BIOLOGICAL RESOURCES REPORT

PACIFICA RIDGE PROJECT
CITY OF SAN DIEGO
SAN DIEGO COUNTY, CALIFORNIA

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LSA Project No. RRE1301

Principal Investigator:	**Jaime Morales, B.S.**	**February 26, 2018**
Signature	Name	Date

LSA

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SUMMARY OF FINDINGS

The applicant proposes to construct a residential condominium subdivision containing 44 units and other improvements at an undeveloped parcel located east of Smythe Avenue, north of Foothill Road, and east of the cul-de-sac at the end of Camino de Progresso in the City of San Diego, San Diego County, California. The applicant contracted LSA to conduct a general biological resources survey (including vegetation mapping) and a cultural resources survey for this project. The results of the cultural resources survey are summarized in a separate report. The surveys were conducted on November 27, 2013. LSA conducted a subsequent biological resources survey on June 7, 2016, to update the boundaries of the vegetation communities and land uses map, and to determine if coastal cactus wren (*Campylorhynchus brunneicapillus sandiegensis*) is present within the Biological Study Area (BSA).

The BSA lies within the City of San Diego Multiple Species Conservation Program (MSCP) area, but it is entirely outside of Multiple Habitat Planning Area (MHPA) boundaries. Three special-status plant species, San Diego barrel cactus (*Ferocactus viridescens*), San Diego bur-sage (*Ambrosia chenopodiifolia*), and golden-spined cereus (*Bergerocactus emoryi*), were observed during the biological surveys. Although not observed during the surveys, coastal cactus wren and coastal California gnatcatcher (*Polioptila californica californica*) have the potential to occur within the BSA due to the presence of suitable habitat. There is no suitable habitat for narrow endemic plant species; therefore, no narrow endemic species have a moderate or higher potential of occurring within the BSA.

No areas potentially subject to the jurisdiction of the United States Army Corps of Engineers (USACE), the Regional Water Quality Control Board (RWQCB), or the California Department of Fish and Wildlife (CDFW) are present within the BSA.

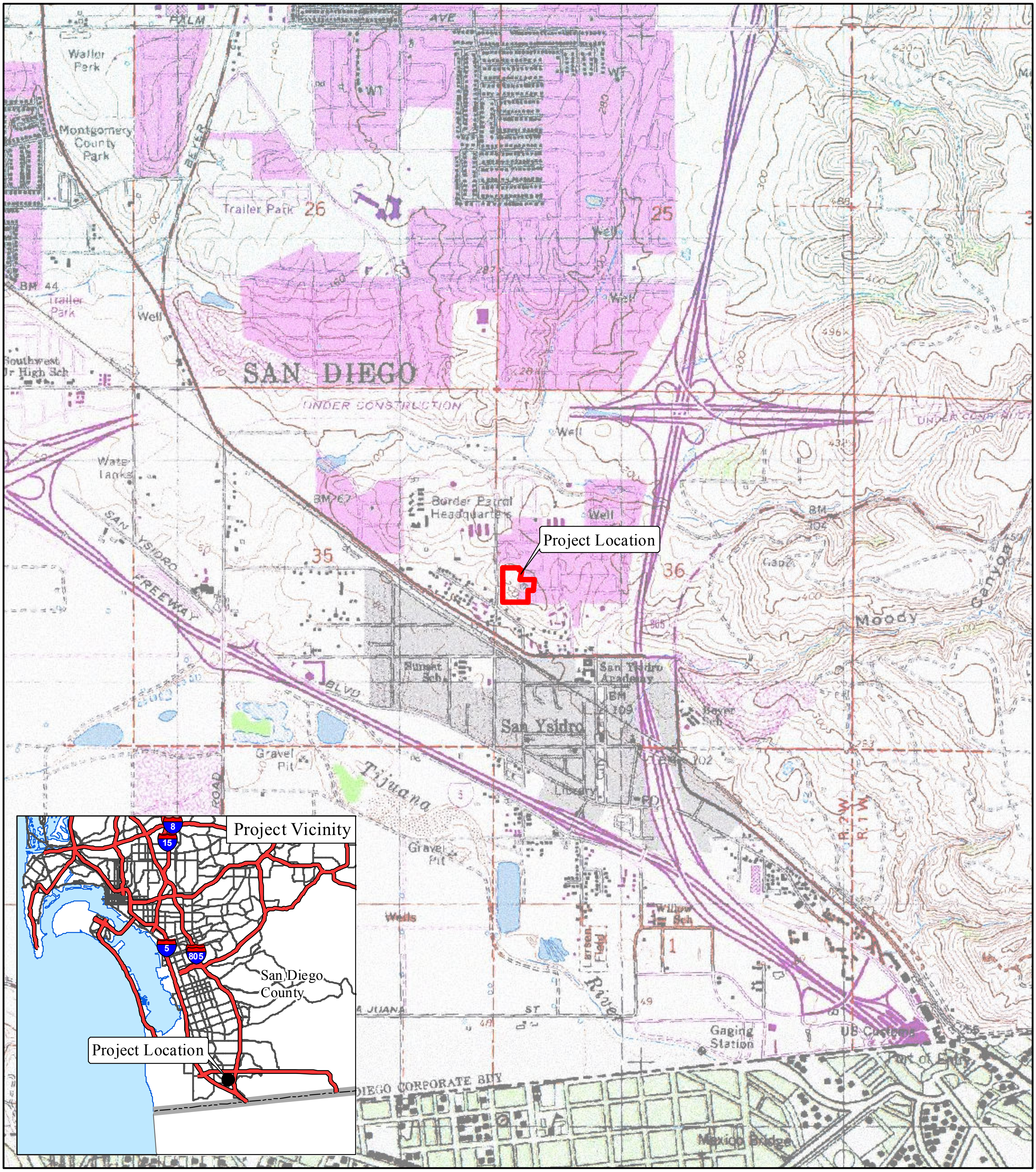
Construction of the Pacifica Ridge Project (project) is expected to result in permanent impacts to 1.98 acres of maritime succulent scrub, 2.42 acres of disturbed habitat, and 0.13 acre of developed land.

The applicant proposes to mitigate for 1.98 acres of impacts to maritime succulent scrub habitat by purchasing an easement or comparable interest in 1.98 acres of native grassland along the eastern edge of Assessor’s Parcel Number (APN) 36602109, which will be included in the Mission Trails Park system.

PROJECT DESCRIPTION

The applicant proposes to construct a 44-unit residential condominium subdivision on an undeveloped parcel located east of Smythe Avenue, north of Foothill Road, and east of the cul-de-sac at the end of Camino de Progresso in the City of San Diego, San Diego County, California (Figure 1). Proposed improvements include the following:

- The widening of Smythe Avenue into a modified four-lane collector street, which will include two full northbound lanes, a bike lane, curb, gutter, and non-contiguous sidewalk located within a parkway. The Smythe Avenue improvements will extend the length of the property adjacent to Smythe Avenue and transition into the existing improvements at the northern and southern ends.



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▭ Project Footprint

FIGURE 1

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Pacifica Ridge

Project Location

SOURCE: USGS 7.5' Quad. (Imperial Beach, 1975)

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- A 12-inch diameter public water main will be extended from the existing location in Smythe Avenue to the entrance driveway of the project site.
- A proposed 8-inch diameter sanitary sewer main will be installed in Smythe Avenue, connecting the proposed subdivision with the existing sewer facility at the intersection with Foothill Road to the south.
- The proposed subdivision will have a privately-maintained water quality treatment and detention facility to handle the project's storm water runoff treatment needs.
- The project proposes common landscaped areas that will be planted, irrigated, and maintained by the Home Owner's Association (HOA). The subdivision will be compliant with the Americans with Disabilities Act (ADA).

CITY OF SAN DIEGO ENVIRONMENTALLY SENSITIVE LANDS REGULATIONS

The Development Services Department (DSD) has formulated guidelines to aid in the implementation and interpretation of the Environmentally Sensitive Lands Regulations (ESL) and San Diego Land Development Code (LDC). These guidelines are the baseline biological standards for processing Neighborhood Development Permits, Site Development Permits, and Coastal Development Permits issued pursuant to the ESL. The ESL defines sensitive biological resources as those lands included within the MHPA as identified in the MSCP Subarea Plan (City of San Diego 1995), and other lands outside of the MHPA that contain wetlands; vegetation communities classified as Tier I, II, IIIA, or IIIB; habitat for rare, endangered or threatened species; or narrow endemics.

The MHPA encompasses those lands that have been included within the preserve for the City's MSCP Subarea Plan for habitat conservation. These lands have been determined to provide the necessary habitat quantity, quality, and connectivity to support the future viability of San Diego's unique biodiversity and thus are considered to be a Sensitive Biological Resource.

Covered Species are those plant and animal species included in the Incidental Take Authorization issued to the City by the federal or State governments as part of the City's MSCP Subarea Plan.

Habitat supporting plant or animal species that have been listed or proposed for listing by the federal or State governments as rare, endangered, or threatened ("listed species") are also considered sensitive biological resources under the ESL.

A Narrow Endemic Species is a species that is confined to a specific geographic region, soil type, and/or habitat.

METHODS

Prior to the on-site survey, LSA Biologist Jaime Morales (résumé attached as Appendix A) conducted a literature review and database records search to identify the existence or potential occurrence of special-status biological resources (e.g., plants, animals, and vegetation communities) within or in the vicinity of the BSA. Special-status species are those that are federally and/or State-listed, proposed for listing, or candidate species; species listed as species of concern by the CDFW Special

Animals List (CDFG 2011) and Special Plants List (CDFG 2012); and/or those species with a California Rare Plant Ranking (CRPR) of 1B or 2B.

Databases reviewed consisted of the following:

- California Natural Diversity Data Base (CNDDB) information (Version 3.1.0, June 1, 2013), which is administered by the CDFW. This database covers special-status plant and animal species, as well as special-status natural communities that occur within California. Species information for the U.S. Geological Survey (USGS) 7.5-minute *Imperial Beach, California* topographic quadrangle was reviewed.
- The California Native Plant Society's (CNPS) On-Line Inventory of Rare and Endangered Plants of California (Version 8, December 2010, CNPS Inventory).

Mr. Morales conducted the original biological resources survey on November 27, 2013, and a subsequent survey on June 7, 2016, to update the boundaries of the vegetation communities and land uses map, and to determine if coastal cactus wren was present within the BSA. Table A displays the survey dates, times, and conditions. Mr. Morales walked the entire BSA and documented general site conditions, vegetation communities occurring at the site, and the suitability of habitat for special-status species. Mr. Morales recorded a list of all plant species observed within the BSA (see Appendix B). Vegetation communities were determined in accordance with the categories described in Holland (1986) and Oberbauer (2008). Plant nomenclature follows that of *The Jepson Manual: Higher Plants of California* (Hickman 1993). All wildlife observed and wildlife sign detected, including tracks, scat, carcasses, burrows, excavations, and vocalizations, were recorded and are included as Appendix C. The boundaries of the different vegetation communities and land uses and locations of special-status plant species within the BSA, as observed in the field, were mapped on an aerial photograph (scale of 1 inch = 100 feet), as shown in Figure 2.

Table A: Survey Schedule and Conditions

Date	Time	Weather
November 27, 2013	1330–1430	70 degrees Fahrenheit, partly cloudy skies, 5 to 7 mile per hour winds
June 7, 2016	1045–1215	72 degrees Fahrenheit, sunny skies, 5 to 10 mile per hour winds

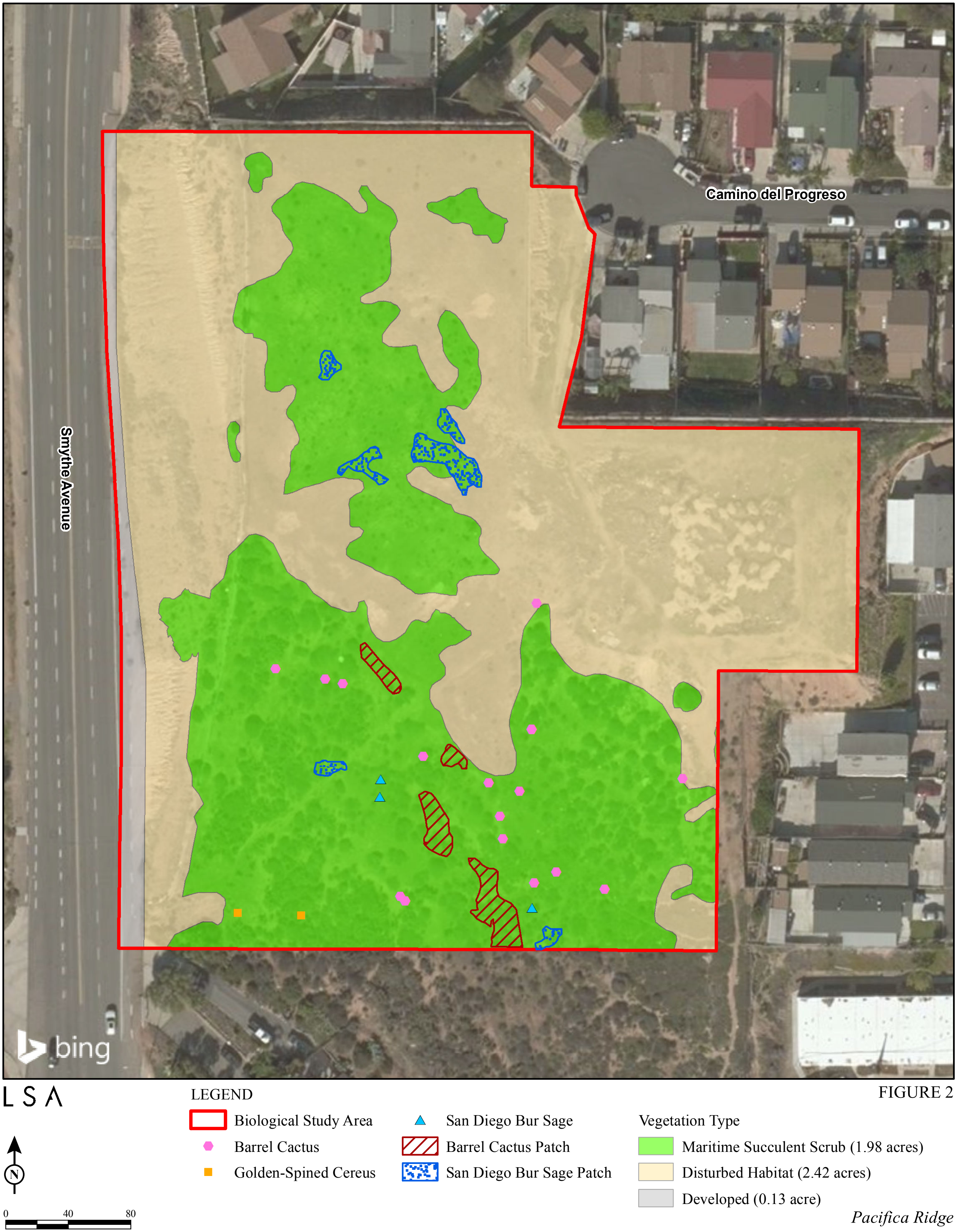
SURVEY RESULTS

Site Description

The BSA consists of a 4.53-acre moderately-sloping (south-facing), undeveloped parcel surrounded by residential development. The BSA contains disturbed habitat, consisting of nonnative vegetation and maritime succulent scrub, consisting of native cactus species and other native vegetation species. Several dirt mounds overgrown by nonnative vegetation (mapped as disturbed habitat) are present at the eastern portion of the BSA. A series of approximately 2-foot-wide concrete brow ditches is located around the perimeter of the BSA. See Appendix D for representative site photographs. The soils that occur in the BSA are in the Group IV Soil Association. They develop on marine terraces and coastal foothills, and are characterized as excessively to moderately well-drained, nearly level to steep loamy, coarse sands to clay loams (U.S. Department of Agriculture

