets showing vegetation requirements for vegetated structural BMP(s)

☐ All BMPs must be fully dimensioned on the plans

☐ When proprietary BMPs are used, site-specific cross section with outflow, inflow, and model number shall be provided. Photocopies of general brochures are not acceptable.



PLAN VIEW - DRAINAGE MANAGEMENT AREA EXHIBIT

SCALE: 1" = 20' HORIZONTAL

LEGEND

PROPERTY BOUNDARY	━━ ╸╸ ━━
CENTERLINE OF ROAD	—— — ——
RIGHT-OF-WAY	━━━━
ADJACENT PROPERTY LINE	—— —— ——
EXISTING CONTOUR LINE	— — 256 — —
PROPOSED CONTOUR LINE	—— 256 ——
DMA DRAINAGE BASIN BOUNDARY	▬ ▬ ▬
PROPOSED / REMOVED AND REPLACED IMPERVIOUS AREA WITHIN DISTURBED AREA OF SITE	▨
BMP / BIOFILTRATION BASIN AREA	× × × × × ×
SELF-MITIGATING AREA PER BMP DESIGN MANUAL SECTION 5.2.1	▨

PROJECT SITE AREA CALCULATIONS

TOTAL GROSS SITE AREA	289,479 SF (6.646 AC)
AREA DISTURBED BY PROJECT	273,457 SF (6.278 AC)
EXISTING IMPERVIOUS AREA	39,852 SF (0.915 AC)
EXISTING PERVIOUS AREA	231,129 SF (5.306 AC)
TOTAL DMA AREA (DMA A)	153,962 SF (3.53 AC)
TOTAL DMA AREA (DMA B)	114,153 SF (2.62 AC)
TOTAL DMA AREA (DMA C)	432 SF (0.001 AC)
TOTAL DMA AREA (DMA D)	243 SF (0.0006 AC)
TOTAL SELF-MITIGATING DMA AREAS	4,667 SF (0.11 AC)
TOTAL PROPOSED IMPERVIOUS AREA	151,866 SF (3.48 AC)
**15% LOT HARDSCAPE CONTINGENCY	22,744 SF (0.52 AC)
ASSUMED TOTAL IMPERVIOUS AREA	174,610 SF (4.01 AC)
TOTAL PROPOSED PERVIOUS AREA	98,847 SF (2.27 AC)

15% FUTURE LOT HARDSCAPE CONTINGENCY BASED ON ROOF AREA AND PRIVATE WALKWAYS / PATIOS, EXCLUSIVE OF PRIVATE ROAD, SIDEWALK, AND PRIVATE DRIVEWAYS; RESULTS IN **500 SF OF FUTURE HARDSCAPE ALLOTTED TO EACH LOT

SELF-RETAINING DMA - DMA C

TOTAL BASIN SIZE = 432 SF (0.010 AC)

SELF-RETAINING IMPERVIOUS AREA = 432 SF
RATIO OF DMA AREA TO PERV. PAVER AREA = 1:1

SECTION 5.2.1 OF CITY OF ENCINITAS BMP DESIGN MANUAL ALLOWS FOR SELF-RETAINING PERVIOUS PAVER DMAS THAT RETAIN RUNOFF TO A LEVEL DETERMINED TO CONSTITUTE FULL RETENTION OF THE ENTIRE DCV. PERVIOUS PAVERS THAT HAVE A RATIO OF 1.5:1 OR LESS FOR TOTAL DRAINAGE AREA TO AREA OF PERVIOUS PAVERS CAN BE CONSIDERED SELF-RETAINING.

DE MINIMIS DMA - DMA D

TOTAL BASIN SIZE = 243 SF (0.006 AC)

SECTION 5.2.2 OF CITY OF ENCINITAS BMP DESIGN MANUAL ALLOWS FOR DE MINIMIAS AREAS THAT ARE LESS THAN 250 SF AND ALL DE MINIMIS AREAS FOR THE SITE ARE LESS THAN 2 PERCENT OF THE TOTAL REMOVED OR REPLACED IMPERVIOUS AREA

SOIL TYPE INFORMATION

SOIL: TYPE D SOILS FOR VERY OLD PARALIC DEPOSITS TOPSOIL PER "STORM WATER MANAGEMENT INVESTIGATION" REPORT PREPARED BY GEOCON, INC. DATED 7/16/21; (TYPE B HYDROLOGIC SOILS PER WEB SOIL SURVEY APPLICATION AVAILABLE THROUGH UNITED STATES DEPARTMENT OF AGRICULTURE)

TREATMENT CONTROL BMPS

BIOFILTRATION WITH IMPERVIOUS LINER	BF-1

GRAPHIC SCALE: 1" = 20'

20 0 20 40 60

GROUNDWATER INFORMATION

GROUNDWATER NOT ENCOUNTERED DURING SITE INVESTIGATION, AND EXPECTED AT DEPTHS GREATER THAN 50 FEET BELOW EXISTING GRADES PER "STORM WATER MANAGEMENT INVESTIGATION" PREPARED BY GEOCON, INC. DATED 1/8/21

COARSE SEDIMENT YIELD

NO CRITICAL COARSE SEDIMENT YIELD AREAS TO BE PROTECTED ONSITE OR UPSTREAM OF SUBJECT PROPERTY. REFER TO DISCUSSION IN PRIORITY DEVELOPMENT PROJECT SWQMP PREPARED BY PASCO, LARET, SUITER & ASSOCIATES

SELF-MITIGATING DMA - DMA V

TOTAL BASIN SIZE = 70 SF (0.002 AC)

SELF-MITIGATING IMPERVIOUS AREA = 0 SF
% IMPERVIOUS = 0.0%

SECTION 5.2.1 OF CITY OF ENCINITAS BMP DESIGN MANUAL ALLOWS FOR SELF-MITIGATING DMA AREAS THAT DRAIN DIRECTLY OFFSITE OR TO THE PUBLIC STORM DRAIN SYSTEM, WITH INCIDENTAL IMPERVIOUS AREAS THAT ARE LESS THAN 5% OF THE SELF-MITIGATING AREA.

SELF-MITIGATING DMA - DMA X

TOTAL BASIN SIZE = 811 SF (0.019 AC)

SELF-MITIGATING IMPERVIOUS AREA = 0 SF
% IMPERVIOUS = 0.0%

SECTION 5.2.1 OF CITY OF ENCINITAS BMP DESIGN MANUAL ALLOWS FOR SELF-MITIGATING DMA AREAS THAT DRAIN DIRECTLY OFFSITE OR TO THE PUBLIC STORM DRAIN SYSTEM, WITH INCIDENTAL IMPERVIOUS AREAS THAT ARE LESS THAN 5% OF THE SELF-MITIGATING AREA.

SELF-MITIGATING DMA - DMA Y

TOTAL BASIN SIZE = 843 SF (0.019 AC)

SELF-MITIGATING IMPERVIOUS AREA = 0 SF
% IMPERVIOUS = 0.0%

SECTION 5.2.1 OF CITY OF ENCINITAS BMP DESIGN MANUAL ALLOWS FOR SELF-MITIGATING DMA AREAS THAT DRAIN DIRECTLY OFFSITE OR TO THE PUBLIC STORM DRAIN SYSTEM, WITH INCIDENTAL IMPERVIOUS AREAS THAT ARE LESS THAN 5% OF THE SELF-MITIGATING AREA.

SELF-MITIGATING DMA - DMA Z

TOTAL BASIN SIZE = 2,943 SF (0.067 AC)

SELF-MITIGATING IMPERVIOUS AREA = 0 SF
% IMPERVIOUS = 0.0%

SECTION 5.2.1 OF CITY OF ENCINITAS BMP DESIGN MANUAL ALLOWS FOR SELF-MITIGATING DMA AREAS THAT DRAIN DIRECTLY OFFSITE OR TO THE PUBLIC STORM DRAIN SYSTEM, WITH INCIDENTAL IMPERVIOUS AREAS THAT ARE LESS THAN 5% OF THE SELF-MITIGATING AREA.

ATTACHMENT 1A
DRAINAGE MANAGEMENT AREA EXHIBIT
1220-1240 MELBA ROAD
CITY OF ENCINITAS

PLSA
PLSAENGINEERING.COM

MATCHLINE: SEE SHEET 1 FOR CONTINUATION

PLAN VIEW - DRAINAGE MANAGEMENT AREA EXHIBIT

SCALE: 1"= 20' HORIZONTAL

BMP LEGEND

POST-CONSTRUCTION SITE DESIGN BMPs

SD-1	MAINTAIN NATURAL DRAINAGE PATHWAYS AND HYDROLOGIC FEATURES
SD-2	CONSERVE NATURAL AREAS, SOILS, AND VEGETATION
SD-3	MINIMIZE IMPERVIOUS AREA
SD-5	IMPERVIOUS AREA DISPERSION
SD-6	RUNOFF COLLECTION
SD-7	LANDSCAPING WITH NATIVE OR DROUGHT TOLERANT SPECIES

SOURCE CONTROL BMPs		APPLIED
SC-1	PREVENTION OF ILLICIT DISCHARGES INTO THE MS4	YES
SC-2	STORM DRAIN STENCILING AND POSTING OF SIGNAGE	YES
SC-3	PROTECTED OUTDOOR MATERIALS STORAGE AREAS	N/A
SC-4	PROTECT MATERIALS STORED IN OUTDOOR WORK AREAS	N/A
SC-5	PROTECT TRASH STORAGE AREAS	YES
SC-6	ADDITIONAL BMPs BASED ON POTENTIAL RUNOFF POLLUTANTS:	
A	ONSITE STORM DRAIN INLET	YES
B	INTERIOR FLOOR DRAINS & ELEVATOR SHAFT SUMPS	N/A
C	INTERIOR PARKING GARAGES	N/A
D	NEED FOR FUTURE INDOOR & STR. PEST CONTROL	N/A
E	LANDSCAPE / OUTDOOR PESTICIDE USE	YES
F	POOLS, SPAS, PONDS, FOUNTAIN, & WATER FEATURES	N/A
G	FOOD SERVICE	N/A
H	TRASH OR REFUSE AREAS	YES
I	INDUSTRIAL PROCESSES	N/A
J	OUTDOOR STORAGE OF EQUIP. OR MATERIALS	N/A
K	VEHICLE AND EQUIPMENT CLEANING	N/A
L	VEHICLE / EQUIPMENT REPAIR AND MAINTENANCE	N/A
M	FUEL DISPENSING AREAS	N/A
N	LOADING DOCKS	N/A
O	FIRE SPRINKLER TEST WATER	N/A
P	MISCELLANEOUS DRAIN OR WASH WATER	N/A
Q	PLAZAS, SIDEWALKS, DRIVEWAYS, AND PARKING LOTS	N/A

ATTACHMENT 1A
DRAINAGE MANAGEMENT AREA EXHIBIT
1220-1240 MELBA ROAD
CITY OF ENCINITAS

PLSA
PLSAENGINEERING.COM

SHEET 3 OF 3

DMA A - AREA CALCULATIONS

IMPERVIOUS AREA	(BUILDING / ROOF)	60,371 SF
	(DRIVEWAYS)	7,466 SF
	(LOT HARDSCAPE)	3,353 SF
	(PRIVATE DRIVE/WALKWAY)	19,074 SF
	(**15% FUTURE CONTINGENCY)	13,540 SF
	TOTAL	103,804 SF
PERVIOUS AREA	(LANDSCAPED AREA)	57,688 SF
	(BIOFILTRATION BASIN)	6,010 SF
	(15% FUTURE CONTINGENCY)	-13,540 SF
	TOTAL	50,158 SF

TOTAL BASIN AREA	153,962 SF
% IMPERVIOUS AREA	67.4%

**15% FUTURE LOT HARDSCAPE CONTINGENCY BASED ON ROOF AREA AND PRIVATE WALKWAYS / PATIOS, EXCLUSIVE OF PRIVATE ROAD, SIDEWALK, AND PRIVATE DRIVEWAYS

DMA TABLE - TREATMENT (BASIN A)

AREA NAME	AREA (SF)	POST-PROJECT SURFACE TYPE	SURFACE RUNOFF FACTOR	ADJUSTMENT FACTOR	AREA X ADJUSTED RUNOFF (SF)
A1	2069	LOT 1 ROOF	0.9	1	1862
A2	215	LOT 1 DRIVEWAY	0.9	1	194
A3	117	LOT 1 HARDSCAPE	0.9	1	105
A4	3366	LOT 2 ROOF	0.9	1	3029
A5	453	LOT 2 DRIVEWAY	0.9	1	408
A6	70	LOT 2 HARDSCAPE	0.9	1	63
A7	2942	LOT 3 ROOF	0.9	1	2648
A8	494	LOT 3 DRIVEWAY	0.9	1	445
A9	357	LOT 3 HARDSCAPE	0.9	1	321
A10	3611	LOT 4 ROOF	0.9	1	3250
A11	684	LOT 4 DRIVEWAY	0.9	1	616
A12	55	LOT 4 HARDSCAPE	0.9	1	50
A13	3235	LOT 5 ROOF	0.9	1	2912
A14	426	LOT 5 DRIVEWAY	0.9	1	383
A15	168	LOT 5 HARDSCAPE	0.9	1	151
A16	4169	LOT 6 ROOF	0.9	1	3752
A17	279	LOT 6 DRIVEWAY	0.9	1	251
A18	115	LOT 6 HARDSCAPE	0.9	1	104
A19	3419	LOT 7 ROOF	0.9	1	3077
A20	266	LOT 7 DRIVEWAY	0.9	1	239
A21	194	LOT 7 HARDSCAPE	0.9	1	175
A22	4169	LOT 8 ROOF	0.9	1	3752
A23	288	LOT 8 DRIVEWAY	0.9	1	259
A24	115	LOT 8 HARDSCAPE	0.9	1	104
A25	3177	LOT 9 ROOF	0.9	1	2859
A26	270	LOT 9 DRIVEWAY	0.9	1	243
A27	290	LOT 9 HARDSCAPE	0.9	1	261
A28	3177	LOT 22 ROOF	0.9	1	2859
A29	485	LOT 22 DRIVEWAY	0.9	1	437
A30	290	LOT 22 HARDSCAPE	0.9	1	261
A31	4245	LOT 23 ROOF	0.9	1	3821
A32	433	LOT 23 DRIVEWAY	0.9	1	390
A33	203	LOT 23 HARDSCAPE	0.9	1	183
A34	3235	LOT 24 ROOF	0.9	1	2912
A35	526	LOT 24 DRIVEWAY	0.9	1	473
A36	168	LOT 24 HARDSCAPE	0.9	1	151
A37	4179	LOT 25 ROOF	0.9	1	3761
A38	444	LOT 25 DRIVEWAY	0.9	1	400
A39	117	LOT 25 HARDSCAPE	0.9	1	105
A40	3418	LOT 26 ROOF	0.9	1	3076
A41	486	LOT 26 DRIVEWAY	0.9	1	437
A42	208	LOT 26 HARDSCAPE	0.9	1	187
A43	2292	LOT 27 ROOF	0.9	1	2063
A44	354	LOT 27 DRIVEWAY	0.9	1	319
A45	450	LOT 27 HARDSCAPE	0.9	1	405
A46	3693	LOT 28 ROOF	0.9	1	3324
A47	347	LOT 28 DRIVEWAY	0.9	1	312
A48	79	LOT 28 HARDSCAPE	0.9	1	71
A49	2944	LOT 29 ROOF	0.9	1	2650
A50	640	LOT 29 DRIVEWAY	0.9	1	576
A51	357	LOT 29 HARDSCAPE	0.9	1	321
A52	3031	LOT 30 ROOF	0.9	1	2728
A53	376	LOT 30 DRIVEWAY	0.9	1	338
A54	0	LOT 30 HARDSCAPE	0.9	1	0
A55	4008	WALKWAY	0.9	1	3607
A56	15066	PRIVATE DRIVE	0.9	1	13559
A57	6010	BMP D	0.3	1	1803
A58	57688	LANDSCAPE	0.3	1	17306
				TOTAL	100347

TOTAL DMA SIZE = 100,347 SF
ADD 15% HARDSCAPE CONTINGENCY = 9,204 SF * 0.9 - 9,204 SF * 0.3
ADJUSTED DMA SIZE = 105,869 SF

IMP. SIZING FACTOR = 0.03 (FOR BIOFILTRATION BMPS)
MIN. AREA REQUIRED = 0.03 * 105,869 SF = 3,176 SF

**6,010 SF PROPOSED > 3,176 SF REQUIRED;
THEREFORE STANDARD BIOFILTRATION MINIMUM AREA REQUIREMENTS MET**

DMA A - DCV CALCULATIONS

AREA TRIBUTARY TO BMP (A) = 153,962 SF / 3.53 AC

TOTAL DMA SIZE (Cx*Ax) = 105,869 SF
WEIGHTED RUNOFF FACTOR (Cx) = 0.74
85TH PERCENTILE RAINFALL DEPTH (d) = 0.54 INCHES

DCV (C*d*A*3,630) = 4,764 CU. FT.

DMA B - AREA CALCULATIONS

IMPERVIOUS AREA	(BUILDING / ROOF)	35,580 SF
	(DRIVEWAYS)	9,905 SF
	(LOT HARDSCAPE)	1,296 SF
	(PRIVATE DRIVE/WALKWAY)	13,188 SF
	(**15% FUTURE CONTINGENCY)	9,220 SF
	TOTAL	70,687 SF
PERVIOUS AREA	(LANDSCAPED AREA)	48,789 SF
	(BIOFILTRATION BASIN)	3,030 SF
	(15% FUTURE CONTINGENCY)	-8,783 SF
	TOTAL	42,599 SF

TOTAL BASIN AREA	113,286 SF
% IMPERVIOUS AREA	52.4%

DMA TABLE - TREATMENT (BASIN B)

AREA NAME	AREA (SF)	POST-PROJECT SURFACE TYPE	SURFACE RUNOFF FACTOR	ADJUSTMENT FACTOR	AREA X ADJUSTED RUNOFF (SF)
B1	3366	LOT10 ROOF	0.9	1	3029
B2	1742	LOOT 10 DRIVEWAY	0.9	1	1568
B3	70	LOT 10 HARDSCAPE	0.9	1	63
B4	3544	LOT 11 ROOF	0.9	1	3190
B5	1304	LOT 11 DRIVEWAY	0.9	1	1174
B6	0	LOT 11 HARDSCAPE	0.9	1	0
B7	2942	LOT 12 ROOF	0.9	1	2648
B8	859	LOT 12 DRIVEWAY	0.9	1	773
B9	357	LOT 12 HARDSCAPE	0.9	1	321
B10	3025	LOT 13 ROOF	0.9	1	2723
B11	463	LOT 13 DRIVEWAY	0.9	1	417
B12	0	LOT 13 HARDSCAPE	0.9	1	0
B13	2942	LOT 14 ROOF	0.9	1	2648
B14	784	LOT 14 DRIVEWAY	0.9	1	706
B15	357	LOT 14 HARDSCAPE	0.9	1	321
B16	2438	LOT 15 ROOF	0.9	1	2194
B17	366	LOT 15 DRIVEWAY	0.9	1	329
B18	0	LOT 15 HARDSCAPE	0.9	1	0
B19	3031	LOT 16 ROOF	0.9	1	2728
B20	425	LOT 16 DRIVEWAY	0.9	1	383
B21	0	LOT 16 HARDSCAPE	0.9	1	0
B22	1472	LOT 17 ROOF	0.9	1	1325
B23	567	LOT 17 DRIVEWAY	0.9	1	510
B24	0	LOT 17 HARDSCAPE	0.9	1	0
B25	3544	LOT 18 ROOF	0.9	1	3190
B26	1235	LOT 18 DRIVEWAY	0.9	1	1112
B27	0	LOT 18 HARDSCAPE	0.9	1	0
B28	3544	LOT 19 ROOF	0.9	1	3190
B29	861	LOT 19 DRIVEWAY	0.9	1	775
B30	0	LOT 19 HARDSCAPE	0.9	1	0
B31	3047	LOT 20 ROOF	0.9	1	2742
B32	834	LOT 20 DRIVEWAY	0.9	1	751
B33	357	LOT 20 HARDSCAPE	0.9	1	321
B34	2507	LOT 21 ROOF	0.9	1	2256
B35	465	LOT 21 DRIVEWAY	0.9	1	419
B36	225	LOT 21 HARDSCAPE	0.9	1	203
B37	1498	WALKWAY	0.9	1	1348
B38	13188	PRIVATE DRIVE	0.9	1	11869
B39	3030	BMP D	0.3	1	909
B40	48897	LANDSCAPE	0.3	1	14669
				TOTAL	70801

TOTAL DMA SIZE = 70,866 SF
ADD 15% HARDSCAPE CONTINGENCY = 8,783 SF * 0.9 - 8,783 SF * 0.3
ADJUSTED DMA SIZE = 76,136 SF

IMP. SIZING FACTOR = 0.03 (FOR BIOFILTRATION BMPS)
MIN. AREA REQUIRED = 0.03 * 76,136 SF = 2,284 SF

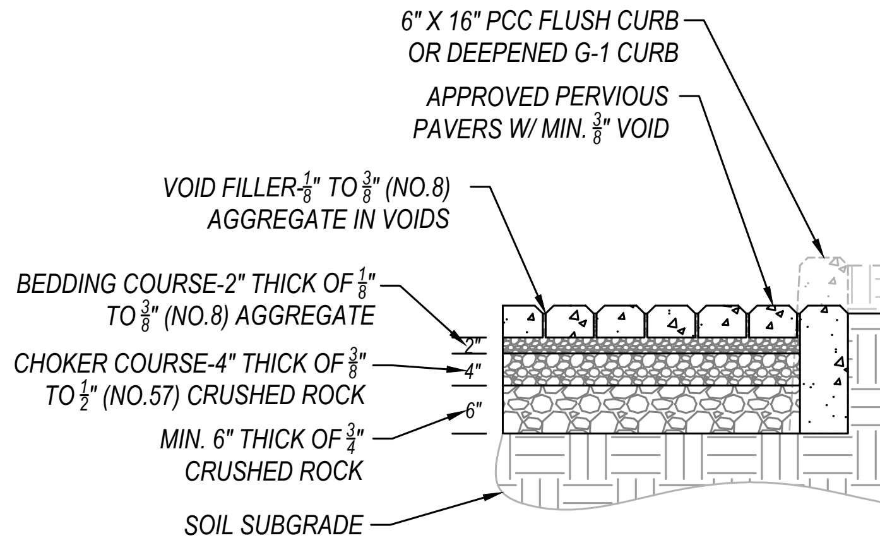
**3,030 SF PROPOSED > 2,284 SF REQUIRED;
THEREFORE STANDARD BIOFILTRATION MINIMUM AREA REQUIREMENTS MET**

DMA B - DCV CALCULATIONS

AREA TRIBUTARY TO BMP (A) = 113,286 SF SF / 2.60 AC

TOTAL DMA SIZE (Cx*Ax) = 76,136 SF
WEIGHTED RUNOFF FACTOR (Cx) = 0.65
85TH PERCENTILE RAINFALL DEPTH (d) = 0.54 INCHES

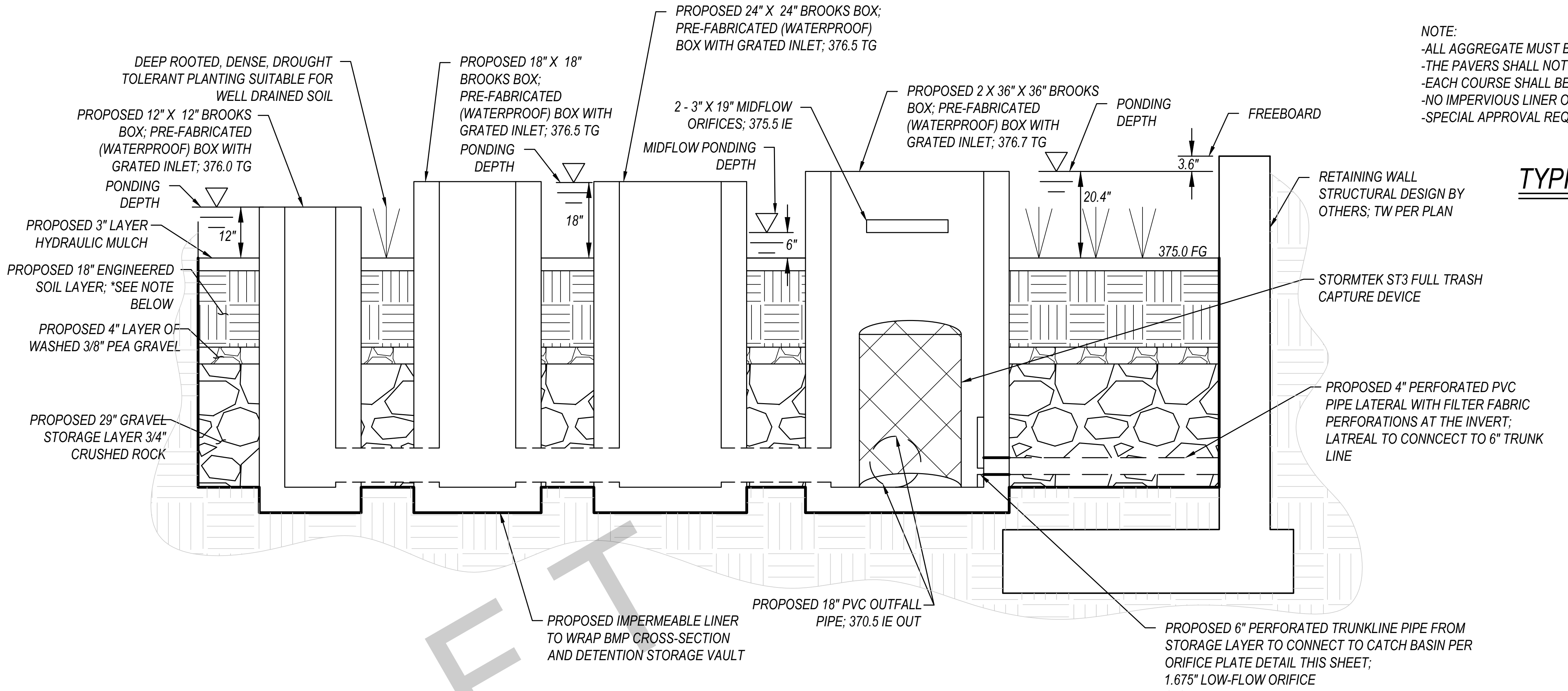
DCV (C*d*A*3,630) = 3,426 CU. FT.



NOTE:
-ALL AGGREGATE MUST BE CLEAN/WASHED AND FREE OF FINES (SAND, SILT, ETC.)
-THE PAVERS SHALL NOT BE SEALED ONCE THE VOID FILLER HAS BEEN ADDED
-EACH COURSE SHALL BE VIBRATORY COMPACTED BEFORE PLACEMENT OF NEXT COURSE
-NO IMPERVIOUS LINER OR FILTER FABRIC IS TO BE USED
-SPECIAL APPROVAL REQUIRED FOR USE IN HIGHLY EXPANSIVE SOIL-SUBDRAIN MAY BE REQUIRED

TYPICAL DETAIL - PERVIOUS PAVERS

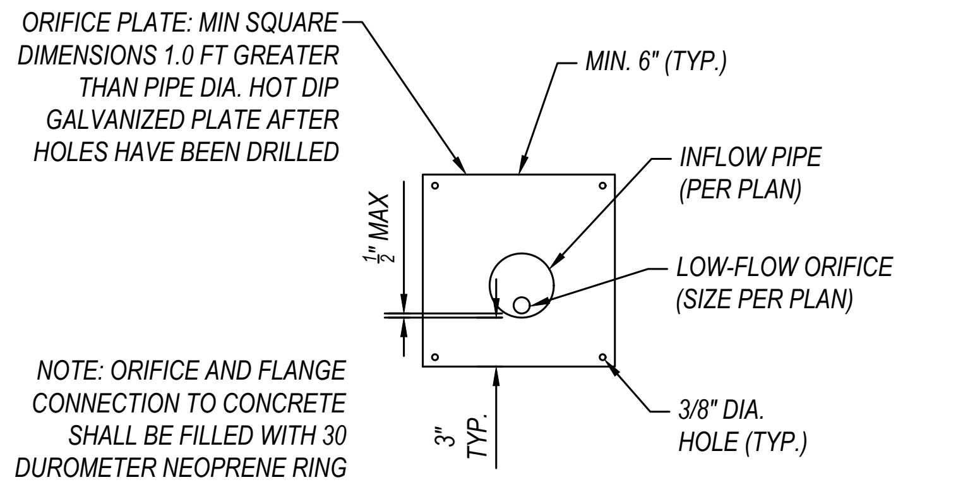
NOT TO SCALE



TYPICAL SECTION - BIOFILTRATION BASIN A

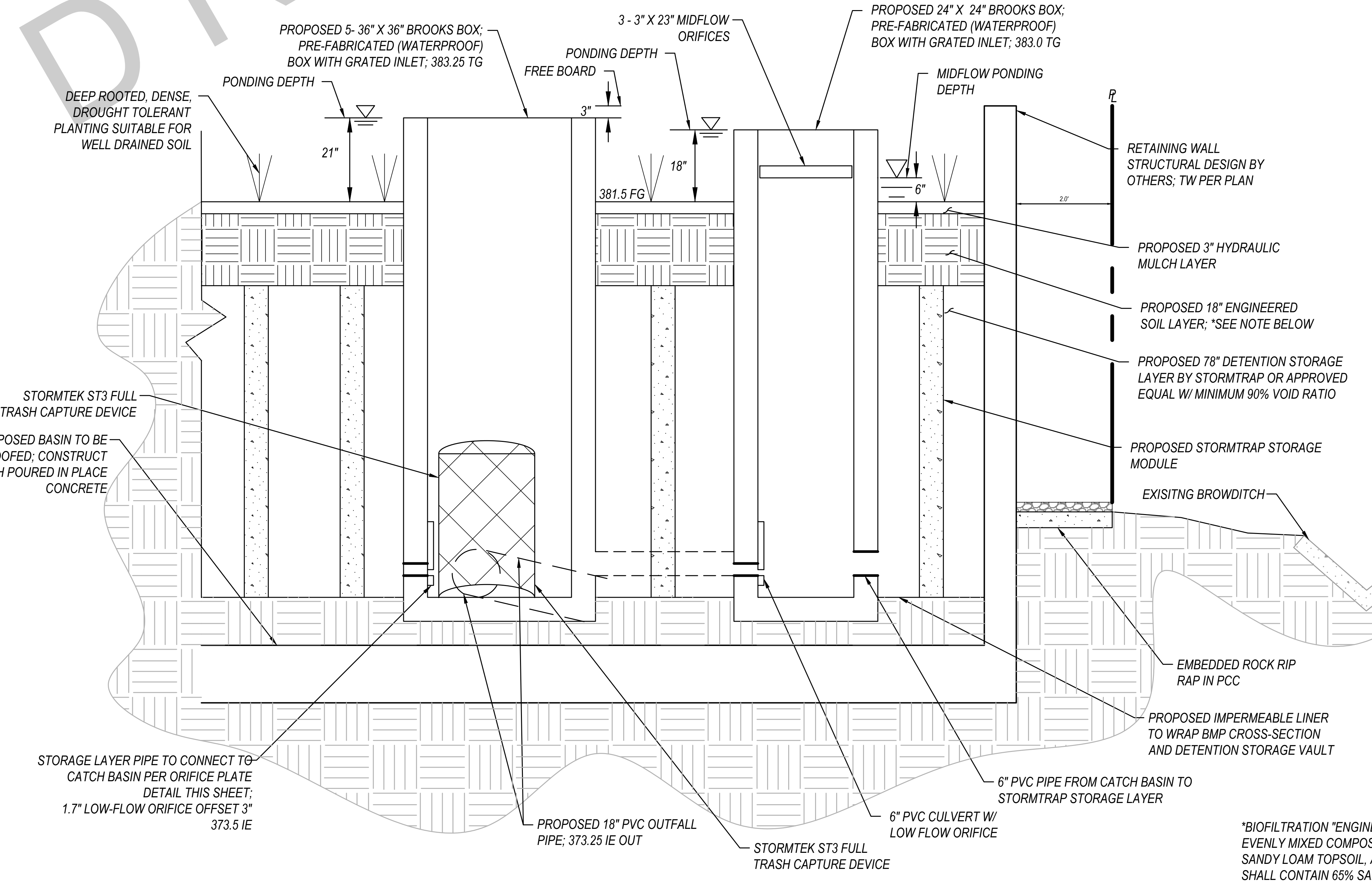
NOT TO SCALE

*BIOFILTRATION "ENGINEERED SOIL" LAYER SHALL BE EVENLY MIXED COMPOSITION OF WASHED SAND, SANDY LOAM TOPSOIL, AND HUMIC COMPOST. THE MIX SHALL CONTAIN 65% SAND, 20% TOPSOIL, AND 15% COMPOST OR HARDWOOD MULCH IN ACCORDANCE WITH COUNTY OF SAN DIEGO LID BIOSWALE MEDIA



TYPICAL DETAIL - FLOW CONTROL ORIFICE PLATE

NOT TO SCALE



TYPICAL SECTION - BIOFILTRATION BASIN B

NOT TO SCALE

*BIOFILTRATION "ENGINEERED SOIL" LAYER SHALL BE EVENLY MIXED COMPOSITION OF WASHED SAND, SANDY LOAM TOPSOIL, AND HUMIC COMPOST. THE MIX SHALL CONTAIN 65% SAND, 20% TOPSOIL, AND 15% COMPOST OR HARDWOOD MULCH IN ACCORDANCE WITH COUNTY OF SAN DIEGO LID BIOSWALE MEDIA

ATTACHMENT 1B
DRAINAGE MANAGEMENT AREA CALCS
1220-1240 MELBA ROAD
CITY OF ENCINITAS

PLSA
PLSAENGINEERING.COM

Harvest and Use Feasibility Checklist

Form I-7

1. Is there a demand for harvested water (check all that apply) at the project site that is reliably present during the wet season?

☒ Toilet and urinal flushing
☒ Landscape irrigation
☐ Other:_______________

2. If there is a demand; estimate the anticipated average wet season demand over a period of 36 hours. Guidance for planning level demand calculations for toilet/urinal flushing and landscape irrigation is provided in Section B.3.2. Toilet & Urinal Demand -> 9.3 Gal / resident Landscape Demand -> 1,470 Gal / irrigated acre moderate water use

9.3 gal/day x (0.13368 cu ft/gal) x (1.5 days) = 1.86 cu ft / person over 36 hrs
30 units x 4.0 people/unit x (1.86 cu ft / person = 36 hr) = 223 cu ft / 36 hrs (toilet/urinal flushing)
3.09 ac irrigated x 1,470 gal / ac - 36 hr x 0.13368 cu ft / gal = 607 cu ft / 36 hrs (landscaping)
Total = 223 cu ft + 607 cu ft = 830 cu ft

3. Calculate the DCV using worksheet B-2.1.

DCV = 7,811 (cubic feet) Total

3a. Is the 36 hour demand greater than or equal to the DCV? ☐ Yes / ☒ No ⇨ ⇩	3b. Is the 36 hour demand greater than 0.25DCV but less than the full DCV? ☐ Yes / ☒ No ⇨ ⇩	3c. Is the 36 hour demand less than 0.25DCV? ☒ Yes ⇩
Harvest and use appears to be feasible. Conduct more detailed evaluation and sizing calculations to confirm that DCV can be used at an adequate rate to meet drawdown criteria.	Harvest and use may be feasible. Conduct more detailed evaluation and sizing calculations to determine feasibility. Harvest and use may only be able to be used for a portion of the site, or (optionally) the storage may need to be upsized to meet long term capture targets while draining in longer than 36 hours.	Harvest and use is considered to be infeasible.

Is harvest and use feasible based on further evaluation?

☐ Yes, refer to Appendix E to select and size harvest and use BMPs.

☒ No, select alternate BMPs.

Categorization of Infiltration Feasibility Condition	Worksheet C.4-1

Part 1 - Full Infiltration Feasibility Screening Criteria

Would infiltration of the full design volume be feasible from a physical perspective without any undesirable consequences that cannot be reasonably mitigated?

Criteria	Screening Question	Yes	No
1	**Is the estimated reliable infiltration rate below proposed facility locations greater than 0.5 inches per hour?** The response to this Screening Question shall be based on a comprehensive evaluation of the factors presented in Appendix C.2 and Appendix D.		X

Provide basis:

Based on the USGS Soil Survey, the property possesses Hydrologic Soil Group D classifications and an infiltration rate of less than 0.5 inches per hour. We performed 4 infiltration tests in two areas of the site within the underlying Very Old Paralic Deposits. The results indicate an average rate of 0.003 inches per hour (with an applied factor of safety of 2). Therefore, full infiltration is considered infeasible at the site.

2	**Can infiltration greater than 0.5 inches per hour be allowed without increasing risk of geotechnical hazards (slope stability, groundwater mounding, utilities, or other factors) that cannot be mitigated to an acceptable level?** The response to this Screening Question shall be based on a comprehensive evaluation of		X

Provide basis:

Infiltration should not be allowed in areas of the site which would negatively affect the adjacent properties and improvements or the existing sloping conditions on the site. Infiltration would cause seepage and erosion on the existing slopes if it were allowed.

Summarize findings of studies; provide reference to studies, calculations, maps, data sources, etc. Provide narrative discussion of study/data source applicability.

<table>
<tr><th colspan="4">Worksheet C.4-1 Page 2 of 4</th></tr>
<tr><th>Criteria</th><th>Screening Question</th><th>Yes</th><th>No</th></tr>
<tr><td>3</td><td>**Can infiltration greater than 0.5 inches per hour be allowed without increasing risk of groundwater contamination (shallow water table, storm water pollutants or other factors) that cannot be mitigated to an acceptable level?** The response to this Screening Question shall be based on a comprehensive evaluation of the factors presented in Appendix C.3.</td><td>X</td><td></td></tr>
<tr><td colspan="4">Provide basis:
We anticipate that groundwater is present at depths of greater than 50 feet. Therefore, infiltration due to groundwater elevations would be considered feasible.
Summarize findings of studies; provide reference to studies, calculations, maps, data sources, etc. Provide narrative discussion of study/data source applicability.</td></tr>
<tr><td>4</td><td>**Can infiltration greater than 0.5 inches per hour be allowed without causing potential water balance issues such as change of seasonality of ephemeral streams or increased discharge of contaminated groundwater to surface waters?** The response to this Screening Question shall be based on a comprehensive evaluation of the factors presented in Appendix C.3.</td><td>X</td><td></td></tr>
<tr><td colspan="4">Provide basis:
A shallow groundwater table does not exist within 10 feet of the proposed grades and we are not aware of any wells within 100 feet of the site.
Summarize findings of studies; provide reference to studies, calculations, maps, data sources, etc. Provide narrative discussion of study/data source applicability.</td></tr>
<tr><td>**Part 1 Result***</td><td colspan="2">If all answers to rows 1 - 4 are “**Yes**” a full infiltration design is potentially feasible. The feasibility screening category is **Full Infiltration**
If any answer from row 1-4 is “**No**”, infiltration may be possible to some extent but would not generally be feasible or desirable to achieve a “full infiltration” design. Proceed to Part 2</td><td>No Infiltration</td></tr>
</table>

***To be completed using gathered site information and best professional judgment considering the definition of MEP in the MS4 Permit. Additional testing and/or studies may be required by the City to substantiate findings.**

Worksheet C.4-1 Page 3 of 4

Part 2 – Partial Infiltration vs. No Infiltration Feasibility Screening Criteria

Would infiltration of water in any appreciable amount be physically feasible without any negative consequences that cannot be reasonably mitigated?