LSA

FIGURE 2



Pacifica Ridge

Vegetation Communities and Locations of Special-Status Plant Species

SOURCE: Bing Maps (2015); LSA (2015)

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1973). Elevation at the BSA ranges from approximately 130 to 215 feet above mean sea level. The BSA lies within the MSCP, but it is entirely outside of MHPA boundaries.

The following vegetation communities/land uses are present within the BSA:

- **Maritime Succulent Scrub:** Dominant plant species include coastal cholla, California sagebrush (*Artemisia californica*), California buckwheat (*Eriogonum fasciculatum*), and jojoba (*Simmondsia chinensis*). San Diego barrel cactus individuals are present throughout the southern portion of the BSA. Patches and scattered individuals of San Diego bur-sage are present primarily at the northern portion of the BSA, although some smaller patches and isolated individuals are present at the southern portion. Two golden-spined cereus individuals are present at the southern portion of the BSA. San Diego barrel cactus, San Diego bur-sage, and golden-spined cereus have a CRPR Rank of 2B.
- **Disturbed Habitat:** Dominant plant species include fennel (*Foeniculum vulgare*), shortpod mustard (*Hirschfeldia incana*), Hottentot-fig (*Carpobrotus edulis*), ripgut brome (*Bromus diandrus*), Russian thistle (*Salsola tragus*), African fountain grass (*Pennisetum setaceum*), and red brome (*Bromus madritensis* ssp. *rubens*).
- **Developed:** This land use consists of concrete sidewalk and asphalt pavement.

Table B displays the approximate area of each vegetation community/land use present within the BSA.

Table B: Vegetation Communities/Land Uses within the BSA

Vegetation Communities/Land Uses	Acreage within BSA
Maritime Succulent Scrub	1.98
Disturbed Habitat	2.42
Developed	0.13
Total Acres	**4.53**

Special-Status Plant and Animal Species

Based on the results of the literature review, database records search, and biological survey, the following species have the potential to occur within the BSA: coastal cactus wren and coastal California gnatcatcher. The following special-status species were observed on site: San Diego barrel cactus, San Diego bur-sage, and golden-spined cereus.

Coastal cactus wren (California Species of Concern) inhabits coastal sage scrub, nesting almost exclusively in thickets of coastal cholla and prickly pear (*Opuntia littoralis* or *Opuntia oricola*), typically below 500 feet elevation. This species is found in coastal areas of Orange and San Diego Counties, and extreme northwestern Baja California, Mexico. There is a moderate potential for this species to occur within the BSA due to the presence of suitable habitat (thickets of coastal cholla); however, this species was not detected during the biological surveys.

Coastal California gnatcatcher (federally-listed as Threatened) inhabits coastal sage scrub in low-lying foothills and valleys in cismontane southwestern California and Baja California. There is a moderate potential for this species to occur within the BSA due to the presence of suitable habitat (patches of California sagebrush and California buckwheat surrounded by coastal cholla); however, this species was not detected during the biological surveys.

San Diego bur-sage (CRPR Rank 2B) inhabits slopes of canyons mostly in open maritime succulent scrub with little herbaceous cover; known from southwestern San Diego County and Baja California; 30 to 500 feet elevation. This species was observed during the biological surveys.

Golden-spined cereus (CRPR Rank 2B) is limited to the coastal belt, usually on clay soils within coastal scrub and margins of chaparral; known from San Diego County, Channel Islands, and Baja California; 10 to 1,300 feet elevation. This species was observed during the biological surveys.

San Diego barrel cactus (CRPR Rank 2B) inhabits exposed, level or south-facing slopes within chaparral, coastal scrub, and grasslands; known from southwestern San Diego County and Baja California; 10 to 1,500 feet elevation. This species was observed during the biological surveys.

Coastal cactus wren, coastal California gnatcatcher, and San Diego barrel cactus are covered by the MSCP. These species do not require additional surveys. San Diego bur-sage and golden-spined cereus are not covered by the MSCP.

The CNDDB results did not indicate any plant species that would require spring surveys, as suitable habitat for any species other than those discussed above was not present.

Narrow Endemic Species

Based on the results of the literature review, database records search, and biological surveys, no narrow endemic species have a moderate or higher potential of occurring within the BSA due to the absence of suitable habitat. See Appendix E for a complete list of narrow endemic species considered.

Aquatic Resources

No areas potentially subject to the jurisdiction of the USACE, the RWQCB, or the CDFW are present within the BSA.

IMPACTS

Project-Specific Impacts

The entire area within the BSA will be developed (this area is hereafter referred to as the impact area). All impacts within the impact area will be permanent; therefore, construction of this project will result in permanent loss of special-status vegetation communities. In addition, temporary disturbance and/or permanent loss could occur to special-status plant and wildlife species. Permanent impacts include long-term impacts associated with the installation/construction of permanent features such as condominiums, roads, and other miscellaneous features.

Vegetation Communities/Land Uses

Table C outlines the impacts anticipated to occur to each vegetation community/land use type as a result of project-related activities. Figure 3 displays the impacts to vegetation communities/land uses within the impact area and the proposed project site plan on an aerial photograph. Maritime succulent scrub is considered a sensitive habitat, as it is designated as Tier I Rare Upland by the MSCP. Impacts to this vegetation community would be considered significant.

Table C: Anticipated Impacts by Vegetation Community/Land Use Type (Acres)

Vegetation Community	Tier Value	Temporary	Permanent	Total
Maritime Succulent Scrub	I	0	1.98	1.98
Disturbed Habitat	IV	0	2.42	2.42
Developed	N/A	0	0.13	0.13
Total		**0**	**4.53**	**4.53**

Special-Status Plant Species

San Diego barrel cactus, San Diego bur-sage, and golden-spined cereus were observed within the impact area during the surveys. Individuals of these species within the impact area will be cleared during construction activities. No other special-status plant species were observed during surveys. Impacts to San Diego barrel cactus would be considered less than significant because the impact area is outside of the MHPA, the species is an MSCP-covered species, and it will be conserved elsewhere in the MHPA in areas containing maritime succulent scrub and coastal sage scrub. Impacts to San Diego bur-sage would be considered less than significant because the impact area is outside of the MHPA, the species has a relatively low sensitivity, and it will be conserved elsewhere in the MHPA in areas containing maritime succulent scrub and coastal sage scrub. Impacts to golden-spined cereus would be considered less than significant because the impact area is outside of the MHPA, the species has a relatively low sensitivity, only two individuals would be affected, and the species will be conserved elsewhere in the MHPA in areas containing maritime succulent scrub and coastal sage scrub.

Special-Status Avian Species

No special-status avian species were observed during surveys; however, coastal California gnatcatcher and coastal cactus wren both have a moderate potential to occur within the impact area based on the presence of suitable habitat. Impacts to maritime succulent scrub have the potential to affect coastal California gnatcatcher and coastal cactus wren directly through the loss of suitable foraging and nesting habitat. However, impacts will be avoided as described in the Mitigation Section. Thus, impacts to these species would be considered less than significant.

Project compliance with the MBTA, as it pertains to other nesting birds, and all other applicable State and federal regulations is anticipated.

LSA

FIGURE 3

LEGEND

🟥 Biological Study Area

— Proposed Site Plan

● Barrel Cactus

■ Golden-Spined Cereus

▲ San Diego Bur Sage

▨ Barrel Cactus Patch

▩ San Diego Bur Sage Patch

Vegetation Type

🟩 Maritime Succulent Scrub (1.98 acres)

🟨 Disturbed Habitat (2.42 acres)

⬜ Developed (0.13 acre)

N

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FEET

Pacifica Ridge

Project Impacts

SOURCE: Bing Maps (2015); LSA (2013)

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United States Fish and Wildlife Service Critical Habitat Areas

No designated critical habitat will be affected by the proposed project activities.

Aquatic Resources

No aquatic resources subject to the jurisdiction of the USACE, the RWQCB, or the CDFW will be affected by the proposed project activities.

MITIGATION

Vegetation

Mitigation for project impacts to Tier I maritime succulent scrub will be accomplished through the purchase and conservation of 1.98 acres of Tier I native grassland contiguous with Mission Trails Regional Park. Because the affected maritime succulent scrub exists outside of the MHPA while the proposed mitigation land exists inside the MHPA, mitigation would be provided at a ratio of 1:1 of mitigation area to impact area. A description of the proposed mitigation is provided below and summarized in Table D.

Table D: MSCP-Required Mitigation for Impacts to Vegetation Communities/Land Uses

Vegetation Community/Land Use	Tier Value	MSCP-Required Mitigation Ratio for Mitigation Purchased Inside/Outside of MHPA Boundaries	Impact Area (acres)	Anticipated Mitigation Requirement (acres)*
Maritime Succulent Scrub	I	1:1/2:1	1.98	1.98/3.96
Disturbed Habitat	IV	0:1	2.42	0
Developed	N/A	0:1	0.13	0
Total			**4.53**	**1.98/3.96**

*Because the impact area is outside MHPA boundaries, the MSCP requires a ratio of 1:1 of mitigation area to impact area for mitigation purchased inside MHPA boundaries and a 2:1 ratio mitigation area to impact area for mitigation purchased outside MHPA boundaries.

Beginning in May 2015, the applicant conducted an exhaustive search for maritime succulent scrub mitigation (e.g., mitigation bank credits or land where maritime succulent scrub could be preserved, restored, or created) within City jurisdiction to no avail. Due to the unavailability of maritime succulent scrub mitigation opportunities, the City allowed the applicant to mitigate out-of-kind with another Tier I Rare Upland.

The applicant and its subconsultant, J. Whalen Associates, Inc., identified a potential mitigation site composed of native grassland (Tier I Rare Upland) along the eastern edge of APN 36602109. The site is adjacent to the Mission Trails Park system, north of California State Route 52 and east of Marine Corps Air Station Miramar (see Figure 4 for mitigation site location). The applicant presented this mitigation opportunity to City staff who visited the site as part of a site meeting attended by J. Whalen, Inc. staff. The proposed mitigation site is entirely within the MHPA and contains native

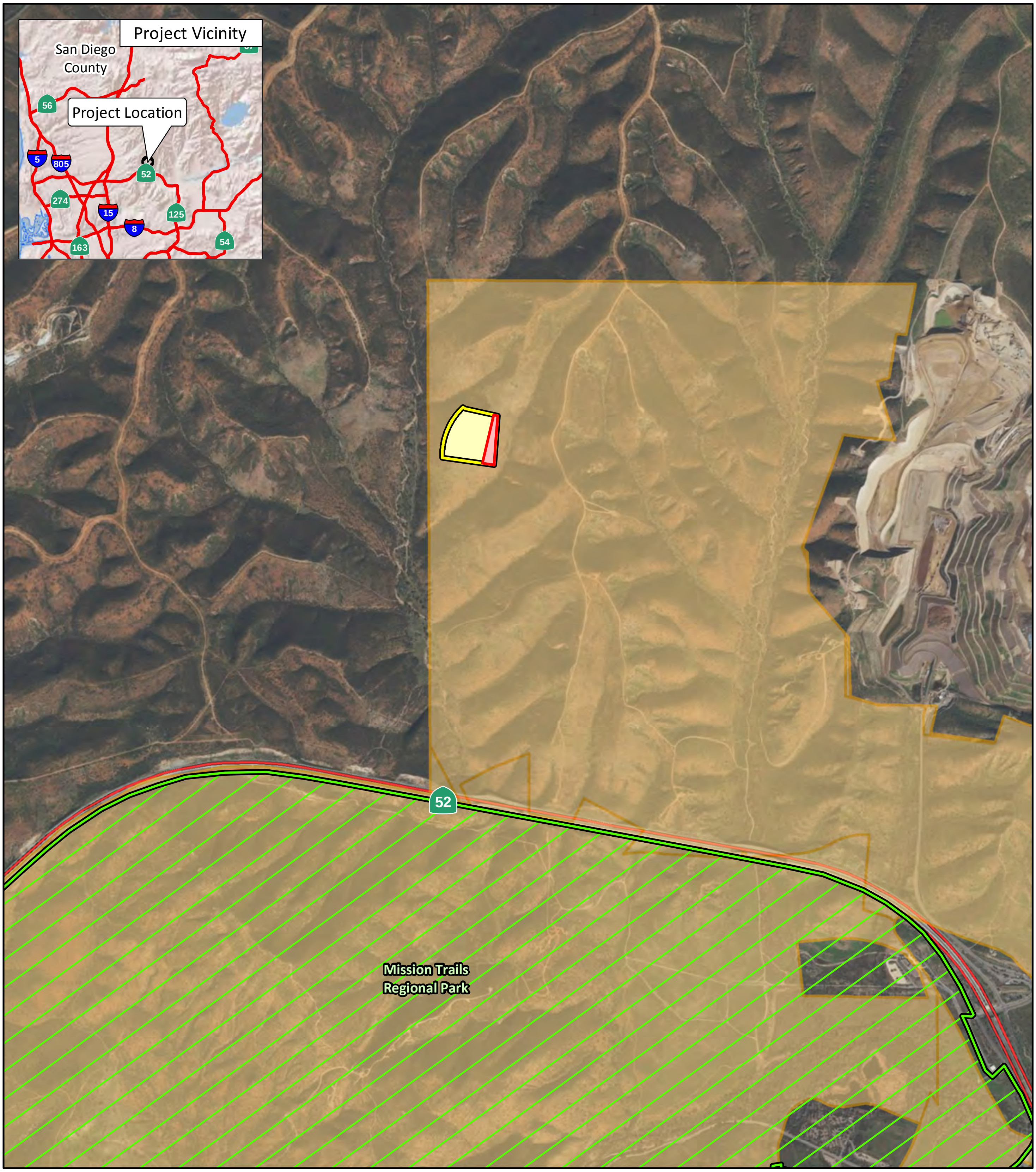

FIGURE 4

LEGEND

🟨 APN 36602109

▨ Mission Trails Regional Park

🟥 Mitigation Site (1.98 acres)

🟧 Multiple Habitat Planning Area (MHPA)

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SOURCE: Esri (2017)

Pacifica Ridge

Off-Site Mitigation Location Map

R:\RRE1301\GIS\MHPATrails.mxd (2/15/2018) grassland habitat (Tier I); therefore, the recordation of a Covenant of Easement over 1.98 acres of Tier I habitat in favor of the City and Wildlife Agencies would be required prior to the issuance of the grading permit. This would satisfy the City's Biology Guidelines mitigation requirement for off-site acquisition inside the MHPA. The applicant proposes to purchase an easement or comparable interest in this land, which will eventually be included in the Mission Trails Park system. Due to the high quality of the native grassland, there is no restoration, maintenance, or performance monitoring associated with this mitigation effort. The land will be purchased, preserved, and added to the Mission Trails Park system.

Mitigation Site Description

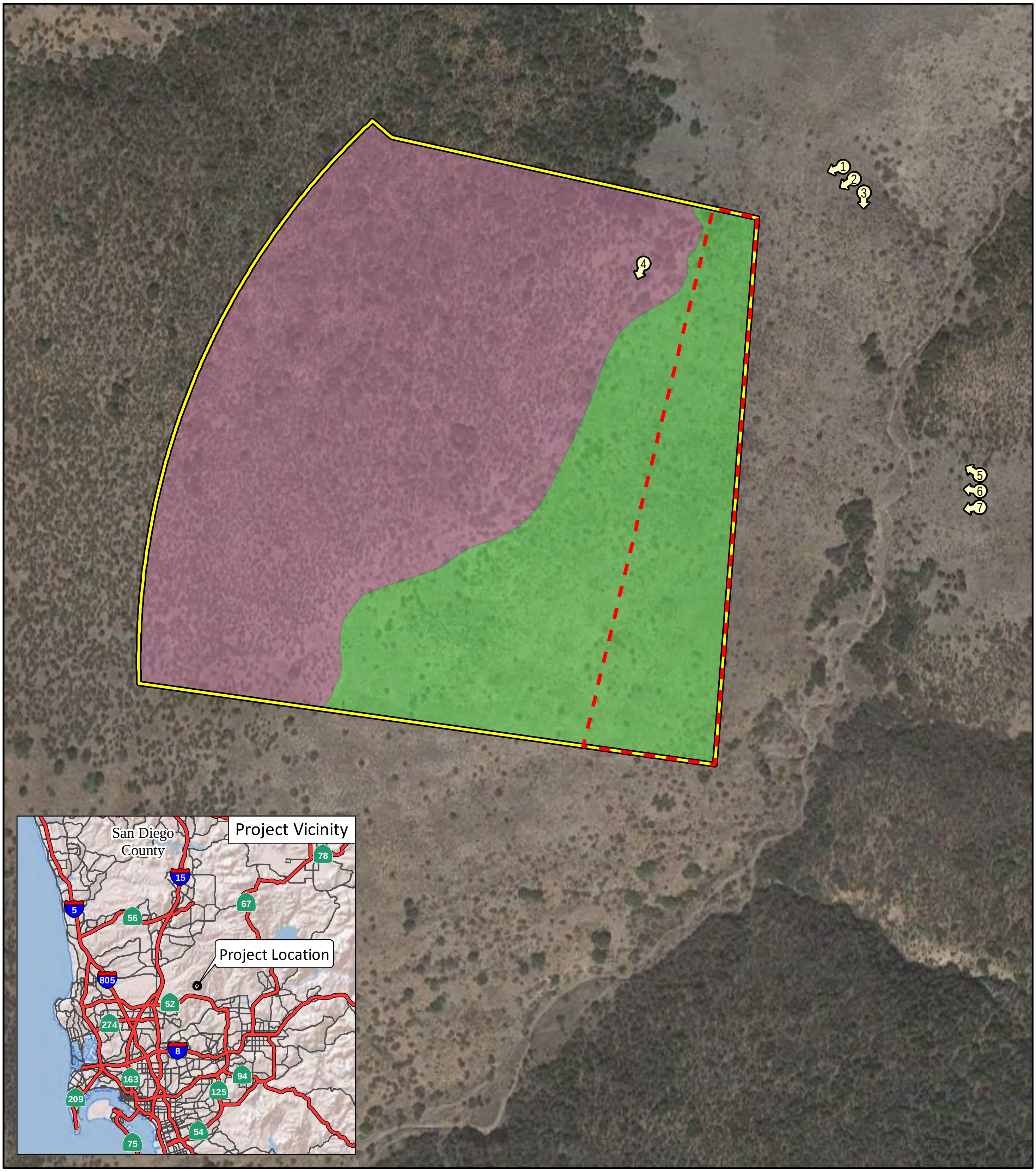
LSA conducted a general reconnaissance survey of the proposed mitigation site on January 5, 2018, to map the vegetation communities, identify special-status plant species, and capture photographs. The site is remote; vehicular access is limited to rugged dirt roads behind Mission Trails Park gates. The site is adjacent to existing Mission Trails Park land, so its preservation will increase the park area and provide for a larger contiguous natural area for animals, including special-status species, to utilize.

The mitigation site is on a southeast-facing slope composed almost entirely of high-quality native grassland, dominated by purple needle grass (*Stipa pulchra*), red brome, fascicled tarweed (*Deinandra fasciculata*), and doveweed (*Croton setigerus*). Scattered native shrubs (typically found in coastal sage scrub habitat), including deerweed (*Acmispon glaber*), California buckwheat, coastal goldenbush (*Isocoma menziesii*), and white sage (*Salvia apiana*), dot the mitigation site. The mitigation site is surrounded by native grassland in all directions. It is further surrounded by chaparral to the west and east. Figure 5 shows the vegetation communities within APN 36602109 and the boundary of the mitigation site. See Appendix F for representative site photographs of the mitigation site.

No special-status plant species were observed within the mitigation site during the general reconnaissance survey. Due to the time of year and the lack of recent rainfall, most of the vegetation on site was dry and not flowering. According to the CNDDB, as recently as 2009, there are records of San Diego goldenstar (*Bloomeria clevelandii*) and variegated dudleya (*Dudleya variegata*), special-status plant species, occurring within or in the vicinity of the mitigation site. San Diego goldenstar has a CRPR Rank of 1B.1 and a blooming period between April and May. Variegated dudleya has a CRPR Rank of 1B.2, is covered by the MSCP, and blooms between April and June.

Special-Status Avian Species

To the extent possible, project construction activities would avoid the bird breeding season (February 1 through September 15). However, if vegetation clearing must occur during the bird breeding season, then LSA recommends that a qualified biologist survey for the presence of nesting coastal California gnatcatcher and coastal cactus wren individuals within the project site and its vicinity no more than 72 hours prior to vegetation clearing. If clearing does not occur within 72 hours of the nesting bird survey, then the area should be resurveyed. If nesting coastal California gnatcatcher or coastal cactus wren individuals are identified, then the qualified biologist should



LEGEND

☐ APN 36602109

🟥 Mitigation Site (1.98 acres)

Vegetation

🟪 Chaparral

🟩 Grassland

➪ Photo Location

FIGURE 5

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SOURCE: Google Maps (2017)

Pacifica Ridge

Proposed Off-Site Mitigation Area Vegetation Map

R:\RRE1301\GIS\Vegetation_APN_36602109.mxd (2/15/2018) establish an adequate buffer zone in which construction activities are prohibited until the nest is no longer active.

Special-Status Plant Species

Because the project site is outside of the MHPA, impacts to San Diego barrel cactus, San Diego bur-sage, and golden-spined cereus would be mitigated through habitat-based mitigation.

CONCLUSION

The maritime succulent scrub present within the footprint provides suitable habitat for special-status plant and animal species; however, no additional biological surveys would be required if this area were to be developed outside of the bird breeding season (February 1 through September 15). If vegetation clearing or heavy equipment use is scheduled during the breeding season, a qualified biologist should conduct clearance surveys for active bird nests immediately prior to any clearing of vegetation.

The applicant proposes to mitigate for 1.98 acres of impacts to maritime succulent scrub habitat by purchasing an easement or comparable interest in 1.98 acres of native grassland along the eastern edge of APN 36602109, which will eventually be included in the Mission Trails Park system.

REFERENCES

American Ornithologists' Union. 1998. *The A.O.U. Checklist of North American Birds*, Seventh Edition, American Ornithologists' Union, Washington D.C.; and supplements; see http://www.aou.org/checklist/north/index.php.

California Department of Fish and Wildlife (CDFW). 2013. *RareFind Version 3.1.0,* Records search executed in November 2013, covering the United States Geological Survey 7.5-minute series topographic map, *Imperial Beach, California* quadrangle. Resource Management and Planning Division. Biogeographic Data Branch, Natural Diversity Database. Sacramento, California.

California Native Plant Society Electronic Inventory (CNPSEI). 2013. Inventory of Rare and Endangered Plants (http://www.cnps.org/inventory). Records search executed in November 2013, covering the United States Geological Survey 7.5-minute series topographic map, *Imperial Beach, California* quadrangle. California Native Plant Society. Sacramento, California.

City of San Diego. Land Development Code Biology Guidelines. September 1999.

City of San Diego. Multiple Species Conservation Program. March 1997. City of San Diego MSCP Subarea Plan.

Hickman, J.C., ed. 1993. *The Jepson Manual: Higher Plants of California*. University of California Press, Berkeley and Los Angeles, CA. 1,400 pp.

Holland, R.F. 1986. *Preliminary Descriptions of the Terrestrial Natural Communities of California*. State of California, The Resources Agency, Department of Fish and Wildlife, Natural Heritage Division, Sacramento, California.

Oberbauer, Thomas, Meghan Kelly, and Jeremy Buegge. March 2008. Draft Vegetation Communities of San Diego County. Based on "Preliminary Descriptions of the Terrestrial Natural Communities of California," Robert F. Holland, Ph.D., October 1986.

Rebman, J.P., and M.G. Simpson. 2006. *Checklist of the Vascular Plants of San Diego County*, 4th Edition. San Diego. Natural History Museum, San Diego, California.

U.S. Department of Agriculture. 1973. Soil Survey, San Diego Area, California. Edited by Roy H. Bowman. Soil Conservation Service and Forest Service. December.

APPENDIX A: RÉSUMÉ

JAIME MORALES

SENIOR BIOLOGIST

EXPERTISE

Biological Assessments and Surveys

Project Management

Ecological Restoration

Construction and Compliance Monitoring

Jurisdictional Delineations

Permitting Assistance

EDUCATION

University of California, San Diego, B.S., Environmental Systems, June 2004.

WORKSHOPS AND COURSES

Desert Tortoise and Field Techniques Workshop, Desert Tortoise Council, 2014.

Basic Wetland Delineation course, Wetland Training Institute, 2008.

Bat Ecology and Field Techniques, The Wildlife Society, 2005.

PROFESSIONAL RESPONSIBILITIES

Mr. Morales has over 13 years of experience managing projects, conducting biological resources surveys, preparing technical reports, and performing construction and compliance monitoring in Southern California. His responsibilities include overseeing several projects; performing biological assessments (including jurisdictional delineations and special-status species surveys); coordinating with clients, contractors, subcontractors, monitoring firms, and government resource agencies; and preparing reports. Mr. Morales has working knowledge of various environmental laws including the Federal Endangered Species Act, the California Endangered Species Act, the California Fish and Game Code, the Federal Clean Water Act, the Migratory Bird Treaty Act, the Coastal Zone Management Act, the National Environmental Policy Act, and the California Environmental Quality Act.

Mr. Morales has extensive experience in Southern California and has worked with both public and private sectors in San Diego, Imperial, Riverside, San Bernardino, Los Angeles, and Orange Counties in a variety of terrestrial habitats.