Criteria	Screening Question	Yes	No
5	**Do soil and geologic conditions allow for infiltration in any appreciable rate or volume?** The response to this Screening Question shall be based on a comprehensive evaluation of the factors presented in Appendix C.2 and Appendix D.		X

Provide basis:

Based on the USGS Soil Survey, the property possesses Hydrologic Soil Group D classifications and an infiltration rate of less than 0.5 inches per hour. We performed 4 infiltration tests in two areas of the site within the underlying Very Old Paralic Deposits. The results indicate an average rate of 0.003 inches per hour (with an applied factor of safety of 2). Therefore, full infiltration is considered infeasible at the site.

Criteria	Screening Question	Yes	No
6	**Can Infiltration in any appreciable quantity be allowed without increasing risk of geotechnical hazards (slope stability, groundwater mounding, utilities, or other factors) that cannot be mitigated to an acceptable level**? The response to this Screening Question shall be based on a comprehensive evaluation of the factors presented in Appendix C.2.		X

Provide basis:

Infiltration should not be allowed in areas of the site which would negatively affect the adjacent properties and improvements or the existing sloping conditions on the site. Infiltration would cause seepage and erosion on the existing slopes if it were allowed.

Summarize findings of studies; provide reference to studies, calculations, maps, data sources, etc. Provide narrative discussion of study/data source applicability and why it was not feasible to mitigate low infiltration rates.

<table>
<tr><th colspan="4">Worksheet C.4-1 Page 4 of 4</th></tr>
<tr><th>Criteria</th><th>Screening Question</th><th>Yes</th><th>No</th></tr>
<tr><td>7</td><td>Can Infiltration in any appreciable quantity be allowed without posing significant risk for groundwater related concerns (shallow water table, storm water pollutants or other factors)? The response to this Screening Question shall be based on a comprehensive evaluation of the factors presented in Appendix C.3.</td><td>X</td><td></td></tr>
<tr><td colspan="4">Provide basis:
We anticipate that groundwater is present at depths of greater than 50 feet. Therefore, infiltration due to groundwater elevations would be considered feasible.
Summarize findings of studies; provide reference to studies, calculations, maps, data sources, etc. Provide narrative discussion of study/data source applicability and why it was not feasible to mitigate low infiltration rates.</td></tr>
<tr><td>8</td><td>Can infiltration be allowed without violating downstream water rights? The response to this Screening Question shall be based on a comprehensive evaluation of the factors presented in Appendix C.3.</td><td>X</td><td></td></tr>
<tr><td colspan="4">Provide basis:
We did not provide a study regarding water rights. However, these rights are not typical in the San Diego County area.
Summarize findings of studies; provide reference to studies, calculations, maps, data sources, etc. Provide narrative discussion of study/data source applicability and why it was not feasible to mitigate low infiltration rates.</td></tr>
<tr><td>Part 2 Result*</td><td colspan="2">If all answers from row 1-4 are yes then partial infiltration design is potentially feasible. The feasibility screening category is Partial Infiltration.
If any answer from row 5-8 is no, then infiltration of any volume is considered to be infeasible within the drainage area. The feasibility screening category is No Infiltration.</td><td>No Infiltration</td></tr>
</table>

***To be completed using gathered site information and best professional judgment considering the definition of MEP in the MS4 Permit. Additional testing and/or studies may be required by the City to substantiate findings.**

Worksheet B.2-1. DCV

DMA A

Design Capture Volume		Worksheet B-2.1		
1	85th percentile 24-hr storm depth from Figure B.1-1	d=	0.54	inches
2	Area tributary to BMP (s)	A=	3.53	acres
3	Area weighted runoff factor (estimate using Appendix B.1.1 and B.2.1)	C=	0.74	unitless
4	Street trees volume reduction	TCV=	0	cubic-feet
5	Rain barrels volume reduction	RCV=	0	cubic-feet
6	Calculate DCV = (3630 x C x d x A) – TCV - RCV	DCV=	4,764	cubic-feet

AREA TRIBUTARY TO BMP (A) = 153,962 SF / 3.53 AC

*TOTAL DMA SIZE (Cx*Ax) = 105,869 SF*
WEIGHTED RUNOFF FACTOR (Cx) = 0.74
85TH PERCENTILE RAINFALL DEPTH (d) = 0.54 INCHES

*DCV (C*d*A*3,630) = 4,764 CU. FT.*

Worksheet B.2-1. DCV

Design Capture Volume		Worksheet B-2.1		
1	85th percentile 24-hr storm depth from Figure B.1-1	d=	0.54	inches
2	Area tributary to BMP (s)	A=	2.60	acres
3	Area weighted runoff factor (estimate using Appendix B.1.1 and B.2.1)	C=	0.65	unitless
4	Street trees volume reduction	TCV=	0	cubic-feet
5	Rain barrels volume reduction	RCV=	0	cubic-feet
6	Calculate DCV = (3630 x C x d x A) – TCV - RCV	DCV=	3,426	cubic-feet

AREA TRIBUTARY TO BMP (A) = 113,286 SF SF / 2.60 AC

*TOTAL DMA SIZE (Cx*Ax) = 76,136 SF*
WEIGHTED RUNOFF FACTOR (Cx) = 0.65
85TH PERCENTILE RAINFALL DEPTH (d) = 0.54 INCHES

*DCV (C*d*A*3,630) = 3,426 CU. FT.*

Worksheet B.5-1: Simple Sizing Method for Biofiltration BMPs			DMA 1
Simple Sizing Method for Biofiltration BMPs		**Worksheet B.5-1**	
1	Remaining DCV after implementing retenion BMPs	4764	cubic-feet
Partial Retention			
2	Infiltration rate from Worksheet D.5-1 if partial infiltation is feasible	0	in/hr
3	allowable drawdown time for aggregate storage below the underdrain	36	hours
4	Depth of runoff that can be infilrated [Line 2 x Line 3]	0	inches
5	Aggregate pore space	0.4	in/in
6	Required depth of gravel below the underdrain [Line 4 / Line 5]	0	inches
7	Assumed surface area of biofiltration BMP	6010	sq-ft
8	Media Retained pore space	0.2	in/in
9	Volume retrained by BMP [Line 4 + (Line 12 x Line 8)/12] x Line 7	1803	cubic-feet
10	DCV that requires biofiltration [Line 1 - Line 9]	2961	cubic-feet
BMP Parameters			
11	Surface Ponding [6in minimum, 12 inch maximum]	16	inches
12	Media Thickness [18 inches minimum]	18	inches
13	Aggregate Storage Above underdrain invert (12 inches typical) - use 0 inches for sizing if the aggregate is not over the entire bottom surface area	30	inches
14	Media available pore space	0.2	in/in
15	Media filtration rate to be used for sizing	5	in/hr
Baseline Calculations			
16	Allowable Routing Time for Sizing	6	hours
17	Depth filtered during strom [Line 15 x Line 16]	30	inches
18	Depth of detention storage [line 11 + (Line 12 Line 14) + (Line 13 x Line 5)]	31.6	inches
19	Total Depth Treated [Line 17 + Line 18]	37.6	inches
Option 1 - Biofilter 1.5 times the DVC			
20	Required biofiltrated volume [1.5 x Line 10]	4441.5	cubic-feet
21	Required Footprint [Line 20 / Line 19] x 12	1418	sq-ft
Option 2 - Store 0.75 of the remaining DCV in pores and ponding			
22	Required Storage (surface + pores) Volume [0.75 x Line 10]	2221	cubic-feet
23	Required Footprint [Line 22 / Line 18] x 12	538	sq-ft
Footprint of the BMP			
24	Area draining to the BMP	153962	sq-ft
25	Adjusted Runoff Factor for drainage area (Refere to Appendix B.1 and B.2)	0.74	
26	Minimum BMP Footprint [Line 24 x Line 25 X 0.03]	3418	sq-ft
27	Footprint of the BMP = Maximum(minimum(Line 21, Line 23), Line 26)	3418	sq-ft

Worksheet B.5-1: Simple Sizing Method for Biofiltration BMPs			DMA 2
Simple Sizing Method for Biofiltration BMPs		**Worksheet B.5-1**	
1	Remaining DCV after implementing retenion BMPs	3426	cubic-feet
Partial Retention			
2	Infiltration rate from Worksheet D.5-1 if partial infiltation is feasible	0	in/hr
3	allowable drawdown time for aggregate storage below the underdrain	36	hours
4	Depth of runoff that can be infilrated [Line 2 x Line 3]	0	inches
5	Aggregate pore space	0.4	in/in
6	Required depth of gravel below the underdrain [Line 4 / Line 5]	0	inches
7	Assumed surface area of biofiltration BMP	3030	sq-ft
8	Media Retained pore space	0.2	in/in
9	Volume retrained by BMP [Line 4 + (Line 12 x Line 8)/12] x Line 7	909	cubic-feet
10	DCV that requires biofiltration [Line 1 - Line 9]	2517	cubic-feet
BMP Parameters			
11	Surface Ponding [6in minimum, 12 inch maximum]	18	inches
12	Media Thickness [18 inches minimum]	18	inches
13	Aggregate Storage Above underdrain invert (12 inches typical) - use 0 inches for sizing if the aggregate is not over the entire bottom surface area	15	inches
14	Media available pore space	0.2	in/in
15	Media filtration rate to be used for sizing	5	in/hr
Baseline Calculations			
16	Allowable Routing Time for Sizing	6	hours
17	Depth filtered during strom [Line 15 x Line 16]	30	inches
18	Depth of detention storage [line 11 + (Line 12 Line 14) + (Line 13 x Line 5)]	27.6	inches
19	Total Depth Treated [Line 17 + Line 18]	33.6	inches
Option 1 - Biofilter 1.5 times the DVC			
20	Required biofiltrated volume [1.5 x Line 10]	3775.5	cubic-feet
21	Required Footprint [Line 20 / Line 19] x 12	1348	sq-ft
Option 2 - Store 0.75 of the remaining DCV in pores and ponding			
22	Required Storage (surface + pores) Volume [0.75 x Line 10]	1888	cubic-feet
23	Required Footprint [Line 22 / Line 18] x 12	586	sq-ft
Footprint of the BMP			
24	Area draining to the BMP	113286	sq-ft
25	Adjusted Runoff Factor for drainage area (Refere to Appendix B.1 and B.2)	0.65	
26	Minimum BMP Footprint [Line 24 x Line 25 X 0.03]	2209	sq-ft
27	Footprint of the BMP = Maximum(minimum(Line 21, Line 23), Line 26)	2209	sq-ft

E.12 BF-1 Biofiltration

Location: 43rd Street and Logan Avenue, San Diego, California

MS4 Permit Category

Biofiltration

Manual Category

Biofiltration

Applicable Performance Standard

Pollutant Control
Flow Control

Primary Benefits

Treatment
Volume Reduction (Incidental)
Peak Flow Attenuation (Optional)

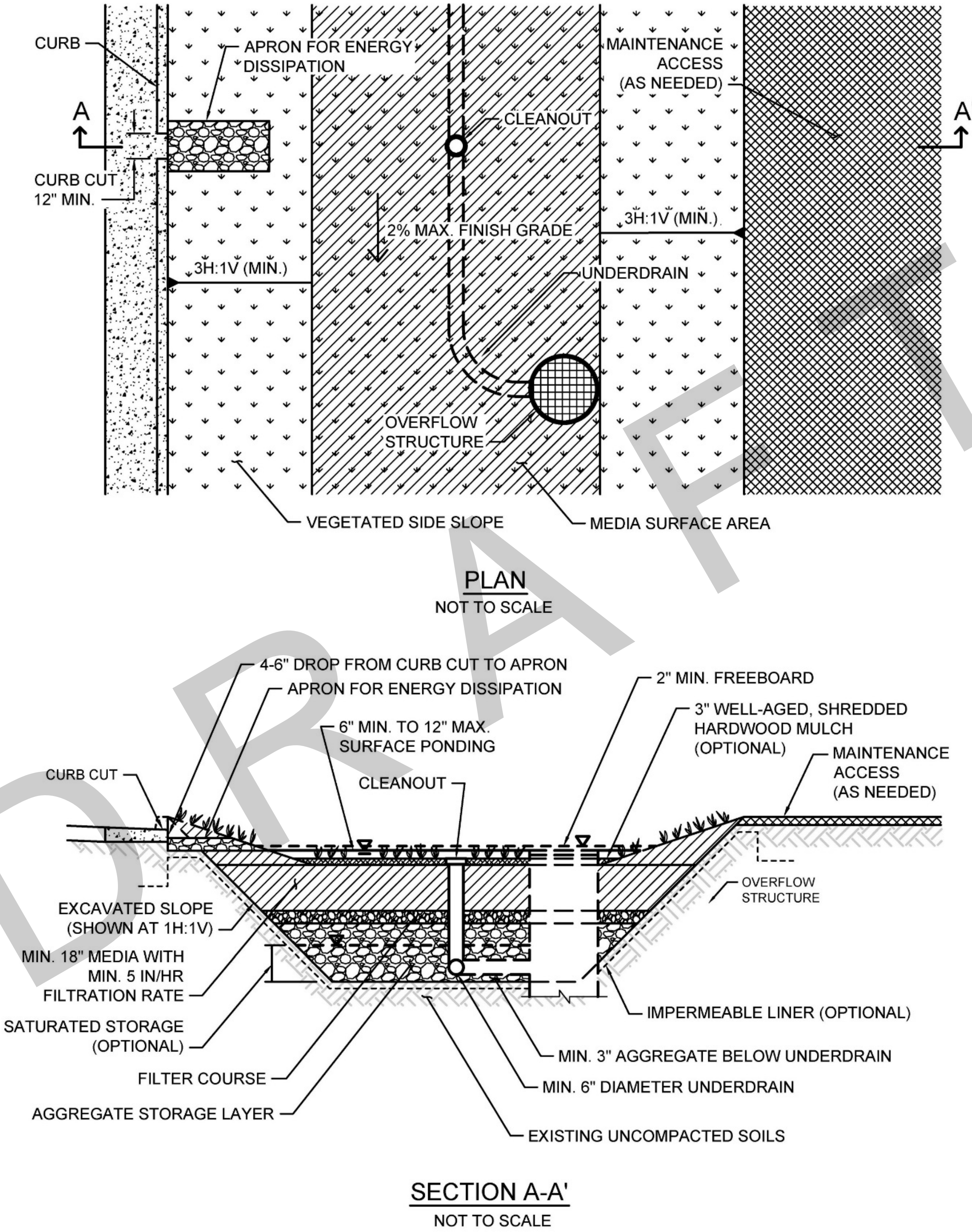
Description

Biofiltration (Bioretention with underdrain) facilities are vegetated surface water systems that filter water through vegetation, and soil or engineered media prior to discharge via underdrain or overflow to the downstream conveyance system. Bioretention with underdrain facilities are commonly incorporated into the site within parking lot landscaping, along roadsides, and in open spaces. Because these types of facilities have limited or no infiltration, they are typically designed to provide enough hydraulic head to move flows through the underdrain connection to the storm drain system. Treatment is achieved through filtration, sedimentation, sorption, biochemical processes and plant uptake.

Typical bioretention with underdrain components include:

- Inflow distribution mechanisms (e.g, perimeter flow spreader or filter strips)
- Energy dissipation mechanism for concentrated inflows (e.g., splash blocks or riprap)
- Shallow surface ponding for captured flows
- Side slope and basin bottom vegetation selected based on expected climate and ponding depth
- Non-floating mulch layer (Optional)
- Media layer (planting mix or engineered media) capable of supporting vegetation growth
- Filter course layer consisting of aggregate to prevent the migration of fines into uncompacted native soils or the aggregate storage layer
- Aggregate storage layer with underdrain(s)
- Impermeable liner or uncompacted native soils at the bottom of the facility

- Overflow structure



PLAN
NOT TO SCALE

SECTION A-A'
NOT TO SCALE

Typical plan and Section view of a Biofiltration BMP

Design Adaptations for Project Goals

Biofiltration Treatment BMP for stormwater pollutant control. The system is lined or un-lined to provide incidental infiltration, and an underdrain is provided at the bottom to carry away filtered runoff. This configuration is considered to provide biofiltration treatment via flow through the media layer. Storage provided above the underdrain within surface ponding, media, and aggregate storage is considered included in the biofiltration treatment volume. Saturated storage within the aggregate storage layer can be added to this design by raising the underdrain above the bottom of the aggregate storage layer or via an internal weir structure designed to maintain a specific water level elevation.

Integrated stormwater flow control and pollutant control configuration. The system can be designed to provide flow rate and duration control by primarily providing increased surface ponding and/or having a deeper aggregate storage layer above the underdrain. This will allow for significant detention storage, which can be controlled via inclusion of an outlet structure at the downstream end of the underdrain.

Design Criteria and Considerations

Bioretention with underdrain must meet the following design criteria. Deviations from the below criteria may be approved at the discretion of the City Engineer if it is determined to be appropriate:

	Siting and Design	*Intent/Rationale*
☐	Placement observes geotechnical recommendations regarding potential hazards (e.g., slope stability, landslides, liquefaction zones) and setbacks (e.g., slopes, foundations, utilities).	Must not negatively impact existing site geotechnical concerns.
☐	An impermeable liner or other hydraulic restriction layer is included if site constraints indicate that infiltration or lateral flows should not be allowed.	Lining prevents stormwater from impacting groundwater and/or sensitive environmental or geotechnical features. Incidental infiltration, when allowable, can aid in pollutant removal and groundwater recharge.
☐	Contributing tributary area shall be ≤ 5 acres (≤ 1 acre preferred).	Bigger BMPs require additional design features for proper performance. Contributing tributary area greater than 5 acres may be allowed at the discretion of the City Engineer if the following conditions are met: 1) incorporate design features (e.g. flow spreaders) to

Siting and Design	*Intent/Rationale*
	minimizing short circuiting of flows in the BMP and 2) incorporate additional design features requested by the City Engineer for proper performance of the regional BMP.
☐ Finish grade of the facility is ≤ 2%.	Flatter surfaces reduce erosion and channelization within the facility.
Surface Ponding	
☐ Surface ponding is limited to a 24-hour drawdown time.	Surface ponding limited to 24 hour for plant health.
☐ Surface ponding depth is ≥ 6 and ≤ 12 inches. SEE BMP SURFACE DRAWDOWN CALCULATION IN ATTACHMENT 2	Surface ponding capacity lowers subsurface storage requirements. Deep surface ponding raises safety concerns. Surface ponding depth greater than 12 inches (for additional pollutant control or surface outlet structures or flow-control orifices) may be allowed at the discretion of the City Engineer if the following conditions are met: 1) surface ponding depth drawdown time is less than 24 hours; and 2) safety issues and fencing requirements are considered (typically ponding greater than 18” will require a fence and/or flatter side slopes) and 3) potential for elevated clogging risk is considered.
☐ A minimum of 2 inches of freeboard is provided.	Freeboard provides room for head over overflow structures and minimizes risk of uncontrolled surface discharge.
☐ Side slopes are stabilized with vegetation and are = 3H:1V or shallower.	Gentler side slopes are safer, less prone to erosion, able to establish vegetation more quickly and easier to maintain.
Vegetation	
☐ Plantings are suitable for the climate and expected ponding depth. A plant list to aid in selection can be found in Appendix E.20.	Plants suited to the climate and ponding depth are more likely to survive.

Siting and Design		*Intent/Rationale*
☐	An irrigation system with a connection to water supply should be provided as needed.	Seasonal irrigation might be needed to keep plants healthy.
Mulch (Optional or Mandatory – Dependent on jurisdiction)		
☐	A minimum of 3 inches of well-aged, shredded hardwood mulch that has been stockpiled or stored for at least 12 months is provided.	Mulch will suppress weeds and maintain moisture for plant growth. Aging mulch kills pathogens and weed seeds and allows the beneficial microbes to multiply.
Media Layer		
☐	Media maintains a minimum filtration rate of 5 in/hr over lifetime of facility. An initial filtration rate of 8 to 12 in/hr is recommended to allow for clogging over time; the initial filtration rate should not exceed 12 inches per hour.	A filtration rate of at least 5 inches per hour allows soil to drain between events. The initial rate should be higher than long term target rate to account for clogging over time. However an excessively high initial rate can have a negative impact on treatment performance, therefore an upper limit is needed.
☐	Media is a minimum 18 inches deep, meeting either of these two media specifications: City of San Diego Low Impact Development Design Manual (page B-18) (July 2011, unless superseded by more recent edition) **<u>or</u>** County of San Diego Low Impact Development Handbook: Appendix G -Bioretention Soil Specification (June 2014, unless superseded by more recent edition). Alternatively, for proprietary designs and custom media mixes not meeting the media specifications contained in the City or County LID Manual, the media meets the pollutant treatment performance criteria in Section F.1.	A deep media layer provides additional filtration and supports plants with deeper roots. Standard specifications shall be followed. For non-standard or proprietary designs, compliance with F.1 ensures that adequate treatment performance will be provided.
☐	Media surface area is 3% of contributing area times adjusted runoff factor or greater.	Greater surface area to tributary area ratios: a) maximizes volume retention as required by the MS4 Permit and b) decrease loading rates per square foot and therefore increase longevity. Adjusted runoff factor is to account for site design BMPs implemented upstream of the BMP (such as rain barrels,

	Siting and Design	*Intent/Rationale*
		impervious area dispersion, etc.). Refer to Appendix B.2 guidance. Use Worksheet B.5-1 Line 26 to estimate the minimum surface area required per this criteria.
☐	Where receiving waters are impaired or have a TMDL for nutrients, the system is designed with nutrient sensitive media design (see fact sheet BF-2).	Potential for pollutant export is partly a function of media composition; media design must minimize potential for export of nutrients, particularly where receiving waters are impaired for nutrients.
Filter Course Layer		
☐	A filter course is used to prevent migration of fines through layers of the facility. Filter fabric is not used.	Migration of media can cause clogging of the aggregate storage layer void spaces or subgrade. Filter fabric is more likely to clog.
☐	Filter course is washed and free of fines.	Washing aggregate will help eliminate fines that could clog the facility and impede infiltration.
☐	Filter course calculations assessing suitability for particle migration prevention have been completed.	Gradation relationship between layers can evaluate factors (e.g., bridging, permeability, and uniformity) to determine if particle sizing is appropriate or if an intermediate layer is needed.
Aggregate Storage Layer		
☐	Class 2 Permeable per Caltrans specification 68-1.025 is recommended for the storage layer. Washed, open-graded crushed rock may be used, however a 4-6 inch washed pea gravel filter course layer at the top of the crushed rock is required.	Washing aggregate will help eliminate fines that could clog the aggregate storage layer void spaces or subgrade.
☐	The depth of aggregate provided (12-inch typical) and storage layer configuration is adequate for providing conveyance for underdrain flows to the outlet structure.	Proper storage layer configuration and underdrain placement will minimize facility drawdown time.
Inflow, Underdrain, and Outflow Structures		
☐	Inflow, underdrains and outflow structures are accessible for inspection and maintenance.	Maintenance will prevent clogging and ensure proper operation of the flow

Siting and Design		*Intent/Rationale*
		control structures.
☐	Inflow velocities are limited to 3 ft/s or less or use energy dissipation methods. (e.g., riprap, level spreader) for concentrated inflows.	High inflow velocities can cause erosion, scour and/or channeling.
☐	Curb cut inlets are at least 12 inches wide, have a 4-6 inch reveal (drop) and an apron and energy dissipation as needed.	Inlets must not restrict flow and apron prevents blockage from vegetation as it grows in. Energy dissipation prevents erosion.
☐	Underdrain outlet elevation should be a minimum of 3 inches above the bottom elevation of the aggregate storage layer.	A minimal separation from subgrade or the liner lessens the risk of fines entering the underdrain and can improve hydraulic performance by allowing perforations to remain unblocked.
☐	Minimum underdrain diameter is 6 inches.	Smaller diameter underdrains are prone to clogging.
☐	Underdrains are made of slotted, PVC pipe conforming to ASTM D 3034 or equivalent or corrugated, HDPE pipe conforming to AASHTO 252M or equivalent.	Slotted underdrains provide greater intake capacity, clog resistant drainage, and reduced entrance velocity into the pipe, thereby reducing the chances of solids migration.
☐	An underdrain cleanout with a minimum 6-inch diameter and lockable cap is placed every 250 to 300 feet as required based on underdrain length.	Properly spaced cleanouts will facilitate underdrain maintenance.
☐	Overflow is safely conveyed to a downstream storm drain system or discharge point Size overflow structure to pass 100-year peak flow for on-line infiltration basins and water quality peak flow for off-line basins.	Planning for overflow lessens the risk of property damage due to flooding.

Conceptual Design and Sizing Approach for Stormwater Pollutant Control Only

To design bioretention with underdrain for stormwater pollutant control only (no flow control required), the following steps should be taken:

1. Verify that siting and design criteria have been met, including placement requirements, contributing tributary area, maximum side and finish grade slopes, and the recommended media surface area tributary ratio.
2. Calculate the DCV per Appendix B based on expected site design runoff for tributary areas.

3. Use the sizing worksheet presented in Appendix B.5 to size biofiltration BMPs.

Conceptual Design and Sizing Approach when Stormwater Flow Control is Applicable

Control of flow rates and/or durations will typically require significant surface ponding and/or aggregate storage volumes, and therefore the following steps should be taken prior to determination of stormwater pollutant control design. Pre-development and allowable post-project flow rates and durations should be determined as discussed in Chapter 6 of the manual.

1. Verify that siting and design criteria have been met, including placement requirements, contributing tributary area, maximum side and finish grade slopes, and the recommended media surface area tributary ratio.
2. Iteratively determine the facility footprint area, surface ponding and/or aggregate storage layer depth required to provide detention storage to reduce flow rates and durations to allowable limits. Flow rates and durations can be controlled from detention storage by altering outlet structure orifice size(s) and/or water control levels. Multi-level orifices can be used within an outlet structure to control the full range of flows.
3. If bioretention with underdrain cannot fully provide the flow rate and duration control required by this manual, an upstream or downstream structure with significant storage volume such as an underground vault can be used to provide remaining controls.
4. After bioretention with underdrain has been designed to meet flow control requirements, calculations must be completed to verify if stormwater pollutant control requirements to treat the DCV have been met.

ATTACHMENT 2 - BACKUP FOR PDP HYDROMODIFICATION CONTROL MEASURES

This is the cover sheet for Attachment 2.

☐ Mark this box if this attachment is not included because the project is exempt from PDP hydromodification management requirements.

Indicate which items are included behind this cover sheet:

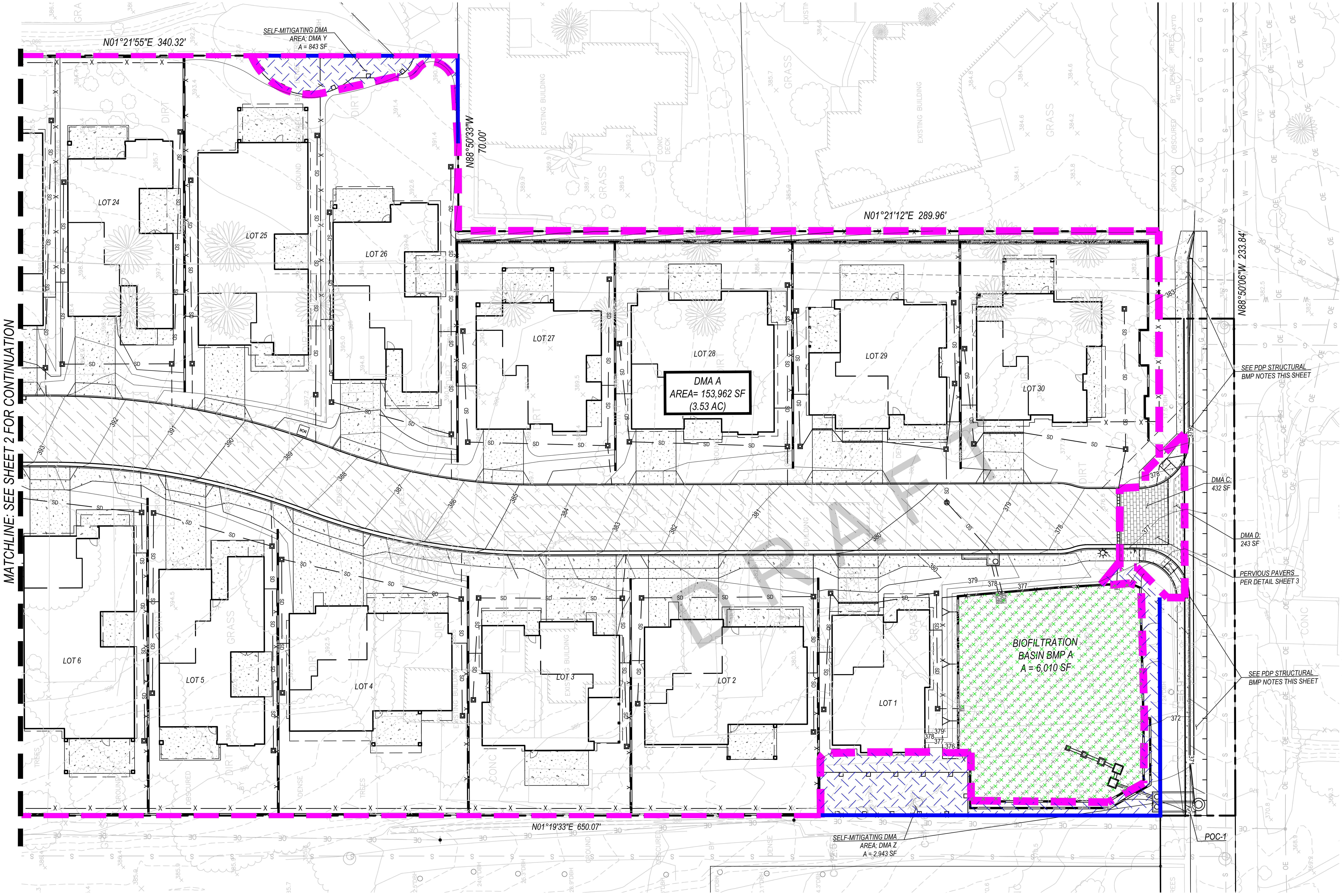
Attachment	**Contents**	**Checklist**
Attachment 2a	Hydromodification Management Exhibit (Required)	☑ Included See Hydromodification Management Exhibit Checklist on the back of this Attachment cover sheet.
Attachment 2b	Management of Critical Coarse Sediment Yield Areas (WMAA Exhibit is required, additional analyses are optional) See Section 6.2 of the BMP Design Manual.	☑ Exhibit showing project drainage boundaries marked on WMAA Critical Coarse Sediment Yield Area Map (Required) Optional analyses for Critical Coarse Sediment Yield Area Determination ☐ 6.2.1 Verification of Geomorphic Landscape Units Onsite ☐ 6.2.2 Downstream Systems Sensitivity to Coarse Sediment ☐ 6.2.3 Optional Additional Analysis of Potential Critical Coarse Sediment Yield Areas Onsite
Attachment 2c	Geomorphic Assessment of Receiving Channels (Optional) See Section 6.3.4 of the BMP Design Manual.	☐ Not performed ☑ Included ☐ Submitted as separate stand-alone document
Attachment 2d	Flow Control Facility Design, including Structural BMP Drawdown Calculations and Overflow Design Summary (Required) See Chapter 6 and Appendix G of the BMP Design Manual	☐ Included ☑ Submitted as separate stand-alone document
Attachment 2e	Vector Control Plan (Required when structural BMPs will not drain in 96 hours)	☐ Included ☑ Not required because BMPs will drain in less than 96 hours

Use this checklist to ensure the required information has been included on the Hydromodification Management Exhibit:

The Hydromodification Management Exhibit must identify:

- ☑ Underlying hydrologic soil group
- ☑ Approximate depth to groundwater
- ☐ Existing natural hydrologic features (watercourses, seeps, springs, wetlands)
- ☑ Critical coarse sediment yield areas to be protected
- ☑ Existing topography
- ☑ Existing and proposed site drainage network and connections to drainage offsite
- ☑ Proposed grading
- ☑ Proposed impervious features
- ☑ Proposed design features and surface treatments used to minimize imperviousness
- ☑ Point(s) of Compliance (POC) for Hydromodification Management
- ☑ Existing and proposed drainage boundary and drainage area to each POC (when necessary, create separate exhibits for pre-development and post-project conditions)
- ☑ Structural BMPs for hydromodification management (identify location, type of BMP, and size/detail)

SHEET 1 OF 3



PLAN VIEW - HYDROMODIFCATION EXHIBIT

SCALE: 1" = 20' HORIZONTAL

LEGEND

PROPERTY BOUNDARY	▬ ‒ ‒ ▬
CENTERLINE OF ROAD	— — —
RIGHT-OF-WAY	———
ADJACENT PROPERTY LINE	— — —
EXISTING CONTOUR LINE	— — 256 — —
PROPOSED CONTOUR LINE	—— 256 ——
DMA DRAINAGE BASIN BOUNDARY	▬ ▬ ▬
PROPOSED / REMOVED AND REPLACED IMPERVIOUS AREA WITHIN DISTURBED AREA OF SITE	▨
BMP / BIOFILTRATION BASIN AREA	× × × × × ×
SELF-MITIGATING AREA PER BMP DESIGN MANUAL SECTION 5.2.1	▨
POINT OF COMPLIANCE	◎

PROJECT SITE AREA CALCULATIONS

TOTAL GROSS SITE AREA	289,479 SF (6.646 AC)
AREA DISTURBED BY PROJECT	273,457 SF (6.278 AC)
EXISTING IMPERVIOUS AREA	39,852 SF (0.915 AC)
EXISTING PERVIOUS AREA	231,129 SF (5.306 AC)
TOTAL DMA AREA (DMA A)	153,962 SF (3.53 AC)
TOTAL DMA AREA (DMA B)	114,153 SF (2.62 AC)
TOTAL DMA AREA (DMA C)	432 SF (0.001 AC)
TOTAL DMA AREA (DMA D)	243 SF (0.0006 AC)
TOTAL SELF-MITIGATING DMA AREAS	4,667 SF (0.11 AC)
TOTAL PROPOSED IMPERVIOUS AREA	151,866 SF (3.48 AC)
**15% LOT HARDSCAPE CONTINGENCY	22,744 SF (0.52 AC)
ASSUMED TOTAL IMPERVIOUS AREA	174,610 SF (4.01 AC)
TOTAL PROPOSED PERVIOUS AREA	98,847 SF (2.27 AC)

15% FUTURE LOT HARDSCAPE CONTINGENCY BASED ON ROOF AREA AND PRIVATE WALKWAYS / PATIOS, EXCLUSIVE OF PRIVATE ROAD, SIDEWALK, AND PRIVATE DRIVEWAYS; RESULTS IN **500 SF OF FUTURE HARDSCAPE ALLOTTED TO EACH LOT

SELF-RETAINING DMA - DMA C

TOTAL BASIN SIZE = 432 SF (0.010 AC)

SELF-RETAINING IMPERVIOUS AREA = 432 SF
RATIO OF DMA AREA TO PERV. PAVER AREA = 1:1

SECTION 5.2.1 OF CITY OF ENCINITAS BMP DESIGN MANUAL ALLOWS FOR SELF-RETAINING PERVIOUS PAVER DMAS THAT RETAIN RUNOFF TO A LEVEL DETERMINED TO CONSTITUTE FULL RETENTION OF THE ENTIRE DCV. PERVIOUS PAVERS THAT HAVE A RATIO OF 1.5:1 OR LESS FOR TOTAL DRAINAGE AREA TO AREA OF PERVIOUS PAVERS CAN BE CONSIDERED SELF-RETAINING.

DE MINIMIS DMA - DMA D

TOTAL BASIN SIZE = 243 SF (0.006 AC)

SECTION 5.2.2 OF CITY OF ENCINITAS BMP DESIGN MANUAL ALLOWS FOR DE MINIMIAS AREAS THAT ARE LESS THAN 250 SF AND ALL DE MINIMIS AREAS FOR THE SITE ARE LESS THAN 2 PERCENT OF THE TOTAL REMOVED OR REPLACED IMPERVIOUS AREA

SOIL TYPE INFORMATION

SOIL: TYPE D SOILS FOR VERY OLD PARALIC DEPOSITS TOPSOIL PER "STORM WATER MANAGEMENT INVESTIGATION" REPORT PREPARED BY GEOCON, INC. DATED 7/16/21; (TYPE B HYDROLOGIC SOILS PER WEB SOIL SURVEY APPLICATION AVAILABLE THROUGH UNITED STATES DEPARTMENT OF AGRICULTURE)

TREATMENT CONTROL BMPS

BIOFILTRATION WITH IMPERVIOUS LINER	BF-1

GROUNDWATER INFORMATION

GROUNDWATER NOT ENCOUNTERED DURING SITE INVESTIGATION, AND EXPECTED AT DEPTHS GREATER THAN 50 FEET BELOW EXISTING GRADES PER "STORM WATER MANAGEMENT INVESTIGATION" PREPARED BY GEOCON, INC. DATED 1/8/21

COARSE SEDIMENT YIELD

NO CRITICAL COARSE SEDIMENT YIELD AREAS TO BE PROTECTED ONSITE OR UPSTREAM OF SUBJECT PROPERTY. REFER TO DISCUSSION IN PRIORITY DEVELOPMENT PROJECT SWQMP PREPARED BY PASCO, LARET, SUITER & ASSOCIATES

SELF-MITIGATING DMA - DMA W

TOTAL BASIN SIZE = 184 SF (0.004 AC)

SELF-MITIGATING IMPERVIOUS AREA = 0 SF
% IMPERVIOUS = 0.0%

SECTION 5.2.1 OF CITY OF ENCINITAS BMP DESIGN MANUAL ALLOWS FOR SELF-MITIGATING DMA AREAS THAT DRAIN DIRECTLY OFFSITE OR TO THE PUBLIC STORM DRAIN SYSTEM, WITH INCIDENTAL IMPERVIOUS AREAS THAT ARE LESS THAN 5% OF THE SELF-MITIGATING AREA.

SELF-MITIGATING DMA - DMA X

TOTAL BASIN SIZE = 811 SF (0.019 AC)

SELF-MITIGATING IMPERVIOUS AREA = 0 SF
% IMPERVIOUS = 0.0%

SECTION 5.2.1 OF CITY OF ENCINITAS BMP DESIGN MANUAL ALLOWS FOR SELF-MITIGATING DMA AREAS THAT DRAIN DIRECTLY OFFSITE OR TO THE PUBLIC STORM DRAIN SYSTEM, WITH INCIDENTAL IMPERVIOUS AREAS THAT ARE LESS THAN 5% OF THE SELF-MITIGATING AREA.