PROJECT EXPERIENCE

Bayshore Bikeway Segment 8B Project, San Diego and Chula Vista, California

Mr. Morales conducted a general biological resources reconnaissance survey and habitat suitability assessment; performed a rare plant survey and botanical inventory; performed a jurisdictional delineation to ascertain the limits of areas potentially subject to the jurisdiction of the United States Army Corps of Engineers (Corps), the California Department of Fish and Wildlife (CDFW), the Regional Water Quality Control Board (RWQCB), and the California Coastal Commission (CCC); and prepared a Natural Environmental Study (Minimal Impact) report for the San Diego Association of Governments (SANDAG) for a proposed Class I bicycle facility.

City of San Diego, Desert View Drive Storm Drain Outfall Emergency Project, San Diego, California

Mr. Morales managed the biological/environmental aspect of the project, attended meetings, and performed a general preconstruction biological resources assessment, a jurisdictional delineation, construction monitoring, multiple nesting bird surveys prior to vegetation clearing, resource agency coordination (RWQCB and Corps),

PROFESSIONAL EXPERIENCE

Senior Biologist, LSA, Carlsbad, California, April 2008–Present.

Biologist, TRC Solutions, Carlsbad, California, August 2004–April 2008.

Marine Mammal Researcher, Southwest Fisheries Science Center, La Jolla, California, July 2003–June 2004.

PERMITS AND AUTHORIZATIONS

Marine Corps Base Camp Pendleton Certified Non-Live Fire Range Safety Officer, 2005–Present.

California Department of Fish and Wildlife Scientific Collecting Permit, 2005–Present.

PROJECT EXPERIENCE (CONTINUED)

Section 404 permit application, biological technical report preparation, revegetation plan preparation, revegetation installation monitoring, and revegetation performance monitoring in support of the emergency erosion repair project at Mt. Soledad. The project site is adjacent to Multiple Habitat Planning Area and is occupied by coastal California gnatcatcher. He continues to manage the monitoring effort associated with the revegetation effort and conducts monthly visits; prepares memorandums describing monitoring visit observations; continues coordination with City Staff (engineers, storm water, biology, and planning), the landscape contractor, and the general contractor; and will conduct annual data collection and reporting to assess the performance of the revegetation effort to meet the 25-month success criteria.

City of San Diego, Cardinal Drive Storm Drain Replacement Emergency Project, San Diego, California

Mr. Morales managed the biological resources/noise aspects of the emergency erosion repair project. He conducted periodic bird nest surveys prior to and during vegetation removal activities. Mr. Morales attended weekly on-site project team meetings and worked with LSA's noise specialist and monitors to interpret the data and determine the best methods for noise attenuation for construction-related noise. Mr. Morales oversaw the construction of a plywood noise barrier to reduce the noise levels entering adjacent areas designated as Multiple Habitat Planning Area occupied by coastal California gnatcatcher and with potential to support least Bell's vireo.

City of Carlsbad, Calavera Dam Routine Maintenance Project, Carlsbad, California

Mr. Morales manages the biological/mitigation aspect of the project. Mr. Morales oversees the preconstruction nesting bird surveys and biological monitoring of periodic vegetation clearing at the dam. Mr. Morales assisted the City with procurement of a CDFW Streambed Alteration Agreement to conduct the vegetation clearing. Mr. Morales helped the City identify appropriate mitigation for impacts to riparian vegetation and prepared a conceptual mitigation plan that was approved by the CDFW. Mr. Morales currently manages the 5-year maintenance and monitoring effort required by the CDFW.

PROJECT EXPERIENCE (CONTINUED)

City of Carlsbad, Coastal Rail Trail Reaches 1, 4, and 5, Carlsbad, California

Mr. Morales conducted vegetation mapping, performed jurisdictional delineations to ascertain the limits of areas potentially subject to the jurisdiction of the Corps and the CDFW, and prepared a Natural Environment Study report for the City of Carlsbad for a proposed rail trail.

San Diego Gas & Electric, Water Permitting On-Call Service, San Diego County, California

Mr. Morales conducted biological resources assessments and construction monitoring for projects adjacent to aquatic resources for San Diego Gas & Electric. He worked closely with client managers, engineers, and contractors to minimize impacts to sensitive resources.

Santa Margarita River Bridge and Second Track Project, Oceanside, California (Marine Corps Base Camp Pendleton)

Mr. Morales served as the project Environmental Compliance Officer (ECO) on behalf of Flatiron Construction Corporation for this project, which includes the replacement of an existing steel trestle bridge over the Santa Margarita River in Oceanside, aboard Marine Corps Base Camp Pendleton; the construction of a second railway track; and improvements to the existing railway track. The duties of the ECO included the preparation of a pre-construction joint condition report; weekly monitoring of the site to ensure compliance with agency-issued permits; nesting bird surveys during the bird breeding season; preparation of daily monitoring memoranda and monthly monitoring reports; coordination with the client and contractors; and preparation and presentation of an environmental awareness training manual. Additionally, Mr. Morales managed the complete monitoring effort on behalf of LSA.

Bear Valley Middle School, Reidy Creek Elementary School, Los Coches Middle School, Guajome Regional Park, and Loma Alta Bridge, Habitat Restoration Monitoring Services, Escondido, California

Mr. Morales conducted quarterly site assessments and annual data collection at on- and off-site mitigation sites located in Escondido to ensure that the sites progressed toward meeting the ultimate performance standards specified in their 5-year mitigation plans in accordance with the expected requirements of the Corps Section 404 Permit, the RWQCB Section 401 water quality certification, and the CDFW Streambed Alteration Agreement. Mr. Morales prepared annual monitoring reports and coordinated with clients and agency representatives. All projects met success criteria and were approved by the resources agencies.

APPENDIX B: VASCULAR PLANT SPECIES OBSERVED

The following vascular plant species were observed within the BSA by LSA during the biological surveys.

Vascular Plant Species Observed

Scientific Name	Common Name
Aizoaceae	**Carpet weed family**
*Carpobrotus edulis**	Hottentot-fig
Apiaceae	**Carrot family**
*Foeniculum vulgare**	Fennel
Asteraceae	**Sunflower family**
Ambrosia chenopodiifolia	San Diego bur-sage
Artemisia californica	California sagebrush
Deinandra fasciculata	Fascicled tarweed
Glebionis coronaria	Garland daisy
Brassicaceae	**Mustard family**
*Hirschfeldia incana**	Shortpod mustard
Cactaceae	**Cactus family**
Bergerocactus emoryi	golden-spined cereus
Cylindropuntia prolifera	Coastal cholla
Ferocactus viridescens	San Diego barrel cactus
Chenopodiaceae	**Saltbush family**
*Salsola tragus**	Russian thistle
Euphorbiaceae	**Spurge family**
*Ricinus communis**	Castor bean
Plumbaginaceae	**Leadwort family**
*Limonium perezii**	Perez’s sea lavender
Polygonaceae	**Buckwheat family**
Eriogonum fasciculatum	California buckwheat
Simmondsiaceae	**Jojoba family**
Simmondsia chinensis	Jojoba
Poaceae	**Grass family**
*Avena fatua**	Wild oat
*Bromus diandrus**	Ripgut brome
Bromus madritensis ssp. *rubens**	Red brome
*Pennisetum setaceum**	African fountain grass

* Nonnative species
Taxonomy and scientific nomenclature generally conform to Hickman (1993). Common names for each taxa generally conform to the Checklist of the Vascular Plants of San Diego County (Simpson and Rebman 2006).

APPENDIX C: WILDLIFE SPECIES OBSERVED

This is a list of the conspicuous aerial insects, reptiles, birds, and mammals noted in or adjacent to the BSA by LSA during the biological surveys. Presence may be noted if a species is seen or heard, or identified by the presence of tracks, scat, or other signs.

Wildlife Species Observed

Scientific Name	Common Name
LEPIDOPTERA	**BUTTERFLIES**
Nymphalidae	**Brushfooted Butterflies**
Vanessa cardui	Painted lady
REPTILIA	**REPTILES**
Phrynosomatidae	**Phrynosomatid Lizards**
Sceloporus occidentalis	Western fence lizard
AVES	**BIRDS**
Trochilidae	**Hummingbirds**
Calypte anna	Anna’s hummingbird
Corvidae	**Crows and Ravens**
Corvus brachyrhynchos	American crow
Aegithalidae	**Bushtits**
Psaltriparus minimus	Bushtit
Mimidae	**Mockingbirds and Thrashers**
Mimus polyglottos	Northern mockingbird
Sturnidae	**Starlings**
*Sturnus vulgaris**	European starling
Emberizidae	**Emberizines**
Melozone crissalis	California towhee
Zonotrichia leucophrys	White-crowned sparrow
Fringillidae	**Finches**
Carpodacus mexicanus	House finch
MAMMALIA	**MAMMALS**
Leporidae	**Rabbits and Hares**
Sylvilagus audubonii	Desert cottontail
Rodentia	**Rodents**
Spermophilus beecheyi	California ground squirrel

* Nonnative species

Taxonomy and nomenclature are based primarily on the following:

Damselflies and dragonflies: Paulson, D. (2009, Dragonflies and Damselflies of the West, Princeton University Press, Princeton, New Jersey).

Butterflies: North American Butterfly Association (2001, NABA checklist and English Names of North American Butterflies, Second Edition, North American Butterfly Association, Morristown, New Jersey; see http://www.naba.org/pubs/checklst.html).

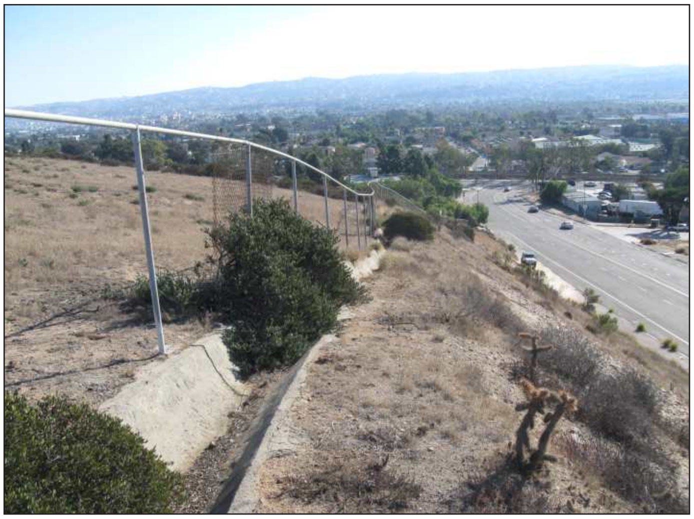
Amphibians and reptiles: Crother, B.I. ed. (2012, Scientific and Standard English Names of Amphibians and Reptiles of North America North of Mexico. *Herpetological Circular* 39) for species taxonomy and nomenclature; Stebbins, R.C., and S.M. McGinnis (2012, Field Guide to Amphibians and Reptiles of California, Revised Edition, University of California Press, Berkeley) for sequence and higher order taxonomy.

Birds: American Ornithologists’ Union (1998, The A.O.U. Checklist of North American Birds, Seventh Edition, American Ornithologists’ Union, Washington D.C.; and supplements; see http://www.aou.org/checklist/north/index.php).

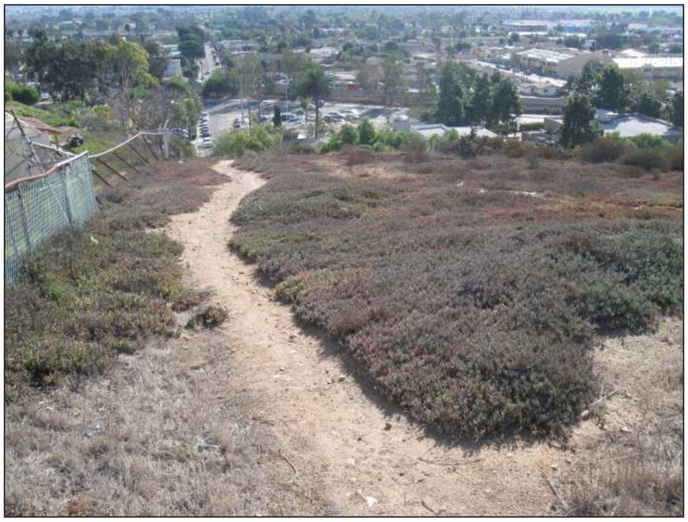
Mammals: Wilson, D.E., and D.M. Reeder, eds. (2005, Mammal Species of the World, Third Edition, Johns Hopkins University Press, Baltimore, Maryland; see http://www.vertebrates.si.edu/msw/mswcfapp/msw/index.cfm).

APPENDIX D: SITE PHOTOGRAPHS

Photograph 1: *View of the maritime succulent scrub within the Biological Study Area (BSA), facing north. The photograph was taken at the southwestern corner of the BSA.*



Photograph 2: *View of the western edge of the BSA, facing south. The photograph was taken at the northwestern corner of the BSA.*



Photograph 3: *View of ornamental vegetation within the BSA, facing south. The photograph was taken at the northeastern corner of the BSA.*

Photograph 4: *View of disturbed land at the eastern section of the BSA, facing west. The photograph was taken at the eastern edge of the BSA.*

LSA

Appendix D

Pacifica Ridge Project

Site Photographs

APPENDIX E: NARROW ENDEMIC SPECIES SUMMARY TABLE

Narrow Endemic Species Summary Table

Scientific Name	Common Name	Habitat	Occurrence Probability
Acanthomintha ilicifolia	San Diego thorn-mint	Annual herb endemic to active vertisol clay soils of mesas and valleys within grasslands, chaparral, coastal scrub, and vernal pool communities; known from southwestern San Diego County and Baja California; 9 to 900 meters (30 to 3,000 feet) elevation.	**Not Expected.** Suitable habitat for this species is not present within the BSA. This species was not observed during the biological survey.
Agave shawii	Shaw's agave	Coastal bluffs and slopes within coastal sage scrub and adjacent to Torrey pine forest; known from southwestern San Diego County to Baja California; 9 to 75 meters (30 to 250 feet) elevation.	**Not Expected.** Suitable habitat for this species is not present within the BSA. This species was not observed during the biological survey.
Ambrosia pumila	San Diego ambrosia	Occurs in open habitats, usually near drainages or vernal pools, usually in sandy loam or on clay (including upland clay slopes) from 20 to 487 meters (70 to 1,600 feet) elevation. Known from western Riverside and western San Diego Counties. Also occurs in Mexico.	**Not Expected.** Suitable habitat for this species is not present within the BSA. This species was not observed during the biological survey.
Aphanisma blitoides	Aphanisma	Sandy or clay soils on slopes or bluffs near the ocean, usually in coastal bluff scrub, coastal dunes, or coastal scrub, below 305 meters (1,000 feet) elevation. Known in California from Ventura, Santa Barbara, Los Angeles, Orange, and San Diego Counties. Also occurs in Mexico.	**Not Expected.** Suitable habitat for this species is not present within the BSA. This species was not observed during the biological survey.
Astragalus tener var. *titi*	Coastal dunes milk-vetch	Moist, sandy depressions of coastal dunes and bluffs, or clay terrace, below 50 meters (160 feet) elevation. Known to occur only in Monterey County. Believed extirpated from Los Angeles County. May also be extirpated from San Diego County.	**Not Expected.** Suitable habitat for this species is not present within the BSA. This species was not observed during the biological survey.
Baccharis vanessae	Encinitas baccharis	Sandstone soils in steep, open, rocky areas in chaparral at 60 to 720 meters (200 to 2,400 feet) elevation. Known only from San Diego County, California.	**Not Expected.** Suitable habitat for this species is not present within the BSA. This species was not observed during the biological survey.
Deinandra conjugens	Otay tarplant	Annual herb found in valley grassland and coastal sage scrub.	**Low.** Although marginally suitable habitat is present within the BSA, this species was not observed during the biological survey.
Dudleya blochmaniae ssp. *brevifolia*	Blochman's dudleya	Dry rocky places, often on clay or serpentine, in chaparral, coastal sage scrub, or grassland, below 450 meters (1,500 feet) elevation. In California, known only from Los Angeles, Orange, Santa Barbara, San Diego, San Luis Obispo, and Ventura Counties. Also occurs in Mexico.	**Not Expected.** Suitable habitat for this species is not present within the BSA. This species was not observed during the biological survey.

Narrow Endemic Species Summary Table

Scientific Name	Common Name	Habitat	Occurrence Probability
Dudleya variegata	Variegated dudleya	In rocky or clay soils within chaparral, coastal scrub, cismontane woodland, valley and foothill grassland, and margins of vernal pools; known from western San Diego County and Baja California; 3 to 580 meters (10 to 1,900 feet) elevation.	**Not Expected.** Suitable habitat for this species is not present within the BSA. This species was not observed during the biological survey.
Eryngium aristulatum var. *parishii*	San Diego button-celery	Vernal pools at 15 to 620 meters (50 to 2,000 feet) elevation. In California, known only from Riverside and San Diego Counties. In Riverside County, this species is known only from the Santa Rosa Plateau.	**Not Expected.** Suitable habitat for this species is not present within the BSA. This species was not observed during the biological survey.
Navarretia fossalis	Spreading navarretia	In vernal pools, playas, shallow freshwater marshes and similar sites at 30 to 1,310 meters (100 to 4,300 feet) elevation. In California, known only from Los Angeles, San Luis Obispo, Riverside, and San Diego Counties. Also occurs in Mexico.	**Not Expected.** Suitable habitat for this species is not present within the BSA. This species was not observed during the biological survey.
Opuntia parryi var. *serpentina*	Snake cholla	A succulent shrub found in coastal sage scrub and chaparral.	**Low.** Although suitable habitat is present within the BSA, this perennial shrub was not observed during the biological survey.
Orcuttia californica	California Orcutt grass	Vernal pools from 15 to 660 meters (50 to 2,200 feet) elevation. In California, known from Los Angeles, Ventura, Riverside, and San Diego Counties. Also occurs in Mexico.	**Not Expected.** Suitable habitat for this species is not present within the BSA. This species was not observed during the biological survey.
Pogogyne abramsii	San Diego mesa mint	Annual herb, inhabitant of vernal pools in San Diego County from 75 to 215 meters (200 to 700 feet) elevation.	**Not Expected.** Suitable habitat for this species is not present within the BSA. This species was not observed during the biological survey.
Pogogyne nudiuscula	Otay Mesa mint	Clay soils on open coastal plains, mesas, and river bottoms, often in disturbed areas; known from southwestern San Diego County and Baja California; 80 to 1,000 feet elevation.	**Not Expected.** Suitable habitat for this species is not present within the BSA. This species was not observed during the biological survey.

APPENDIX F: MITIGATION SITE PHOTOGRAPHS

Photo Location 1: View of the proposed mitigation site, facing southwest. Chaparral can be seen in the background.

Photo Location 2: View of the proposed mitigation site, facing south-southwest.

Photo Location 3: View of the area east of and adjacent to the proposed mitigation site, facing south.

Photo Location 4: View of chaparral west of and adjacent to the proposed mitigation site, facing south-southwest.

Photo Location 5: View of the east-facing hillside and an approximation of the proposed mitigation site boundary, facing northwest. Chaparral can be seen at the top of the hill.

Photo Location 6: View of the east-facing hillside and an approximation of the proposed mitigation site boundary, facing west. Chaparral can be seen at the top of the hill.

Photo Location 7: View of the east-facing hillside and an approximation of the proposed mitigation site boundary, facing west-northwest. Chaparral can be seen at the top of the hill.

Representative photograph of the grassland occurring within the proposed mitigation site, facing north.The long stalks of native bunch grasses can be seen protruding through the mats of nonnative grassland. Scattered deerweed (*Acmispon glaber*), a native scrub species, dot the grassland.

Representative photograph of the grassland occurring within the proposed mitigation site, facing north. The long stalks of native bunch grasses can be seen protruding through the mats of nonnative grassland. Scattered deerweed (*Acmispon glaber*), a native scrub species, dot the grassland.

CAP CONSISTENCY CHECKLIST SUBMITTAL APPLICATION

- The Checklist is required only for projects subject to CEQA review.[2]
- If required, the Checklist must be included in the project submittal package. Application submittal procedures can be found in Chapter 11: Land Development Procedures of the City's Municipal Code.
- The requirements in the Checklist will be included in the project's conditions of approval.
- The applicant must provide an explanation of how the proposed project will implement the requirements described herein to the satisfaction of the Planning Department.

Application Information

Contact Information

Project No./Name: PTS No. 393812/Pacifica Ridge Residential

Property Address: East of Smythe Avenue, north of Foothill Road near Camino de Progresso

Applicant Name/Co.: Michael Kootchick/Raintree Residential LLC

Contact Phone: (858) 273-8800 Contact Email: michael@sospropertymanage

Was a consultant retained to complete this checklist? ☒ Yes ☐ No If Yes, complete the following

Consultant Name: Kim Baranek Contact Phone: (858)922-8604

Company Name: Baranek Consulting Group Contact Email: kim@baranekconsulting.com

Project Information

1. What is the size of the project (acres)? 4.35 acres (undeveloped)
2. Identify all applicable proposed land uses:
    - ☐ Residential (indicate # of single-family units):
    - ☒ Residential (indicate # of multi-family units): 44 condominium units
    - ☐ Commercial (total square footage):
    - ☐ Industrial (total square footage):
    - ☐ Other (describe):
3. Is the project or a portion of the project located in a Transit Priority Area? ☐ Yes ☒ No
4. Provide a brief description of the project proposed:

Condominiums, landscaping, parking, and infrastructure, including widening of Smythe Avenue along site frontage to its ultimate planned configuration as a modified four-lane collector street. Infrastructure improvements within Smythe Avenue including sewer and water main connections. TM proposes to consolidate the existing three lots into one lot; PDP to allow deviations from the RM-1-1 development regulations; and a SDP to develop on Environmentally

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[2] Certain projects seeking ministerial approval may be required to complete the Checklist. For example, projects in a Community Plan Implementation Overlay Zone may be required to use the Checklist to qualify for ministerial level review. See Supplemental Development Regulations in the project's community plan to determine applicability.

Step 1: Land Use Consistency

The first step in determining CAP consistency for discretionary development projects is to assess the project's consistency with the growth projections used in the development of the CAP. This section allows the City to determine a project's consistency with the land use assumptions used in the CAP.

Step 1: Land Use Consistency

Checklist Item (Check the appropriate box and provide explanation and supporting documentation for your answer)	Yes	No
A. Is the proposed project consistent with the existing General Plan and Community Plan land use and zoning designations?;[3] OR, B. If the proposed project is not consistent with the existing land use plan and zoning designations, and includes a land use plan and/or zoning designation amendment, would the proposed amendment result in an increased density within a Transit Priority Area (TPA)[4] and implement CAP Strategy 3 actions, as determined in Step 3 to the satisfaction of the Development Services Department?; OR, C. If the proposed project is not consistent with the existing land use plan and zoning designations, does the project include a land use plan and/or zoning designation amendment that would result in an equivalent or less GHG-intensive project when compared to the existing designations?	☑	☐

If "***Yes***," proceed to Step 2 of the Checklist. For question B above, complete Step 3. For question C above, provide estimated project emissions under both existing and proposed designation(s) for comparison. Compare the maximum buildout of the existing designation and the maximum buildout of the proposed designation.

If "***No***," in accordance with the City's Significance Determination Thresholds, the project's GHG impact is significant. The project must nonetheless incorporate each of the measures identified in Step 2 to mitigate cumulative GHG emissions impacts unless the decision maker finds that a measure is infeasible in accordance with CEQA Guidelines Section 15091. Proceed and complete Step 2 of the Checklist.

Development of 44 two-story, detached condominiums and related site improvements/infrastructure. Site is designated for Residential use in the City's General Plan and is within one-half mile of the Beyer Boulevard Trolley Station in a TPA. The San Ysidro Community Plan (SYCP) designates the site for Low Medium Density Residential use, which allows a density of 10 to 22 dwelling units per net acre (du/ac), and the project site is zoned RM-1-1. The project proposes 44 multi-family units on a 4.35-acre site, which would result in an overall density of 10 du/ac. Project proposes development at a density allowed under the SYCP and zoning. Project site is encumbered by ESL restrictions related to steep hillsides/terrain and sensitive habitat that affect the applicant's ability to construct more units on the site. Nonetheless, the project is consistent with the General Plan, SYCP land use designation, and zoning for the site.

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[3] This question may also be answered in the affirmative if the project is consistent with SANDAG Series 12 growth projections, which were used to determine the CAP projections, as determined by the Planning Department.

[4] This category applies to all projects that answered in the affirmative to question 3 on the previous page: Is the project or a portion of the project located in a transit priority area.

Step 2: CAP Strategies Consistency

The second step of the CAP consistency review is to review and evaluate a project's consistency with the applicable strategies and actions of the CAP. Step 2 only applies to development projects that involve permits that would require a certificate of occupancy from the Building Official or projects comprised of one and two family dwellings or townhouses as defined in the California Residential Code and their accessory structures.[5] All other development projects that would not require a certificate of occupancy from the Building Official shall implement Best Management Practices for construction activities as set forth in the Greenbook (for public projects).

Step 2: CAP Strategies Consistency

Checklist Item (Check the appropriate box and provide explanation for your answer)	Yes	No	N/A
Strategy 1: Energy & Water Efficient Buildings			
1. *Cool/Green Roofs*. • Would the project include roofing materials with a minimum 3-year aged solar reflection and thermal emittance or solar reflection index equal to or greater than the values specified in the voluntary measures under California Green Building Standards Code (Attachment A)?; OR • Would the project roof construction have a thermal mass over the roof membrane, including areas of vegetated (green) roofs, weighing at least 25 pounds per square foot as specified in the voluntary measures under California Green Building Standards Code?; OR • Would the project include a combination of the above two options? Check "N/A" only if the project does not include a roof component. Project design would include roofing materials with a minimum 3-year aged solar reflection and thermal emittance or solar reflection index equal to or greater than the values specified in the voluntary measures under the California Green Building Standards Code.	☑	☐	☐

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[5] Actions that are not subject to Step 2 would include, for example: 1) discretionary map actions that do not propose specific development, 2) permits allowing wireless communication facilities, 3) special events permits, 4) use permits or other permits that do not result in the expansion or enlargement of a building (e.g., decks, garages, etc.), and 5) non-building infrastructure projects such as roads and pipelines. Because such actions would not result in new occupancy buildings from which GHG emissions reductions could be achieved, the items contained in Step 2 would not be applicable.

2. *Plumbing fixtures and fittings*

With respect to plumbing fixtures or fittings provided as part of the project, would those low-flow fixtures/appliances be consistent with each of the following:

Residential buildings:

- Kitchen faucets: maximum flow rate not to exceed 1.5 gallons per minute at 60 psi;
- Standard dishwashers: 4.25 gallons per cycle;
- Compact dishwashers: 3.5 gallons per cycle; and
- Clothes washers: water factor of 6 gallons per cubic feet of drum capacity?

Nonresidential buildings:

- Plumbing fixtures and fittings that do not exceed the maximum flow rate specified in Table A5.303.2.3.1 (voluntary measures) of the California Green Building Standards Code (See Attachment A); and
- Appliances and fixtures for commercial applications that meet the provisions of Section A5.303.3 (voluntary measures) of the California Green Building Standards Code (See Attachment A)?

Check "N/A" only if the project does not include any plumbing fixtures or fittings.

☑ ☐ ☐

Project design would use low-flow fixtures and appliances that are consistent with the following:

- Kitchen faucets: maximum flow rate not to exceed 1.5 gallons per minute at 60 pounds per square inch (psi);
- Standard dishwashers: 4.25 gallons per cycle;
- Compact dishwashers: 3.5 gallons per cycle; and
- Clothes washers: water factor of 6 gallons per cubic feet of drum capacity.