SELF-MITIGATING DMA - DMA Y

TOTAL BASIN SIZE = 843 SF (0.019 AC)

SELF-MITIGATING IMPERVIOUS AREA = 0 SF
% IMPERVIOUS = 0.0%

SECTION 5.2.1 OF CITY OF ENCINITAS BMP DESIGN MANUAL ALLOWS FOR SELF-MITIGATING DMA AREAS THAT DRAIN DIRECTLY OFFSITE OR TO THE PUBLIC STORM DRAIN SYSTEM, WITH INCIDENTAL IMPERVIOUS AREAS THAT ARE LESS THAN 5% OF THE SELF-MITIGATING AREA.

SELF-MITIGATING DMA - DMA Z

TOTAL BASIN SIZE = 2,943 SF (0.067 AC)

SELF-MITIGATING IMPERVIOUS AREA = 0 SF
% IMPERVIOUS = 0.0%

SECTION 5.2.1 OF CITY OF ENCINITAS BMP DESIGN MANUAL ALLOWS FOR SELF-MITIGATING DMA AREAS THAT DRAIN DIRECTLY OFFSITE OR TO THE PUBLIC STORM DRAIN SYSTEM, WITH INCIDENTAL IMPERVIOUS AREAS THAT ARE LESS THAN 5% OF THE SELF-MITIGATING AREA.

GRAPHIC SCALE: 1" = 20'

20 0 20 40 60

ATTACHMENT 2a
HYDROMODIFICATION EXHIBIT
1220-1240 MELBA ROAD
CITY OF ENCINITAS

PLSA
PLSAENGINEERING.COM

MATCHLINE: SEE SHEET 1 FOR CONTINUATION

PLAN VIEW - HYDROMODIFICATION EXHIBIT

SCALE: 1" = 20' HORIZONTAL

GRAPHIC SCALE: 1" = 20'

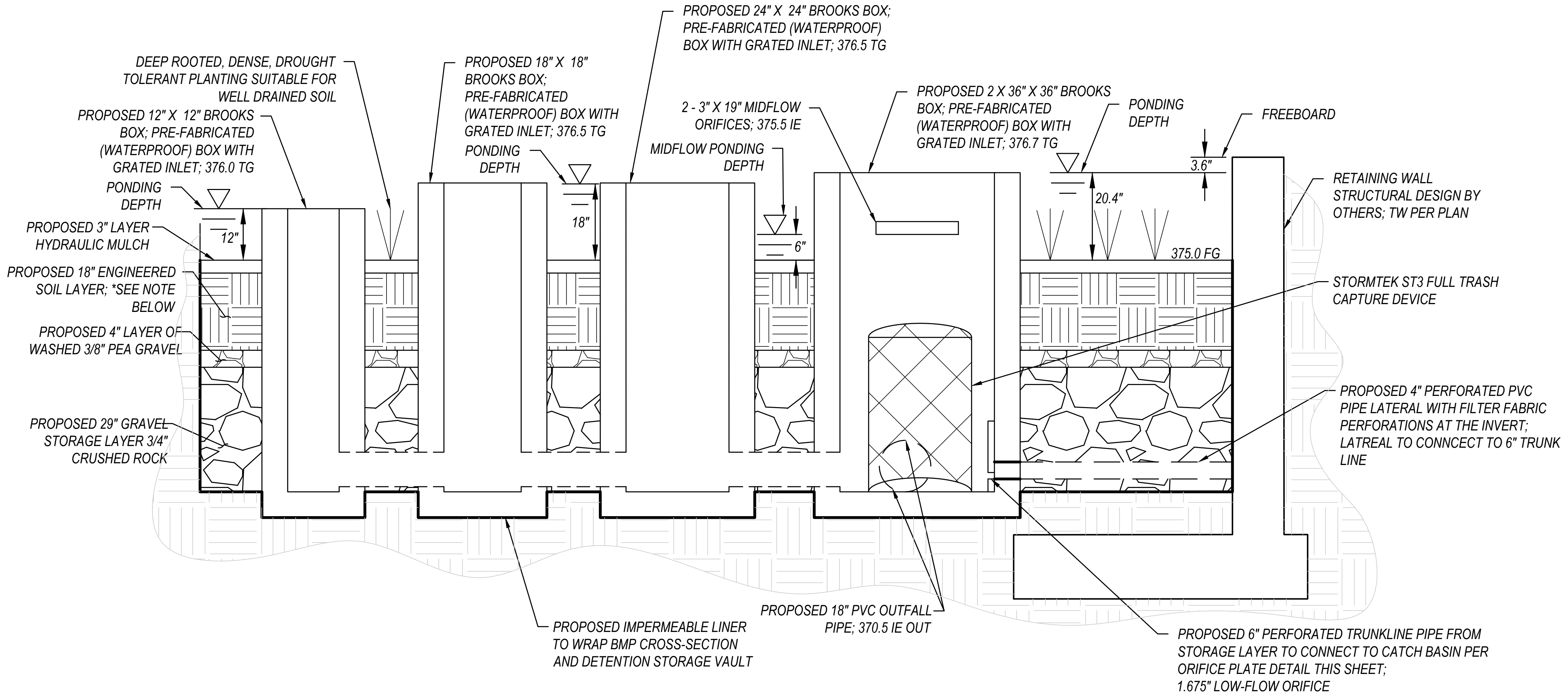
20 0 20 40 60

PLAN VIEW - HYDROMODIFICATION EXHIBIT

SCALE: 1" = 20' HORIZONTAL

ATTACHMENT 2a
HYDROMODIFICATION EXHIBIT
1220-1240 MELBA ROAD
CITY OF ENCINITAS

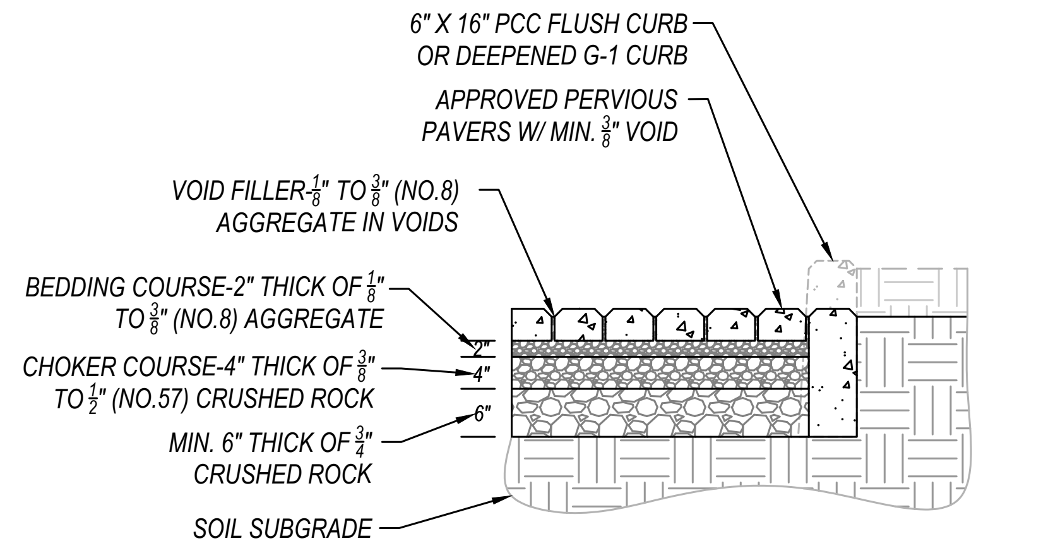
PLSA
PLSAENGINEERING.COM



TYPICAL SECTION - BIOFILTRATION BASIN A

NOT TO SCALE

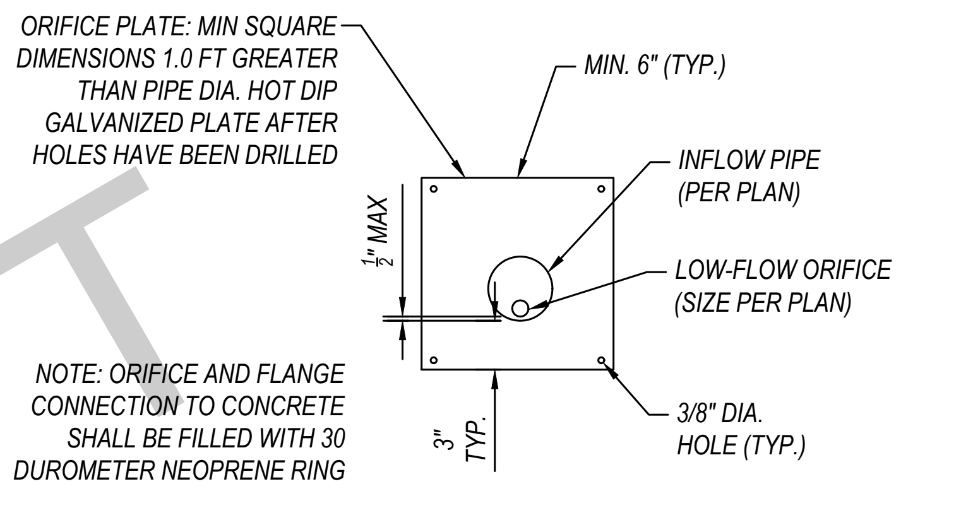
*BIOFILTRATION "ENGINEERED SOIL" LAYER SHALL BE EVENLY MIXED COMPOSITION OF WASHED SAND, SANDY LOAM TOPSOIL, AND HUMIC COMPOST. THE MIX SHALL CONTAIN 65% SAND, 20% TOPSOIL, AND 15% COMPOST OR HARDWOOD MULCH IN ACCORDANCE WITH COUNTY OF SAN DIEGO LID BIOSWALE MEDIA



NOTE:
- -ALL AGGREGATE MUST BE CLEAN/WASHED AND FREE OF FINES (SAND, SILT, ETC.)
- -THE PAVERS SHALL NOT BE SEALED ONCE THE VOID FILLER HAS BEEN ADDED
- -EACH COURSE SHALL BE VIBRATORY COMPACTED BEFORE PLACEMENT OF NEXT COURSE
- -NO IMPERVIOUS LINER OR FILTER FABRIC IS TO BE USED
- -SPECIAL APPROVAL REQUIRED FOR USE IN HIGHLY EXPANSIVE SOIL-SUBDRAIN MAY BE REQUIRED

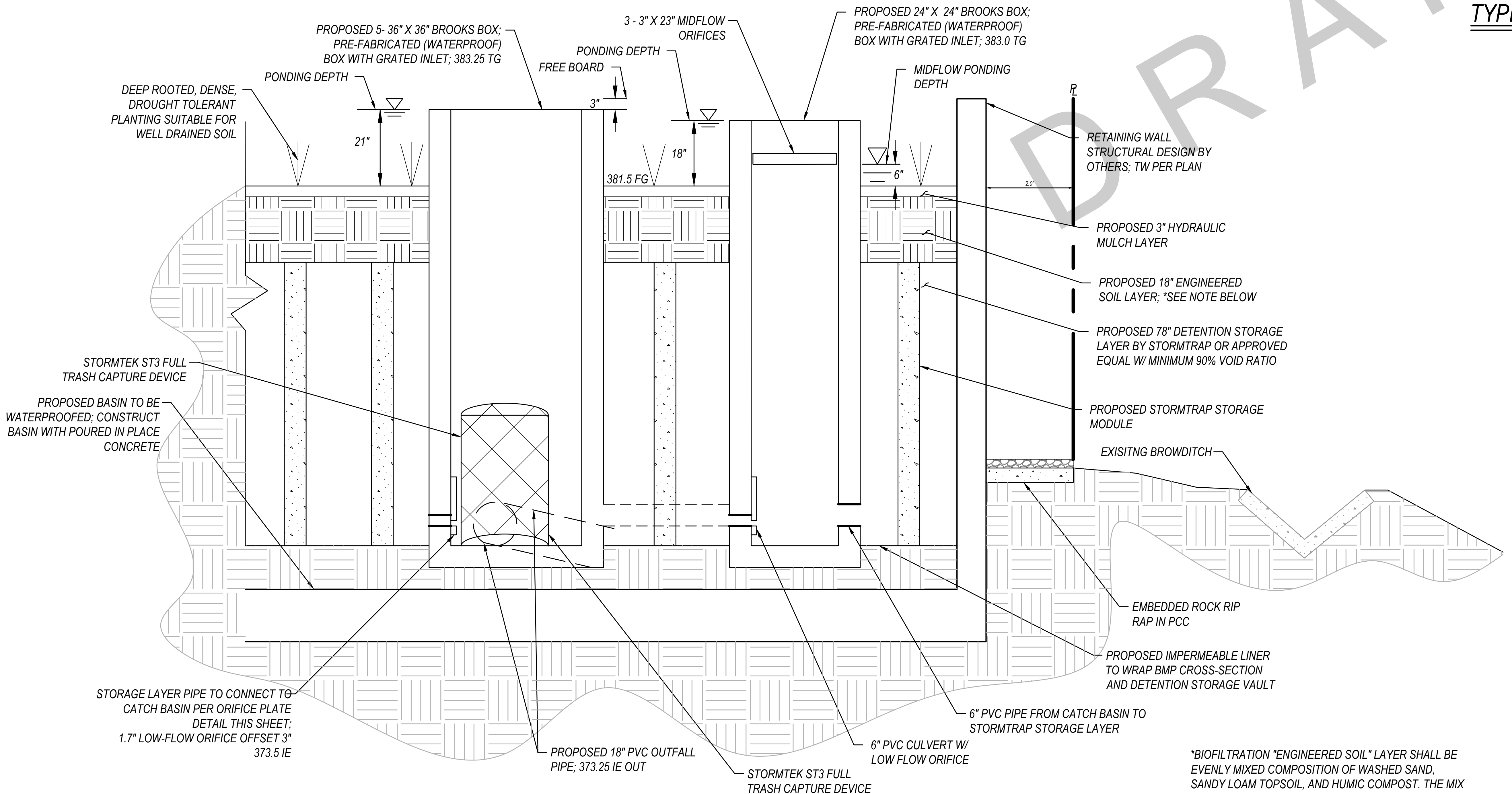
TYPICAL DETAIL - PERVIOUS PAVERS

NOT TO SCALE



TYPICAL DETAIL - FLOW CONTROL ORIFICE PLATE

NOT TO SCALE



*BIOFILTRATION "ENGINEERED SOIL" LAYER SHALL BE EVENLY MIXED COMPOSITION OF WASHED SAND, SANDY LOAM TOPSOIL, AND HUMIC COMPOST. THE MIX SHALL CONTAIN 65% SAND, 20% TOPSOIL, AND 15% COMPOST OR HARDWOOD MULCH IN ACCORDANCE WITH COUNTY OF SAN DIEGO LID BIOSWALE MEDIA

TYPICAL SECTION - BIOFILTRATION BASIN B

NOT TO SCALE

ATTACHMENT 2a
DRAINAGE MANAGEMENT AREA CALCS
1220-1240 MELBA ROAD
CITY OF ENCINITAS

PLSA
PLSAENGINEERING.COM

Attachment 2d.1 – SWMM / Hydromodification Analysis Discussion

SWMM / Hydromodification Analysis / Discussion

2d.2.1 Hydromodification Analysis

To satisfy the requirements of the MS4 Permit, a hydromodification management strategy has been developed for the project based on the Final Hydromodification Management Plan dated March 2011 (Final HMP). A continuous simulation model, the Storm Water Management Model (SWMM) version 5.1 by the Environmental Protection Agency (EPA) was selected to size mitigation measures. The SWMM model is capable of modeling hydromodification management facilities to mitigate the effects of increased runoff from the post-development conditions and use changes that may cause negative impacts (i.e. erosion) to downstream channels.

2d.2.2 Hydromodification Criteria

Pursuant to the MS4 Permit, post-development runoff conditions (flow rates and durations) must not exceed pre-development runoff conditions by more than 10% (for the range of flows that result in increased potential for erosion, or degraded instream habitat downstream of the project. Based on the Final HMP:

- For flow rates between the pre-project lower threshold (10%, 30%, or 50%) of the pre-project 2-year runoff event ($0.1Q_2$, $0.3Q_2$, or $0.5Q_2$) to the pre-project 10-year event (Q_{10}), the post-project discharge rates and durations may not deviate above the pre-project rates and durations by more than 10% over more than 10% of the length of the flow duration curve.

A channel screening analysis may be performed to determine a larger lower flow threshold. However, at this time a low flow threshold of $0.1Q_2$ (high susceptibility) is assumed for erosion of the downstream channel.

5.1.2 SWMM Model Development

SWMM is a rainfall-runoff model used for single event or continuous simulation of runoff quantity from primarily urban areas. SWMM calculates and routes runoff based on user-specified input including precipitation data, subcatchment characteristics, soil data, routing information, and BMP configuration. SWMM is capable of modeling various hydrologic processes including but not limited to time-varying precipitation, evaporation, storage, infiltration, and retention LID facilities.

5.1.3 SWMM Input

A pre-development and post-development model were created using the following global information:

Parameter	Input	Source
Precipitation	Oceanside Rainfall Data	Project Clean Water
Evaporation	Encinitas ETo Zone Data	CIMIS ETo Zones Map
Soils	B	Field Infiltration / Testing Methods

Each HMP flow-control biofiltration facility consists of a basin with surface area square footage per plan, 18 inches of engineered soil and as well as a storage layer consisting of gravel or Permavoid, along with an impermeable liner to prevent infiltration. Runoff generated during high-frequency, low-intensity storm events will be biofiltered through the engineered soil and gravel layers, then collected in a series of small PVC drainpipes and directed to an emergency overflow / outlet structure located in the biofiltration basin. Runoff will be mitigated into the outlet structure via a restrictor plate with an HMP low-flow orifice, restricting flow to meet hydromodification management requirements. In larger storm events, runoff not filtered through the engineered soil and gravel layers will be conveyed via an overflow outlet structure consisting of a 3-foot by 3-foot grate located on top of the catch basin. Runoff conveyed via the outlet structure will bypass the soil layers and be conveyed directly to a proposed 12-inch PVC drainpipe to direct discharge offsite. Refer to Attachment 2d.2 of this Storm Water Quality Management Plan (SWQMP) for a general cross-section of the HMP biofiltration basin and additional results of the hydromodification management compliance analysis.

Each HMP biofiltration basin has been designed to comply with both pollutant control and hydromodification management criteria. The HMP biofiltration portion in the SWMM model is specified as an “LID Control” within the “Subcatchment” to define the ponding depth, bioretention soil layer, gravel layer, and low flow orifice restrictor.

5.1.4 SWMM Processing and Output

The HMP sizing was determined assuming a completely pervious existing site condition. The pre-development project $0.1Q_2$ and Q_{10} were determined to be 0.025 cfs and 0.493 cfs, respectively for POC-1, 0.058 cfs and 1.12 cfs for POC-2, and 0.13 cfs and 2.52 cfs for POC-3. After routing through each HMP biofiltration basin, the post-development, mitigated project $0.1Q_2$ and Q_{10} were determined to be 0.002 cfs and 0.345 cfs, respectively for POC-1, 0.005 cfs and 0.94 cfs for POC-2, and 0.05 cfs and 2.11 cfs for POC-3. Additional information and data from the SWMM model including input files, rain gage and evaporation data, and flow duration and frequency curves are included hereon.

5.2 Storm Water Pollutant Control

To meet the requirements of the MS4 Permit, the HMP biofiltration facility is designed to treat onsite storm water pollutants contained in the volume of runoff from a 24-hour, 85th percentile storm event by slowly infiltrating runoff through an engineered soil layer and gravel layer.

5.2.1 Numeric Sizing Requirements for Pollutant Control BMPs

Pursuant to the MS4 Permit, Pollutant Control BMPs shall be designed to retain onsite pollutants contained in the post-development Design Capture Volume (DCV). The DCV is the volume of runoff resulting from the 24-hour, 85th percentile storm event. The DCV calculations for the project are located in Attachment 1 of the project’s Storm Water Quality Management Plan (SWQMP). The Pollutant Control BMP proposed for the project is a biofiltration basin. Each proposed HMP biofiltration basin does not provide infiltration, therefore pursuant to the MS4 Permit and Appendix B.5 of the BMP Design Manual, each HMP biofiltration basin is designed to biofilter 1.5 times the DCV or store 0.75 times the DCV in pores and ponding.

Attachment 2d.2 – Additional SWMM Support Documentation

```
[TITLE]
;;Project Title/Notes
3086 Staver Melba
Pre-Development Condition

[OPTIONS]
;;Option             Value
FLOW_UNITS           CFS
INFILTRATION         GREEN_AMPT
FLOW_ROUTING         KINWAVE
LINK_OFFSETS         DEPTH
MIN_SLOPE            0
ALLOW_PONDING        NO
SKIP_STEADY_STATE    NO

START_DATE           08/28/1951
START_TIME           05:00:00
REPORT_START_DATE    08/28/1951
REPORT_START_TIME    05:00:00
END_DATE             05/23/2008
END_TIME             23:00:00
SWEEP_START          01/01
SWEEP_END            12/31
DRY_DAYS             0
REPORT_STEP          01:00:00
WET_STEP             00:15:00
DRY_STEP             04:00:00
ROUTING_STEP         0:01:00
RULE_STEP            00:00:00

INERTIAL_DAMPING     PARTIAL
NORMAL_FLOW_LIMITED  BOTH
FORCE_MAIN_EQUATION  H-W
VARIABLE_STEP        0.75
LENGTHENING_STEP     0
MIN_SURFAREA         12.557
MAX_TRIALS           8
HEAD_TOLERANCE       0.005
SYS_FLOW_TOL         5
LAT_FLOW_TOL         5
MINIMUM_STEP         0.5
THREADS              1

[EVAPORATION]
;;Data Source    Parameters
;;-------------- ----------------
MONTHLY          .06    .08    .11    .15    17     .19    .19    .18    .15    .11    .08    .06
DRY_ONLY         YES

[RAINGAGES]
```

```
;;Name           Format    Interval SCF      Source
;;-------------- --------- ------ ------ ----------
OCEANSIDE        INTENSITY 1:00     1.0      TIMESERIES OCEANSIDE

[SUBCATCHMENTS]
;;Name           Rain Gage        Outlet           Area     %Imperv  Width    %Slope   CurbLen  SnowPack
;;-------------- ---------------- ---------------- -------- -------- -------- -------- -------- ----------------
DMA-A            OCEANSIDE        POC-1            2.92     0        560      6        0
DMA-B            OCEANSIDE        POC-2            2.6      0        399      5.5      0

[SUBAREAS]
;;Subcatchment   N-Imperv   N-Perv     S-Imperv   S-Perv     PctZero    RouteTo    PctRouted
;;-------------- ---------- ---------- ---------- ---------- ---------- ---------- ----------
DMA-A            0.012      0.08       0.05       0.1        25         OUTLET
DMA-B            0.012      0.08       0.05       0.1        25         OUTLET

[INFILTRATION]
;;Subcatchment   Param1     Param2     Param3     Param4     Param5
;;-------------- ---------- ---------- ---------- ---------- ----------
DMA-A            9          0.025      0.33       7          0
DMA-B            9          0.025      0.33       7          0

[OUTFALLS]
;;Name           Elevation  Type       Stage Data       Gated    Route To
;;-------------- ---------- ---------- ---------------- -------- ----------------
;Basin 200
POC-1            0          FREE                        NO
POC-2            0          FREE                        NO

[TIMESERIES]
;;Name           Date       Time       Value
;;-------------- ---------- ---------- ----------
OCEANSIDE        FILE "Rainfall_data\oceanside.dat"

[REPORT]
;;Reporting Options
SUBCATCHMENTS ALL
NODES ALL
LINKS ALL

[TAGS]

[MAP]
DIMENSIONS -905.312 0.000 10000.000 10000.000
Units      None

[COORDINATES]
;;Node           X-Coord            Y-Coord
;;-------------- ------------------ ------------------
POC-1            -836.352           5783.905
```

```
POC-2            501.045            5898.837          

[VERTICES]
;;Link           X-Coord            Y-Coord           
;;-------------- ------------------ ------------------

[Polygons]
;;Subcatchment   X-Coord            Y-Coord           
;;-------------- ------------------ ------------------
DMA-A            -805.007           7507.893          
DMA-B            542.839            7539.239          

[SYMBOLS]
;;Gage           X-Coord            Y-Coord           
;;-------------- ------------------ ------------------
OCEANSIDE        -18.514            8498.329          
```

```
[TITLE]
;;Project Title/Notes
3086 Staver Melba
Post-Project Condition

[OPTIONS]
;;Option             Value
FLOW_UNITS           CFS
INFILTRATION         GREEN_AMPT
FLOW_ROUTING         KINWAVE
LINK_OFFSETS         DEPTH
MIN_SLOPE            0
ALLOW_PONDING        NO
SKIP_STEADY_STATE    NO

START_DATE           08/28/1951
START_TIME           05:00:00
REPORT_START_DATE    08/28/1951
REPORT_START_TIME    05:00:00
END_DATE             05/23/2008
END_TIME             23:00:00
SWEEP_START          01/01
SWEEP_END            12/31
DRY_DAYS             0
REPORT_STEP          01:00:00
WET_STEP             00:15:00
DRY_STEP             04:00:00
ROUTING_STEP         0:01:00
RULE_STEP            00:00:00

INERTIAL_DAMPING     PARTIAL
NORMAL_FLOW_LIMITED  BOTH
FORCE_MAIN_EQUATION  H-W
VARIABLE_STEP        0.75
LENGTHENING_STEP     0
MIN_SURFAREA         12.557
MAX_TRIALS           8
HEAD_TOLERANCE       0.005
SYS_FLOW_TOL         5
LAT_FLOW_TOL         5
MINIMUM_STEP         0.5
THREADS              1

[EVAPORATION]
;;Data Source    Parameters
;;-------------- ----------------
MONTHLY          .06    .08    .11    .15    17     .19    .19    .18    .15    .11    .08    .06
DRY_ONLY         YES

[RAINGAGES]
;;Name           Format    Interval SCF      Source
```

```
;;-------------- --------- ------ ------ ----------
OCEANSIDE        INTENSITY 1:00     1.0      TIMESERIES OCEANSIDE

[SUBCATCHMENTS]
;;Name           Rain Gage        Outlet           Area     %Imperv  Width    %Slope   CurbLen  SnowPack
;;-------------- ---------------- ---------------- -------- -------- -------- -------- -------- ----------------
DMA-A            OCEANSIDE        BMP-A            3.392    70       2081     4        0
DMA-Z            OCEANSIDE        POC-1            0.067    0        117      13       0
BMP-A            OCEANSIDE        DIV-A            0.13797  0        120      0        0
DMA-B            OCEANSIDE        BMP-B            2.53     64       2205     3        0
BMP-B            OCEANSIDE        DIV-B            0.06956  0        61       0        0
DMA-V            OCEANSIDE        POC-2            0.022    0        192      50       0

[SUBAREAS]
;;Subcatchment   N-Imperv   N-Perv     S-Imperv   S-Perv     PctZero    RouteTo    PctRouted
;;-------------- ---------- ---------- ---------- ---------- ---------- ---------- ----------
DMA-A            0.012      0.06       0.05       0.1        25         OUTLET
DMA-Z            0.012      0.06       0.05       0.1        25         OUTLET
BMP-A            0.012      0.06       0.05       0.1        25         OUTLET
DMA-B            0.012      0.06       0.05       0.1        25         OUTLET
BMP-B            0.012      0.06       0.05       0.1        25         OUTLET
DMA-V            0.012      0.06       0.05       0.1        25         OUTLET

[INFILTRATION]
;;Subcatchment   Param1     Param2     Param3     Param4     Param5
;;-------------- ---------- ---------- ---------- ---------- ----------
DMA-A            9          0.019      0.33       7          0
DMA-Z            9          0.019      0.33       7          0
BMP-A            9          0.025      0.33       7          0
DMA-B            9          0.019      0.33       7          0
BMP-B            9          0.025      0.33       7          0
DMA-V            9          0.019      0.33       7          0

[LID_CONTROLS]
;;Name           Type/Layer Parameters
;;-------------- ---------- ----------
BMP-A            BC
BMP-A            SURFACE    6          0          0          0          5
BMP-A            SOIL       21         0.4        0.2        0.1        5          5          1.5
BMP-A            STORAGE    33         0.67       0          0          NO
BMP-A            DRAIN      0.1541     0.5        3          6          0          0

BMP-B            BC
BMP-B            SURFACE    6          0          0          0          5
BMP-B            SOIL       21         0.4        0.2        0.1        5          5          1.5
BMP-B            STORAGE    78         0.99       0          0          NO
BMP-B            DRAIN      0.3148     0.5        3          6          0          0

[LID_USAGE]
;;Subcatchment   LID Process      Number  Area       Width      InitSat    FromImp    ToPerv     RptFile                  DrainTo
FromPerv
```

```
;;-------------- ---------------- ------- ---------- ---------- ---------- ---------- ---------- ------------------------ ------------
---- ----------
BMP-A            BMP-A            1       6009.97    0          0          100        0          *                        *
0
BMP-B            BMP-B            1       3030.03    0          0          100        0          *                        *
0

[OUTFALLS]
;;Name           Elevation  Type       Stage Data       Gated    Route To
;;-------------- ---------- ---------- ---------------- -------- ----------------
POC-1            0          FREE                        NO
POC-2            0          FREE                        NO

[DIVIDERS]
;;Name           Elevation  Diverted Link    Type       Parameters
;;-------------- ---------- ---------------- ---------- ----------
DIV-B            0          BYPASS-B         CUTOFF     0.224      0          0          0          0
DIV-A            0          BYPASS-A         CUTOFF     0.164      0          0          0          0

[STORAGE]
;;Name           Elev.    MaxDepth   InitDepth   Shape      Curve Type/Params            SurDepth  Fevap    Psi      Ksat     IMD
;;-------------- -------- ---------- ----------- ---------- ---------------------------- --------- --------          -------- --------
STOR-B           0        1.5        0           TABULAR    STOR-B                       0          0
STOR-A           0        1.5        0           TABULAR    STOR-A                       0          0

[CONDUITS]
;;Name           From Node        To Node          Length     Roughness  InOffset   OutOffset  InitFlow   MaxFlow
;;-------------- ---------------- ---------------- ---------- ---------- ---------- ---------- ---------- ----------
BYPASS-B         DIV-B            STOR-B           400        0.01       0          0          0          0
LOWFLOW-B        DIV-B            POC-2            400        0.01       0          0          0          0
LOWFLOW-A        DIV-A            POC-1            400        0.01       0          0          0          0
BYPASS-A         DIV-A            STOR-A           400        0.01       0          0          0          0

[OUTLETS]
;;Name           From Node        To Node          Offset     Type            QTable/Qcoeff    Qexpon     Gated
;;-------------- ---------------- ---------------- ---------- --------------- ---------------- ---------- --------
OUTLET-A         STOR-A           POC-1            0          TABULAR/DEPTH   OUTLET-A                    NO
OUTLET-B         STOR-B           POC-2            0          TABULAR/DEPTH   OUTLET-B                    NO

[XSECTIONS]
;;Link           Shape        Geom1            Geom2      Geom3      Geom4      Barrels    Culvert
;;-------------- ------------ ---------------- ---------- ---------- ---------- ---------- ----------
BYPASS-B         DUMMY        0                0          0          0          1
LOWFLOW-B        DUMMY        0                0          0          0          1
LOWFLOW-A        DUMMY        0                0          0          0          1
BYPASS-A         DUMMY        0                0          0          0          1

[CURVES]
;;Name           Type       X-Value    Y-Value
;;-------------- ---------- ---------- ----------
OUTLET-A         Rating     0          0
```

```
OUTLET-A                    0.05       0.11
OUTLET-A                    0.1        0.32
OUTLET-A                    0.15       0.59
OUTLET-A                    0.2        0.91
OUTLET-A                    0.25       1.27
OUTLET-A                    0.3        1.56
OUTLET-A                    0.35       1.78
OUTLET-A                    0.4        1.98
OUTLET-A                    0.45       2.16
OUTLET-A                    0.5        2.32
OUTLET-A                    0.55       2.55
OUTLET-A                    0.6        2.83
OUTLET-A                    0.65       3.14
OUTLET-A                    0.7        3.47
OUTLET-A                    0.75       3.83
OUTLET-A                    0.8        4.2
OUTLET-A                    0.85       4.6
OUTLET-A                    0.9        4.87
OUTLET-A                    0.95       5.07
OUTLET-A                    1          5.26
OUTLET-A                    1.05       5.7
OUTLET-A                    1.1        6.35
OUTLET-A                    1.15       7.13
OUTLET-A                    1.2        8.01
OUTLET-A                    1.25       9.43
OUTLET-A                    1.3        11.29
OUTLET-A                    1.35       13.46
OUTLET-A                    1.4        15.89
OUTLET-A                    1.45       18.55
OUTLET-A                    1.5        20.4
;
OUTLET-B         Rating     0          0
OUTLET-B                    0.05       0.21
OUTLET-B                    0.1        0.58
OUTLET-B                    0.15       1.07
OUTLET-B                    0.2        1.65
OUTLET-B                    0.25       2.31
OUTLET-B                    0.3        2.68
OUTLET-B                    0.35       2.69
OUTLET-B                    0.4        2.7
OUTLET-B                    0.45       2.71
OUTLET-B                    0.5        2.71
OUTLET-B                    0.55       2.72
OUTLET-B                    0.6        2.73
OUTLET-B                    0.65       2.74
OUTLET-B                    0.7        2.75
OUTLET-B                    0.75       2.75
OUTLET-B                    0.8        2.76
OUTLET-B                    0.85       2.77
OUTLET-B                    0.9        2.78
OUTLET-B                    0.95       2.78
```

```
OUTLET-B                    1          2.79
OUTLET-B                    1.05       2.8
OUTLET-B                    1.1        2.81
OUTLET-B                    1.15       2.81
OUTLET-B                    1.2        2.82
OUTLET-B                    1.25       2.83
OUTLET-B                    1.3        3.93
OUTLET-B                    1.35       5.95
OUTLET-B                    1.4        8.55
OUTLET-B                    1.45       11.63
OUTLET-B                    1.5        15.13
;
STOR-A           Storage    0          6010
STOR-A                      1.5        6010
;
STOR-B           Storage    0          3030
STOR-B                      1.5        3030

[TIMESERIES]
;;Name           Date       Time       Value
;;-------------- ---------- ---------- ----------
OCEANSIDE        FILE "Rainfall_data\oceanside.dat"

[REPORT]
;;Reporting Options
SUBCATCHMENTS ALL
NODES ALL
LINKS ALL

[TAGS]

[MAP]
DIMENSIONS -3453.124 0.000 10000.000 10173.475
Units      None

[COORDINATES]
;;Node           X-Coord            Y-Coord
;;-------------- ------------------ ------------------
POC-1            -657.277           1115.023
POC-2            2515.806           1263.225
DIV-B            2530.844           4082.924
DIV-A            -563.380           3955.399
STOR-B           4888.152           4063.285
STOR-A           -3055.920          3917.502

[VERTICES]
;;Link           X-Coord            Y-Coord
;;-------------- ------------------ ------------------

[Polygons]
;;Subcatchment   X-Coord            Y-Coord
```

```
;;-------------- ------------------ ------------------
DMA-A            -773.639           8123.209          
DMA-Z            -2672.441          1165.476          
BMP-A            -680.751           5950.704          
DMA-B            2425.575           8203.445          
BMP-B            2455.652           6052.954          
DMA-V            4561.027           1406.090          

;;Storage Node   X-Coord            Y-Coord           
;;-------------- ------------------ ------------------
STOR-B           4888.152           4063.285          
STOR-A           -3055.920          3917.502          

[SYMBOLS]
;;Gage           X-Coord            Y-Coord           
;;-------------- ------------------ ------------------
OCEANSIDE        718.531            9575.849          
```

```
EPA STORM WATER MANAGEMENT MODEL - VERSION 5.2 (Build 5.2.4)
------------------------------------------------------------

3086 Staver Melba
Pre-Development Condition

****************
Analysis Options
****************
Flow Units ............... CFS
Process Models:
  Rainfall/Runoff ........ YES
  RDII ................... NO
  Snowmelt ............... NO
  Groundwater ............ NO
  Flow Routing ........... NO
  Water Quality .......... NO
Infiltration Method ...... GREEN_AMPT
Starting Date ............ 08/28/1951 05:00:00
Ending Date .............. 05/23/2008 23:00:00
Antecedent Dry Days ...... 0.0
Report Time Step ......... 01:00:00
Wet Time Step ............ 00:15:00
Dry Time Step ............ 04:00:00


**************************        Volume         Depth
Runoff Quantity Continuity     acre-feet        inches
**************************     ---------       -------
Total Precipitation ......       310.541       675.090
Evaporation Loss .........         5.942        12.917
Infiltration Loss ........       242.540       527.262
Surface Runoff ...........        68.293       148.463
Final Storage ............         0.000         0.000
Continuity Error (%) .....        -2.007


**************************        Volume        Volume
Flow Routing Continuity        acre-feet      10^6 gal
**************************     ---------     ---------
Dry Weather Inflow .......         0.000         0.000
Wet Weather Inflow .......        68.293        22.254
Groundwater Inflow .......         0.000         0.000
RDII Inflow ..............         0.000         0.000
External Inflow ..........         0.000         0.000
External Outflow .........        68.293        22.254
Flooding Loss ............         0.000         0.000
Evaporation Loss .........         0.000         0.000
Exfiltration Loss ........         0.000         0.000
Initial Stored Volume ....         0.000         0.000
Final Stored Volume ......         0.000         0.000
Continuity Error (%) .....         0.000
```

```
  ***************************
  Subcatchment Runoff Summary
  ***************************

  -------------------------------------------------------------------------------------------------------------------------------
                            Total      Total      Total      Total     Imperv       Perv      Total        Total     Peak  Runoff
                           Precip      Runon       Evap      Infil     Runoff     Runoff     Runoff       Runoff   Runoff   Coeff
  Subcatchment                 in         in         in         in         in         in         in     10^6 gal      CFS
  -------------------------------------------------------------------------------------------------------------------------------
  DMA-A                    675.09       0.00      12.91     526.34       0.00     149.59     149.59        11.86     3.29   0.222
  DMA-B                    675.09       0.00      12.93     528.29       0.00     147.19     147.19        10.39     2.92   0.218

  Analysis begun on:  Fri Jan  5 10:21:33 2024
  Analysis ended on:  Fri Jan  5 10:21:49 2024
  Total elapsed time: 00:00:16
```