Strategy 3: Bicycling, Walking, Transit & Land Use

3. *Electric Vehicle Charging*

- <u>Multiple-family projects of 17 dwelling units or less</u>: Would 3% of the total parking spaces required, or a minimum of one space, whichever is greater, be provided with a listed cabinet, box or enclosure connected to a conduit linking the parking spaces with the electrical service, in a manner approved by the building and safety official, to allow for the future installation of electric vehicle supply equipment to provide electric vehicle charging stations at such time as it is needed for use by residents?

- <u>Multiple-family projects of more than 17 dwelling units</u>: Of the total required listed cabinets, boxes or enclosures, would 50% have the necessary electric vehicle supply equipment installed to provide active electric vehicle charging stations ready for use by residents?

- <u>Non-residential projects</u>: Of the total required listed cabinets, boxes or enclosures, would 50% have the necessary electric vehicle supply equipment installed to provide active electric vehicle charging stations ready for use?

Check "N/A" only if the project is a single-family project or would not require the provision of listed cabinets, boxes, or enclosures connected to a conduit linking the parking spaces with electrical service, e.g., projects requiring fewer than 10 parking spaces.

Of the 119 required parking spaces, the project design would provide 3% or 4 parking spaces with a listed cabinet, box, or enclosure connected to a conduit linking the parking spaces with electrical service. Of the listed cabinets, boxes, or enclosures provided, a minimum of 2 (or 50 percent) would have the necessary electric vehicle supply equipment installed to provide active electric vehicle charging stations ready for use by residents.

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Strategy 3: Bicycling, Walking, Transit & Land Use
(Complete this section if project includes non-residential or mixed uses)

4. *Bicycle Parking Spaces*

Would the project provide more short- and long-term bicycle parking spaces than required in the City's Municipal Code (Chapter 14, Article 2, Division 5)?[6]

Check "N/A" only if the project is a residential project.

N/A

☐ ☐ ☑

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[6] Non-portable bicycle corrals within 600 feet of project frontage can be counted towards the project's bicycle parking requirements.

5. *Shower facilities*

If the project includes nonresidential development that would accommodate over 10 tenant occupants (employees), would the project include changing/shower facilities in accordance with the voluntary measures under the California Green Building Standards Code as shown in the table below?

Number of Tenant Occupants (Employees)	Shower/Changing Facilities Required	Two-Tier (12" X 15" X 72") Personal Effects Lockers Required
0-10	0	0
11-50	1 shower stall	2
51-100	1 shower stall	3
101-200	1 shower stall	4
Over 200	1 shower stall plus 1 additional shower stall for each 200 additional tenant-occupants	1 two-tier locker plus 1 two-tier locker for each 50 additional tenant-occupants

Check "N/A" only if the project is a residential project, or if it does not include nonresidential development that would accommodate over 10 tenant occupants (employees).

N/A

☐ ☐ ☑

6. *Designated Parking Spaces*

If the project includes a nonresidential use in a TPA, would the project provide designated parking for a combination of low-emitting, fuel-efficient, and carpool/vanpool vehicles in accordance with the following table?

Number of Required Parking Spaces	Number of Designated Parking Spaces
0-9	0
10-25	2
26-50	4
51-75	6
76-100	9
101-150	11
151-200	18
201 and over	At least 10% of total

This measure does not cover electric vehicles. See Question 4 for electric vehicle parking requirements.

Note: Vehicles bearing Clean Air Vehicle stickers from expired HOV lane programs may be considered eligible for designated parking spaces. The required designated parking spaces are to be provided within the overall minimum parking requirement, not in addition to it.

Check "N/A" only if the project is a residential project, or if it does not include nonresidential use in a TPA.

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N/A

7. *Transportation Demand Management Program*

If the project would accommodate over 50 tenant-occupants (employees), would it include a transportation demand management program that would be applicable to existing tenants and future tenants that includes:

At least one of the following components:

- Parking cash out program
- Parking management plan that includes charging employees market-rate for single-occupancy vehicle parking and providing reserved, discounted, or free spaces for registered carpools or vanpools
- Unbundled parking whereby parking spaces would be leased or sold separately from the rental or purchase fees for the development for the life of the development

And at least three of the following components:

- Commitment to maintaining an employer network in the SANDAG iCommute program and promoting its RideMatcher service to tenants/employees
- On-site carsharing vehicle(s) or bikesharing
- Flexible or alternative work hours
- Telework program
- Transit, carpool, and vanpool subsidies
- Pre-tax deduction for transit or vanpool fares and bicycle commute costs
- Access to services that reduce the need to drive, such as cafes, commercial stores, banks, post offices, restaurants, gyms, or childcare, either onsite or within 1,320 feet (1/4 mile) of the structure/use?

Check "N/A" only if the project is a residential project or if it would not accommodate over 50 tenant-occupants (employees).

N/A

☐ ☐ ☑

Step 3: Project CAP Conformance Evaluation (if applicable)

The third step of the CAP consistency review only applies if Step 1 is answered in the affirmative under option B. The purpose of this step is to determine whether a project that is located in a TPA but that includes a land use plan and/or zoning designation amendment is nevertheless consistent with the assumptions in the CAP because it would implement CAP Strategy 3 actions. In general, a project that would result in a reduction in density inside a TPA would not be consistent with Strategy 3.The following questions must each be answered in the affirmative and fully explained.

1. **Would the proposed project implement the General Plan's City of Villages strategy in an identified Transit Priority Area (TPA) that will result in an increase in the capacity for transit-supportive residential and/or employment densities?**

   Considerations for this question:
   - Does the proposed land use and zoning designation associated with the project provide capacity for transit-supportive residential densities within the TPA?
   - Is the project site suitable to accommodate mixed-use village development, as defined in the General Plan, within the TPA?
   - Does the land use and zoning associated with the project increase the capacity for transit-supportive employment intensities within the TPA?

2. **Would the proposed project implement the General Plan's Mobility Element in Transit Priority Areas to increase the use of transit?**

   Considerations for this question:
   - Does the proposed project support/incorporate identified transit routes and stops/stations?
   - Does the project include transit priority measures?

3. **Would the proposed project implement pedestrian improvements in Transit Priority Areas to increase walking opportunities?**

   Considerations for this question:
   - Does the proposed project circulation system provide multiple and direct pedestrian connections and accessibility to local activity centers (such as transit stations, schools, shopping centers, and libraries)?
   - Does the proposed project urban design include features for walkability to promote a transit supportive environment?

4. **Would the proposed project implement the City of San Diego's Bicycle Master Plan to increase bicycling opportunities?**

   Considerations for this question:
   - Does the proposed project circulation system include bicycle improvements consistent with the Bicycle Master Plan?
   - Does the overall project circulation system provide a balanced, multimodal, "complete streets" approach to accommodate mobility needs of all users?

5. **Would the proposed project incorporate implementation mechanisms that support Transit Oriented Development?**

   Considerations for this question:
   - Does the proposed project include new or expanded urban public spaces such as plazas, pocket parks, or urban greens in the TPA?
   - Does the land use and zoning associated with the proposed project increase the potential for jobs within the TPA?
   - Do the zoning/implementing regulations associated with the proposed project support the efficient use of parking through mechanisms such as: shared parking, parking districts, unbundled parking, reduced parking, paid or time-limited parking, etc.?

6. **Would the proposed project implement the Urban Forest Management Plan to increase urban tree canopy coverage?**

   Considerations for this question:
   - Does the proposed project provide at least three different species for the primary, secondary and accent trees in order to accommodate varying parkway widths?
   - Does the proposed project include policies or strategies for preserving existing trees?
   - Does the proposed project incorporate tree planting that will contribute to the City's 20% urban canopy tree coverage goal?

TEMPORARY CONSTRUCTION NOISE ANALYSIS

Pacifica Ridge
City of San Diego, California

Prepared For

Raintree Residential LLC
Attention: Michael Kootchick
P.O. Box 2671
Carlsbad, California 92018
Phone: 619-804-3417

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Job #B80404N1

May 7, 2018

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APPENDICES

A. Project Plans
B. Pertinent Sections of the City of San Diego Municipal Code and CEQA Regulations
C. Cadna Analysis Data and Results

1.0 EXECUTIVE SUMMARY

The proposed project, known as Pacifica Ridge, consists of the construction of a residential condominium subdivision and other improvements at an undeveloped parcel. The project site is located east of Smythe Avenue, north of Foothill Road, and west of the cul-de-sac at the end of Camino de Progresso in the City of San Diego, California.

No analysis of traffic noise, aircraft noise, or permanent project-related noise is required at this time. Temporary construction noise is the focus of this analysis.

An analysis of noise impacts from temporary construction activities was performed to determine whether or not this activity will exceed the applicable construction noise limits contained within the City of San Diego Municipal Code at surrounding properties. Section 59.5.0404 of the City of San Diego Municipal Code states that construction activity is prohibited between the hours of 7 p.m. and 7 a.m. and on Sundays or legal holidays. During permissible hours of operation, noise levels from construction activity must be limited to a twelve-hour average of no greater than 75 dBA at any property line zoned for residential use.

Calculations show that typical construction activities will not exceed the City of San Diego temporary construction noise limit of 75 dBA at adjacent property lines during the construction activity. General good practice noise control measures shall be followed to ensure that noise levels remain below the City of San Diego construction noise limits, including reasonable maintenance of equipment, conservative planning of simultaneous equipment operation, and using equipment with effective mufflers. Equipment operation must also be limited to the allowable hours of operation set by the City of San Diego.

The proposed project is not expected to result in any significant impacts with the incorporation of "good practice" general noise control measures, by the standards of the California Environmental Quality Act (CEQA). Noise impacts from the project site are summarized in Section 6.1.

2.0 INTRODUCTION

This acoustical analysis report is submitted to satisfy the acoustical requirements of the City of San Diego. Its purpose is to assess noise impacts from construction activities to identify project features or requirements necessary to remain in compliance with City of San Diego noise regulations for temporary construction noise.

All noise level or sound level values presented herein are expressed in terms of decibels, with A-weighting to approximate the hearing sensitivity of humans. Time-averaged noise levels are expressed by the symbol L_{EQ}, for a specified duration. Further explanation can be provided upon request.

2.1 Project Description

The proposed project, known as Pacifica Ridge, consists of the construction of a residential condominium subdivision and other improvements at an undeveloped parcel. A total of 22 lots is proposed on site. Additional information is provided in project plans, included as Appendix A.

2.2 Project Location

The project site is located east of Smythe Avenue, north of Foothill Road, and west of the cul-de-sac at the end of Camino de Progresso in the City of San Diego, California. The Assessor's Parcel Numbers (APN) for the property are 638-060-41-00, 638-060-03-00, and 638-060-04-00. For a graphical representation of the site, please refer to the Vicinity Map, Assessor's Parcel Map, Satellite Aerial Photograph, and Topographic Map, provided as Figures 1 through 4, respectively.

2.3 Applicable Noise Regulations

Construction noise is regulated by Section 59.5.0404 of the City of San Diego Municipal Code. This section of the Municipal Code states that construction activity is prohibited between the hours of 7 p.m. and 7 a.m. and on Sundays or legal holidays. During permissible hours of operation, noise levels from construction activity must be limited to a twelve-hour average of no greater than 75 dBA at any property line zoned for residential use. Please refer to Appendix B for pertinent sections of the City of San Diego Municipal Code and CEQA regulations.

3.0 EXISTING NOISE ENVIRONMENT

Long-term noise monitoring was conducted near the northeastern boundary of the project site, west of the cul-de-sac at the end of Camino Del Progresso, between April 11, 2018 and April 12, 2018 to establish the existing ambient noise conditions at the site. The long-term noise monitor was placed in a bush, at a height of approximately 3 feet above the existing grade, to ensure the security of the meter. The results of the ambient noise monitoring are shown in Table 1. Please refer to Figure 5 for a graphical representation of the ambient noise measurement location.

Table 1. Long-Term Ambient Noise Monitoring Results

Date	Time	Measured Noise Level (dBA L_{EQ})
April 11, 2018	2 p.m. – 3 p.m.	48.4
	3 p.m. – 4 p.m.	52.6
	4 p.m. – 5 p.m.	53.2
	5 p.m. – 6 p.m.	52.0
	6 p.m. – 7 p.m.	52.4
	7 p.m. – 8 p.m.	49.9
	8 p.m. – 9 p.m.	48.5
	9 p.m. – 10 p.m.	45.8
	10 p.m. – 11 p.m.	45.8
	11 p.m. – 12 a.m.	45.2

Table 1. Long-Term Ambient Noise Monitoring Results		
Date	**Time**	**Measured Noise Level (dBA L_{EQ})**
April 12, 2018	12 a.m. – 1 a.m.	45.0
	1 a.m. – 2 a.m.	45.3
	2 a.m. – 3 a.m.	43.1
	3 a.m. – 4 a.m.	44.2
	4 a.m. – 5 a.m.	48.3
	5 a.m. – 6 a.m.	50.9
	6 a.m. – 7 a.m.	53.1
	7 a.m. – 8 a.m.	54.6
	8 a.m. – 9 a.m.	56.0
	9 a.m. – 10 a.m.	53.4
	10 a.m. – 11 a.m.	54.1
	11 a.m. – 12 p.m.	53.2
	12 p.m. – 1 p.m.	51.1
	1 p.m. – 2 p.m.	53.5

During noise level monitoring on April 11 through April 12, 2018, ambient noise levels were found to range from 43.1 dBA, between 2 a.m. and 3 a.m. on April 12, to 56.0 dBA, between 8 a.m. to 9 a.m. on April 12. The primary source of noise during ambient noise monitoring was traffic on surrounding roadways.