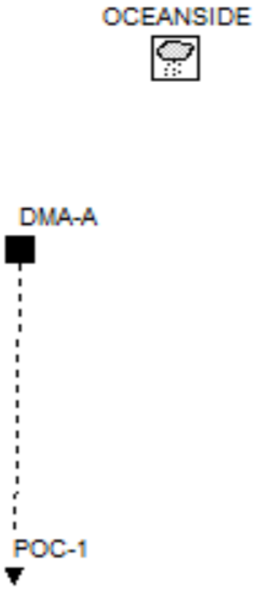
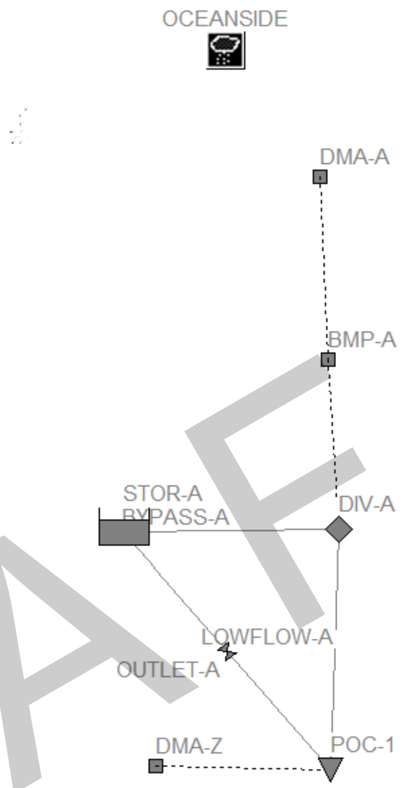
```
EPA STORM WATER MANAGEMENT MODEL - VERSION 5.2 (Build 5.2.4)
------------------------------------------------------------

3086 Staver Melba
Post-Project Condition
WARNING 04: minimum elevation drop used for Conduit BYPASS-B
WARNING 04: minimum elevation drop used for Conduit LOWFLOW-B
WARNING 04: minimum elevation drop used for Conduit LOWFLOW-A
WARNING 04: minimum elevation drop used for Conduit BYPASS-A

****************
Analysis Options
****************
Flow Units ............... CFS
Process Models:
  Rainfall/Runoff ........ YES
  RDII ................... NO
  Snowmelt ............... NO
  Groundwater ............ NO
  Flow Routing ........... YES
  Ponding Allowed ........ NO
  Water Quality .......... NO
Infiltration Method ...... GREEN_AMPT
Flow Routing Method ...... KINWAVE
Starting Date ............ 08/28/1951 05:00:00
Ending Date .............. 05/23/2008 23:00:00
Antecedent Dry Days ...... 0.0
Report Time Step ......... 01:00:00
Wet Time Step ............ 00:15:00
Dry Time Step ............ 04:00:00
Routing Time Step ........ 60.00 sec


**************************        Volume         Depth
Runoff Quantity Continuity     acre-feet        inches
**************************     ---------       -------
Initial LID Storage ......         0.036         0.070
Total Precipitation ......       349.839       675.090
Evaporation Loss .........        44.859        86.566
Infiltration Loss ........        80.796       155.913
Surface Runoff ...........        21.430        41.355
LID Drainage .............       208.530       402.404
Final Storage ............         0.049         0.094
Continuity Error (%) .....        -1.655


**************************        Volume        Volume
Flow Routing Continuity        acre-feet      10^6 gal
**************************     ---------     ---------
Dry Weather Inflow .......         0.000         0.000
Wet Weather Inflow .......       229.960        74.936
Groundwater Inflow .......         0.000         0.000
RDII Inflow ..............         0.000         0.000
External Inflow ..........         0.000         0.000
```

```
  External Outflow .........       229.948        74.932
  Flooding Loss ............         0.000         0.000
  Evaporation Loss .........         0.000         0.000
  Exfiltration Loss ........         0.000         0.000
  Initial Stored Volume ....         0.000         0.000
  Final Stored Volume ......         0.000         0.000
  Continuity Error (%) .....         0.005


  ********************************
  Highest Flow Instability Indexes
  ********************************
  All links are stable.


  *************************
  Routing Time Step Summary
  *************************
  Minimum Time Step           :    60.00 sec
  Average Time Step           :    60.00 sec
  Maximum Time Step           :    60.00 sec
  % of Time in Steady State   :     0.00
  Average Iterations per Step :     1.00
  % of Steps Not Converging   :     0.00


  ***************************
  Subcatchment Runoff Summary
  ***************************

  ------------------------------------------------------------------------------------------------------------------------------
                          Total      Total      Total      Total     Imperv       Perv      Total       Total     Peak  Runoff
                         Precip      Runon       Evap      Infil     Runoff     Runoff     Runoff      Runoff   Runoff   Coeff
  Subcatchment               in         in         in         in         in         in         in    10^6 gal      CFS
  ------------------------------------------------------------------------------------------------------------------------------
  DMA-A                  675.09       0.00      51.51     144.13     432.16      58.82     490.98       45.22     4.04   0.727
  DMA-Z                  675.09       0.00       9.31     479.76       0.00     198.15     198.15        0.36     0.08   0.294
  BMP-A                  675.09   12070.64    1142.58       0.00       0.00       0.00   11602.82       43.47     4.20   0.910
  DMA-B                  675.09       0.00      47.60     173.12     395.43      70.46     465.89       32.01     3.00   0.690
  BMP-B                  675.09   16945.01    1217.68       0.00       0.00       0.00   16402.25       30.98     2.87   0.931
  DMA-V                  675.09       0.00       8.99     477.97       0.00     203.12     203.12        0.12     0.03   0.301


  ***********************
  LID Performance Summary
  ***********************

  --------------------------------------------------------------------------------------------------------------------
                                        Total      Evap     Infil   Surface     Drain   Initial     Final  Continuity
                                       Inflow      Loss      Loss   Outflow   Outflow   Storage   Storage       Error
  Subcatchment      LID Control            in        in        in        in        in        in        in           %
  --------------------------------------------------------------------------------------------------------------------
  BMP-A             BMP-A            12745.73   1142.63      0.00    977.73  10625.52      2.10      2.21       -0.00
  BMP-B             BMP-B            17620.10   1217.73      0.00   1502.75  14900.12      2.10      2.24       -0.00
```

```
  ******************
  Node Depth Summary
  ******************

  ---------------------------------------------------------------------------------
                               Average  Maximum  Maximum  Time of Max    Reported
                                 Depth    Depth      HGL   Occurrence   Max Depth
  Node                 Type       Feet     Feet     Feet  days hr:min        Feet
  ---------------------------------------------------------------------------------
  POC-1                OUTFALL    0.00     0.00     0.00     0  00:00        0.00
  POC-2                OUTFALL    0.00     0.00     0.00     0  00:00        0.00
  DIV-B                DIVIDER    0.00     0.00     0.00     0  00:00        0.00
  DIV-A                DIVIDER    0.00     0.00     0.00     0  00:00        0.00
  STOR-B               STORAGE    0.00     0.29     0.29  18857  12:02         0.29
  STOR-A               STORAGE    0.00     0.75     0.75  18857  12:16         0.71


  *******************
  Node Inflow Summary
  *******************

  -------------------------------------------------------------------------------------------------
                                Maximum  Maximum                  Lateral       Total        Flow
                                Lateral    Total  Time of Max      Inflow      Inflow     Balance
                                 Inflow   Inflow   Occurrence      Volume      Volume       Error
  Node                 Type         CFS      CFS  days hr:min    10^6 gal    10^6 gal     Percent
  -------------------------------------------------------------------------------------------------
  POC-1                OUTFALL     0.08     4.01  18857  12:16        0.36        43.8       0.000
  POC-2                OUTFALL     0.03     2.89  18857  12:01       0.121        31.1       0.000
  DIV-B                DIVIDER     2.87     2.87  18857  12:01          31          31       0.000
  DIV-A                DIVIDER     4.20     4.20  18857  12:01        43.5        43.5       0.000
  STOR-B               STORAGE     0.00     2.65  18857  12:01           0        2.12       0.070
  STOR-A               STORAGE     0.00     4.04  18857  12:01           0        3.55       0.072


  *********************
  Node Flooding Summary
  *********************

  No nodes were flooded.


  **********************
  Storage Volume Summary
  **********************

  ------------------------------------------------------------------------------------------------
                         Average     Avg  Evap Exfil       Maximum    Max    Time of Max    Maximum
                          Volume    Pcnt  Pcnt  Pcnt        Volume   Pcnt     Occurrence    Outflow
  Storage Unit          1000 ft³    Full  Loss  Loss      1000 ft³   Full    days hr:min        CFS
  ------------------------------------------------------------------------------------------------
  STOR-B                   0.000     0.0   0.0   0.0         0.893   19.6    18857  12:02       2.64
  STOR-A                   0.001     0.0   0.0   0.0         4.513   50.1    18857  12:16       3.84
```

```
  ***********************
  Outfall Loading Summary
  ***********************

  -----------------------------------------------------------
                         Flow       Avg       Max       Total
                         Freq      Flow      Flow      Volume
  Outfall Node           Pcnt       CFS       CFS    10^6 gal
  -----------------------------------------------------------
  POC-1                  5.23      0.06      4.01      43.826
  POC-2                  3.95      0.06      2.89      31.100
  -----------------------------------------------------------
  System                 4.59      0.12      6.85      74.926


  ********************
  Link Flow Summary
  ********************

  -----------------------------------------------------------------------------
                                Maximum  Time of Max   Maximum    Max/     Max/
                                 |Flow|   Occurrence   |Veloc|    Full     Full
  Link                 Type         CFS  days hr:min    ft/sec    Flow    Depth
  -----------------------------------------------------------------------------
  BYPASS-B             DUMMY       2.65  18857  12:01
  LOWFLOW-B            DUMMY       0.22  9626  09:44
  LOWFLOW-A            DUMMY       0.16   141  06:58
  BYPASS-A             DUMMY       4.04  18857  12:01
  OUTLET-A             DUMMY       3.84  18857  12:16
  OUTLET-B             DUMMY       2.64  18857  12:02


  *************************
  Conduit Surcharge Summary
  *************************

  No conduits were surcharged.


  Analysis begun on:  Fri Jan  5 10:48:06 2024
  Analysis ended on:  Fri Jan  5 10:49:45 2024
  Total elapsed time: 00:01:39
```

POC-1
SWMM MODEL SCHEMATICS

PRE-DEVELOPMENT MODEL	POST-PROJECT MODEL
	

3086 Staver Melba
1/5/2024

POC-1 SWMM INPUT

PRE-DEVELOPMENT												
DMA	BMP	Area (ac)	Width (Area/Flow Length) (ft)	% Slope	% Impervious	% "A" Soils	% "B" Soils	% "D" Soils	Weighted Infiltration (in/hr):	Weighted Suction Head (in):	Weighted Initial Deficit:	N-perv [1]
DMA-A	N/A	2.92	560	6.0%	0%	0%	0%	100%	0.025	9.000	0.330	0.08
	Total:	**2.92**										

1. Per the Manning's n Values for Overland Flow table (Tory Walker Engineering):

DMA is shrubs and bushes = 0.08

POST-PROJECT												
DMA	BMP	Area (ac)	Width (Area/Flow Length) (ft)	% Impervious	% Slope	% "A" Soils	% "B" Soils	% "D" Soils	Weighted Infiltration (in/hr):	Weighted Suction Head (in):	Weighted Initial Deficit:	N-perv [1]
DMA-A	A	3.392	2081	70%	4%	0%	0%	100%	0.019	9.000	0.330	0.06
BMP-A	A	0.13797	120	0%	0%	0%	0%	100%	0.025	9.000	0.330	0.06
DMA-Z	NA	0.067	117	0%	13%	0%	0%	100%	0.019	9.000	0.330	0.06
	Total:	**3.60**										

1. Per the Manning's n Values for Overland Flow table (Tory Walker Engineering):

DMA is a combination of average grass, closely clipped sod and shrubs and bushes = (0.04+0.08)/2 = 0.06

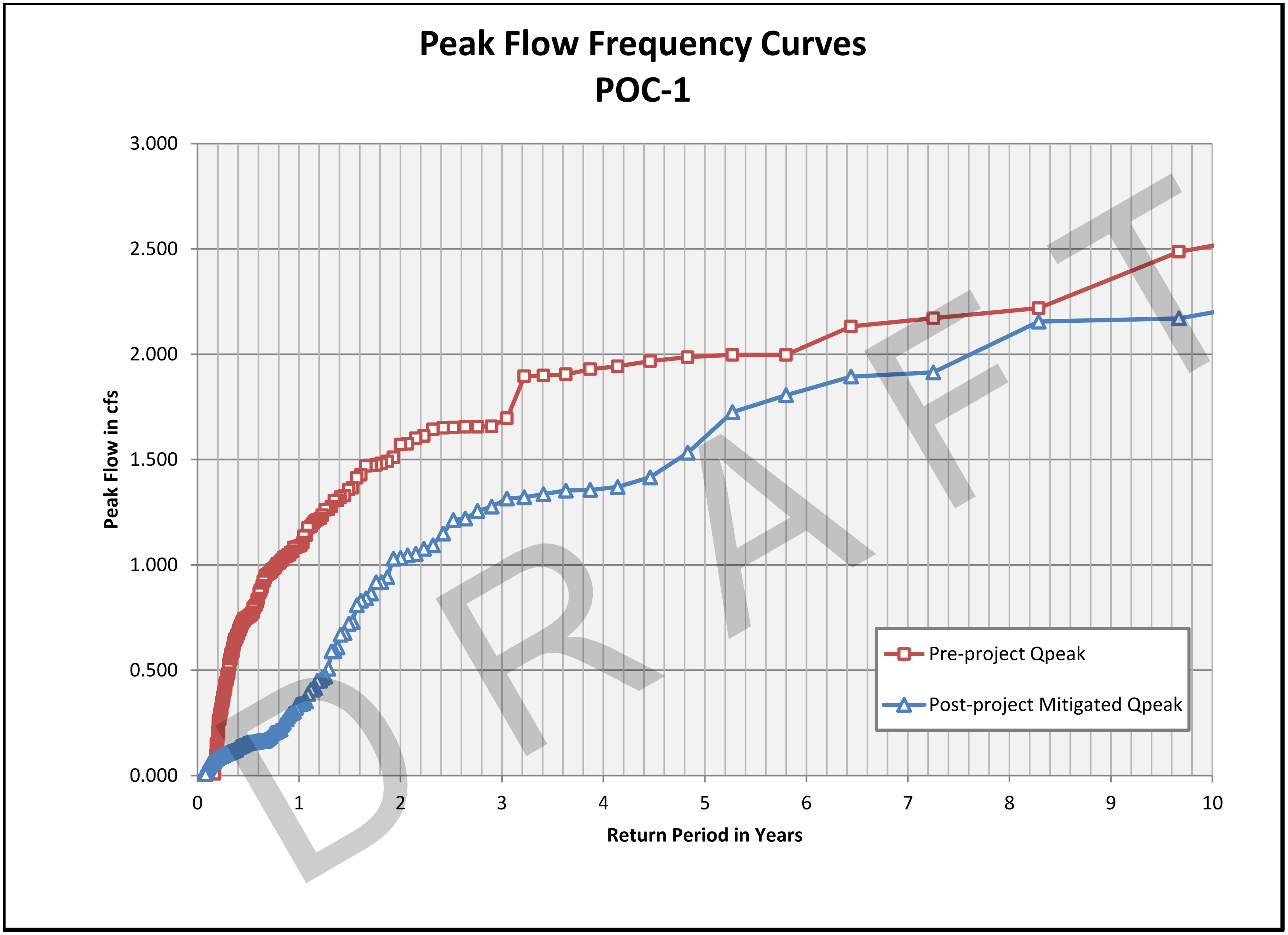
Infiltration:		
D:	0.025	in/hr

Suction Head:		
D:	9	in

Initial Deficit	
D:	0.33

POC-1
Peak Flow Frequency Summary

Return Period	Pre-project Qpeak (cfs)	Post-project - Mitigated Q (cfs)
LF = 0.1xQ2	0.157	0.103
2-year	1.571	1.033
5-year	1.990	1.607
10-year	2.515	2.199


Peak Flow Frequency Curves
POC-1
3.000
2.500
2.000
1.500
1.000
0.500
0.000
Peak Flow in cfs
0
1
2
3
4
5
6
7
8
9
10
Return Period in Years
Pre-project Qpeak
Post-project Mitigated Qpeak

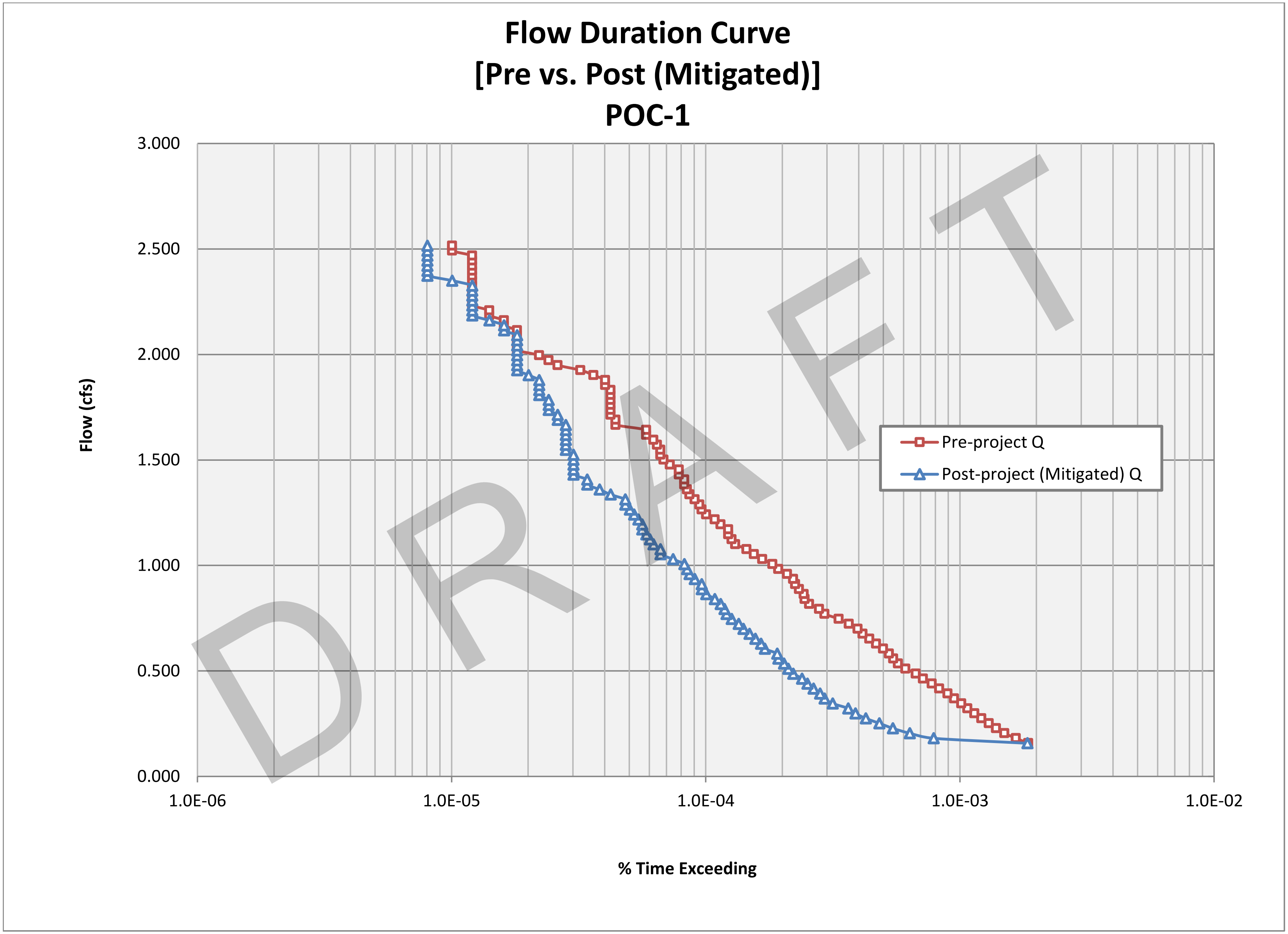
POC-1

Low-flow Threshold:	10%	
0.1xQ2 (Pre):	0.157	cfs
Q10 (Pre):	2.515	cfs
Ordinate #:	100	
Incremental Q (Pre):	0.02358	cfs
Total Hourly Data:	497370	hours

The proposed BMP: PASSED

Interval	Pre-project Flow (cfs)	Pre-project Hours	Pre-project % Time Exceeding	Post-project Hours	Post-project % Time Exceeding	Percentage	Pass/Fail
0	0.157	924	1.86E-03	918	1.85E-03	99%	Pass
1	0.181	827	1.66E-03	392	7.88E-04	47%	Pass
2	0.204	745	1.50E-03	316	6.35E-04	42%	Pass
3	0.228	690	1.39E-03	271	5.45E-04	39%	Pass
4	0.251	647	1.30E-03	240	4.83E-04	37%	Pass
5	0.275	605	1.22E-03	212	4.26E-04	35%	Pass
6	0.299	568	1.14E-03	193	3.88E-04	34%	Pass
7	0.322	533	1.07E-03	181	3.64E-04	34%	Pass
8	0.346	504	1.01E-03	157	3.16E-04	31%	Pass
9	0.369	472	9.49E-04	146	2.94E-04	31%	Pass
10	0.393	445	8.95E-04	140	2.81E-04	31%	Pass
11	0.416	413	8.30E-04	132	2.65E-04	32%	Pass
12	0.440	386	7.76E-04	125	2.51E-04	32%	Pass
13	0.464	356	7.16E-04	119	2.39E-04	33%	Pass
14	0.487	334	6.72E-04	110	2.21E-04	33%	Pass
15	0.511	304	6.11E-04	105	2.11E-04	35%	Pass
16	0.534	284	5.71E-04	101	2.03E-04	36%	Pass
17	0.558	272	5.47E-04	96	1.93E-04	35%	Pass
18	0.582	262	5.27E-04	95	1.91E-04	36%	Pass
19	0.605	248	4.99E-04	85	1.71E-04	34%	Pass
20	0.629	233	4.68E-04	82	1.65E-04	35%	Pass
21	0.652	219	4.40E-04	78	1.57E-04	36%	Pass
22	0.676	206	4.14E-04	74	1.49E-04	36%	Pass
23	0.699	197	3.96E-04	70	1.41E-04	36%	Pass
24	0.723	182	3.66E-04	67	1.35E-04	37%	Pass
25	0.747	166	3.34E-04	63	1.27E-04	38%	Pass
26	0.770	146	2.94E-04	60	1.21E-04	41%	Pass
27	0.794	139	2.79E-04	59	1.19E-04	42%	Pass
28	0.817	127	2.55E-04	57	1.15E-04	45%	Pass
29	0.841	122	2.45E-04	54	1.09E-04	44%	Pass
30	0.864	121	2.43E-04	50	1.01E-04	41%	Pass
31	0.888	116	2.33E-04	48	9.65E-05	41%	Pass
32	0.912	112	2.25E-04	48	9.65E-05	43%	Pass
33	0.935	110	2.21E-04	45	9.05E-05	41%	Pass
34	0.959	104	2.09E-04	43	8.65E-05	41%	Pass
35	0.982	96	1.93E-04	42	8.44E-05	44%	Pass
36	1.006	91	1.83E-04	41	8.24E-05	45%	Pass
37	1.030	83	1.67E-04	37	7.44E-05	45%	Pass
38	1.053	77	1.55E-04	33	6.63E-05	43%	Pass
39	1.077	72	1.45E-04	33	6.63E-05	46%	Pass
40	1.100	65	1.31E-04	31	6.23E-05	48%	Pass
41	1.124	63	1.27E-04	30	6.03E-05	48%	Pass
42	1.147	61	1.23E-04	29	5.83E-05	48%	Pass
43	1.171	61	1.23E-04	28	5.63E-05	46%	Pass
44	1.195	57	1.15E-04	28	5.63E-05	49%	Pass
45	1.218	54	1.09E-04	27	5.43E-05	50%	Pass
46	1.242	50	1.01E-04	26	5.23E-05	52%	Pass
47	1.265	48	9.65E-05	25	5.03E-05	52%	Pass
48	1.289	47	9.45E-05	24	4.83E-05	51%	Pass
49	1.313	45	9.05E-05	24	4.83E-05	53%	Pass
50	1.336	43	8.65E-05	21	4.22E-05	49%	Pass
51	1.360	42	8.44E-05	19	3.82E-05	45%	Pass
52	1.383	41	8.24E-05	17	3.42E-05	41%	Pass
53	1.407	41	8.24E-05	17	3.42E-05	41%	Pass
54	1.430	39	7.84E-05	15	3.02E-05	38%	Pass

Interval	Pre-project Flow (cfs)	Pre-project Hours	Pre-project % Time Exceeding	Post-project Hours	Post-project % Time Exceeding	Percentage	Pass/Fail
55	1.454	39	7.84E-05	15	3.02E-05	38%	Pass
56	1.478	36	7.24E-05	15	3.02E-05	42%	Pass
57	1.501	34	6.84E-05	15	3.02E-05	44%	Pass
58	1.525	33	6.63E-05	15	3.02E-05	45%	Pass
59	1.548	33	6.63E-05	14	2.81E-05	42%	Pass
60	1.572	32	6.43E-05	14	2.81E-05	44%	Pass
61	1.595	31	6.23E-05	14	2.81E-05	45%	Pass
62	1.619	29	5.83E-05	14	2.81E-05	48%	Pass
63	1.643	29	5.83E-05	14	2.81E-05	48%	Pass
64	1.666	22	4.42E-05	14	2.81E-05	64%	Pass
65	1.690	22	4.42E-05	13	2.61E-05	59%	Pass
66	1.713	21	4.22E-05	13	2.61E-05	62%	Pass
67	1.737	21	4.22E-05	12	2.41E-05	57%	Pass
68	1.761	21	4.22E-05	12	2.41E-05	57%	Pass
69	1.784	21	4.22E-05	12	2.41E-05	57%	Pass
70	1.808	21	4.22E-05	11	2.21E-05	52%	Pass
71	1.831	21	4.22E-05	11	2.21E-05	52%	Pass
72	1.855	20	4.02E-05	11	2.21E-05	55%	Pass
73	1.878	20	4.02E-05	11	2.21E-05	55%	Pass
74	1.902	18	3.62E-05	10	2.01E-05	56%	Pass
75	1.926	16	3.22E-05	9	1.81E-05	56%	Pass
76	1.949	13	2.61E-05	9	1.81E-05	69%	Pass
77	1.973	12	2.41E-05	9	1.81E-05	75%	Pass
78	1.996	11	2.21E-05	9	1.81E-05	82%	Pass
79	2.020	9	1.81E-05	9	1.81E-05	100%	Pass
80	2.043	9	1.81E-05	9	1.81E-05	100%	Pass
81	2.067	9	1.81E-05	9	1.81E-05	100%	Pass
82	2.091	9	1.81E-05	9	1.81E-05	100%	Pass
83	2.114	9	1.81E-05	8	1.61E-05	89%	Pass
84	2.138	8	1.61E-05	8	1.61E-05	100%	Pass
85	2.161	8	1.61E-05	7	1.41E-05	88%	Pass
86	2.185	7	1.41E-05	6	1.21E-05	86%	Pass
87	2.209	7	1.41E-05	6	1.21E-05	86%	Pass
88	2.232	6	1.21E-05	6	1.21E-05	100%	Pass
89	2.256	6	1.21E-05	6	1.21E-05	100%	Pass
90	2.279	6	1.21E-05	6	1.21E-05	100%	Pass
91	2.303	6	1.21E-05	6	1.21E-05	100%	Pass
92	2.326	6	1.21E-05	6	1.21E-05	100%	Pass
93	2.350	6	1.21E-05	5	1.01E-05	83%	Pass
94	2.374	6	1.21E-05	4	8.04E-06	67%	Pass
95	2.397	6	1.21E-05	4	8.04E-06	67%	Pass
96	2.421	6	1.21E-05	4	8.04E-06	67%	Pass
97	2.444	6	1.21E-05	4	8.04E-06	67%	Pass
98	2.468	6	1.21E-05	4	8.04E-06	67%	Pass
99	2.491	5	1.01E-05	4	8.04E-06	80%	Pass
100	2.515	5	1.01E-05	4	8.04E-06	80%	Pass


Flow Duration Curve
[Pre vs. Post (Mitigated)]
POC-1
Flow (cfs)
3.000
2.500
2.000
1.500
1.000
0.500
0.000
1.0E-06
1.0E-05
1.0E-04
1.0E-03
1.0E-02
% Time Exceeding
Pre-project Q
Post-project (Mitigated) Q

POC-1

SWMM Model Flow Coefficient Calculation

BMP-A

PARAMETER	ABBREV.	Bio-Retention Cell LID BMP	
Ponding Depth	PD	6	in
Bioretention Soil Layer	S	21	in
Gravel Layer	G	33	in
TOTAL		5.0	ft
		60	in
Orifice Coefficient	c_g	0.6	--
Low Flow Orifice Diameter	D	1.675	in
Drain exponent	n	0.5	--
Flow Rate (volumetric)	Q	0.164	cfs
Ponding Depth Surface Area	A_{PD}	6010	ft^2
Bioretention Surface Area	$A_{S,} A_G$	6010	ft^2
	$A_{S,} A_G$	0.1380	ac
Porosity of Bioretention Soil		0.40	-
Flow Rate (per unit area)	q	2.940	in/hr
Effective Ponding Depth	PD_{eff}	**6.00**	in
Flow Coefficient	C	**0.1541**	--

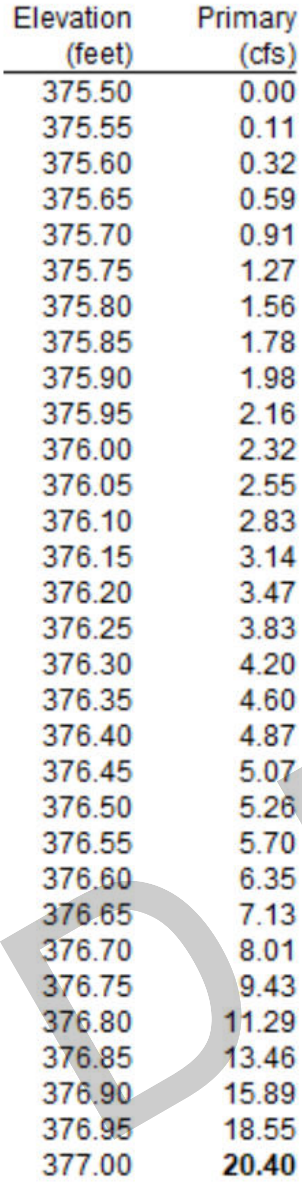
Summary for Pond 2P: STOR BMP-A Alt 1

Volume	Invert	Avail.Storage	Storage Description
#1	375.50'	9,015 cf	**BMP-A (Conic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
375.50	6,010	0.00	0	0	6,010
377.00	6,010	100.00	9,015	9,015	6,422

Device	Routing	Invert	Outlet Devices
#1	Primary	370.50'	**18.000" Round Culvert** L= 18.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 370.50' / 370.41' S= 0.0050 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf
#2	Device 1	375.50'	**19.000" W x 3.000" H Vert. Orifice X 2.00** C= 0.600 Limited to weir flow at low heads
#3	Device 1	376.00'	**12.000" x 12.000" Horiz. Grate X 0.50** C= 0.600 in 12.000" x 12.000" Grate (100% open area) Limited to weir flow at low heads
#4	Device 1	376.50'	**18.000" x 18.000" Horiz. Grate X 0.50** C= 0.600 in 18.000" x 18.000" Grate (100% open area) Limited to weir flow at low heads
#5	Device 1	376.50'	**24.000" x 24.000" Horiz. Grate X 0.50** C= 0.600 in 24.000" x 24.000" Grate (100% open area) Limited to weir flow at low heads
#6	Device 1	376.70'	**36.000" x 36.000" Horiz. Grate X 0.50** C= 0.600 in 36.000" x 36.000" Grate (100% open area) Limited to weir flow at low heads
#7	Device 1	376.70'	**36.000" x 36.000" Horiz. Grate X 0.50** C= 0.600 in 36.000" x 36.000" Grate (100% open area) Limited to weir flow at low heads

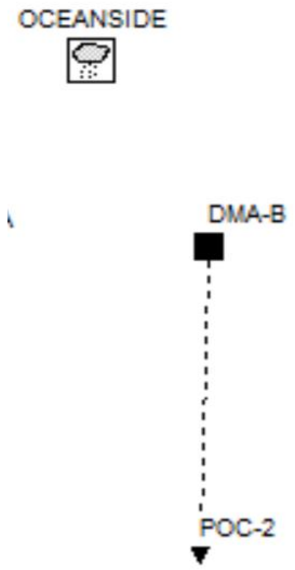
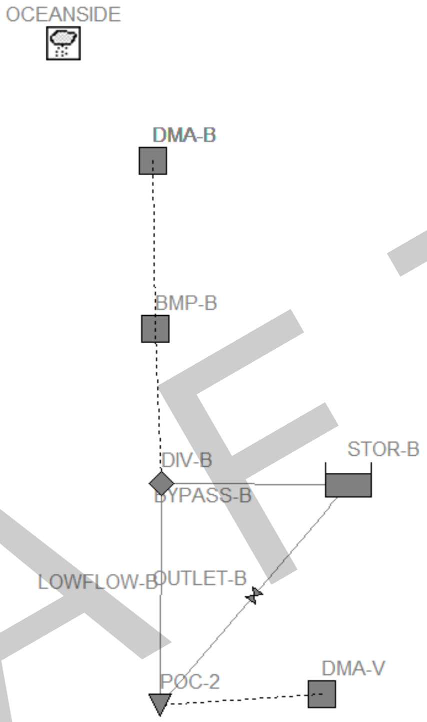
Stage-Discharge for Pond 2P: STOR BMP-A Alt 1



Elevation (feet)	Primary (cfs)
375.50	0.00
375.55	0.11
375.60	0.32
375.65	0.59
375.70	0.91
375.75	1.27
375.80	1.56
375.85	1.78
375.90	1.98
375.95	2.16
376.00	2.32
376.05	2.55
376.10	2.83
376.15	3.14
376.20	3.47
376.25	3.83
376.30	4.20
376.35	4.60
376.40	4.87
376.45	5.07
376.50	5.26
376.55	5.70
376.60	6.35
376.65	7.13
376.70	8.01
376.75	9.43
376.80	11.29
376.85	13.46
376.90	15.89
376.95	18.55
377.00	**20.40**

Drawdown Calculation for BMP	A	
Project Name	Staver Melba	
Project No	3086	
Surface Drawdown Time:	**5.2**	hr
Total Drawdown Time:	19.4	hr
Surface Area	6010	sq ft
Underdrain Orifice Diameter:	1.675	in
C:	0.6	
Ponding (to invert of lowest discharge opening in outlet structure):	0.5	ft
Amended Soil Depth:	1.75	ft
Gravel Depth:	2.5	ft
Orifice Q =	0.159	cfs
Effective Depth	22.2	in
Flow Rate controlled by orifice	1.145	in/hr

POC-2
SWMM MODEL SCHEMATICS

PRE-DEVELOPMENT MODEL	POST-PROJECT MODEL
	

3086 Staver Melba
1/5/2024

POC-2 SWMM INPUT

PRE-DEVELOPMENT												
DMA	BMP	Area (ac)	Width (Area/Flow Length) (ft)	% Slope	% Impervious	% "A" Soils	% "B" Soils	% "D" Soils	Weighted Infiltration (in/hr):	Weighted Suction Head (in):	Weighted Initial Deficit:	N-perv ^{1}
DMA-B	N/A	2.60	399	5.5%	0%	0%	0%	100%	0.025	9.000	0.330	0.08
	Total:	**2.60**										

1. Per the Manning's n Values for Overland Flow table (Tory Walker Engineering):

DMA is shrubs and bushes = 0.08

POST-PROJECT												
DMA	BMP	Area (ac)	Width (Area/Flow Length) (ft)	% Impervious	% Slope	% "A" Soils	% "B" Soils	% "D" Soils	Weighted Infiltration (in/hr):	Weighted Suction Head (in):	Weighted Initial Deficit:	N-perv ^{1}
DMA-B	B	2.53	2205	64%	3%	0%	0%	100%	0.019	9.000	0.330	0.06
BMP-B	B	0.06956	61	0%	0%	0%	0%	100%	0.025	9.000	0.330	0.06
DMA-V	NA	0.022	192	0%	50%	0%	0%	100%	0.019	9.000	0.330	0.06
	Total:	**2.62**										

1. Per the Manning's n Values for Overland Flow table (Tory Walker Engineering):

DMA is a combination of average grass, closely clipped sod and shrubs and bushes = (0.04+0.08)/2 = 0.06

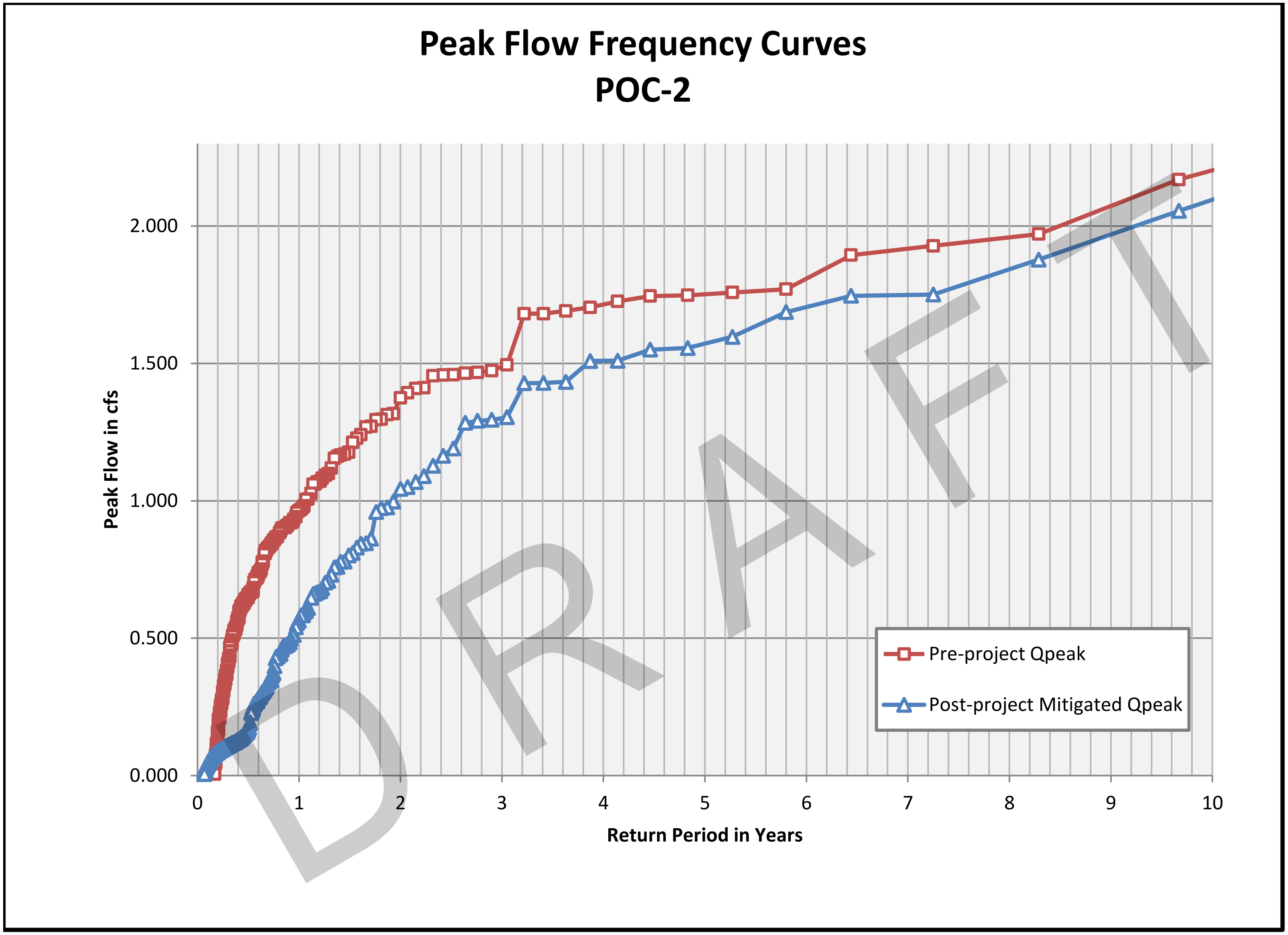
Infiltration:		
D:	0.025	in/hr

Suction Head:		
D:	9	in

Initial Deficit	
D:	0.33

POC-2
Peak Flow Frequency Summary

Return Period	Pre-project Qpeak (cfs)	Post-project - Mitigated Q (cfs)
LF = 0.1xQ2	0.138	0.104
2-year	1.375	1.044
5-year	1.752	1.572
10-year	2.202	2.096



Peak Flow Frequency Curves
POC-2
Peak Flow in cfs
2.000
1.500
1.000
0.500
0.000
0
1
2
3
4
5
6
7
8
9
10
Return Period in Years
Pre-project Qpeak
Post-project Mitigated Qpeak

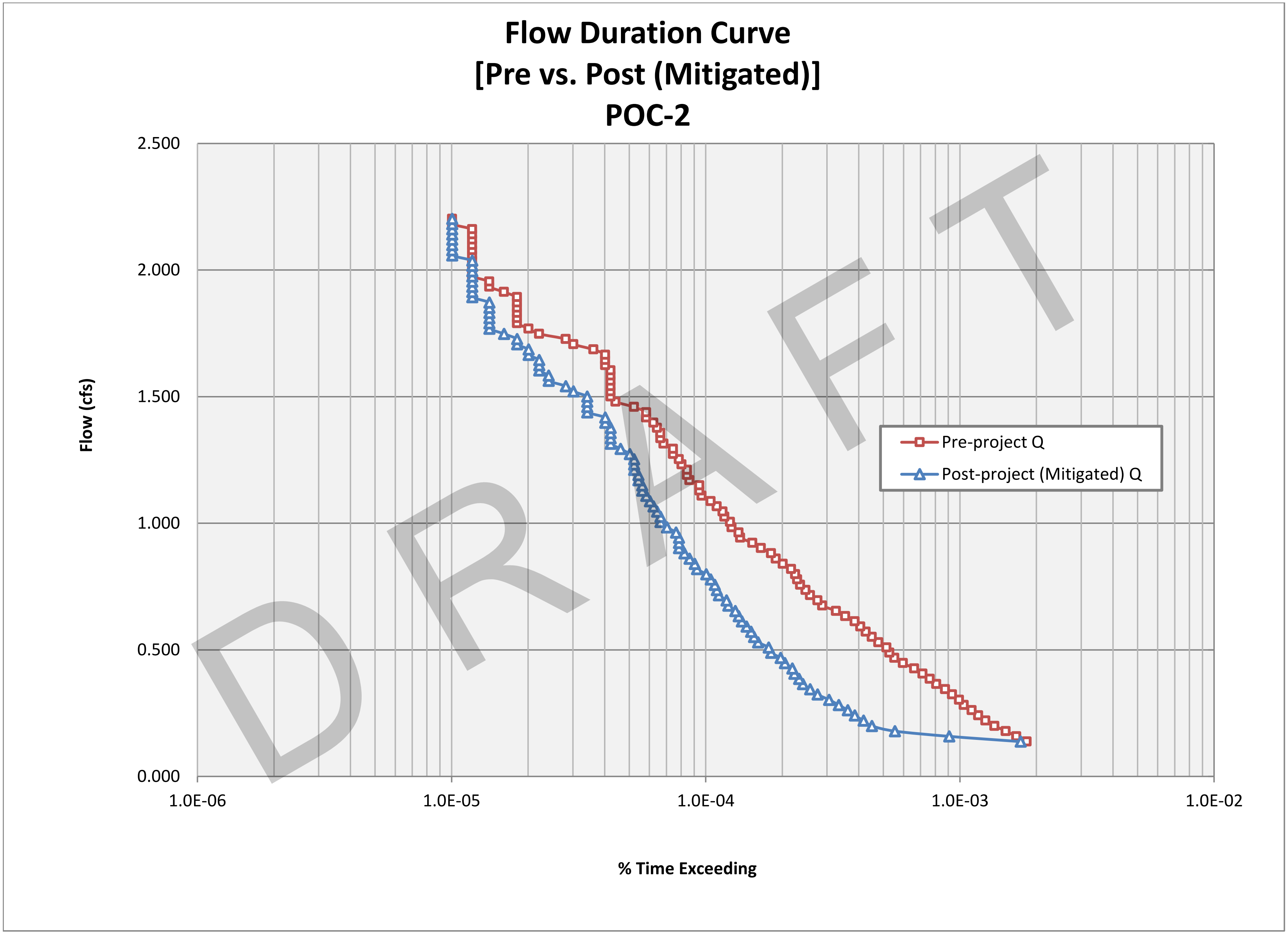
POC-2

Low-flow Threshold: 10%
0.1xQ2 (Pre): 0.138 cfs
Q10 (Pre): 2.202 cfs
Ordinate #: 100
Incremental Q (Pre): 0.02065 cfs
Total Hourly Data: 497370 hours

The proposed BMP: PASSED

Interval	Pre-project Flow (cfs)	Pre-project Hours	Pre-project % Time Exceeding	Post-project Hours	Post-project % Time Exceeding	Percentage	Pass/Fail
0	0.138	912	1.83E-03	863	1.74E-03	95%	Pass
1	0.158	830	1.67E-03	452	9.09E-04	54%	Pass
2	0.179	754	1.52E-03	276	5.55E-04	37%	Pass
3	0.199	681	1.37E-03	224	4.50E-04	33%	Pass
4	0.220	627	1.26E-03	208	4.18E-04	33%	Pass
5	0.241	588	1.18E-03	192	3.86E-04	33%	Pass
6	0.261	554	1.11E-03	180	3.62E-04	32%	Pass
7	0.282	516	1.04E-03	166	3.34E-04	32%	Pass
8	0.303	494	9.93E-04	152	3.06E-04	31%	Pass
9	0.323	464	9.33E-04	137	2.75E-04	30%	Pass
10	0.344	435	8.75E-04	128	2.57E-04	29%	Pass
11	0.365	402	8.08E-04	120	2.41E-04	30%	Pass
12	0.385	379	7.62E-04	116	2.33E-04	31%	Pass
13	0.406	355	7.14E-04	111	2.23E-04	31%	Pass
14	0.427	329	6.61E-04	109	2.19E-04	33%	Pass
15	0.447	297	5.97E-04	102	2.05E-04	34%	Pass
16	0.468	275	5.53E-04	98	1.97E-04	36%	Pass
17	0.489	263	5.29E-04	90	1.81E-04	34%	Pass
18	0.509	256	5.15E-04	88	1.77E-04	34%	Pass
19	0.530	238	4.79E-04	80	1.61E-04	34%	Pass
20	0.550	224	4.50E-04	77	1.55E-04	34%	Pass
21	0.571	212	4.26E-04	75	1.51E-04	35%	Pass
22	0.592	202	4.06E-04	72	1.45E-04	36%	Pass
23	0.612	192	3.86E-04	69	1.39E-04	36%	Pass
24	0.633	176	3.54E-04	67	1.35E-04	38%	Pass
25	0.654	162	3.26E-04	65	1.31E-04	40%	Pass
26	0.674	143	2.88E-04	61	1.23E-04	43%	Pass
27	0.695	137	2.75E-04	60	1.21E-04	44%	Pass
28	0.716	128	2.57E-04	56	1.13E-04	44%	Pass
29	0.736	123	2.47E-04	55	1.11E-04	45%	Pass
30	0.757	117	2.35E-04	54	1.09E-04	46%	Pass
31	0.778	114	2.29E-04	52	1.05E-04	46%	Pass
32	0.798	112	2.25E-04	50	1.01E-04	45%	Pass
33	0.819	108	2.17E-04	46	9.25E-05	43%	Pass
34	0.840	100	2.01E-04	45	9.05E-05	45%	Pass
35	0.860	94	1.89E-04	43	8.65E-05	46%	Pass
36	0.881	90	1.81E-04	41	8.24E-05	46%	Pass
37	0.901	82	1.65E-04	39	7.84E-05	48%	Pass
38	0.922	76	1.53E-04	39	7.84E-05	51%	Pass
39	0.943	68	1.37E-04	39	7.84E-05	57%	Pass
40	0.963	67	1.35E-04	38	7.64E-05	57%	Pass
41	0.984	63	1.27E-04	35	7.04E-05	56%	Pass
42	1.005	62	1.25E-04	33	6.63E-05	53%	Pass
43	1.025	59	1.19E-04	33	6.63E-05	56%	Pass
44	1.046	58	1.17E-04	32	6.43E-05	55%	Pass
45	1.067	55	1.11E-04	31	6.23E-05	56%	Pass
46	1.087	52	1.05E-04	30	6.03E-05	58%	Pass
47	1.108	48	9.65E-05	29	5.83E-05	60%	Pass
48	1.129	47	9.45E-05	28	5.63E-05	60%	Pass
49	1.149	47	9.45E-05	28	5.63E-05	60%	Pass
50	1.170	43	8.65E-05	27	5.43E-05	63%	Pass
51	1.191	42	8.44E-05	27	5.43E-05	64%	Pass
52	1.211	42	8.44E-05	26	5.23E-05	62%	Pass
53	1.232	40	8.04E-05	26	5.23E-05	65%	Pass
54	1.253	39	7.84E-05	26	5.23E-05	67%	Pass

Interval	Pre-project Flow (cfs)	Pre-project Hours	Pre-project % Time Exceeding	Post-project Hours	Post-project % Time Exceeding	Percentage	Pass/Fail
55	1.273	37	7.44E-05	25	5.03E-05	68%	Pass
56	1.294	37	7.44E-05	23	4.62E-05	62%	Pass
57	1.314	34	6.84E-05	21	4.22E-05	62%	Pass
58	1.335	33	6.63E-05	21	4.22E-05	64%	Pass
59	1.356	33	6.63E-05	21	4.22E-05	64%	Pass
60	1.376	32	6.43E-05	21	4.22E-05	66%	Pass
61	1.397	31	6.23E-05	20	4.02E-05	65%	Pass
62	1.418	29	5.83E-05	20	4.02E-05	69%	Pass
63	1.438	29	5.83E-05	17	3.42E-05	59%	Pass
64	1.459	26	5.23E-05	17	3.42E-05	65%	Pass
65	1.480	22	4.42E-05	17	3.42E-05	77%	Pass
66	1.500	21	4.22E-05	17	3.42E-05	81%	Pass
67	1.521	21	4.22E-05	15	3.02E-05	71%	Pass
68	1.542	21	4.22E-05	14	2.81E-05	67%	Pass
69	1.562	21	4.22E-05	12	2.41E-05	57%	Pass
70	1.583	21	4.22E-05	12	2.41E-05	57%	Pass
71	1.604	21	4.22E-05	11	2.21E-05	52%	Pass
72	1.624	20	4.02E-05	11	2.21E-05	55%	Pass
73	1.645	20	4.02E-05	11	2.21E-05	55%	Pass
74	1.665	20	4.02E-05	10	2.01E-05	50%	Pass
75	1.686	18	3.62E-05	10	2.01E-05	56%	Pass
76	1.707	15	3.02E-05	9	1.81E-05	60%	Pass
77	1.727	14	2.81E-05	9	1.81E-05	64%	Pass
78	1.748	11	2.21E-05	8	1.61E-05	73%	Pass
79	1.769	10	2.01E-05	7	1.41E-05	70%	Pass
80	1.789	9	1.81E-05	7	1.41E-05	78%	Pass
81	1.810	9	1.81E-05	7	1.41E-05	78%	Pass
82	1.831	9	1.81E-05	7	1.41E-05	78%	Pass
83	1.851	9	1.81E-05	7	1.41E-05	78%	Pass
84	1.872	9	1.81E-05	7	1.41E-05	78%	Pass
85	1.893	9	1.81E-05	6	1.21E-05	67%	Pass
86	1.913	8	1.61E-05	6	1.21E-05	75%	Pass
87	1.934	7	1.41E-05	6	1.21E-05	86%	Pass
88	1.955	7	1.41E-05	6	1.21E-05	86%	Pass
89	1.975	6	1.21E-05	6	1.21E-05	100%	Pass
90	1.996	6	1.21E-05	6	1.21E-05	100%	Pass
91	2.017	6	1.21E-05	6	1.21E-05	100%	Pass
92	2.037	6	1.21E-05	6	1.21E-05	100%	Pass
93	2.058	6	1.21E-05	5	1.01E-05	83%	Pass
94	2.078	6	1.21E-05	5	1.01E-05	83%	Pass
95	2.099	6	1.21E-05	5	1.01E-05	83%	Pass
96	2.120	6	1.21E-05	5	1.01E-05	83%	Pass
97	2.140	6	1.21E-05	5	1.01E-05	83%	Pass
98	2.161	6	1.21E-05	5	1.01E-05	83%	Pass
99	2.182	5	1.01E-05	5	1.01E-05	100%	Pass
100	2.202	5	1.01E-05	5	1.01E-05	100%	Pass


Flow Duration Curve
[Pre vs. Post (Mitigated)]
POC-2
2.500
2.000
1.500
1.000
0.500
0.000
Flow (cfs)
1.0E-06
1.0E-05
1.0E-04
1.0E-03
1.0E-02
% Time Exceeding
Pre-project Q
Post-project (Mitigated) Q

POC-2

SWMM Model Flow Coefficient Calculation

BMP-B

PARAMETER	ABBREV.	Bio-Retention Cell LID BMP	
Ponding Depth	PD	6	in
Bioretention Soil Layer	S	21	in
Permavoid Layer	G	78	in
TOTAL		8.8	ft
		105	in
Orifice Coefficient	c_g	0.6	--
Low Flow Orifice Diameter	D	1.7	in
Drain exponent	n	0.5	--
Flow Rate (volumetric)	Q	0.224	cfs
Ponding Depth Surface Area	A_{PD}	3030	ft^2
Bioretention Surface Area	$A_{S,} A_G$	3030	ft^2
	$A_{S,} A_G$	0.0696	ac
Porosity of Bioretention Soil		0.40	-
Flow Rate (per unit area)	q	7.970	in/hr
Effective Ponding Depth	PD_{eff}	**6.00**	in
Flow Coefficient	C	**0.3148**	--

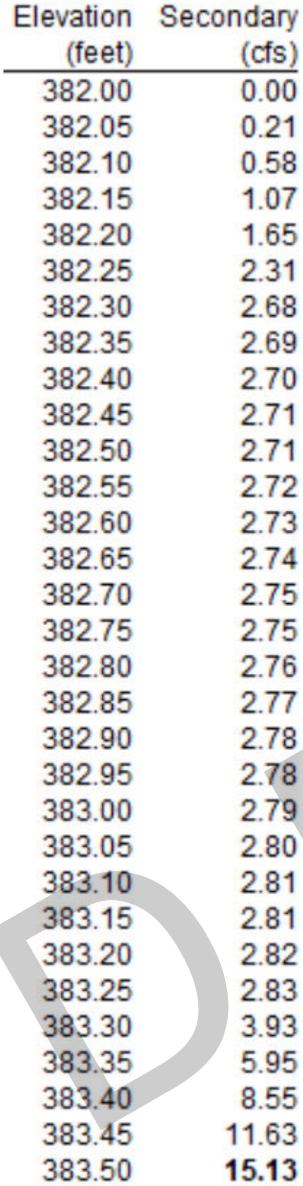
Summary for Pond 11P: STOR BMP-B Alt 1

Volume	Invert	Avail.Storage	Storage Description
#1	382.00'	4,545 cf	**BMP-B (Conic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
382.00	3,030	0.00	0	0	3,030
383.50	3,030	100.00	4,545	4,545	3,323

Device	Routing	Invert	Outlet Devices
#1	Secondary	373.50'	**6.000" Round 6" Culvert** L= 18.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 373.50' / 373.32' S= 0.0100 '/' Cc= 0.900 n= 0.013, Flow Area= 0.20 sf
#2	Device 1	382.00'	**23.000" W x 3.000" H Vert. Midflow Orifice X 3.00** C= 0.600 Limited to weir flow at low heads
#3	Device 1	383.00'	**24.000" x 24.000" Horiz. Grate X 0.50** C= 0.600 in 24.000" x 24.000" Grate (100% open area) Limited to weir flow at low heads
#4	Secondary	373.25'	**18.000" Round 18" Culvert** L= 10.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 373.25' / 373.15' S= 0.0100 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf
#5	Device 4	383.25'	**36.000" x 36.000" Horiz. Grate X 0.50** C= 0.600 in 36.000" x 36.000" Grate (100% open area) Limited to weir flow at low heads
#6	Device 4	383.25'	**36.000" x 36.000" Horiz. Grate X 0.50** C= 0.600 in 36.000" x 36.000" Grate (100% open area) Limited to weir flow at low heads
#7	Device 4	383.25'	**36.000" x 36.000" Horiz. Grate X 0.50** C= 0.600 in 36.000" x 36.000" Grate (100% open area) Limited to weir flow at low heads
#8	Device 4	383.25'	**36.000" x 36.000" Horiz. Grate X 0.50** C= 0.600 in 36.000" x 36.000" Grate (100% open area) Limited to weir flow at low heads
#9	Device 4	383.25'	**36.000" x 36.000" Horiz. Grate X 0.50** C= 0.600 in 36.000" x 36.000" Grate (100% open area) Limited to weir flow at low heads

Stage-Discharge for Pond 11P: STOR BMP-B Alt 1



Elevation (feet)	Secondary (cfs)
382.00	0.00
382.05	0.21
382.10	0.58
382.15	1.07
382.20	1.65
382.25	2.31
382.30	2.68
382.35	2.69
382.40	2.70
382.45	2.71
382.50	2.71
382.55	2.72
382.60	2.73
382.65	2.74
382.70	2.75
382.75	2.75
382.80	2.76
382.85	2.77
382.90	2.78
382.95	2.78
383.00	2.79
383.05	2.80
383.10	2.81
383.15	2.81
383.20	2.82
383.25	2.83
383.30	3.93
383.35	5.95
383.40	8.55
383.45	11.63
383.50	**15.13**

Drawdown Calculation for BMP B

Project Name Staver Melba

Project No 3086

Surface Drawdown Time:	**1.9**	hr
Total Drawdown Time:	12.8	hr
Surface Area	3030	sq ft
Underdrain Orifice Diameter:	1.7	in
C:	0.6	
Ponding (to invert of lowest discharge opening in outlet structure):	0.5	ft
Amended Soil Depth:	1.75	ft
Permavoid Depth:	6.25	ft
Orifice Q =	0.220	cfs
Effective Depth	81.45	in
Flow Rate controlled by orifice	3.140	in/hr

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RELIABLE SOLUTIONS IN WATER RESOURCES

Manning's *n* Values for Overland Flow[1]

The BMP Design Manuals within the County of San Diego allow for a land surface description other than short prairie grass to be used for hydromodification BMP design only if documentation provided is consistent with Table A.6 of the SWMM 5 User's Manual.

In January 2016, the EPA released the SWMM Reference Manual Volume I – Hydrology (SWMM Hydrology Reference Manual). The SWMM Hydrology Reference Manual complements the SWMM 5 User's Manual by providing an in-depth description of the program's hydrologic components. Table 3-5 of the SWMM Hydrology Reference Manual expounds upon Table A.6 of the SWMM 5 User's Manual by providing Manning's *n* values for additional overland flow surfaces. Therefore, in order to provide SWMM users with a wider range of land surfaces suitable for local application and to provide Copermittees with confidence in the design parameters, we recommend using the values published by Yen and Chow in Table 3-5 of the EPA SWMM Reference Manual Volume I – Hydrology. The values are provided in the table below:

Overland Surface	**Manning value (*n*)**
Smooth asphalt pavement	0.010
Smooth impervious surface	0.011
Tar and sand pavement	0.012
Concrete pavement	0.014
Rough impervious surface	0.015
Smooth bare packed soil	0.017
Moderate bare packed soil	0.025
Rough bare packed soil	0.032
Gravel soil	0.025
Mowed poor grass	0.030
Average grass, closely clipped sod	0.040
Pasture	0.040
Timberland	0.060
Dense grass	0.060
Shrubs and bushes	0.080
Land Use	
Business	0.014
Semibusiness	0.022
Industrial	0.020
Dense residential	0.025
Suburban residential	0.030
Parks and lawns	0.040

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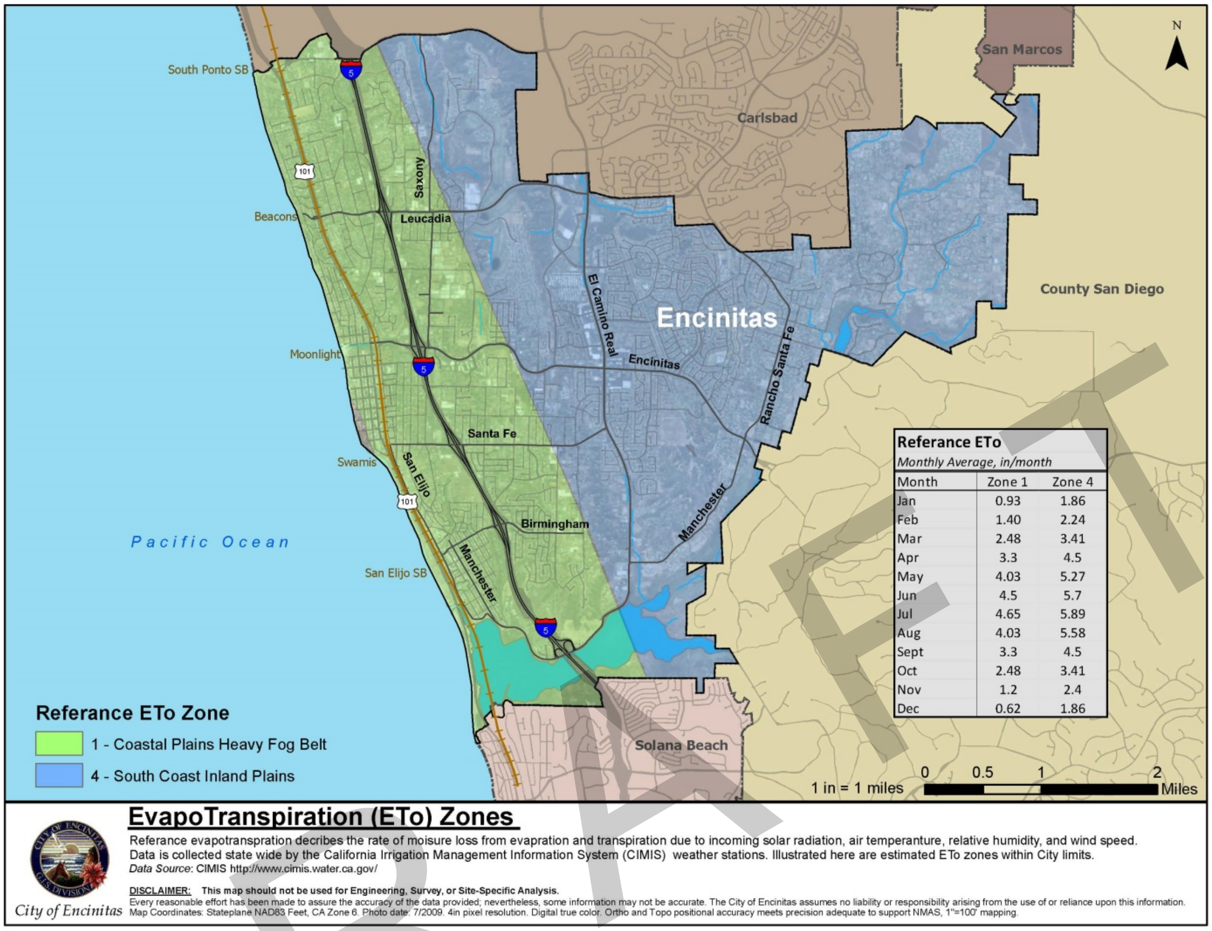
[1] Content summarized from *Improving Accuracy in Continuous Simulation Modeling: Guidance for Selecting Pervious Overland Flow Manning's n Values in the San Diego Region* (TRWE, 2016).



Referance ETo

Monthly Average, in/month

Month	Zone 1	Zone 4
Jan	0.93	1.86
Feb	1.40	2.24
Mar	2.48	3.41
Apr	3.3	4.5
May	4.03	5.27
Jun	4.5	5.7
Jul	4.65	5.89
Aug	4.03	5.58
Sept	3.3	4.5
Oct	2.48	3.41
Nov	1.2	2.4
Dec	0.62	1.86

EvapoTranspiration (ETo) Zones

Referance evapotranspration decribes the rate of moisure loss from evapration and transpiration due to incoming solar radiation, air temperanture, relative humidity, and wind speed. Data is collected state wide by the California Irrigation Management Information System (CIMIS) weather stations. Illustrated here are estimated ETo zones within City limits.

Data Source: CIMIS http://www.cimis.water.ca.gov/

DISCLAIMER: **This map should not be used for Engineering, Survey, or Site-Specific Analysis.**

Every reasonable effort has been made to assure the accuracy of the data provided; nevertheless, some information may not be accurate. The City of Encinitas assumes no liability or responsibility arising from the use of or reliance upon this information.

Map Coordinates: Stateplane NAD83 Feet, CA Zone 6. Photo date: 7/2009. 4in pixel resolution. Digital true color. Ortho and Topo positional accuracy meets precision adequate to support NMAS, 1"=100' mapping.

Figure G.1-2: California Irrigation Management Information System "Reference Evapotranspiration Zones"

Table G.1-1: Monthly Average Reference Evapotranspiration by ETo Zone (inches/month and inches/day) for use in SWMM Models for Hydromodification Management Studies in San Diego County CIMIS Zones 1, 4, 6, 9, and 16 (See CIMIS ETo Zone Map)

	January	February	March	April	May	June	July	August	September	October	November	December
Zone	in/month	in/month	in/month	in/month	in/month	in/month	in/month	in/month	in/month	in/month	in/month	in/month
1	0.93	1.4	2.48	3.3	4.03	4.5	4.65	4.03	3.3	2.48	1.2	0.62
4	1.86	2.24	3.41	4.5	5.27	5.7	5.89	5.58	4.5	3.41	2.4	1.86
6	1.86	2.24	3.41	4.8	5.58	6.3	6.51	6.2	4.8	3.72	2.4	1.86
9	2.17	2.8	4.03	5.1	5.89	6.6	7.44	6.82	5.7	4.03	2.7	1.86
16	1.55	2.52	4.03	5.7	7.75	8.7	9.3	8.37	6.3	4.34	2.4	1.55
	January	**February**	**March**	**April**	**May**	**June**	**July**	**August**	**September**	**October**	**November**	**December**
Days	31	28	31	30	31	30	31	31	30	31	30	31
Zone	in/day	in/day	in/day	in/day	in/day	in/day	in/day	in/day	in/day	in/day	in/day	in/day
1	0.030	0.050	0.080	0.110	0.130	0.150	0.150	0.130	0.110	0.080	0.040	0.020
4	0.060	0.080	0.110	0.150	0.170	0.190	0.190	0.180	0.150	0.110	0.080	0.060
6	0.060	0.080	0.110	0.160	0.180	0.210	0.210	0.200	0.160	0.120	0.080	0.060
9	0.070	0.100	0.130	0.170	0.190	0.220	0.240	0.220	0.190	0.130	0.090	0.060
16	0.050	0.090	0.130	0.190	0.250	0.290	0.300	0.270	0.210	0.140	0.080	0.050

ATTACHMENT 3 - STRUCTURAL BMP MAINTENANCE INFORMATION

This is the cover sheet for Attachment 3.

Indicate which items are included behind this cover sheet:

Attachment	**Contents**	**Checklist**
Attachment 3a	Structural BMP Maintenance Thresholds and Actions (Required)	☑ Included See Structural BMP Maintenance Information Checklist on the back of this Attachment cover sheet.
Attachment 3b	Draft Maintenance Agreement (when applicable)	☐ Included ☐ Not Applicable

Use this checklist to ensure the required information has been included in the Structural BMP Maintenance Information Attachment:

☐ **Preliminary Design / Planning / CEQA level submittal:**

Attachment 3a must identify:

- ☐ Typical maintenance indicators and actions for proposed structural BMP(s) based on Section 7.7 of the BMP Design Manual

Attachment 3b is not required for preliminary design / planning / CEQA level submittal.

☐ **Final Design level submittal:**

Attachment 3a must identify:

- ☐ Specific maintenance indicators and actions for proposed structural BMP(s). This shall be based on Section 7.7 of the BMP Design Manual and enhanced to reflect actual proposed components of the structural BMP(s)
- ☐ How to access the structural BMP(s) to inspect and perform maintenance
- ☐ Features that are provided to facilitate inspection (e.g., observation ports, cleanouts, silt posts, or other features that allow the inspector to view necessary components of the structural BMP and compare to maintenance thresholds)
- ☐ Manufacturer and part number for proprietary parts of structural BMP(s) when applicable
- ☐ Maintenance thresholds specific to the structural BMP(s), with a location-specific frame of reference (e.g., level of accumulated materials that triggers removal of the materials, to be identified based on viewing marks on silt posts or measured with a survey rod with respect to a fixed benchmark within the BMP)
- ☐ Recommended equipment to perform maintenance
- ☐ When applicable, necessary special training or certification requirements for inspection and maintenance personnel such as confined space entry or hazardous waste management

Attachment 3b: For private entity operation and maintenance, Attachment 3b shall include a draft maintenance agreement in the local jurisdiction's standard format (PDP applicant to contact the City Engineer to obtain the current maintenance agreement forms).

APPENDIX 3a

BMP MAINTENANCE THRESHOLDS

BMP DESCRIPTION

BIOFILTRATION (6,010 SF)	STORM WATER MANAGEMENT AND DISCHARGE CONTROL MAINTENANCE AGREEMENT APPROVAL NO: ___________ O&M RESPONSIBLE PARTY DESIGNEE: TORREY PACIFIC CORPORATION

POST–CONSTRUCTION PERMANENT BMP OPERATION & MAINTENANCE PROCEDURE DETAILS

MAINTENANCE INDICATORS	MAINTENANCE ACTION
ACCUMULATION OF SEDIMENT, LITTER, OR DEBRIS	REMOVE AND PROPERLY DISPOSE OF ACCUMULATED MATERIALS, WITHOUT DAMAGE TO THE VEGETATION
POOR VEGETATION ESTABLISHMENT	RE–SEED, RE–PLANT, OR RE–ESTABLISH VEGETATION PER ORIGINAL PLANS
OVERGROWN VEGETATION	MOW OR TRIM AS APPROPRIATE, BUT NOT LESS THAT THE DESIGN HEIGHT OF THE VEGETATION PER ORIGINAL PLANS.
EROSION DUE TO CONCENTRATED IRRIGATION FLOW	REPAIR/RE–SEED/RE–PLANT ERODED AREAS AND ADJUST THE IRRIGATION SYSTEM
EROSION DUE TO CONCENTRATED STORM WATER RUNOFF FLOW	REPAIR/RE–SEED/RE–PLANT ERODED AREAS AND MAKE APPROPRIATE CORRECTIVE MEASURES SUCH AS ADDING STONE AT FLOW ENTRY POINTS OR MINOR RE–GRADING TO RESTORE PROPER DRAINAGE ACCORDING TO THE ORIGINAL PLAN.
STANDING WATER IN BIOFILTRATION AREAS	MAKE APPROPRIATE CORRECTIVE MEASURES SUCH AS ADJUSTING IRRIGATION SYSTEM, REMOVING OBSTRUCTION OF DEBRIS OR INVASIVE VEGETATION, OR CLEANING UNDERDRAINS
OBSTRUCTED INLET OR OUTLET STRUCTURE	CLEAR OBSTRUCTIONS
DAMAGE TO INLET OR OUTLET STRUCTURE	REPAIR OR REPLACE AS APPLICABLE

MAINTENANCE EQUIPMENT AND ACCESS

USE LANDSCAPE EQUIPMENT FOR MAINTENANCE; ACCESS BMP FROM PRIVATE ROAD SERVING THE SUBJECT PROPERTY OFF OF MELBA ROAD

INSPECTION FACILITATION

INSTALL A 1' x 1', 1.5' x 1.5', 2' x 2' AND TWO 3' X 3' OUTLET RISER STRUCTURE TO PROVIDE OBSERVATION ACCESS FOR INSPECTION OF MAINTENANCE THRESHOLDS WITHIN EACH BMP; MARKING TO BE PROVIDED ON BMP COMPONENTS TO DETERMINE HOW FULL BMP IS.

PASCO LARET SUITER
& ASSOCIATES
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APPENDIX 3a

BMP MAINTENANCE THRESHOLDS

BMP DESCRIPTION

BIOFILTRATION (3,030 SF)	STORM WATER MANAGEMENT AND DISCHARGE CONTROL MAINTENANCE AGREEMENT APPROVAL NO: ___________ O&M RESPONSIBLE PARTY DESIGNEE: TORREY PACIFIC CORPORATION

POST-CONSTRUCTION PERMANENT BMP OPERATION & MAINTENANCE PROCEDURE DETAILS

MAINTENANCE INDICATORS	MAINTENANCE ACTION
ACCUMULATION OF SEDIMENT, LITTER, OR DEBRIS	REMOVE AND PROPERLY DISPOSE OF ACCUMULATED MATERIALS, WITHOUT DAMAGE TO THE VEGETATION
POOR VEGETATION ESTABLISHMENT	RE-SEED, RE-PLANT, OR RE-ESTABLISH VEGETATION PER ORIGINAL PLANS
OVERGROWN VEGETATION	MOW OR TRIM AS APPROPRIATE, BUT NOT LESS THAT THE DESIGN HEIGHT OF THE VEGETATION PER ORIGINAL PLANS.
EROSION DUE TO CONCENTRATED IRRIGATION FLOW	REPAIR/RE-SEED/RE-PLANT ERODED AREAS AND ADJUST THE IRRIGATION SYSTEM
EROSION DUE TO CONCENTRATED STORM WATER RUNOFF FLOW	REPAIR/RE-SEED/RE-PLANT ERODED AREAS AND MAKE APPROPRIATE CORRECTIVE MEASURES SUCH AS ADDING STONE AT FLOW ENTRY POINTS OR MINOR RE-GRADING TO RESTORE PROPER DRAINAGE ACCORDING TO THE ORIGINAL PLAN.
STANDING WATER IN BIOFILTRATION AREAS	MAKE APPROPRIATE CORRECTIVE MEASURES SUCH AS ADJUSTING IRRIGATION SYSTEM, REMOVING OBSTRUCTION OF DEBRIS OR INVASIVE VEGETATION, OR CLEANING UNDERDRAINS
OBSTRUCTED INLET OR OUTLET STRUCTURE	CLEAR OBSTRUCTIONS
DAMAGE TO INLET OR OUTLET STRUCTURE	REPAIR OR REPLACE AS APPLICABLE

MAINTENANCE EQUIPMENT AND ACCESS

USE LANDSCAPE EQUIPMENT FOR MAINTENANCE; ACCESS BMP FROM LOT 19 WITH IN THE PROPOSED DEVELOPMENT

INSPECTION FACILITATION

INSTALL 2' X 2' AND 5-3' X 3' OUTLET RISER STRUCTURE TO PROVIDE OBSERVATION ACCESS FOR INSPECTION OF MAINTENANCE THRESHOLDS WITHIN EACH BMP; MARKING TO BE PROVIDED ON BMP COMPONENTS TO DETERMINE HOW FULL BMP IS.

PASCO LARET SUITER
& ASSOCIATES
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BF-1
Biofiltration

BMP MAINTENANCE FACT SHEET
FOR
STRUCTURAL BMP BF-1 BIOFILTRATION

Biofiltration facilities are vegetated surface water systems that filter water through vegetation, and soil or engineered media prior to discharge via underdrain or overflow to the downstream conveyance system. Biofiltration facilities have limited or no infiltration. They are typically designed to provide enough hydraulic head to move flows through the underdrain connection to the storm drain system. Typical biofiltration components include:

- Inflow distribution mechanisms (e.g., perimeter flow spreader or filter strips)
- Energy dissipation mechanism for concentrated inflows (e.g., splash blocks or riprap)
- Shallow surface ponding for captured flows
- Side slope and basin bottom vegetation selected based on climate and ponding depth
- Non-floating mulch layer
- Media layer (planting mix or engineered media) capable of supporting vegetation growth
- Filter course layer consisting of aggregate to prevent the migration of fines into uncompacted native soils or the aggregate storage layer
- Aggregate storage layer with underdrain(s)
- Impermeable liner or uncompacted native soils at the bottom of the facility
- Overflow structure

Normal Expected Maintenance

Biofiltration requires routine maintenance to: remove accumulated materials such as sediment, trash or debris; maintain vegetation health; maintain infiltration capacity of the media layer; replenish mulch; and maintain integrity of side slopes, inlets, energy dissipators, and outlets. A summary table of standard inspection and maintenance indicators is provided within this Fact Sheet.

Non-Standard Maintenance or BMP Failure

If any of the following scenarios are observed, the BMP is not performing as intended to protect downstream waterways from pollution and/or erosion. Corrective maintenance, increased inspection and maintenance, BMP replacement, or a different BMP type will be required.

- The BMP is not drained between storm events. Surface ponding longer than approximately 24 hours following a storm event may be detrimental to vegetation health, and surface ponding longer than approximately 96 hours following a storm event poses a risk of vector (mosquito) breeding. Poor drainage can result from clogging of the media layer, filter course, aggregate storage layer, underdrain, or outlet structure. The specific cause of the drainage issue must be determined and corrected.
- Sediment, trash, or debris accumulation greater than 25% of the surface ponding volume within one month. This means the load from the tributary drainage area is too high, reducing BMP function or clogging the BMP. This would require pretreatment measures within the tributary area draining to the BMP to intercept the materials. Pretreatment components, especially for sediment, will extend the life of components that are more expensive to replace such as media, filter course, and aggregate layers.
- Erosion due to concentrated storm water runoff flow that is not readily corrected by adding erosion control blankets, adding stone at flow entry points, or minor re-grading to restore proper drainage according to the original plan. If the issue is not corrected by restoring the BMP to the original plan and grade, the [City Engineer] shall be contacted prior to any additional repairs or reconstruction.