4.0 METHODOLOGY AND EQUIPMENT

4.1 Methodology

Modeling of the outdoor noise environment to determine temporary construction noise impacts is accomplished using Cadna Version 2018, which is a model-based computer program developed by DataKustik for predicting noise impacts in a wide variety of conditions. Cadna (Computer Aided Noise Abatement) assists in the calculation, presentation, assessment, and mitigation of noise exposure. It allows for the input of project information such as noise source data, barriers, structures, and topography to create a detailed model and uses the most up-to-date calculation standards to predict outdoor noise impacts. Noise standards used by Cadna that are particularly relevant to this analysis include ISO 9613 (Attenuation of sound during propagation outdoors). Cadna provides results that are in line with basic acoustical calculations for distance attenuation and barrier insertion loss. Further explanation may be provided upon request.

4.2 Measurement Equipment

Some or all of the following equipment was used at the site to measure existing noise levels:

- Larson Davis Model 720 Type 2 Sound Level Meter, Serial # 0312
- Larson Davis Model CA150 Type 2 Calibrator, Serial # 2056
- Microphone with windscreen

The sound level meters were field-calibrated immediately prior to the noise measurement and checked afterward, to ensure accuracy. All sound level measurements conducted and presented in this report, in accordance with the regulations, were made with a sound level meter that conforms to the American National Standards Institute specifications for sound level meters (ANSI SI.4). All instruments are maintained with National Bureau of Standards traceable calibration, per the manufacturers' standards.

5.0 NOISE SOURCES

The contractor has provided a list of equipment to be used on site during the grading phase of construction. As this phase of construction will have the most pieces of heavy equipment operating simultaneously on the project site, the evaluation of grading noise impacts is expected to represent a worst-case scenario of potential construction noise impacts during all activity to take place on the project site. Noise levels and typical duty cycles for proposed grading equipment are detailed in Table 2. Unless otherwise noted, all noise levels have been provided by the DEFRA Construction Equipment Noise Database (see reference).

Table 2. Construction Equipment Noise Levels

Equipment	Make/Model	Duty Cycle (%)[1]	Noise Level at 50 feet (dBA)
Excavator	CAT 320	40	74
Dozer	CAT D8	40	76
Loader	CAT 988	40	75
Dump Truck	Unknown	40	75
Water Truck[2]	Unknown	40	77

[1] Duty cycle information from Federal Highway Administration.
[2] Source: Noise measurements made by Eilar Associates on 3/25/2010 for Brutoco Engineering & Construction, Inc. for the Orange Line Extension Project, Metro Contract #C0943, City of Los Angeles.

Equipment noise levels at the project site have been modeled using the reference noise levels detailed above. Detailed information is provided in Section 6.0.

6.0 IMPACTS AND MITIGATION

6.1 Noise Impacts

According to the City of San Diego Municipal Code, temporary construction noise shall not exceed 75 dBA at adjacent property lines during the construction activity. The occupied properties surrounding the site include receivers to the north, east, south, and west (across Smythe Avenue), with the nearest affected receivers to the north and east. All surrounding receivers are residential properties, with the exception of an elementary school to the northwest, and a motel to the southwest.

According to correspondence with Michael Kootchick of SOS Management & Property Services, the loudest phase of construction is anticipated to be the grading phase, with approximately 50,000 cubic yards of material exported from the site. To help mitigate noise impacts to residential properties to the north and east, construction is planned to make use of the existing slope of the hill on which the site is located. Construction equipment will start grading from the west side of the project site, at street level on Smythe Ave, and will grade according to project plans, leaving a natural earth berm to the east as the project progresses, which will provide a barrier to construction noise activity.

Construction noise impacts were modeled in three stages. Stage 1 consists of construction activity at the northwest corner of the site, with all existing topographical contours in place. Stage 2 consists of construction activity distributed among the majority of proposed lots, considering the difference in elevation between existing and proposed topographical contours. Stage 3 consists of construction activity along the remaining portions of the project site near residential receivers to the east and north, and includes minimal shielding from existing or proposed topographical contours.

One piece of each specified equipment type was modeled during activity in Stages 1 and 3. Stage 2 was modeled with three dump trucks, two excavators, two dozers, two loaders, and one water truck. A summary of construction stages and anticipated equipment is shown in Table 3, and stage layouts are shown graphically in Figures 6 through 8.

Table 3. Anticipated Grading Construction Activity

	Anticipated Large Equipment
Stage 1	(1) Excavator, (1) Dozer, (1) Loader, (1) Dump Truck, (1) Water Truck
Stage 2	(2) Excavator, (2) Dozer, (2) Loader, (3) Dump Truck, (1) Water Truck
Stage 3	(1) Excavator, (1) Dozer, (1) Loader, (1) Dump Truck, (1) Water Truck

Receivers have been placed at all surrounding properties to the north, south, east, and west, located in the middle of the nearest yard or usable open space. All other noise-sensitive receivers are located at a greater distance from potential construction activity and are expected to have lower noise levels. Construction equipment noise sources were modelled as area sources, which simulates the noise impacts of one (or more) piece of equipment as it moves around the construction site.

Construction noise impacts at the locations described above are shown in Table 4. Detailed calculations can be found in Appendix C. Source and receiver locations and graphical representations of construction noise contours for each stage of grading are shown in Figures 6 through 8.

Table 4. Temporary Grading Construction Noise Levels at Neighboring Properties

Receiver Number	Location	Distance From Nearest Extent of Grading (ft)	12-Hour Average Noise Level (dBA)		
			Stage 1	Stage 2	Stage 3
R-1	North	9	71.9	60.5	51.5
R-2	North	18	68.5	65.7	53.7
R-3	North	13	69.0	67.3	55.4
R-4	North	14	68.6	66.5	60.9
R-5	North	10	65.1	61.5	68.5
R-6	East	6	58.5	54.2	72.7
R-7	North	8	58.4	54.5	72.4
R-8	North	10	54.7	51.2	71.7
R-9	North	16	52.3	49.1	68.1
R-10	East	25	51.2	47.9	64.6
R-11	East	21	45.0	48.2	67.3
R-12	East	27	40.8	49.1	67.1
R-13	East	26	40.1	48.7	66.2
R-14	East	30	40.5	49.3	64.9
R-15	East	31	41.4	50.4	63.7
R-16	Southeast	46	39.7	49.6	59.0
R-17	South	123	48.4	54.7	44.6
R-18	South	69	47.6	55.3	45.6
R-19	Southwest	133	53.2	53.5	44.4
R-20	West	88	55.9	54.2	43.6
R-21	West	94	61.3	57.7	44.8
R-22	West	91	66.2	58.9	47.6
R-23	Northwest	94	64.9	57.8	48.2

As shown in Table 4 above, construction noise impacts are expected to remain at or below 75 dBA at all locations during the grading phase of construction. As grading is expected to represent the noisiest condition of construction activity, all other phases of construction activity are also expected to comply with this noise requirement. For any project in which construction activity will take place near occupied residential properties, the following “good practice” noise control measures should be followed:

1. Construction equipment shall be turned off when not in use.

2. Equipment used in construction shall be maintained in proper operating condition, and all loads should be properly secured, to prevent rattling and banging.

3. Construction equipment with effective mufflers shall be used at the project site.

4. The use of backup alarms shall be minimized whenever possible.

5. Equipment staging areas shall be placed at locations away from noise-sensitive (occupied) receivers as much as possible.

These general noise control measures, in addition to limiting construction equipment operation to the allowable hours detailed in the City of San Diego Municipal Code, will assist in maintaining the comfort of neighboring sensitive receivers during the construction of this site.

6.2 CEQA Significance Determination

Noise impacts to and from the project site are summarized below and classified per the noise portion of the CEQA Environmental Checklist form. This list summarizes conclusions made within the report and classifies the level of significance as: Potentially Significant Impact, Less than Significant with Mitigation Incorporated, Less than Significant Impact, or No Impact.

Italics are used to denote language from the CEQA Environmental Checklist form.

XII. NOISE—Would the project result in:

a) Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?

Less Than Significant Impact. According to Michael Kootchick of SOS Management & Property Services, this project has been accepted for building permit and has therefore already met the local General Plan and Municipal Code requirements for noise impacts to the site, as well as permanent project-related noise generated from the site. Construction noise impacts were therefore the focus of this analysis. As shown in Section 6.1, noise levels from temporary grading construction activity are expected to be in compliance with the City of San Diego noise limit of 75 dBA at off-site receivers. This impact can therefore be considered less than significant with the following general good practice noise control measures implemented:

NOI-1 Construction activity must be limited to the allowable hours of operation, as detailed in Section 59.5.0404 of the City of San Diego Municipal Code.

NOI-2 Construction equipment shall be turned off when not in use.

NOI-3 Equipment used in construction shall be maintained in proper operating condition, and all loads should be properly secured, to prevent rattling and banging.

NOI-4 Construction equipment with effective mufflers shall be used at the project site

NOI-5 The use of backup alarms shall be minimized whenever possible.

NOI-6 Equipment staging areas shall be placed at locations away from noise-sensitive (occupied) receivers as much as possible.

b) *Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?*

Less Than Significant Impact. Proposed construction phases for this project do not include any significant vibration-inducing equipment, such as pile driving or heavy soil compaction. As these types of equipment will not be present, excessive levels of groundborne vibration and groundborne noise are expected to be less than significant.

c) *A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?*

Less Than Significant Impact. Permanent project-related noise is not the focus of this analysis, but would be limited to typical noise sources associated with this type of project, such as air conditioning unit operation and project-related traffic. These noise sources are not expected to generate high levels of noise at off-site receivers and therefore, this impact is considered to be less than significant.

d) *A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?*

Less Than Significant Impact. As shown in Section 6.1 of this report, noise from temporary grading construction is expected to exceed ambient noise levels at surrounding properties; however, these noise impacts will be temporary in nature and do not exceed the applicable standards set forth in the City of San Diego Municipal Code. While mitigation in the form of additional temporary barriers and reduced duty cycle of construction equipment is not feasible to reduce construction noise to the existing ambient noise level in this neighborhood; general noise control measures (NOI-1 through NOI-6) will assist in reducing noise levels at off-site receivers. For this reason, this noise impact is considered less than significant with noise control measures implemented.

e) *For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?*

No Impact. The project site is not located within an airport land use plan nor is it located within two miles of a public airport or public use airport. Therefore, the proposed project would not expose people working in the project area to excessive noise levels from such uses.

f) For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?

No Impact. The project site is not located within the vicinity of a private airstrip. Therefore, the proposed project would not expose people working in the project area to excessive noise levels from such uses.

7.0 CONCLUSION AND CERTIFICATION

Calculations show that typical construction activities will not exceed the City of San Diego temporary construction noise limit of 75 dBA at adjacent property lines during the construction activity. General good practice noise control measures shall be followed to ensure that noise levels remain below the City of San Diego construction noise limits, including reasonable maintenance of equipment, conservative planning of simultaneous equipment operation, and using equipment with effective mufflers. Equipment operation must also be limited to the allowable hours of operation set by the City of San Diego.

The findings and recommendations of this acoustical analysis report are based on the information available and are a true and factual analysis of the potential acoustical issues associated with the proposed Pacifica Ridge project, located east of Smythe Avenue, north of Foothill Road, and west of the cul-de-sac at the end of Camino de Progresso in the City of San Diego, California. This report was prepared by Daniel Gershun and Jonathan Brothers.

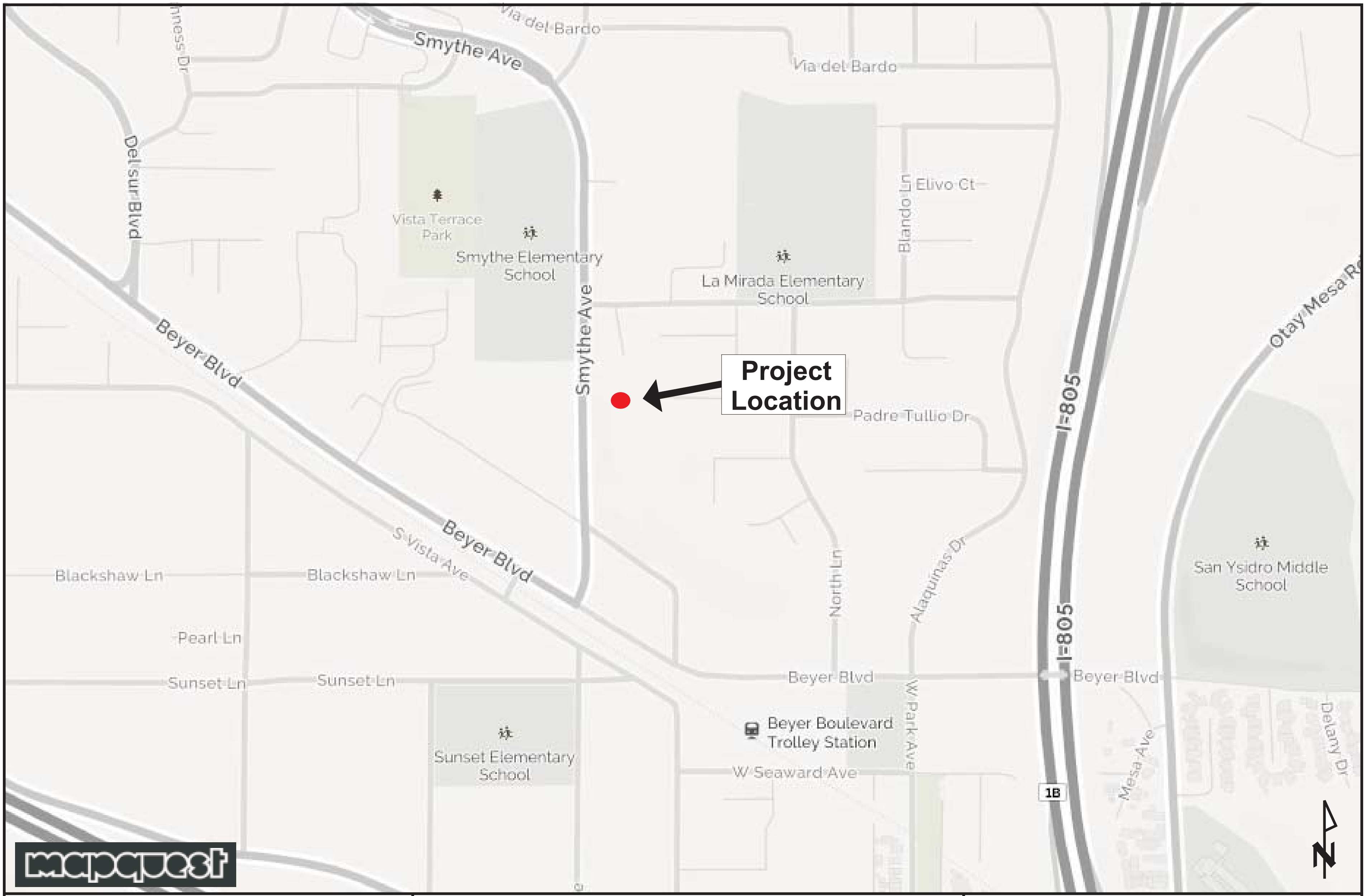
Daniel Gershun, Acoustical Consultant II

Jonathan Brothers, Principal Acoustical Consultant

8.0 REFERENCES

1. City of San Diego Municipal Code.
2. DataKustik, CadnaA (Computer Aided Noise Abatement), Version 2018.
3. UK Department for Environment, Food, and Rural Affairs (DEFRA) Construction Noise Database.
4. U.S. Department of Transportation Federal Highway Administration, Construction Noise Handbook, Construction Equipment Noise Levels and Ranges.