Other Special Considerations

Biofiltration is a vegetated structural BMP. Vegetated structural BMPs that are constructed in the vicinity of, or connected to, an existing jurisdictional water or wetland could inadvertently result in creation of expanded waters or wetlands. As such, vegetated structural BMPs have the potential to come under the jurisdiction of the United States Army Corps of Engineers, SDRWQCB, California Department of Fish and Wildlife, or the United States Fish and Wildlife Service. This could result in the need for specific resource agency permits and costly mitigation to perform maintenance of the structural BMP. Along with proper placement of a structural BMP, **routine maintenance is key to preventing this scenario**.

SUMMARY OF STANDARD INSPECTION AND MAINTENANCE FOR BF-1 BIOFILTRATION

The property owner is responsible to ensure inspection, operation and maintenance of permanent BMPs on their property unless responsibility has been formally transferred to an agency, community facilities district, homeowners association, property owners association, or other special district.

Maintenance frequencies listed in this table are average/typical frequencies. Actual maintenance needs are site-specific, and maintenance may be required more frequently. Maintenance must be performed whenever needed, based on maintenance indicators presented in this table. The BMP owner is responsible for conducting regular inspections to see when maintenance is needed based on the maintenance indicators. During the first year of operation of a structural BMP, inspection is recommended at least once prior to August 31 and then monthly from September through May. Inspection during a storm event is also recommended. After the initial period of frequent inspections, the minimum inspection and maintenance frequency can be determined based on the results of the first year inspections.

Threshold/Indicator	Maintenance Action	Typical Maintenance Frequency
Accumulation of sediment, litter, or debris	Remove and properly dispose of accumulated materials, without damage to the vegetation or compaction of the media layer.	• Inspect monthly. If the BMP is 25% full* or more in one month, increase inspection frequency to monthly plus after every 0.1-inch or larger storm event. • Remove any accumulated materials found at each inspection.
Obstructed inlet or outlet structure	Clear blockage.	• Inspect monthly and after every 0.5-inch or larger storm event. • Remove any accumulated materials found at each inspection.
Damage to structural components such as weirs, inlet or outlet structures	Repair or replace as applicable	• Inspect annually. • Maintenance when needed.
Poor vegetation establishment	Re-seed, re-plant, or re-establish vegetation per original plans.	• Inspect monthly. • Maintenance when needed.
Dead or diseased vegetation	Remove dead or diseased vegetation, re-seed, re-plant, or re-establish vegetation per original plans.	• Inspect monthly. • Maintenance when needed.
Overgrown vegetation	Mow or trim as appropriate.	• Inspect monthly. • Maintenance when needed.
2/3 of mulch has decomposed, or mulch has been removed	Remove decomposed fraction and top off with fresh mulch to a total depth of 3 inches.	• Inspect monthly. • Replenish mulch annually, or more frequently when needed based on inspection.

*"25% full" is defined as ¼ of the depth from the design bottom elevation to the crest of the outflow structure (e.g., if the height to the outflow opening is 12 inches from the bottom elevation, then the materials must be removed when there is 3 inches of accumulation – this should be marked on the outflow structure).

SUMMARY OF STANDARD INSPECTION AND MAINTENANCE FOR BF-1 BIOFILTRATION (Continued from previous page)		
Threshold/Indicator	**Maintenance Action**	**Typical Maintenance Frequency**
Erosion due to concentrated irrigation flow	Repair/re-seed/re-plant eroded areas and adjust the irrigation system.	- Inspect monthly. - Maintenance when needed.
Erosion due to concentrated storm water runoff flow	Repair/re-seed/re-plant eroded areas, and make appropriate corrective measures such as adding erosion control blankets, adding stone at flow entry points, or minor re-grading to restore proper drainage according to the original plan. If the issue is not corrected by restoring the BMP to the original plan and grade, the [City Engineer] shall be contacted prior to any additional repairs or reconstruction.	- Inspect after every 0.5-inch or larger storm event. If erosion due to storm water flow has been observed, increase inspection frequency to after every 0.1-inch or larger storm event. - Maintenance when needed. If the issue is not corrected by restoring the BMP to the original plan and grade, the [City Engineer] shall be contacted prior to any additional repairs or reconstruction.
Standing water in BMP for longer than 24 hours following a storm event Surface ponding longer than approximately 24 hours following a storm event may be detrimental to vegetation health	Make appropriate corrective measures such as adjusting irrigation system, removing obstructions of debris or invasive vegetation, clearing underdrains, or repairing/replacing clogged or compacted soils.	- Inspect monthly and after every 0.5-inch or larger storm event. If standing water is observed, increase inspection frequency to after every 0.1-inch or larger storm event. - Maintenance when needed.
Presence of mosquitos/larvae For images of egg rafts, larva, pupa, and adult mosquitos, see http://www.mosquito.org/biology	If mosquitos/larvae are observed: first, immediately remove any standing water by dispersing to nearby landscaping; second, make corrective measures as applicable to restore BMP drainage to prevent standing water. If mosquitos persist following corrective measures to remove standing water, or if the BMP design does not meet the 96-hour drawdown criteria due to release rates controlled by an orifice installed on the underdrain, the [City Engineer] shall be contacted to determine a solution. A different BMP type, or a Vector Management Plan prepared with concurrence from the County of San Diego Department of Environmental Health, may be required.	- Inspect monthly and after every 0.5-inch or larger storm event. If mosquitos are observed, increase inspection frequency to after every 0.1-inch or larger storm event. - Maintenance when needed.
Underdrain clogged	Clear blockage.	- Inspect if standing water is observed for longer than 24-96 hours following a storm event. - Maintenance when needed.

References

American Mosquito Control Association.
http://www.mosquito.org/
California Storm Water Quality Association (CASQA). 2003. Municipal BMP Handbook.
https://www.casqa.org/resources/bmp-handbooks/municipal-bmp-handbook
County of San Diego. 2014. Low Impact Development Handbook.
http://www.sandiegocounty.gov/content/sdc/dpw/watersheds/susmp/lid.html
San Diego County Copermittees. 2016. Model BMP Design Manual, Appendix E, Fact Sheet BF-1.
http://www.projectcleanwater.org/index.php?option=com_content&view=article&id=250&Itemid=220

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BF-1
Biofiltration

Date:	Inspector:	BMP ID No.:
Permit No.:	APN(s):	
Property / Development Name:	Responsible Party Name and Phone Number:	
Property Address of BMP:	Responsible Party Address:	

INSPECTION AND MAINTENANCE CHECKLIST FOR BF-1 BIOFILTRATION PAGE 1 of 5			
Threshold/Indicator	**Maintenance Recommendation**	**Date**	**Description of Maintenance Conducted**
Accumulation of sediment, litter, or debris Maintenance Needed? ☐ YES ☐ NO ☐ N/A	☐ Remove and properly dispose of accumulated materials, without damage to the vegetation ☐ If sediment, litter, or debris accumulation exceeds 25% of the surface ponding volume within one month (25% full*), add a forebay or other pre-treatment measures within the tributary area draining to the BMP to intercept the materials. ☐ Other / Comments:		
Poor vegetation establishment Maintenance Needed? ☐ YES ☐ NO ☐ N/A	☐ Re-seed, re-plant, or re-establish vegetation per original plans ☐ Other / Comments:		

*"25% full" is defined as ¼ of the depth from the design bottom elevation to the crest of the outflow structure (e.g., if the height to the outflow opening is 12 inches from the bottom elevation, then the materials must be removed when there is 3 inches of accumulation – this should be marked on the outflow structure).

Date:	Inspector:	BMP ID No.:
Permit No.:	APN(s):	

INSPECTION AND MAINTENANCE CHECKLIST FOR BF-1 BIOFILTRATION PAGE 2 of 5

Threshold/Indicator	Maintenance Recommendation	Date	Description of Maintenance Conducted
Dead or diseased vegetation Maintenance Needed? ☐ YES ☐ NO ☐ N/A	☐ Remove dead or diseased vegetation, re-seed, re-plant, or re-establish vegetation per original plans ☐ Other / Comments:		
Overgrown vegetation Maintenance Needed? ☐ YES ☐ NO ☐ N/A	☐ Mow or trim as appropriate ☐ Other / Comments:		
2/3 of mulch has decomposed, or mulch has been removed Maintenance Needed? ☐ YES ☐ NO ☐ N/A	☐ Remove decomposed fraction and top off with fresh mulch to a total depth of 3 inches ☐ Other / Comments:		

Date:	Inspector:	BMP ID No.:
Permit No.:	APN(s):	

INSPECTION AND MAINTENANCE CHECKLIST FOR BF-1 BIOFILTRATION PAGE 3 of 5

Threshold/Indicator	Maintenance Recommendation	Date	Description of Maintenance Conducted
Erosion due to concentrated irrigation flow Maintenance Needed? ☐ YES ☐ NO ☐ N/A	☐ Repair/re-seed/re-plant eroded areas and adjust the irrigation system ☐ Other / Comments:		
Erosion due to concentrated storm water runoff flow Maintenance Needed? ☐ YES ☐ NO ☐ N/A	☐ Repair/re-seed/re-plant eroded areas, and make appropriate corrective measures such as adding erosion control blankets, adding stone at flow entry points, or minor re-grading to restore proper drainage according to the original plan ☐ If the issue is not corrected by restoring the BMP to the original plan and grade, the [City Engineer] shall be contacted prior to any additional repairs or reconstruction ☐ Other / Comments:		

Date:	Inspector:	BMP ID No.:
Permit No.:	APN(s):	

INSPECTION AND MAINTENANCE CHECKLIST FOR BF-1 BIOFILTRATION PAGE 4 of 5

Threshold/Indicator	Maintenance Recommendation	Date	Description of Maintenance Conducted
Obstructed inlet or outlet structure Maintenance Needed? ☐ YES ☐ NO ☐ N/A	☐ Clear blockage ☐ Other / Comments:		
Underdrain clogged (inspect underdrain if standing water is observed for longer than 24-96 hours following a storm event) Maintenance Needed? ☐ YES ☐ NO ☐ N/A	☐ Clear blockage ☐ Other / Comments:		
Damage to structural components such as weirs, inlet or outlet structures Maintenance Needed? ☐ YES ☐ NO ☐ N/A	☐ Repair or replace as applicable ☐ Other / Comments:		

Date:	Inspector:	BMP ID No.:
Permit No.:	APN(s):	

INSPECTION AND MAINTENANCE CHECKLIST FOR BF-1 BIOFILTRATION PAGE 5 of 5

Threshold/Indicator	Maintenance Recommendation	Date	Description of Maintenance Conducted
Standing water in BMP for longer than 24-96 hours following a storm event* Surface ponding longer than approximately 24 hours following a storm event may be detrimental to vegetation health Maintenance Needed? ☐ YES ☐ NO ☐ N/A	☐ Make appropriate corrective measures such as adjusting irrigation system, removing obstructions of debris or invasive vegetation, clearing underdrains, or repairing/replacing clogged or compacted soils ☐ Other / Comments:		
Presence of mosquitos/larvae For images of egg rafts, larva, pupa, and adult mosquitos, see http://www.mosquito.org/biology Maintenance Needed? ☐ YES ☐ NO ☐ N/A	☐ Apply corrective measures to remove standing water in BMP when standing water occurs for longer than 24-96 hours following a storm event.** ☐ Other / Comments:		

*Surface ponding longer than approximately 24 hours following a storm event may be detrimental to vegetation health, and surface ponding longer than approximately 96 hours following a storm event poses a risk of vector (mosquito) breeding. Poor drainage can result from clogging of the media layer, filter course, aggregate storage layer, underdrain, or outlet structure. The specific cause of the drainage issue must be determined and corrected.

**If mosquitos persist following corrective measures to remove standing water, or if the BMP design does not meet the 96-hour drawdown criteria due to release rates controlled by an orifice installed on the underdrain, the [City Engineer] shall be contacted to determine a solution. A different BMP type, or a Vector Management Plan prepared with concurrence from the County of San Diego Department of Environmental Health, may be required.

ATTACHMENT 4 - COPY OF PLAN SHEETS SHOWING PERMANENT STORM WATER BMPS

This is the cover sheet for Attachment 4.

Use this checklist to ensure the required information has been included on the plans:

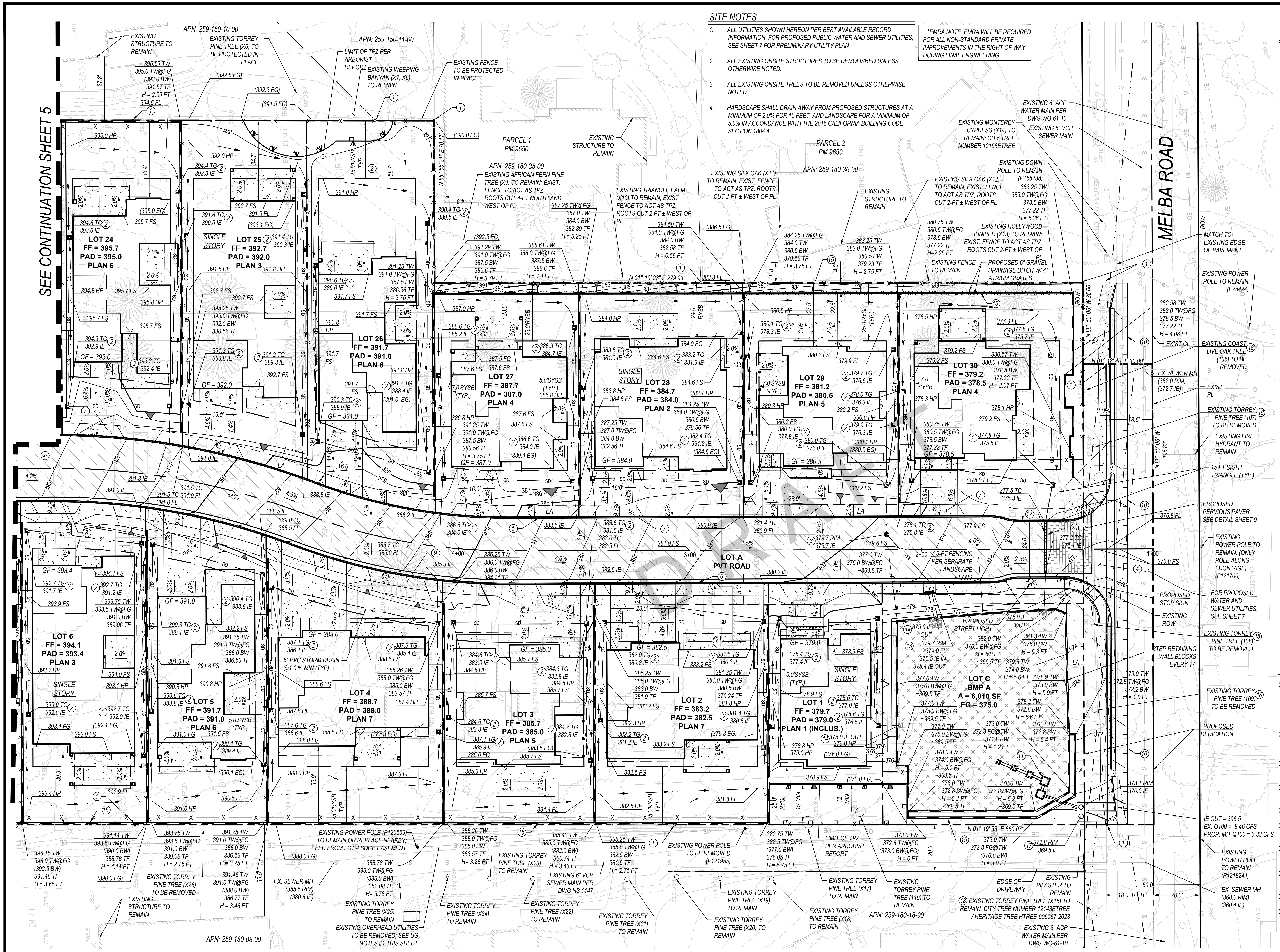
The plans must identify:

☐ Structural BMP(s) with ID numbers matching Form I-6 Summary of PDP Structural BMPs
☐ The grading and drainage design shown on the plans must be consistent with the delineation of DMAs shown on the DMA exhibit
☐ Details and specifications for construction of structural BMP(s)
☐ Signage indicating the location and boundary of structural BMP(s) as required by the [City Engineer]
☐ How to access the structural BMP(s) to inspect and perform maintenance
☐ Features that are provided to facilitate inspection (e.g., observation ports, cleanouts, silt posts, or other features that allow the inspector to view necessary components of the structural BMP and compare to maintenance thresholds)
☐ Manufacturer and part number for proprietary parts of structural BMP(s) when applicable
☐ Maintenance thresholds specific to the structural BMP(s), with a location-specific frame of reference (e.g., level of accumulated materials that triggers removal of the materials, to be identified based on viewing marks on silt posts or measured with a survey rod with respect to a fixed benchmark within the BMP)
☐ Recommended equipment to perform maintenance
☐ When applicable, necessary special training or certification requirements for inspection and maintenance personnel such as confined space entry or hazardous waste management
☐ Include landscaping plan sheets showing vegetation requirements for vegetated structural BMP(s)
☐ All BMPs must be fully dimensioned on the plans
☐ When proprietary BMPs are used, site-specific cross section with outflow, inflow, and model number shall be provided. Photocopies of general brochures are not acceptable.

SITE NOTES

1. ALL UTILITIES SHOWN HEREON PER BEST AVAILABLE RECORD INFORMATION. FOR PROPOSED PUBLIC WATER AND SEWER UTILITIES, SEE SHEET 7 FOR PRELIMINARY UTILITY PLAN
2. ALL EXISTING ONSITE STRUCTURES TO BE DEMOLISHED UNLESS OTHERWISE NOTED.
3. ALL EXISTING ONSITE TREES TO BE REMOVED UNLESS OTHERWISE NOTED.
4. HARDSCAPE SHALL DRAIN AWAY FROM PROPOSED STRUCTURES AT A MINIMUM OF 2.0% FOR 10 FEET, AND LANDSCAPE FOR A MINIMUM OF 5.0% IN ACCORDANCE WITH THE 2016 CALIFORNIA BUILDING CODE SECTION 1804.4.

*EMRA NOTE: EMRA WILL BE REQUIRED FOR ALL NON-STANDARD PRIVATE IMPROVEMENTS IN THE RIGHT OF WAY DURING FINAL ENGINEERING



PLAN VIEW - PRELIMINARY GRADING PLAN

SCALE: 1" = 20' HORIZONTAL

LEGEND

EXISTING SUBDIVISION BOUNDARY (PL)	
CENTERLINE OF ROAD	
RIGHT-OF-WAY	
PROPOSED SUBDIVISION BOUNDARY (AFTER DEDICATION)	
ADJACENT PROPERTY LINE	
SETBACK LINE	
EXISTING CONTOUR LINE	64
PROPOSED CONTOUR LINE	64
PROPOSED FLOWLINE	
PROPOSED DIRECTION OF FLOW	→ →
PROPOSED SAWCUT OF EXISTING AC PAVEMENT	
PROPOSED FENCE (PER SEPARATE LANDSCAPE PLANS)	X X
PROPOSED 6" STORM DRAIN @ 1.0% MIN	SD SD
PROPOSED 12" AREA DRAIN	⧈
PROPOSED 6" STORM DRAIN CLEANOUT	⊡
PROPOSED 18" PVC STORM DRAIN @ 1.0% MIN	
PROPOSED TYPE-B CURB INLET PER SDSRSD D-2	
PROPOSED TYPE A-4 STORM DRAIN CLEANOUT PER SDRSD D-9	
PROPOSED LIMIT OF GRADING	
PROPOSED 6" PCC CURB & GUTTER PER SDRSD G-2	
PROPOSED PCC PAVEMENT	
PROPOSED AC PAVEMENT (4" AC OVER 6" CLASS II AB MIN OR PER GEOTECH RECOMMENDATION)	▨
PROPOSED 6" GRAVEL DRAINAGE DITCH	
PROPOSED BMP BIOFILTRATION BASIN PER DETAIL SHEET 9	
PROPOSED MASONRY RETAINING WALL	
PROPOSED 6"X16" FLUSH CURB	
EXISTING CITY INVENTORIED STREET TREE IN CURRENT PUBLIC RIGHT-OF-WAY	○*
EXISTING TREE	○
LIMIT OF TREE PROTECTION ZONE (TPZ) PER ARBORIST REPORT	
*DIAMETER AT BREAST HEIGHT (DBH) MEASURED AT 54" ABOVE NATURAL GRADE	20" DBH ○
PROPOSED FINISHED SURFACE CALLOUT	XX.XX FS
EXISTING FINISHED SURFACE CALLOUT	(XX.XX FS)
PROPOSED FILL SLOPE	▼
PROPOSED CUT SLOPE	△
SHEET MATCHLINE	

CONSTRUCTION NOTES

① EXISTING SURVEY MONUMENT SHALL BE PROTECTED IN PLACE. MONUMENT SHALL BE REPLACED BY A LICENSED LAND SURVEYOR WHO SHALL FILE A CORNER RECORD WITH THE COUNTY IF DISTURBED OR DESTROYED

② PROPOSED 12" X 12" AREA DRAIN BY NDS OR APPROVED EQUAL

③ PROPOSED 6" TRAFFIC RATED PRIVATE STORM DRAIN CLEANOUT BY NDS OR APPROVED EQUAL

④ PROPOSED PCC CROSS-GUTTER PER SDRSD G-12

⑤ PROPOSED 6" PCC CURB PER SDRSD G-1

⑥ PROPOSED 6" PCC CURB AND GUTTER PER SDRSD G-2

⑦ PROPOSED PCC DRIVEWAY APRON PER SDRSD G-14A

⑧ PROPOSED PCC DRIVEWAY APRON PER SDRSD G-14C

⑨ PROPOSED PCC SIDEWALK PER SDRSD G-7

⑩ SAWCUT EXISTING AC PAVEMENT; SEE DETAIL ON SHEET 9

⑪ PROPOSED BMP OUTLET STRUCTURES SEE SHEET 10 FOR BMP DETAILS

⑫ PROPOSED 12" TRENCH DRAIN BY NDS OR APPROVED EQUAL

⑬ PROPOSED TYPE B STORM DRAIN CURB INLET PER SDRSD D-02

⑭ OUTLET STORM DRAIN THROUGH RETAINING WALL; PROPOSED 4' X 4' ROCK RIP RAP ENERGY DISSIPATER; 1.1' THICK, NO. 2 BACKING PER SDRSD D-34, D-40

⑮ PROPOSED MASONRY RETAINING WALL PER SDRSD C-03

⑯ PROPOSED TRENCH DRAIN BY NDS OR APPROVED EQUAL

⑰ PROPOSED CLEANOUT PER SDRSD D-09 WITH CURB OUTLET PER SDRSD D-25

⑱ EXISTING TREE TO REMAIN; SEE STREET TREE NOTE 1 BELOW AND SHEET 13 FOR ADDITIONAL INFORMATION

⑲ PROPOSED FREE-STANDING MASONRY WALL (NON-RETAINING) (NOT USED THIS SHEET)

⑳ PROPOSED 6" X 16" PCC FLUSH CURB

ABBREVIATIONS

*SEE SHEET 1 FOR ABBREVIATION LEGEND

PROPOSED EASEMENTS / DEDICATIONS

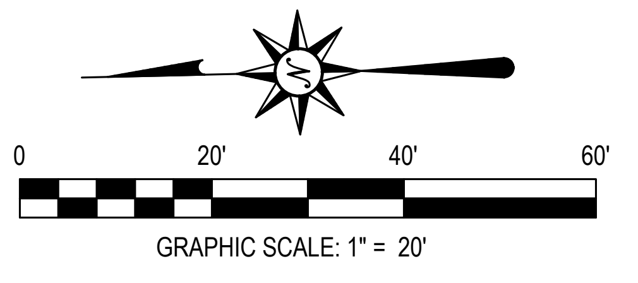
*SEE SHEET 2 FOR PROPOSED EASEMENTS AND DEDICATIONS

UG NOTES

1. EXISTING OVERHEAD UTILITIES TO BE REMOVED ALONG WESTERN PL BETWEEN POLE P121824J AND P120556 AND ON NORTHERN PL OF 1210 MELBA ROAD BETWEEN P120556 AND P120555. NEW UNDERGROUND SERVICE VIA PROJECT TO P120559 AND P120558 TO BE ADDED; OVERHEAD SERVICE FROM P120558 TO 1210 MELBA ROAD BARN TO REMAIN AND OVERHEAD SERVICE FROM P120559 TO 1210 MELBA RESIDENCE TO REMAIN.

STREET TREE NOTE

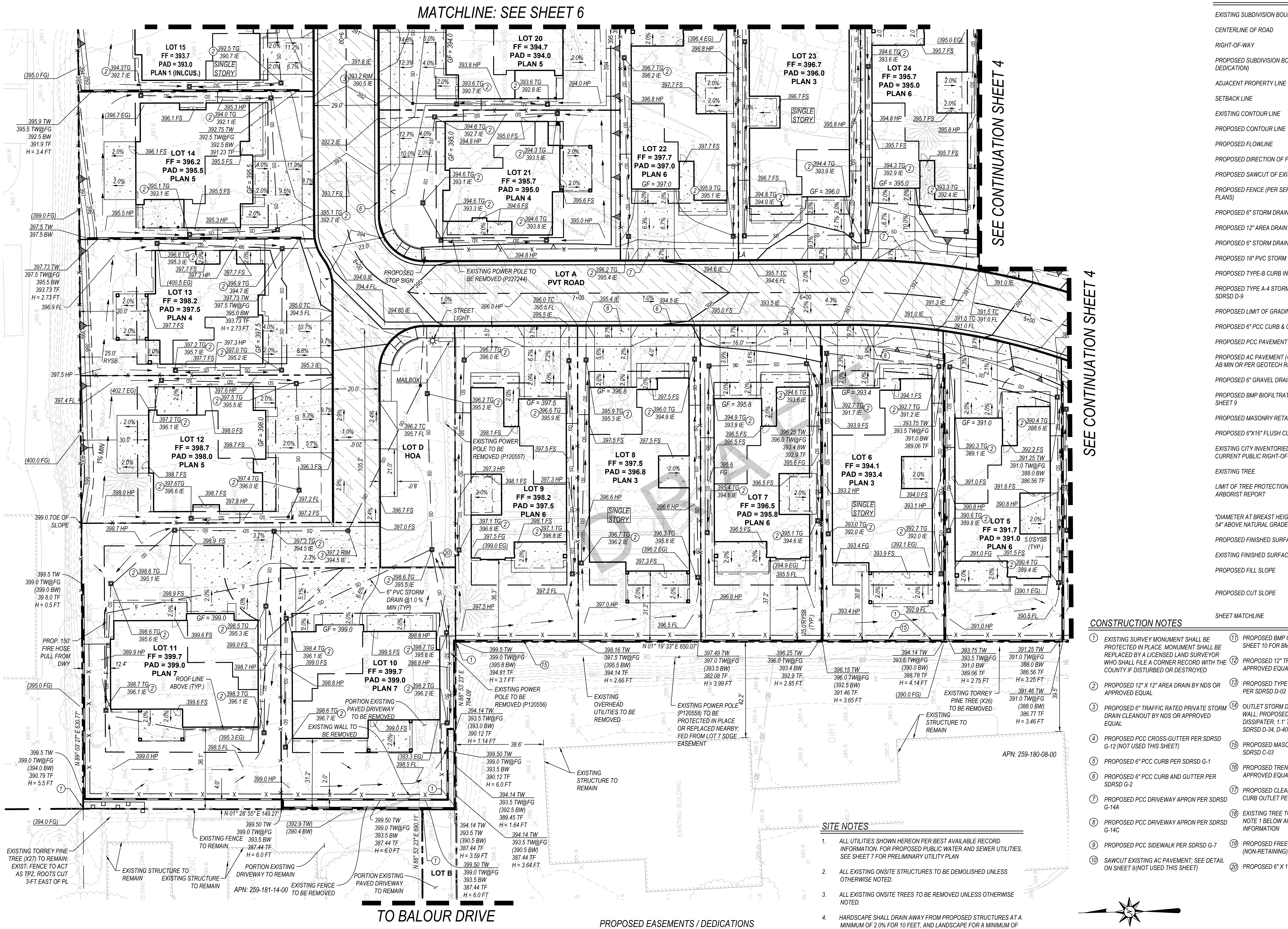
1. SEE SHEET 13 FOR MELBA ROAD FRONTAGE OPTION "A". TREES 106, 107, 108, 109, X15 AND X16 TO BE REMOVED FROM MELBA ROAD FRONTAGE OPTION "A". REFER TO SEPARATE ARBORIST REPORT FOR RECOMMENDATIONS WITHIN THE TREE PROTECTION ZONE (TPZ) FOR THE EXISTING TREES ON PRIVATE PROPERTY AND ALONG PROPERTY BOUNDARY TO BE PROTECTED IN PLACE



GRAPHIC SCALE: 1" = 20'

REGISTERED PROFESSIONAL ENGINEER
TYLER G LAWSON
No. 80356
Exp. 12/31/24
CIVIL
STATE OF CALIFORNIA

PLSA
PLSAENGINEERING.COM



PLAN VIEW - PRELIMINARY GRADING PLAN

SCALE: 1" = 20' HORIZONTAL

PROPOSED EASEMENTS / DEDICATIONS

*SEE SHEET 2 FOR PROPOSED EASEMENTS AND DEDICATIONS

SITE NOTES

1. ALL UTILITIES SHOWN HEREON PER BEST AVAILABLE RECORD INFORMATION. FOR PROPOSED PUBLIC WATER AND SEWER UTILITIES, SEE SHEET 7 FOR PRELIMINARY UTILITY PLAN
2. ALL EXISTING ONSITE STRUCTURES TO BE DEMOLISHED UNLESS OTHERWISE NOTED.
3. ALL EXISTING ONSITE TREES TO BE REMOVED UNLESS OTHERWISE NOTED.
4. HARDSCAPE SHALL DRAIN AWAY FROM PROPOSED STRUCTURES AT A MINIMUM OF 2.0% FOR 10 FEET, AND LANDSCAPE FOR A MINIMUM OF 5.0% IN ACCORDANCE WITH THE 2016 CALIFORNIA BUILDING CODE SECTION 1804.4.

LEGEND

EXISTING SUBDIVISION BOUNDARY (PL)	━━ ━ ━ ━━
CENTERLINE OF ROAD	—— — ——
RIGHT-OF-WAY	———
PROPOSED SUBDIVISION BOUNDARY (AFTER DEDICATION)	━━ ━ ━ ━━
ADJACENT PROPERTY LINE	—— —— ——
SETBACK LINE	—— —— ——
EXISTING CONTOUR LINE	— — 64 — —
PROPOSED CONTOUR LINE	—— 64 ——
PROPOSED FLOWLINE	· · → · · →
PROPOSED DIRECTION OF FLOW	→ →
PROPOSED SAWCUT OF EXISTING AC PAVEMENT	┴ ┴ ┴
PROPOSED FENCE (PER SEPARATE LANDSCAPE PLANS)	—— X —— X ——
PROPOSED 6" STORM DRAIN @ 1.0% MIN	—— SD —— SD ——
PROPOSED 12" AREA DRAIN	▣
PROPOSED 6" STORM DRAIN CLEANOUT	▣
PROPOSED 18" PVC STORM DRAIN @ 1.0% MIN	═ ═ ═
PROPOSED TYPE-B CURB INLET PER SDSRSD D-2	▭
PROPOSED TYPE A-4 STORM DRAIN CLEANOUT PER SDRSD D-9	▣
PROPOSED LIMIT OF GRADING	—v—v—v—
PROPOSED 6" PCC CURB & GUTTER PER SDRSD G-2	═
PROPOSED PCC PAVEMENT	▭
PROPOSED AC PAVEMENT (4" AC OVER 6" CLASS II AB MIN OR PER GEOTECH RECOMMENDATION)	▨
PROPOSED 6" GRAVEL DRAINAGE DITCH	▒
PROPOSED BMP BIOFILTRATION BASIN PER DETAIL SHEET 9	▨
PROPOSED MASONRY RETAINING WALL	▬ ▬ ▬
PROPOSED 6"X16" FLUSH CURB	▭
EXISTING CITY INVENTORIED STREET TREE IN CURRENT PUBLIC RIGHT-OF-WAY	○*
EXISTING TREE	○
LIMIT OF TREE PROTECTION ZONE (TPZ) PER ARBORIST REPORT	—□—□—□—
*DIAMETER AT BREAST HEIGHT (DBH) MEASURED AT 54" ABOVE NATURAL GRADE	20" DBH ○
PROPOSED FINISHED SURFACE CALLOUT	XX.XX FS
EXISTING FINISHED SURFACE CALLOUT	(XX.XX FS)
PROPOSED FILL SLOPE	▼
PROPOSED CUT SLOPE	△
SHEET MATCHLINE	▬ ▬ ▬

CONSTRUCTION NOTES

① EXISTING SURVEY MONUMENT SHALL BE PROTECTED IN PLACE. MONUMENT SHALL BE REPLACED BY A LICENSED LAND SURVEYOR WHO SHALL FILE A CORNER RECORD WITH THE COUNTY IF DISTURBED OR DESTROYED

② PROPOSED 12" X 12" AREA DRAIN BY NDS OR APPROVED EQUAL

③ PROPOSED 6" TRAFFIC RATED PRIVATE STORM DRAIN CLEANOUT BY NDS OR APPROVED EQUAL

④ PROPOSED PCC CROSS-GUTTER PER SDRSD G-12 (NOT USED THIS SHEET)

⑤ PROPOSED 6" PCC CURB PER SDRSD G-1

⑥ PROPOSED 6" PCC CURB AND GUTTER PER SDRSD G-2

⑦ PROPOSED PCC DRIVEWAY APRON PER SDRSD G-14A

⑧ PROPOSED PCC DRIVEWAY APRON PER SDRSD G-14C

⑨ PROPOSED PCC SIDEWALK PER SDRSD G-7

⑩ SAWCUT EXISTING AC PAVEMENT; SEE DETAIL ON SHEET 9(NOT USED THIS SHEET)

⑪ PROPOSED BMP OUTLET STRUCTURES SEE SHEET 10 FOR BMP DETAILS (NOT USED THIS SHEET)

⑫ PROPOSED 12" TRENCH DRAIN BY NDS OR APPROVED EQUAL

⑬ PROPOSED TYPE B STORM DRAIN CURB INLET PER SDRSD D-02

⑭ OUTLET STORM DRAIN THROUGH RETAINING WALL; PROPOSED 4' X 4' ROCK RIP RAP ENERGY DISSIPATER; 1.1' THICK, NO. 2 BACKING PER SDRSD D-34, D-40 (NOT USED THIS SHEET)

⑮ PROPOSED MASONRY RETAINING WALL PER SDRSD C-03

⑯ PROPOSED TRENCH DRAIN BY NDS OR APPROVED EQUAL(NOT USED THIS SHEET)

⑰ PROPOSED CLEANOUT PER SDRSD D-09 WITH CURB OUTLET PER SDRSD D-25(NOT USED THIS SHEET)

⑱ EXISTING TREE TO REMAIN; SEE STREET TREE NOTE 1 BELOW AND SHEET 13 FOR ADDITIONAL INFORMATION

⑲ PROPOSED FREE-STANDING MASONRY WALL (NON-RETAINING)(NOT USED THIS SHEET)

⑳ PROPOSED 6" X 16" PCC FLUSH CURB

0 20' 40' 60'

GRAPHIC SCALE: 1" = 20'

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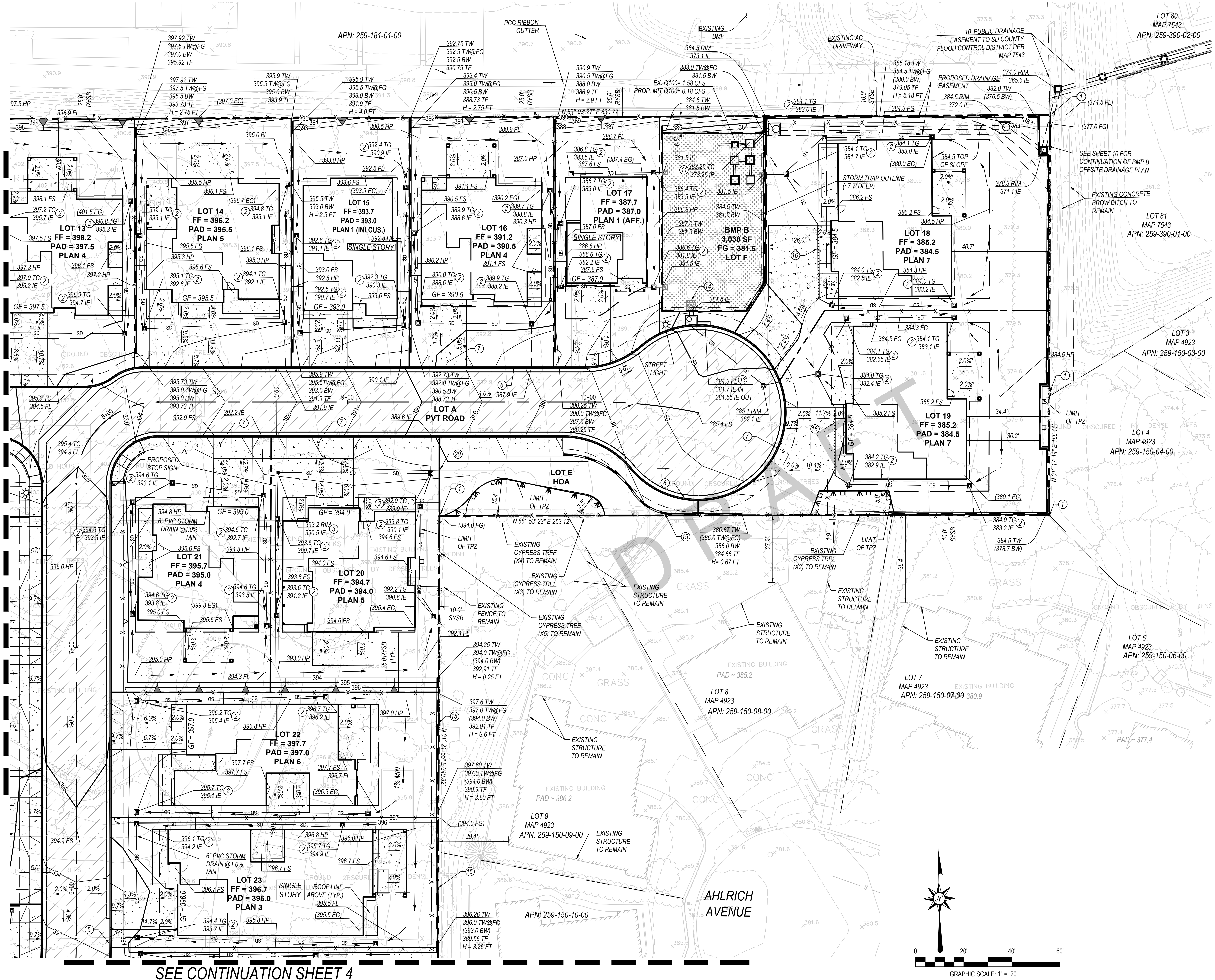

PLAN VIEW - PRELIMINARY GRADING PLAN

SCALE: 1" = 20' HORIZONTAL

PROPOSED EASEMENTS / DEDICATIONS

*SEE SHEET 2 FOR PROPOSED EASEMENTS AND DEDICATIONS

LEGEND

EXISTING SUBDIVISION BOUNDARY (PL)	━━ ━ ━ ━━
CENTERLINE OF ROAD	—— — ——
RIGHT-OF-WAY	———
PROPOSED SUBDIVISION BOUNDARY (AFTER DEDICATION)	━━ ━ ━ ━━
ADJACENT PROPERTY LINE	— — —
SETBACK LINE	— — —
EXISTING CONTOUR LINE	— — 64 — —
PROPOSED CONTOUR LINE	—— 64 ——
PROPOSED FLOWLINE	· · → · · →
PROPOSED DIRECTION OF FLOW	→ →
PROPOSED FENCE (PER SEPARATE LANDSCAPE PLANS)	— X — X —
PROPOSED 6" STORM DRAIN @ 1.0% MIN	— SD — SD —
PROPOSED 12" AREA DRAIN	▣
PROPOSED 6" STORM DRAIN CLEANOUT	▣
PROPOSED 18" PVC STORM DRAIN @ 1.0% MIN	═ ═ ═
PROPOSED TYPE-B CURB INLET PER SDSRSD D-2	
PROPOSED TYPE A-4 STORM DRAIN CLEANOUT PER SDRSD D-9	▣
PROPOSED LIMIT OF GRADING	
PROPOSED 6" PCC CURB & GUTTER PER SDRSD G-2	═
PROPOSED PCC PAVEMENT	
PROPOSED AC PAVEMENT (4" AC OVER 6" CLASS II AB MIN OR PER GEOTECH RECOMMENDATION)	▨
PROPOSED 6" GRAVEL DRAINAGE DITCH	
PROPOSED BMP BIOFILTRATION BASIN PER DETAIL SHEET 9	
PROPOSED MASONRY RETAINING WALL	
PROPOSED 6"X16" FLUSH CURB	▭
EXISTING CITY INVENTORIED STREET TREE IN CURRENT PUBLIC RIGHT-OF-WAY	○*
EXISTING TREE	○
LIMIT OF TREE PROTECTION ZONE (TPZ) PER ARBORIST REPORT	
*DIAMETER AT BREAST HEIGHT (DBH) MEASURED AT 54" ABOVE NATURAL GRADE	20" DBH ○
PROPOSED FINISHED SURFACE CALLOUT	XX.XX FS
EXISTING FINISHED SURFACE CALLOUT	(XX.XX FS)
PROPOSED FILL SLOPE	▼
PROPOSED CUT SLOPE	△
SHEET MATCHLINE	▬ ▬ ▬

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⑤ PROPOSED 6" PCC CURB PER SDRSD G-1

⑥ PROPOSED 6" PCC CURB AND GUTTER PER SDRSD G-2

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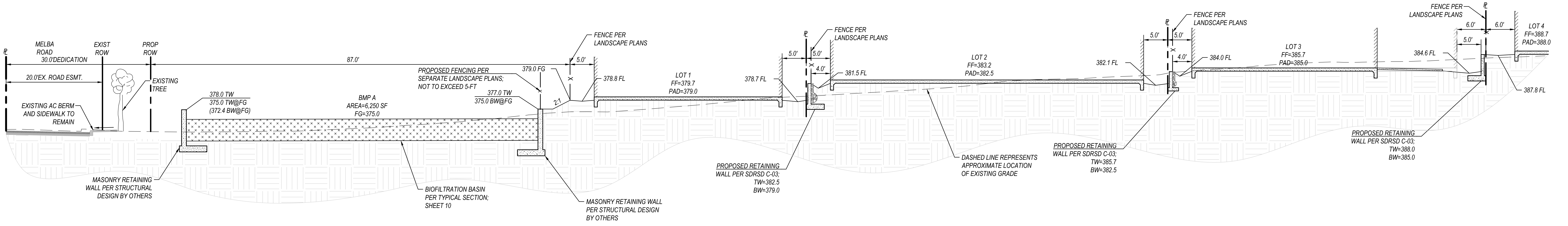
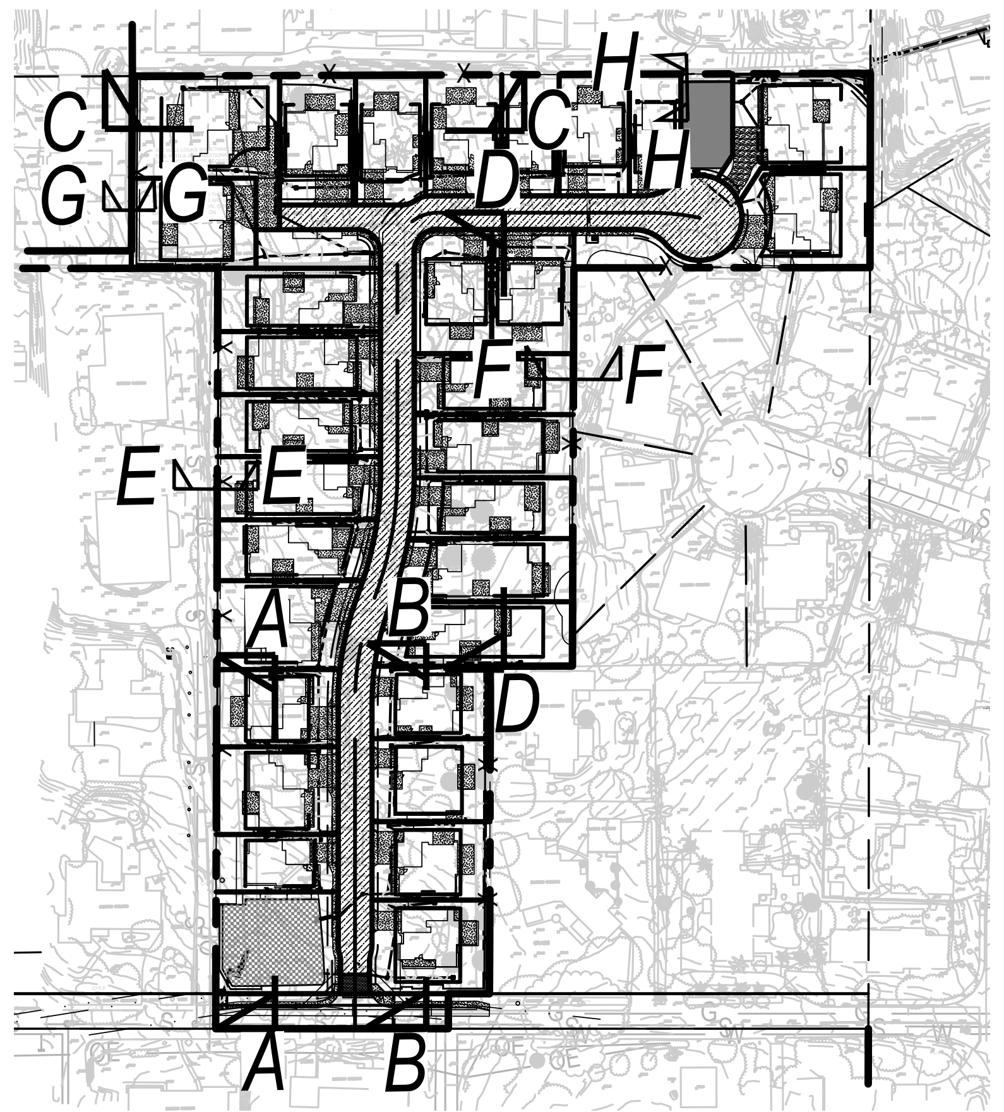


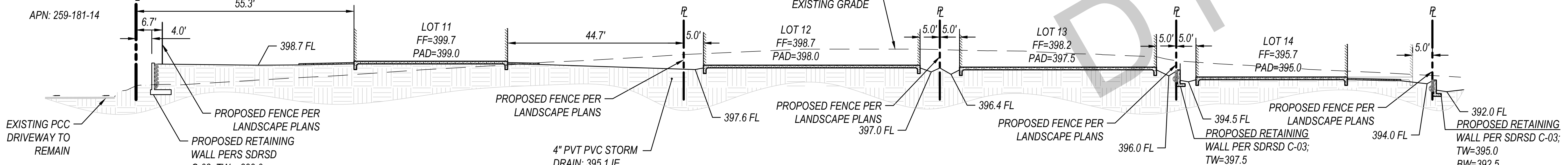
SECTION A-A
NOT TO SCALE
(SHEET 4)

SECTION B-B
NOT TO SCALE
(SHEET 4)

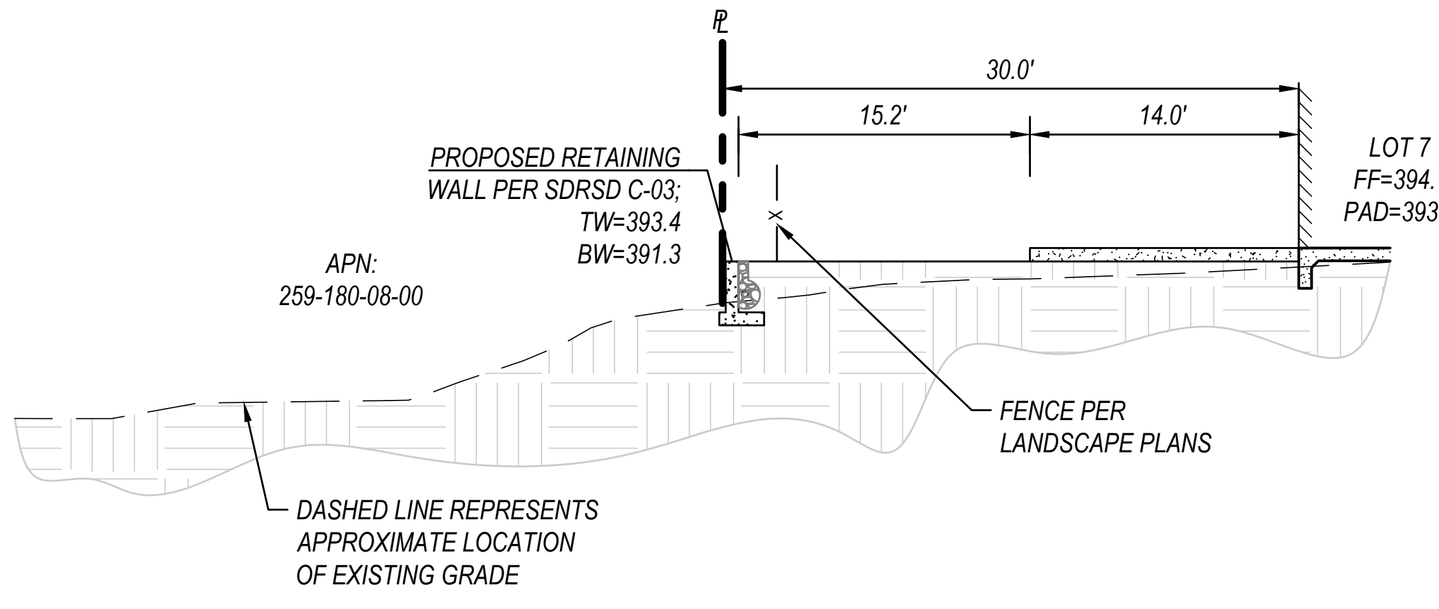


LOT 10

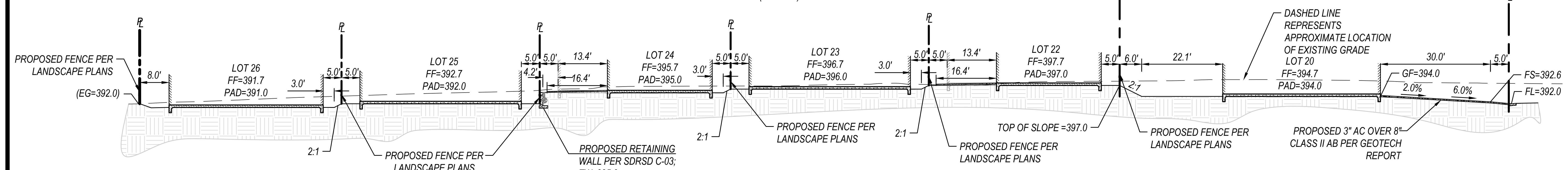
KEY MAP
NOT TO SCALE



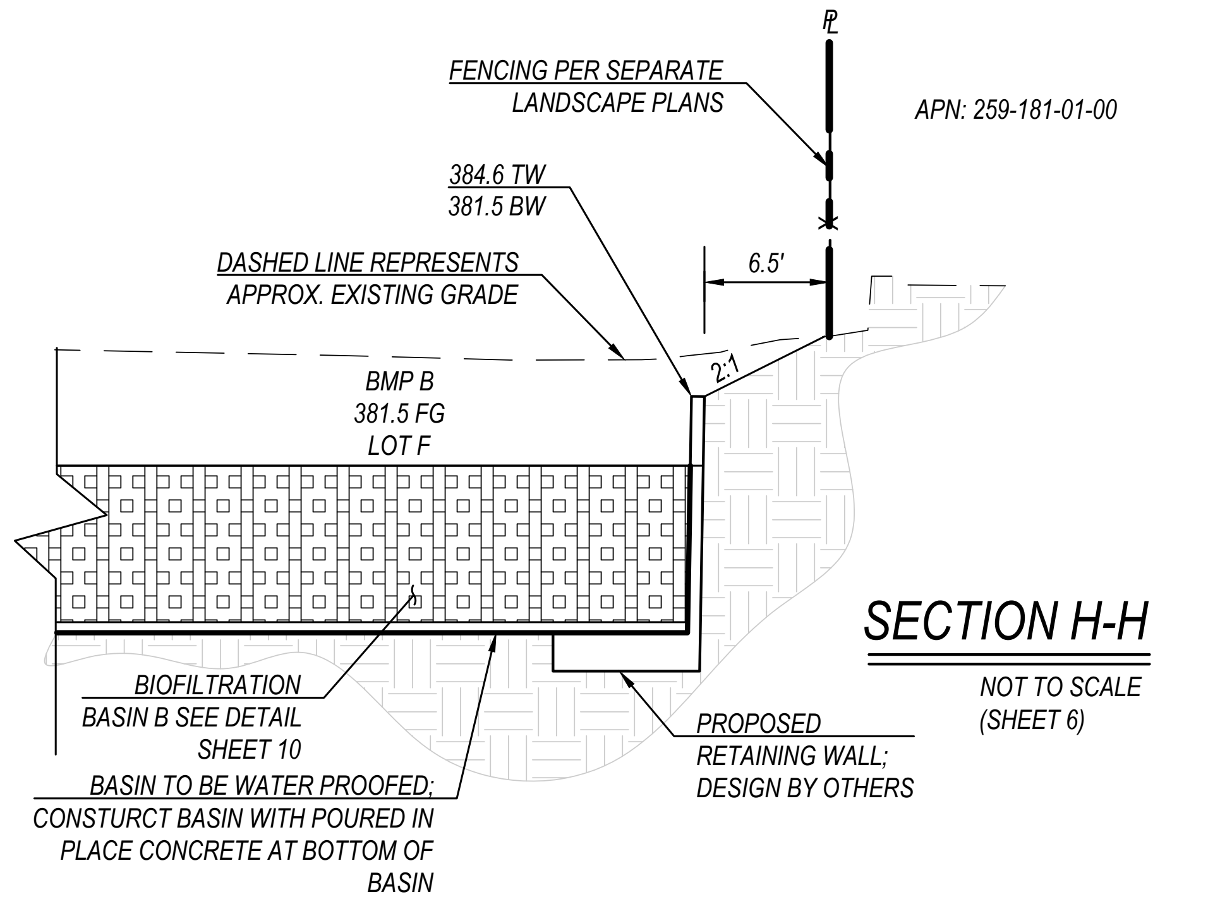
SECTION C-C
NOT TO SCALE
(SHEET 5)



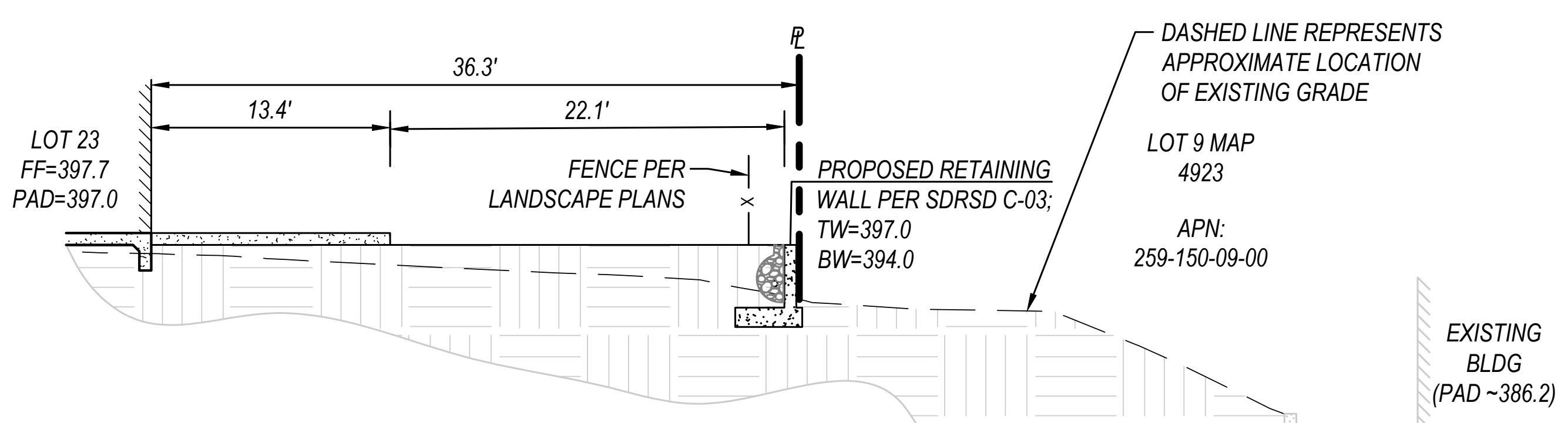
SECTION E-E
NOT TO SCALE
(SHEET 5)



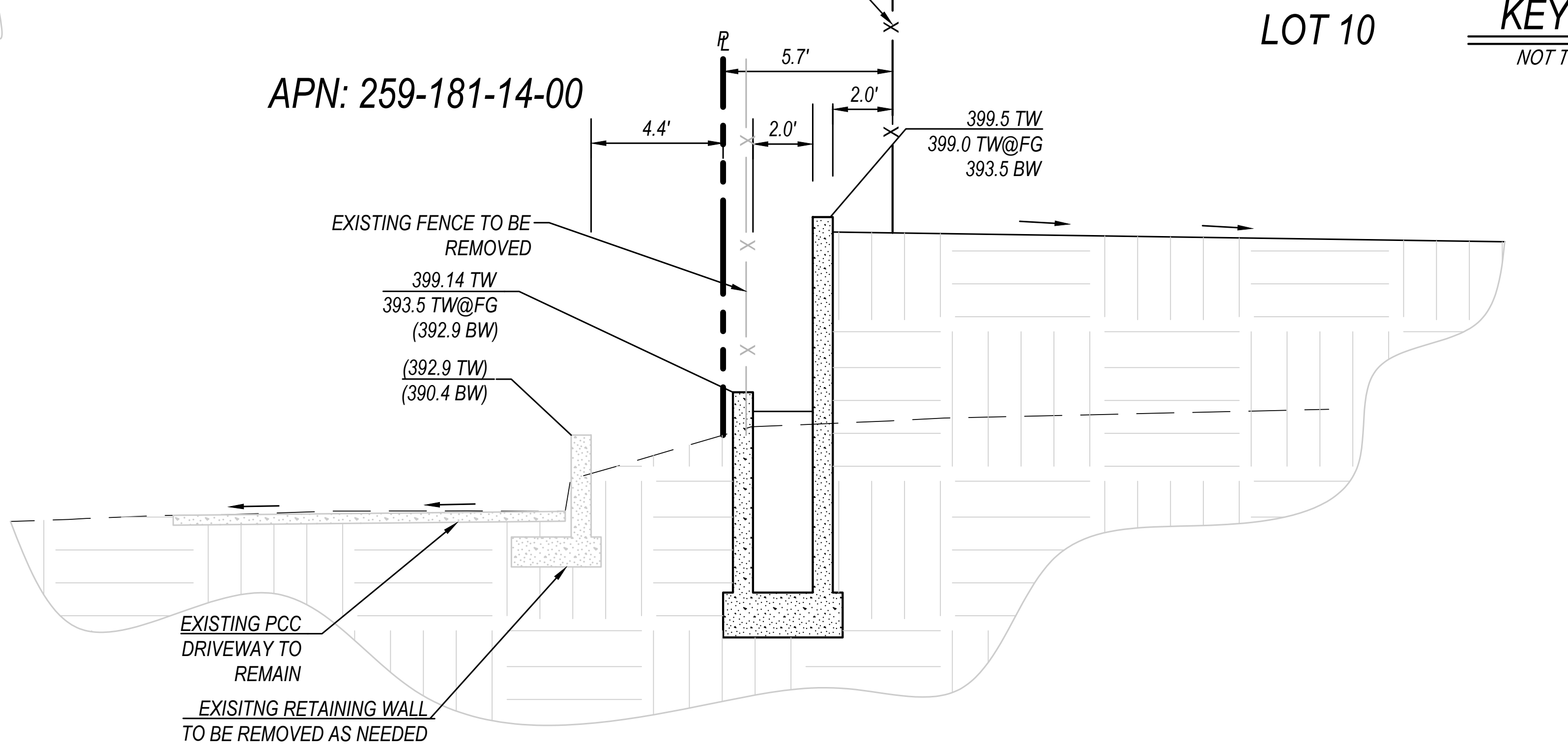
SECTION D-D
NOT TO SCALE
(SHEET 4 & 5)



SECTION H-H
NOT TO SCALE
(SHEET 6)



SECTION F-F
NOT TO SCALE
(SHEET 6)



SECTION G-G
NOT TO SCALE
(SHEET 6)

NOTE: BUILDING HEIGHT TO BE MEASURED FROM THE LOWER OF EXISTING OR PROPOSED FINISHED GRADES

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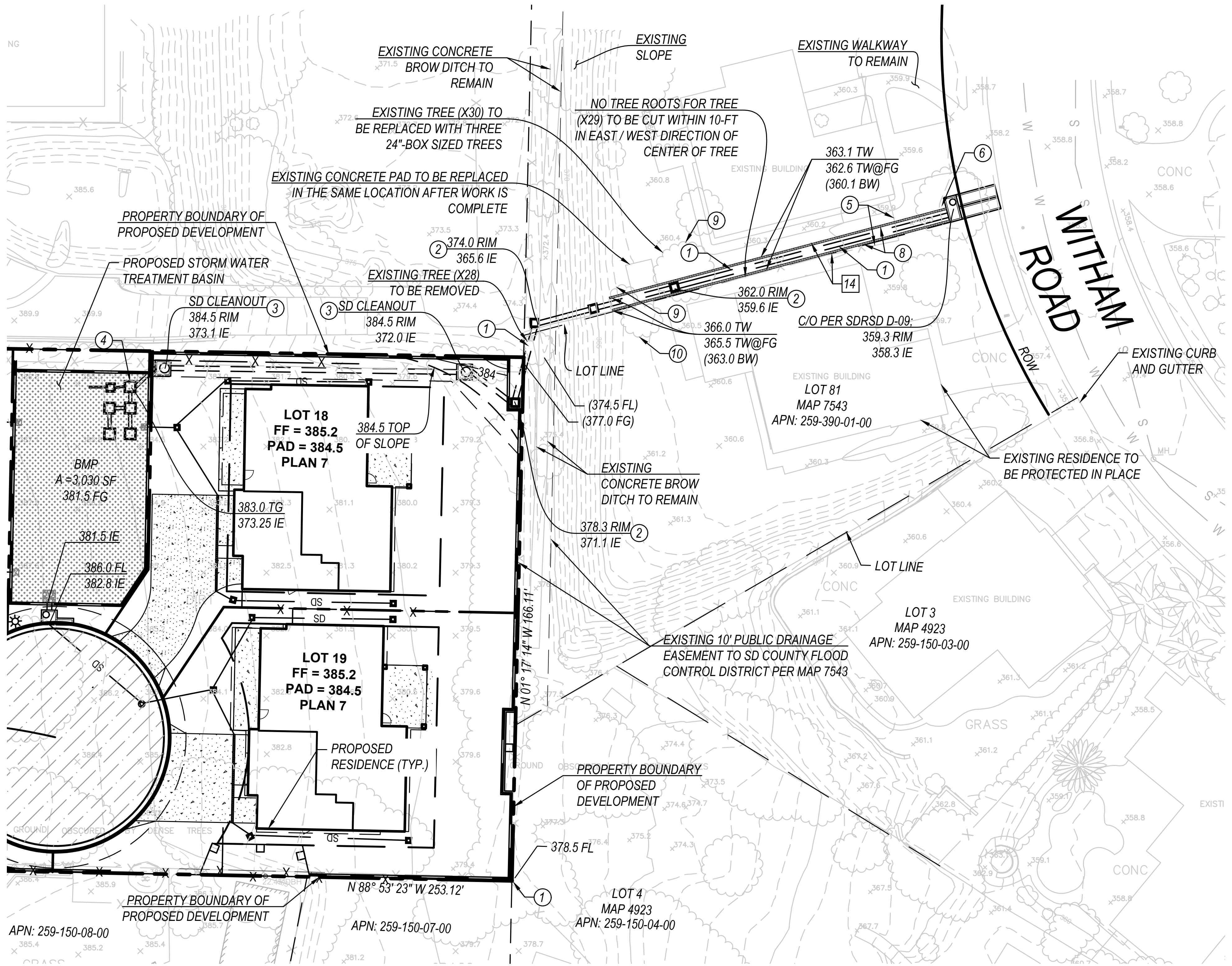
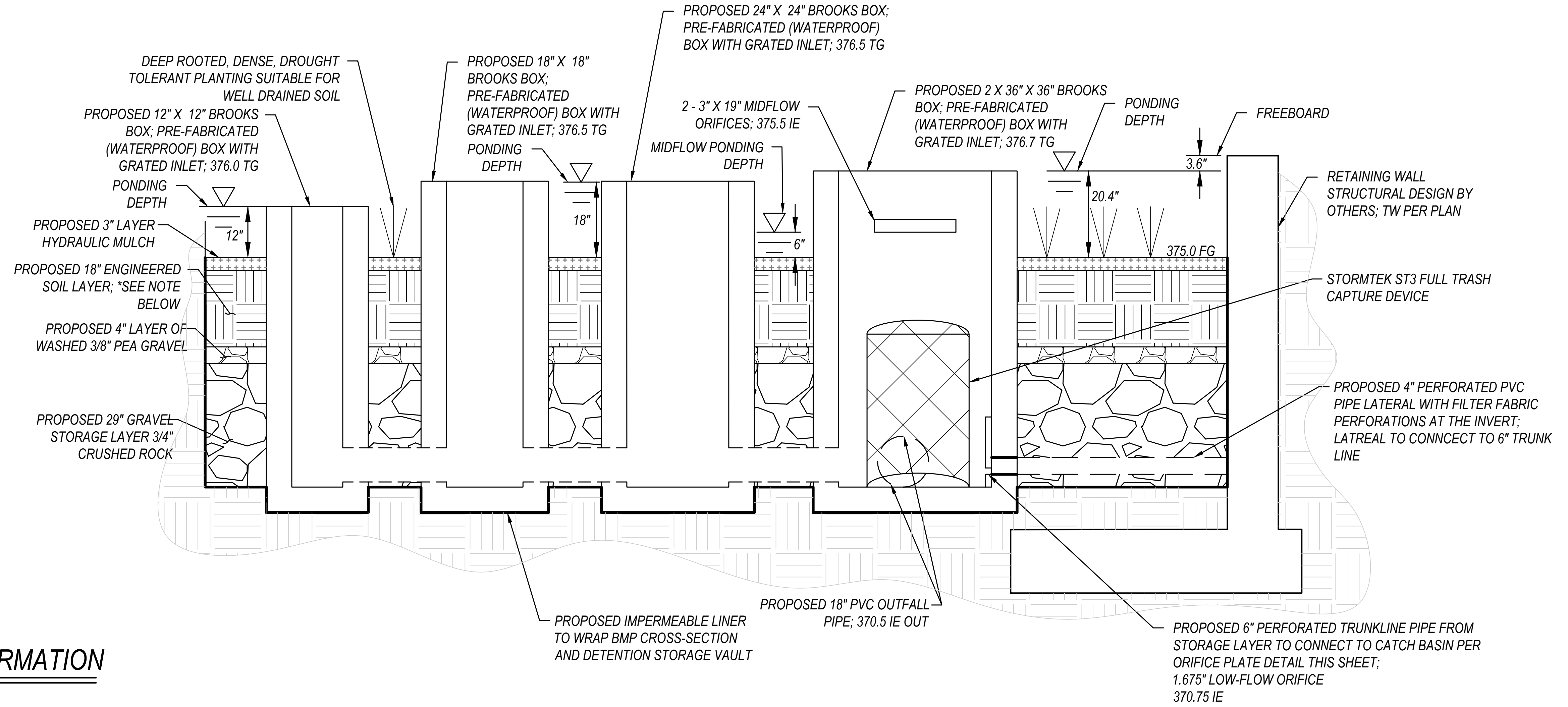


PLAN VIEW - BMP B OFFSITE DRAINAGE PLAN

SCALE: 1" = 30' HORIZONTAL

GRAPHIC SCALE 1" = 30'

30 0 30 60 90



TYPICAL SECTION - BIOFILTRATION BASIN A

NOT TO SCALE

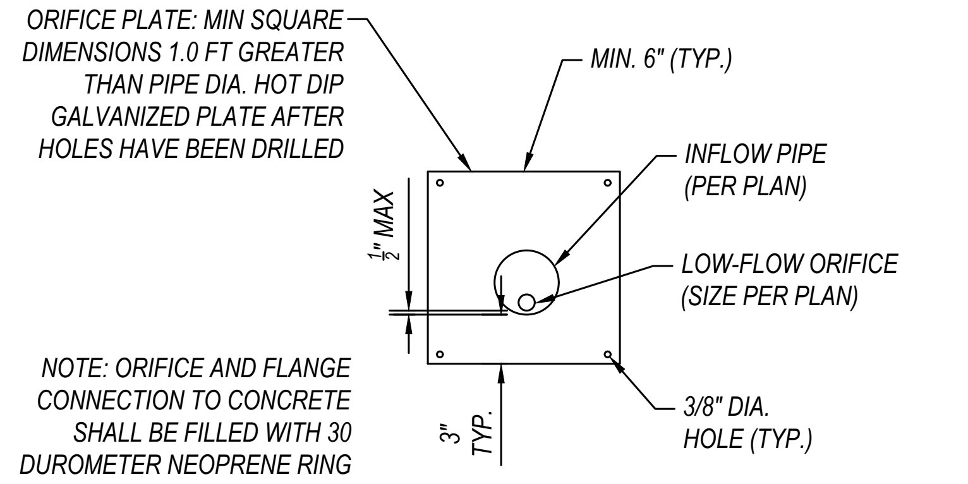
*BIOFILTRATION "ENGINEERED SOIL" LAYER SHALL BE EVENLY MIXED COMPOSITION OF WASHED SAND, SANDY LOAM TOPSOIL, AND HUMIC COMPOST. THE MIX SHALL CONTAIN 65% SAND, 20% TOPSOIL, AND 15% COMPOST OR HARDWOOD MULCH IN ACCORDANCE WITH COUNTY OF SAN DIEGO LID BIOSWALE MEDIA

PROPOSED EASEMENT INFORMATION

14 PROPOSED DRAINAGE EASEMENT (ON LOT 80) FOR THE BENEFIT OF THE PROPOSED DEVELOPMENT

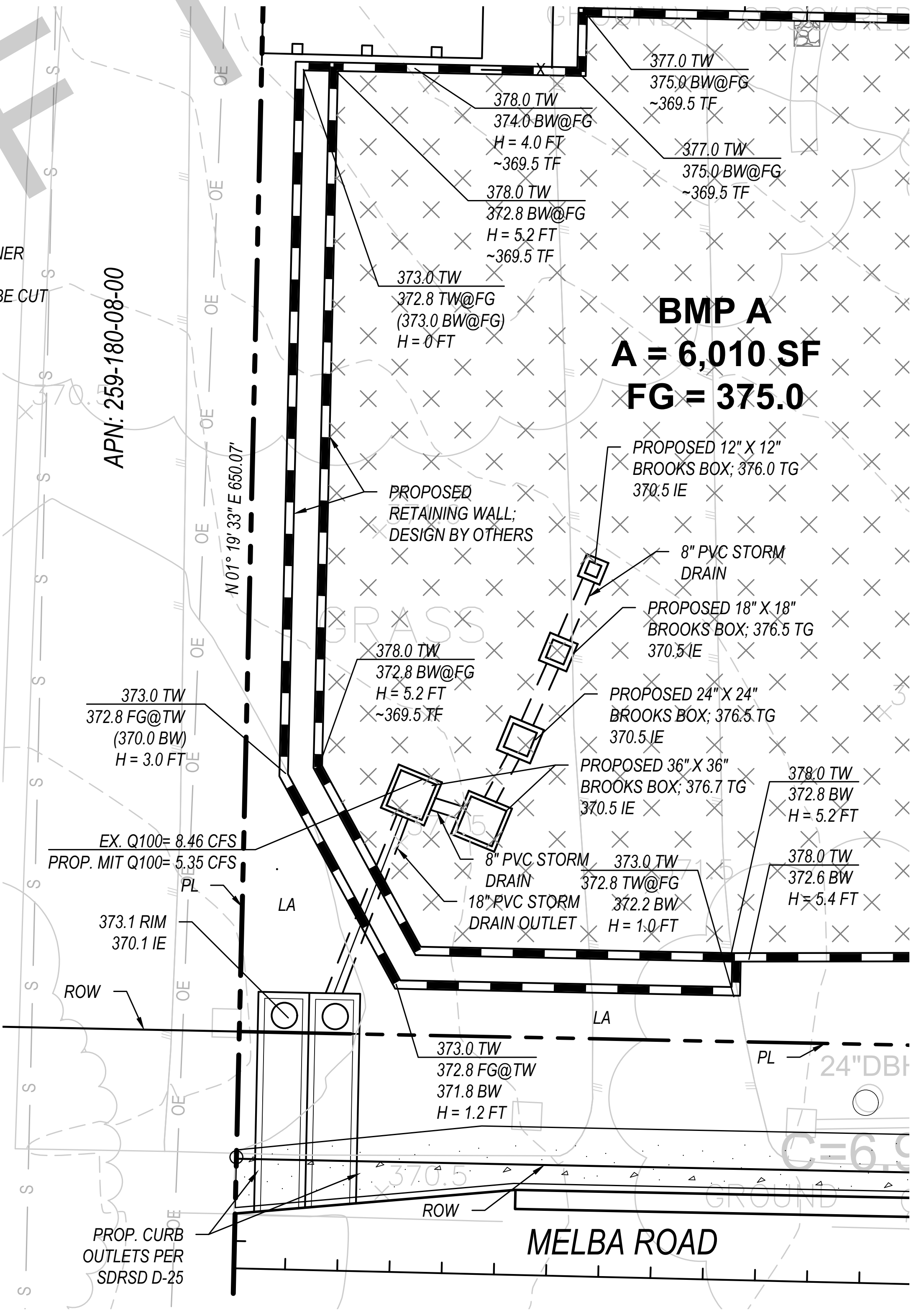
CONSTRUCTION NOTES

1. PROPOSED 18" HDPE STORM DRAIN OUTLET PIPE FROM BMP; WATER TIGHT JOINTS
2. PROPOSED 24" X 24" BROOKS BOX CLEANOUT W/ INTERLOCKING LID
3. PROPOSED TYPE A CLEANOUT PER SDRSD D-9
4. PROPOSED BMP STRUCTURES SEE DETAIL THIS SHEET
5. EXISTING FENCE TO BE BE REMOVED AND REPLACED AS NECESSAY
6. EXISTING TREE PREVIOUSLY REMOVED
7. CONNECT 18" HDPE STORM DRAIN TO SDRSD D-09 CLEANOUT
8. PROPOSED WOODEN SURFACE PLANTER BOX
9. EXISITNG TREE TO BE REMOVED PER SEPARATE AGREEMENT WITH OWNER
10. EXISTING TREE (X29) TO BE PROTECTED IN PLACE; NO TREE ROOTS TO BE CUT WITHIN 15-FT OF TRUNK OF TREE



TYPICAL DETAIL - FLOW CONTROL ORIFICE PLATE

NOT TO SCALE

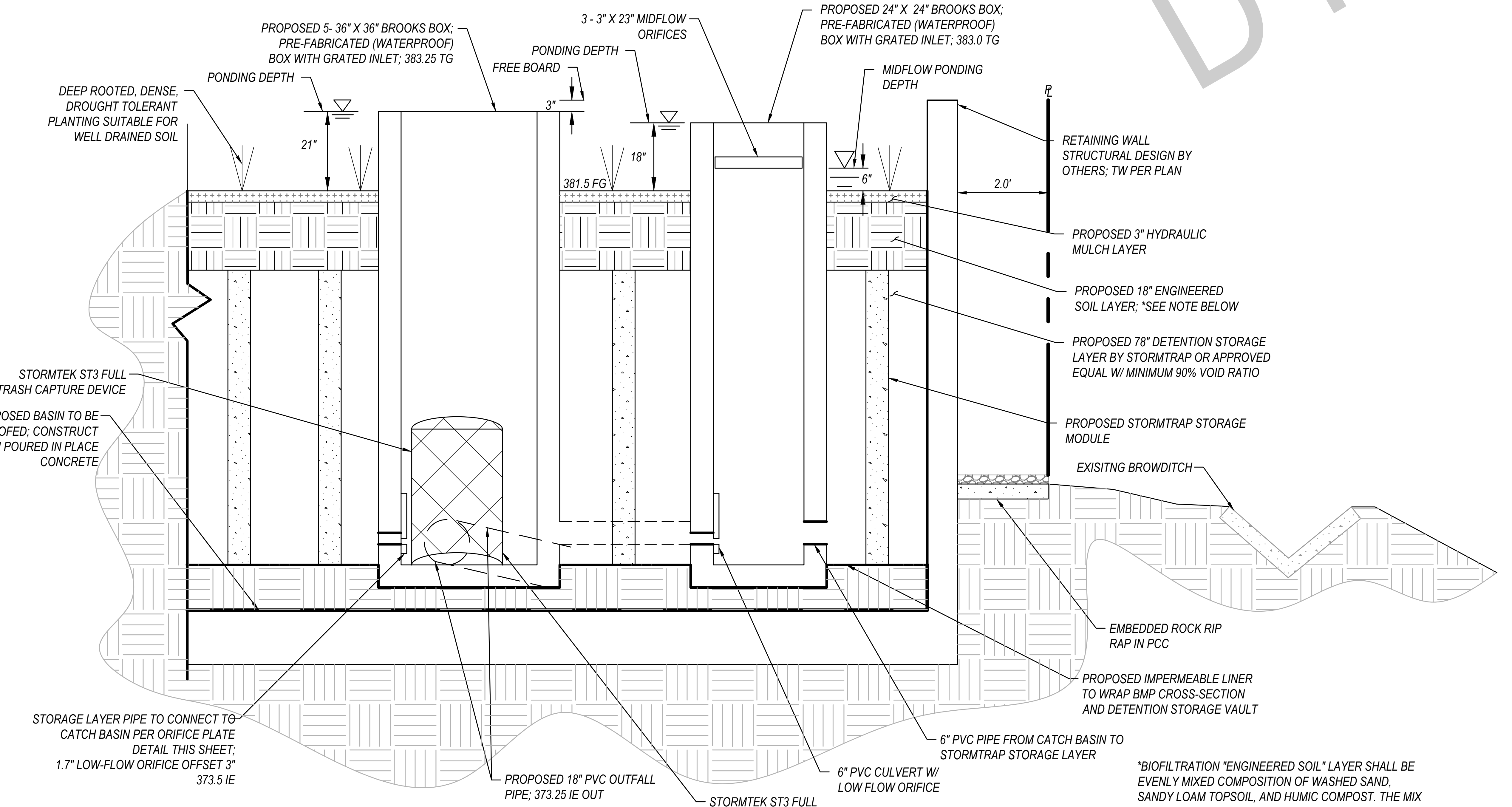


DETAIL- BIOFILTRATION BASIN A OUTLET STRUCTURES

SCALE: 1" = 10'

GRAPHIC SCALE 1" = 10'

10 0 10 20 30



TYPICAL SECTION - BIOFILTRATION BASIN B

NOT TO SCALE

*BIOFILTRATION "ENGINEERED SOIL" LAYER SHALL BE EVENLY MIXED COMPOSITION OF WASHED SAND, SANDY LOAM TOPSOIL, AND HUMIC COMPOST. THE MIX SHALL CONTAIN 65% SAND, 20% TOPSOIL, AND 15% COMPOST OR HARDWOOD MULCH IN ACCORDANCE WITH COUNTY OF SAN DIEGO LID BIOSWALE MEDIA

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H-2

STORM WATER MANAGEMENT INVESTIGATION

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STORM WATER MANAGEMENT INVESTIGATION

TORREY CREST
1220-1240 MELBA ROAD AND 1190 ISLAND VIEW LANE
ENCINITAS, CALIFORNIA

GEOCON
INCORPORATED

GEOTECHNICAL
ENVIRONMENTAL
MATERIALS

PREPARED FOR

TORREY PACIFIC CORPORATION
ENCINITAS CALIFORNIA

JANUARY 8, 2021
REVISED MARCH 21, 2021
PROJECT NO. G2438-52-01

GEOCON
INCORPORATED
GEOTECHNICAL ■ ENVIRONMENTAL ■ MATERIALS

Geocon Project No. G2438-52-01
January 8, 2021
Revised March 21, 2022

Torrey Pacific Corporation
171 Saxony Road, Suite 109
Encinitas, California 92024

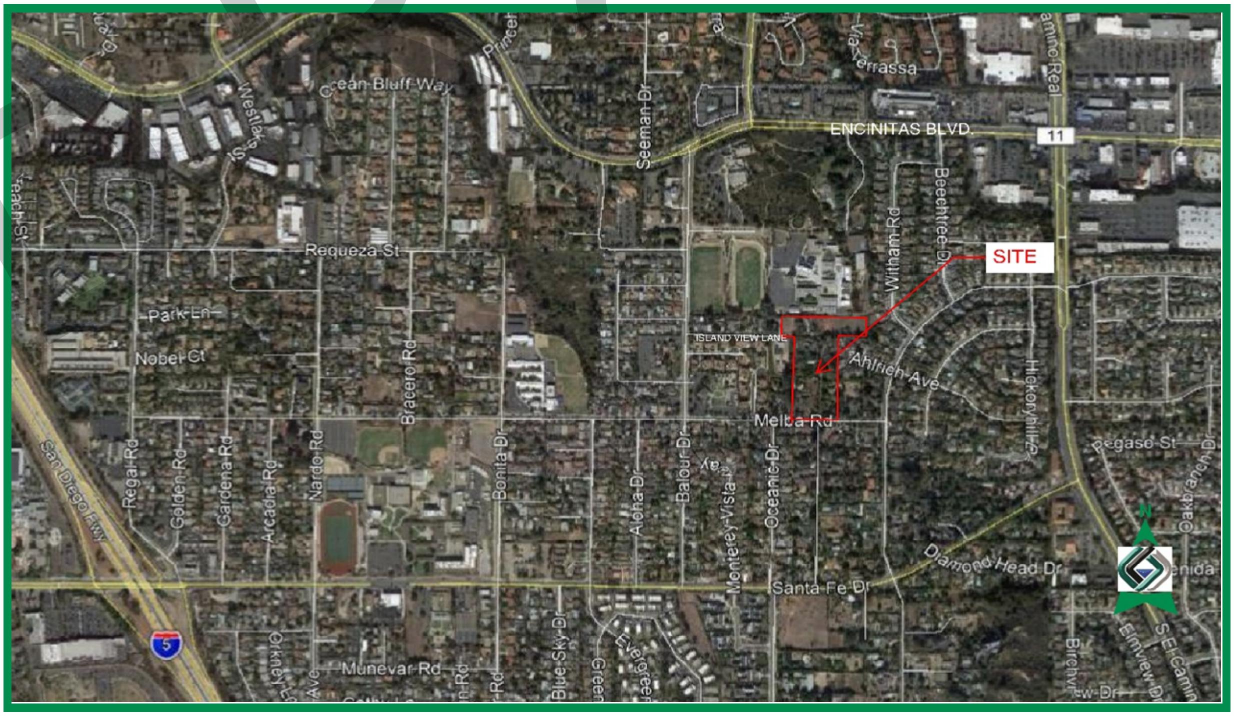
Attention: Mr. Brian Staver

Subject: STORM WATER MANAGEMENT INVESTIGATION
TORREY CREST
1220-1240 MELBA ROAD AND 1190 ISLAND VIEW LANE
ENCINITAS, CALIFORNIA

References:
1. *Geotechnical Investigation, Torrey Crest, Encinitas, California*, prepared by Geocon Incorporated, revised March 21, 2022 (Project No. G2438-52-01).
2. *Preliminary Grading Plan for: Torrey Crest, 1220-1240 Melba Road and 1190 Island View Lane*, prepared by Pasco, Laret, Suiter & Associates, (PLSA 3086-01), dated March 18, 2022.

Dear Mr. Staver:

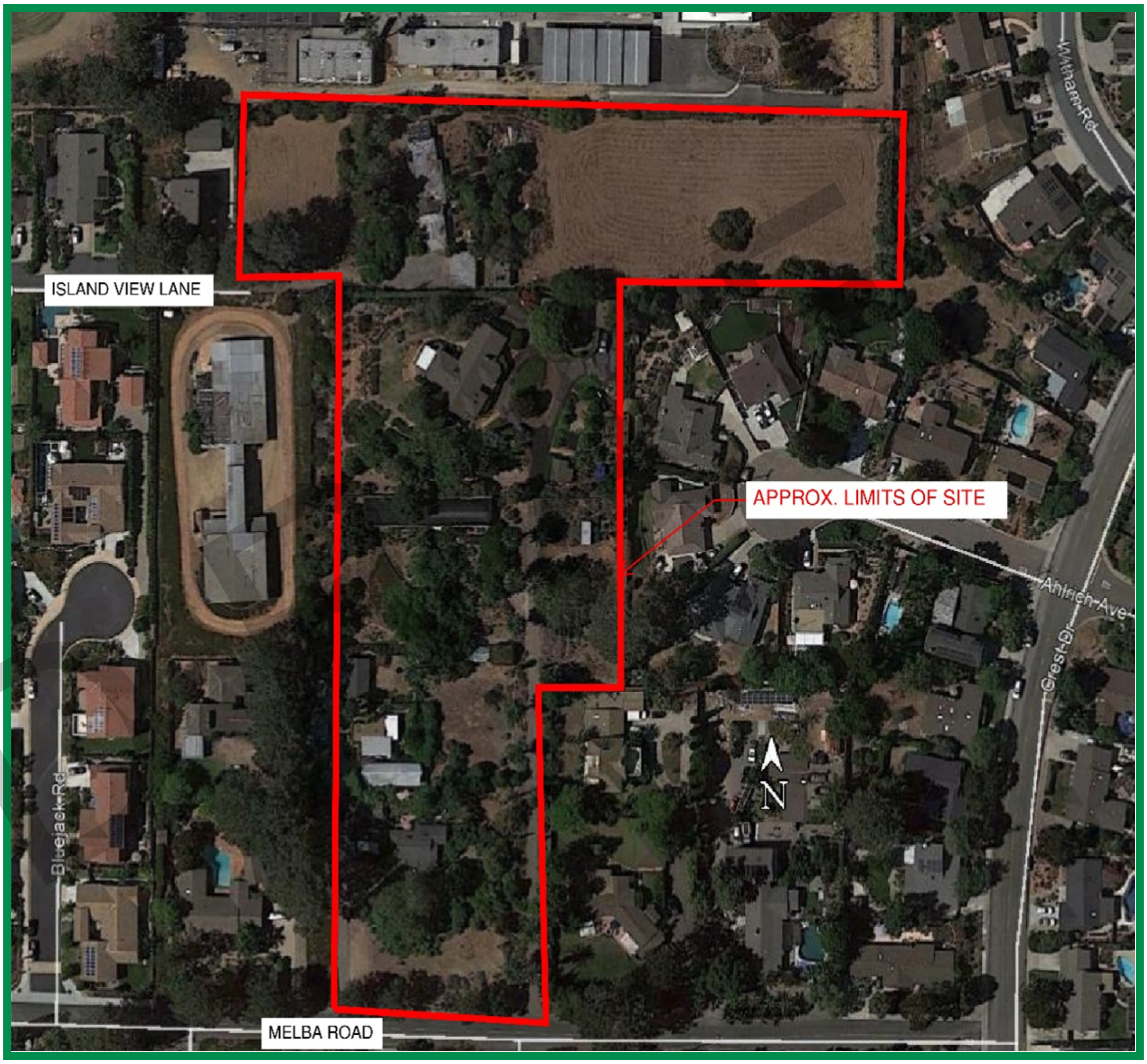
In accordance with your authorization, we herein submit the results of our supplemental storm water management investigation for the subject property located at 1220-1240 Melba Road and 1190 Island View Lane, Encinitas, California (see Vicinity Map).



Vicinity Map

SITE AND PROJECT DESCRIPTION

The property is located north of Melba Road and east of the Island View Lane terminus in the City of Encinitas, California. The subject project site is occupied by four single-family residences with accompanied ancillary structures, utilities, landscaping and driveways. The property is accessed by two driveways from Melba Road and a driveway from Island View Lane. The topography is relatively flat to gently sloping at an elevation of about 370 to 400 feet above mean sea level (MSL). The Existing Site Plan shows the current site conditions.



Existing Site Map

We understand the planned development will consist of demolishing the existing structures, removing the existing utilities, and constructing a new residential development. The new development would consist of 30 single-family residences with associated utilities, landscape and access driveways. The development would be accessed by a private road from Melba Road with one cul-de-sac on the northeast end. A bioretention basin is planned on the southwestern corners of the property. We understand the BMP devices on the southwest corner of the site will consist of dry a well basin.

Based on published geologic maps, the referenced reports and field investigation, the site is underlain by Very Old Paralic Deposits and Torrey Sandstone. We expect some localized fill soil located at the south-central portions of the site near the existing residences. The existing soil possesses a “very low” expansion potential (expansion index of 20 or less) and generally consists of silty to clayey sand.

We prepared the referenced geotechnical investigation report for the site and proposed development. Our storm water and referenced field investigation consisted of 11 exploratory trenches and 4 small-diameter hand-auger borings within the excavations to depths ranging from approximately 3 to 4 feet below existing grades and performing infiltration tests. We performed infiltration tests in the Very Old Paralic Deposits (Qvop). During our most recent supplemental investigation, we performed a supplemental field investigation consisting of 4 small-diameter boring within excavations to depths ranging from approximately 60 to 65 feet below existing grades and performing percolation tests. The Geologic Map, Figure 1, presents the approximate locations of the infiltration tests (P-1 through P-4), and deep percolation tests (B-1 through B-4).

SOIL AND GEOLOGIC CONDITIONS

Based on the referenced geotechnical documents, and our supplemental field investigation, the site is underlain by thin veneer of topsoil overlying Very Old Paralic Deposits and the Torrey Sandstone. The approximate occurrence, distribution, and description of each unit is shown on the Geologic Map, Figure 1. The surficial soil and geologic units are described herein in order of increasing age.

Topsoil (unmapped)

We encountered Holocene-age topsoil present as a relatively thin veneer locally blanketing the geologic unit across the site derived from the underlying deposits. The topsoil is less than a foot to two feet thick across the site and can be characterized as loose, damp to dry, reddish to grayish brown, silty, fine to medium sand. The topsoil is compressible and possess a “very low” expansion potential (expansion index of 20 or less). Remedial grading of the topsoil will be necessary in areas to support proposed fill or structures. The topsoil can be reused for new compacted fills. Water that is allowed to migrate within the topsoil cannot be controlled, would destabilize support for the existing improvements, and would shrink and swell. Therefore, full and partial infiltration should not be allowed within the topsoil.

Very Old Paralic Deposits (Qvop)

Quaternary-age Very Old Paralic Deposits, Unit 10 (formerly called the Terrace Deposits) underlies the topsoil and extended to the maximum depth explored of 7 feet in our exploratory trenches. Based on our supplemental borings, we expect this unit to possess a maximum thickness on the order of 50 to 55 feet at the site (330 MSL to 335). The Very Old Paralic Deposits consists of a sand unit consisting of dense to very dense silty sand. We encountered practical trenching refusal in the very dense portions of this unit in the exploratory trenches. The Very Old Paralic Deposits possess a “very low” expansion potential (expansion index of 20 or less). Excavations within this unit will likely encounter difficult digging conditions in the cemented zones. Based on our field testing, infiltration rates in this unit were an average of 0.003 inches per hour.

Torrey Sandstone (Tt)

We encountered Eocene-age Torrey Sandstone beneath the Very Old Paralic Deposits, at depths of approximately 50 to 55 (330 MSL to 335) feet below the existing ground surface. The Torrey Sandstone consists of massively bedded, well sorted, dense to very dense fine-to medium-grained sandstones which possess cohesionless, and friable lenses. Excavations within this unit will likely encounter difficult drilling conditions in the cemented zones. Based on our field testing, infiltration rates in this unit are 3.0 to 13.4 inches per hour, or 1.5 to 6.7 inches per hour, respectively, with a factor of safety of two.

STORM WATER MANAGEMENT INVESTIGATION

We understand storm water management devices are being proposed in accordance with the County of San Diego Storm Water Standards (SWS). If not properly constructed, there is a potential for distress to improvements and properties located hydrologically down gradient or adjacent to these devices. Factors such as the amount of water to be detained, its residence time, and soil permeability have an important effect on seepage transmission and the potential adverse impacts that may occur if the storm water management features are not properly designed and constructed. We have not performed a hydrogeological study at the site. If infiltration of storm water runoff occurs, downstream properties may be subjected to seeps, springs, slope instability, raised groundwater, movement of foundations and slabs, or other undesirable impacts as a result of water infiltration.

Hydrologic Soil Group

The United States Department of Agriculture (USDA), Natural Resources Conservation Services, possesses general information regarding the existing soil conditions for areas within the United States. The USDA website also provides the Hydrologic Soil Group. Table 1 presents the descriptions of the hydrologic soil groups. If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. In addition, the USDA website also provides an estimated saturated hydraulic conductivity for the existing soil.

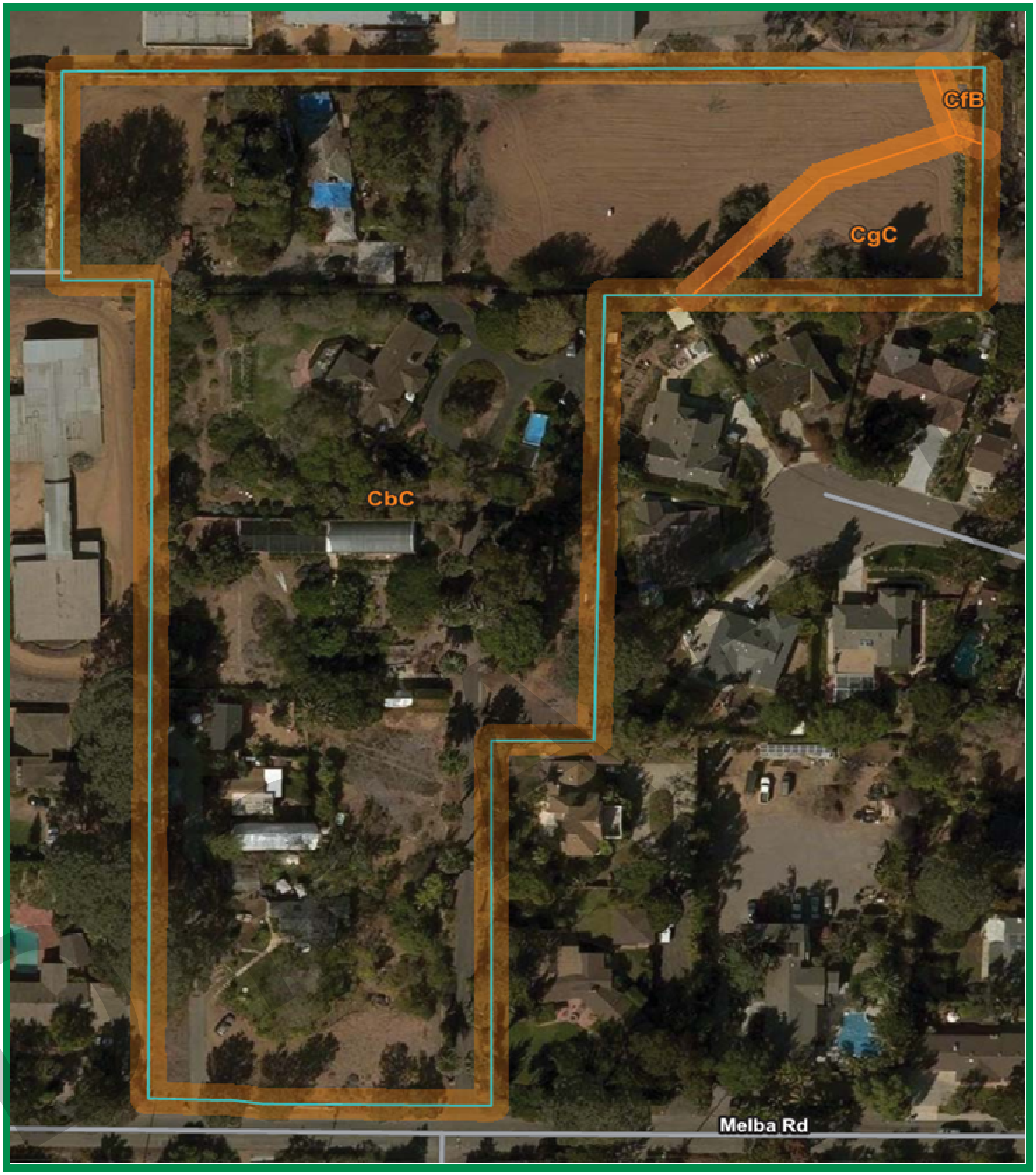
TABLE 1
HYDROLOGIC SOIL GROUP DEFINITIONS

Soil Group	Soil Group Definition
A	Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.
B	Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.
C	Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.
D	Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

The property is surficially underlain by Very Old Paralic Deposits with very slow infiltration rates and should be classified as Soil Group D. The Hydrologic Soil Group Map presents output from the USDA website showing the limits of the soil units. Table 2 presents the information from the USDA website for the subject property.

TABLE 2
USDA WEB SOIL SURVEY – HYDROLOGIC SOIL GROUP*

Map Unit Name	Map Unit Symbol	Approximate Percentage of Property	Hydrologic Soil Group	k_{SAT} of Most Limiting Layer (Inches/ Hour)
Carlsbad gravelly loamy sand, 5 to 9 percent slopes	CbC	94	D	0.00 to 0.06
Chesterton fine sandy loam, 2 to 5 percent slopes	CfB	0.3	D	0.00 to 0.06
Chesterton-Urban land complex, 2 to 9 percent slopes	CgC	5.7	D	0.00 to 0.06



Hydrologic Soil Group Map

In Situ Testing

We performed constant-head infiltration tests using the Aardvark permeameter at the locations shown on the Geologic Map, Figure 1, near the existing grades within the Very Old Paralic Deposits. Table 3 presents the results of the permeameter infiltration tests. The field data sheets are attached herein. We applied a feasibility factor of safety of 2.0 to our estimated infiltration rates to provide input on Worksheet C.4-1.

TABLE 3
AARDVARK PERMEAMETER INFILTRATION TEST RESULTS

Test No.	Geologic Unit	Test Elevation (feet, MSL)	Field-Saturated Hydraulic Conductivity/Infiltration Rate, k_{sat} (inch/hour)	Worksheet Infiltration Rate[1] (inch/hour)
P-1	Qvop	377	0.010	0.005
P-2	Qvop	377	0.007	0.004
P-3	Qvop	372	0.004	0.002
P-4	Qvop	372	0.004	0.002
Average			0.006	0.003

[1] Using a Factor of Safety of 2.

We performed supplemental falling head in-situ infiltration tests for the purposes of designing a dry well system. We performed the tests within Borings B-1 through B-4 at depths from 50 to 65 feet below the existing ground surface. The test borings were 8 inches in diameter. The results of the tests provide parameters regarding the saturated hydraulic conductivity and infiltration characteristics of on-site soil and geologic units. Table 4 presents the results of the estimated field saturated hydraulic conductivity and estimated infiltration rates obtained from the falling head infiltration tests. The field sheets are also attached herein. Laboratory testing of samples collected within the test borings at the depth of the percolation tests is in progress. The designer of storm water devices should apply an appropriate factor of safety, where necessary. Soil infiltration rates from in-situ tests can vary significantly from one location to another due to the heterogeneous characteristics inherent to most soil.

TABLE 4
FIELD FALLING HEAD INFILTRATION TEST RESULTS (BORINGS)

Test No. – Basin Location	Geologic Unit	Test Depth (Feet)	Approximate Test Elevation at Existing Ground Surface (Feet MSL)	Field-Saturated Infiltration Rate (Inch/Hour)	Factored Infiltration Rate[1] (Inch/Hour)
B-1 – South	Tt	50-60	376	3.8	1.9
B-2 – South	Tt	55-65	380	13.4	6.7
B-3 – North	Tt	50-60	380	3.0	1.5
B-4 – North	Tt	55-65	380	5.5	2.8
			Average:	6.4	3.2

[1] Using a factor of safety of 2.0.

Infiltration categories include full infiltration, partial infiltration and no infiltration. Table 5 presents the commonly accepted definitions of the potential infiltration categories based on the infiltration rates.

TABLE 5
INFILTRATION CATEGORIES

Infiltration Category	Field Infiltration Rate, I (Inches/Hour)	Factored Infiltration Rate[1], I (Inches/Hour)
Full Infiltration	I > 1.0	I > 0.5
Partial Infiltration	0.10 < I ≤ 1.0	0.05 < I ≤ 0.5
No Infiltration (Infeasible)	I < 0.10	I < 0.05

[1] Using a Factor of Safety of 2.

Based on our observations and test results, the factored infiltration rates for the Very Old Paralic Deposits is less than 0.05 inches per hour. Therefore, full and partial infiltration on the property is considered infeasible based on the calculated infiltrations rates and the site possesses a "No Infiltration" condition. Vertical cutoff walls or liners should be installed on the sides and bottom of planned infiltration devices and a drain should be installed at the base of the basins.

The results of the infiltration rates for the dry wells are 3.0 to 13.4 inches per hour, or 1.5 to 6.7 inches per hour, respectively, with a factor of safety of two. Therefore, based on the results of the field infiltration tests, the laboratory tests and our experience, full infiltration would be considered feasible within the Torrey Sandstone at a depth of 50 to 65 feet below the existing grades.

GEOTECHNICAL CONSIDERATIONS

Groundwater Elevations

We did not encounter groundwater or seepage during our site investigation, and we expect a static groundwater elevation exists greater than 150 feet below existing grades. However, it is not uncommon for shallow seepage conditions to develop where none previously existed when sites are irrigated or infiltration is implemented. Groundwater and seepage are dependent on seasonal precipitation, irrigation, land use, among other factors, and varies as a result. Proper surface drainage will be important to future performance of the project. We do not expect groundwater to be encountered during construction of the proposed development.

New or Existing Utilities

Utilities are located adjacent to the property within the existing parking areas, driveways, and roadways and are proposed for the site's development. Therefore, full and partial infiltration within the areas near these utilities should be considered infeasible. Setbacks for infiltration should be incorporated if infiltration were to be considered. The setback for infiltration devices should be a minimum of 10 feet and a 1:1 plane of 1 foot below the closest edge of the deepest adjacent utility.

Slopes

The existing slope along the northeastern border slopes at inclinations as steep as 2:1 (horizontal to vertical). If infiltration is allowed adjacent to the existing slopes at the site, water migration and the resulting seepage forces can negatively affect the stability of the slopes and cause erosion. The existing fill and formational materials possess limited vertical infiltration characteristics and water allowed to infiltrate on the site would migrate laterally to adjacent improvements. Infiltration devices should not be installed adjacent to slopes unless they are lined, possess a minimum setback distance of 50 feet or 1.5 times the slope height, or extend below the height of the slope.

Soil or Groundwater Contamination

We understand pesticides are present at the 1190 Island View Lane parcels property that are being handled through a soil management plan in coordination with the San Diego County Department of Environmental Health. We understand mitigation will be performed prior to construction. Therefore, infiltration associated with this risk is considered feasible. In addition, groundwater mounding would not be a concern due to the lack of a near surface groundwater table.

CONCLUSIONS AND RECOMMENDATIONS

Storm Water Evaluation Narrative

We used the referenced reports and plans prepared by the civil engineer to evaluate possible locations for infiltration based on the known geologic information on the property. We selected areas on the property where the formational Very Old Paralic Deposits were exposed at near existing grades. The in-place infiltration test locations were also selected in areas likely used for potential infiltration devices. We performed 4 infiltration tests within the Very Old Paralic Deposits and the results indicate an average rate of 0.003 inches per hour (with an applied factor of safety of 2).

Due to the slow rates, we were asked to perform infiltration tests for the potential design of a dry well system. We performed 4 falling head infiltration tests within the Torrey Sandstone at depths of 50 to 65 feet and the results indicate an average rate of 0.55 to 1.8 inches per hour (with an applied factor of safety of 2).

Storm Water Evaluation Conclusion

Based on the results of our infiltration tests performed within the Very Old Paralic Deposits near the existing surface, we opine full and partial infiltration on the property is considered infeasible and the property possesses a “No Infiltration” condition for a basin or surficial infiltration device.

Based on the results of our infiltration tests performed within the Torrey Sandstone, we opine full infiltration is feasible and can be performed at a depth of about 50 to 65 feet using a dry well system.

Storm Water Management Devices

Liners and subdrains should be incorporated into the design and construction of the planned storm water management devices near the surface. The liners should be impermeable (e.g. High-density polyethylene, HDPE, with a thickness of about 30 mil or equivalent Polyvinyl Chloride, PVC) to prevent water migration. The subdrains should be perforated within the liner area, installed at the base and above the liner, be at least 3 inches in diameter and consist of Schedule 40 PVC pipe. The subdrains outside of the liner should consist of solid pipe. The penetration of the liners at the subdrains should be properly waterproofed. The subdrains should be connected to a proper outlet. The devices should also be installed in accordance with the manufacturer's recommendations.

Storm Water Standard Worksheets

The SWS requests the geotechnical engineer complete the Categorization of Infiltration Feasibility Condition (Worksheet C.4-1 or I-8) worksheet information to help evaluate the potential for infiltration on the property. Worksheet C.4-1 presents the completed information for the submittal process and is attached herein.

The regional storm water standards also have a worksheet (Worksheet D.5-1 or Form I-9) that helps the project civil engineer estimate the factor of safety based on several factors. Table 6 describes the suitability assessment input parameters related to the geotechnical engineering aspects for the factor of safety determination.

TABLE 6
SUITABILITY ASSESSMENT RELATED CONSIDERATIONS FOR INFILTRATION FACILITY SAFETY FACTORS

Consideration	High Concern – 3 Points	Medium Concern – 2 Points	Low Concern – 1 Point
Assessment Methods	Use of soil survey maps or simple texture analysis to estimate short-term infiltration rates. Use of well permeameter or borehole methods without accompanying continuous boring log. Relatively sparse testing with direct infiltration methods	Use of well permeameter or borehole methods with accompanying continuous boring log. Direct measurement of infiltration area with localized infiltration measurement methods (e.g., Infiltrometer). Moderate spatial resolution	Direct measurement with localized (i.e. small-scale) infiltration testing methods at relatively high resolution or use of extensive test pit infiltration measurement methods.
Predominant Soil Texture	Silty and clayey soils with significant fines	Loamy soils	Granular to slightly loamy soils
Site Soil Variability	Highly variable soils indicated from site assessment or unknown variability	Soil boring/test pits indicate moderately homogenous soils	Soil boring/test pits indicate relatively homogenous soils
Depth to Groundwater/ Impervious Layer	<5 feet below facility bottom	5-15 feet below facility bottom	>15 feet below facility bottom

Based on our geotechnical investigation and the previous table, Table 7 presents the estimated factor values for the evaluation of the factor of safety for the surface improvement design. This table only presents the suitability assessment safety factor (Part A) of the worksheet. The project civil engineer should evaluate the safety factor for design (Part B) and use the combined safety factor for the design infiltration rate.

TABLE 7
SURFACE IMPROVEMENT FACTOR OF SAFETY WORKSHEET DESIGN VALUES – PART A1

Suitability Assessment Factor Category	Assigned Weight (w)	Factor Value (v)	Product (p = w x v)
Assessment Methods	0.25	2	0.50
Predominant Soil Texture	0.25	2	0.50
Site Soil Variability	0.25	2	0.50
Depth to Groundwater/ Impervious Layer	0.25	1	0.25
Suitability Assessment Safety Factor, $S_A = \sum p$			1.75

*The project civil engineer should complete Worksheet D.5-1 or Form I-9 using the data on this table. Additional information is required to evaluate the design factor of safety.

Table 8 presents the estimated factor values for the evaluation of the factor of safety for the proposed drywell design using the falling head infiltration test results from the borings.

TABLE 8
DRYWELL FACTOR OF SAFETY WORKSHEET DESIGN VALUES – PART A1

Suitability Assessment Factor Category	Assigned Weight (w)	Factor Value (v)	Product (p = w x v)
Assessment Methods	0.25	1	0.25
Predominant Soil Texture	0.25	2	0.50
Site Soil Variability	0.25	2	0.50
Depth to Groundwater/ Impervious Layer	0.25	1	0.25
Suitability Assessment Safety Factor, $S_A = \sum p$			1.5

*The project civil engineer should complete Worksheet D.5-1 or Form I-9 using the data on this table. Additional information is required to evaluate the design factor of safety.

Should you have any questions regarding this correspondence, or if we may be of further service, please contact the undersigned at your convenience.

Very truly yours,

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Categorization of Infiltration Feasibility Condition

Worksheet C.4-1

Part 1 - Full Infiltration Feasibility Screening Criteria

Would infiltration of the full design volume be feasible from a physical perspective without any undesirable consequences that cannot be reasonably mitigated?

Criteria	Screening Question	Yes	No
1	**Is the estimated reliable infiltration rate below proposed facility locations greater than 0.5 inches per hour?** The response to this Screening Question shall be based on a comprehensive evaluation of the factors presented in Appendix C.2 and Appendix D.	x	

Provide basis:

Based on the USGS Soil Survey, the property possesses Hydrologic Soil Group D classifications and an infiltration rate of less than 0.5 inches per hour for near surface devices (no infiltration condition).

We performed 4 infiltration tests in two areas of the site within the underlying Torrey Sandstone for a dry well system. The results indicate an average rate of 6.4 inches per hour (3.2 inches per hour with an applied factor of safety of 2). Therefore, full infiltration is considered feasible at the site using a dry well system.

Summarize findings of studies; provide reference to studies, calculations, maps, data sources, etc. Provide narrative discussion of study/data source applicability.

Criteria	Screening Question	Yes	No
2	**Can infiltration greater than 0.5 inches per hour be allowed without increasing risk of geotechnical hazards (slope stability, groundwater mounding, utilities, or other factors) that cannot be mitigated to an acceptable level?** The response to this Screening Question shall be based on a comprehensive evaluation of	X	

Provide basis:

Infiltration should not be allowed in areas of the site near the surface which would negatively affect the adjacent properties and improvements or the existing sloping conditions on the site. Infiltration would cause seepage and erosion on the existing slopes if it were allowed near surface.

Infiltration can be performed using a dry well system at depths of about 50 to 65 feet below existing grade.

Summarize findings of studies; provide reference to studies, calculations, maps, data sources, etc. Provide narrative discussion of study/data source applicability.

<table>
<tr><th colspan="4">Worksheet C.4-1 Page 2 of 4</th></tr>
<tr><th>Criteria</th><th>Screening Question</th><th>Yes</th><th>No</th></tr>
<tr><td>3</td><td>Can infiltration greater than 0.5 inches per hour be allowed without increasing risk of groundwater contamination (shallow water table, storm water pollutants or other factors) that cannot be mitigated to an acceptable level? The response to this Screening Question shall be based on a comprehensive evaluation of the factors presented in Appendix C.3.</td><td>X</td><td></td></tr>
<tr><td colspan="4">Provide basis:
We anticipate that groundwater is present at depths of greater than 150 feet. Therefore, infiltration due to groundwater elevations would be considered feasible.
Summarize findings of studies; provide reference to studies, calculations, maps, data sources, etc. Provide narrative discussion of study/data source applicability.</td></tr>
<tr><td>4</td><td>Can infiltration greater than 0.5 inches per hour be allowed without causing potential water balance issues such as change of seasonality of ephemeral streams or increased discharge of contaminated groundwater to surface waters? The response to this Screening Question shall be based on a comprehensive evaluation of the factors presented in Appendix C.3.</td><td>X</td><td></td></tr>
<tr><td colspan="4">Provide basis:
We are unaware of potential water balance issues if the dry wells are to be installed.
Summarize findings of studies; provide reference to studies, calculations, maps, data sources, etc. Provide narrative discussion of study/data source applicability.</td></tr>
<tr><td>Part 1 Result*</td><td colspan="2">If all answers to rows 1 - 4 are “Yes” a full infiltration design is potentially feasible. The feasibility screening category is Full Infiltration
If any answer from row 1-4 is “No”, infiltration may be possible to some extent but would not generally be feasible or desirable to achieve a “full infiltration” design. Proceed to Part 2</td><td>Full Infiltration (Dry Wells)</td></tr>
</table>

***To be completed using gathered site information and best professional judgment considering the definition of MEP in the MS4 Permit. Additional testing and/or studies may be required by the City to substantiate findings.**

Worksheet C.4-1 Page 3 of 4

Part 2 – Partial Infiltration vs. No Infiltration Feasibility Screening Criteria

Would infiltration of water in any appreciable amount be physically feasible without any negative consequences that cannot be reasonably mitigated?

Criteria	Screening Question	**Yes**	**No**
5	**Do soil and geologic conditions allow for infiltration in any appreciable rate or volume?** The response to this Screening Question shall be based on a comprehensive evaluation of the factors presented in Appendix C.2 and Appendix D.	X	

Provide basis:

Based on the USGS Soil Survey, the property possesses Hydrologic Soil Group D classifications and an infiltration rate of less than 0.5 inches per hour for near surface devices.

We performed 4 infiltration tests in two areas of the site within the underlying Torrey Sandstone for a dry well system. The results indicate an average rate of 6.4 inches per hour (3.2 inches per hour with an applied factor of safety of 2). Therefore, full infiltration is considered feasible at the site for dry well systems.

Summarize findings of studies; provide reference to studies, calculations, maps, data sources, etc. Provide narrative discussion of study/data source applicability and why it was not feasible to mitigate low infiltration rates.

Criteria	Screening Question	**Yes**	**No**
6	**Can Infiltration in any appreciable quantity be allowed without increasing risk of geotechnical hazards (slope stability, groundwater mounding, utilities, or other factors) that cannot be mitigated to an acceptable level**? The response to this Screening Question shall be based on a comprehensive evaluation of the factors presented in Appendix C.2.	X	

Provide basis:

Infiltration should not be allowed in areas of the site near the surface which would negatively affect the adjacent properties and improvements or the existing sloping conditions on the site. Infiltration would cause seepage and erosion on the existing slopes if it were allowed.

Infiltration can be performed using a dry well system at depths of about 50 to 65 feet below existing grade.

Summarize findings of studies; provide reference to studies, calculations, maps, data sources, etc. Provide narrative discussion of study/data source applicability and why it was not feasible to mitigate low infiltration rates.

<table>
<tr><th colspan="4">Worksheet C.4-1 Page 4 of 4</th></tr>
<tr><th>Criteria</th><th>Screening Question</th><th>Yes</th><th>No</th></tr>
<tr><td>7</td><td>Can Infiltration in any appreciable quantity be allowed without posing significant risk for groundwater related concerns (shallow water table, storm water pollutants or other factors)? The response to this Screening Question shall be based on a comprehensive evaluation of the factors presented in Appendix C.3.</td><td>X</td><td></td></tr>
<tr><td colspan="4">Provide basis:
We anticipate that groundwater is present at depths of greater than 150 feet. Therefore, infiltration due to groundwater elevations would be considered feasible.
Summarize findings of studies; provide reference to studies, calculations, maps, data sources, etc. Provide narrative discussion of study/data source applicability and why it was not feasible to mitigate low infiltration rates.</td></tr>
<tr><td>8</td><td>Can infiltration be allowed without violating downstream water rights? The response to this Screening Question shall be based on a comprehensive evaluation of the factors presented in Appendix C.3.</td><td>X</td><td></td></tr>
<tr><td colspan="4">Provide basis:
We did not provide a study regarding water rights. However, these rights are not typical in the San Diego County area.
Summarize findings of studies; provide reference to studies, calculations, maps, data sources, etc. Provide narrative discussion of study/data source applicability and why it was not feasible to mitigate low infiltration rates.</td></tr>
<tr><td>Part 2 Result*</td><td colspan="2">If all answers from row 1-4 are yes then partial infiltration design is potentially feasible. The feasibility screening category is Partial Infiltration.
If any answer from row 5-8 is no, then infiltration of any volume is considered to be infeasible within the drainage area. The feasibility screening category is No Infiltration.</td><td>Full Infiltration</td></tr>
</table>

***To be completed using gathered site information and best professional judgment considering the definition of MEP in the MS4 Permit. Additional testing and/or studies may be required by the City to substantiate findings.**

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