FIGURES



Eilar Associates, Inc.
210 South Juniper Street, Suite 100
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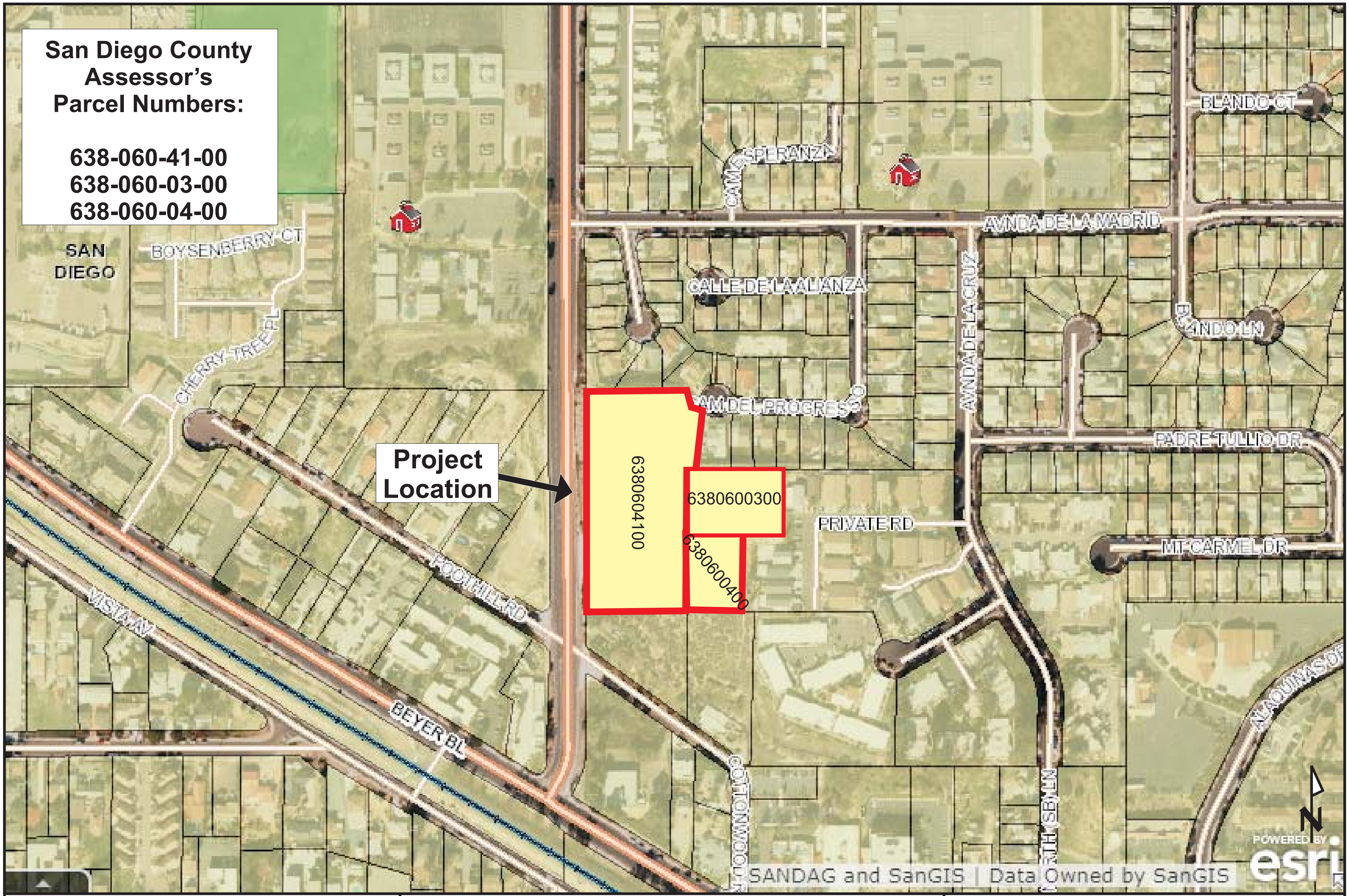
Vicinity Map
Job # B80404N1

Figure 1



San Diego County Assessor's Parcel Numbers:

638-060-41-00
638-060-03-00
638-060-04-00

Project Location

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210 South Juniper Street, Suite 100
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Assessor's Parcel Map
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Figure 2

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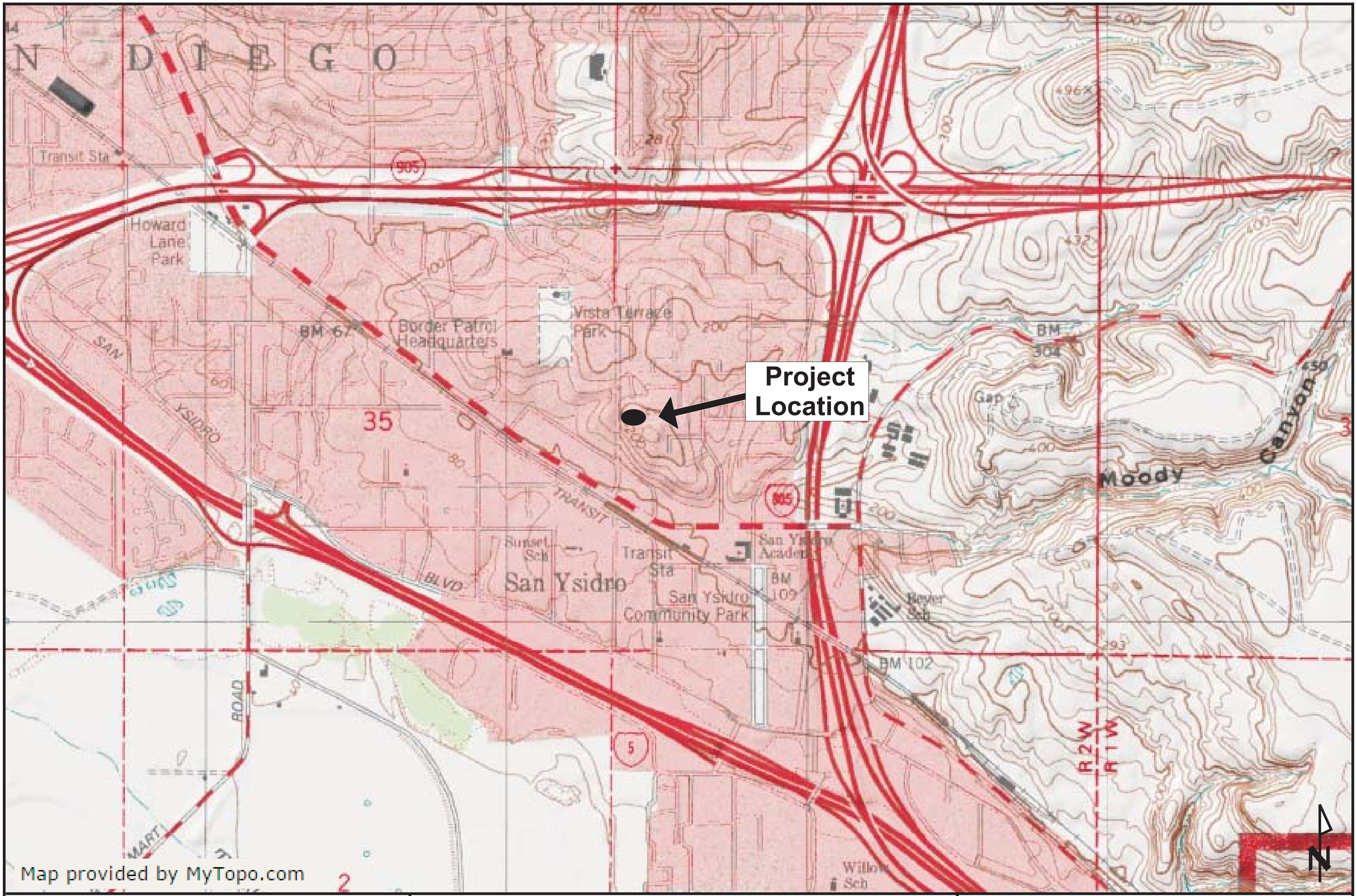
Satellite Aerial Photograph
Job # B80404N1

Figure 3



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Topographic Map
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Figure 4

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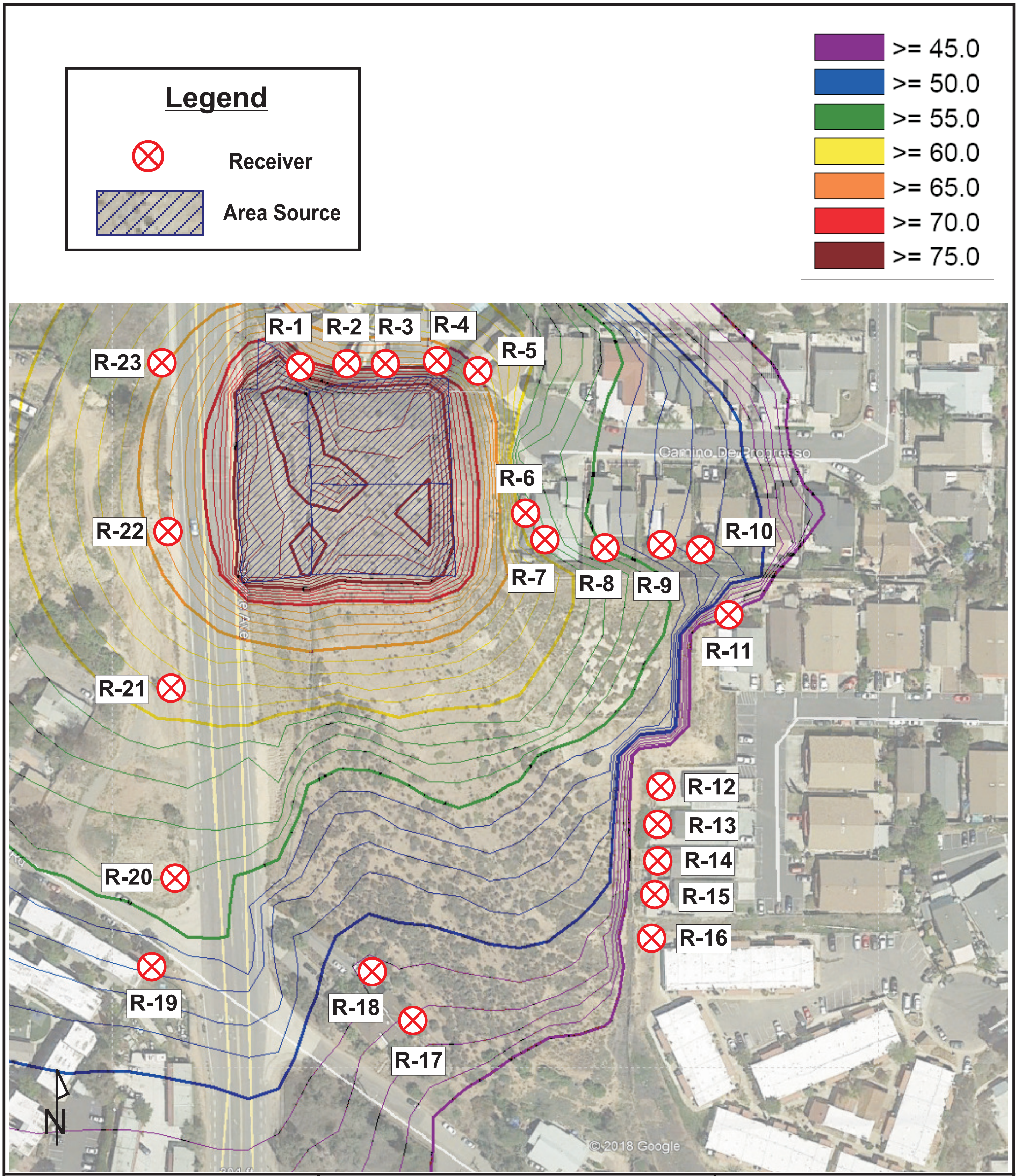
Satellite Aerial Photograph Showing Long-Term Noise Monitoring Location
Job # B80404N1

Figure 5



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Escondido, California 92025
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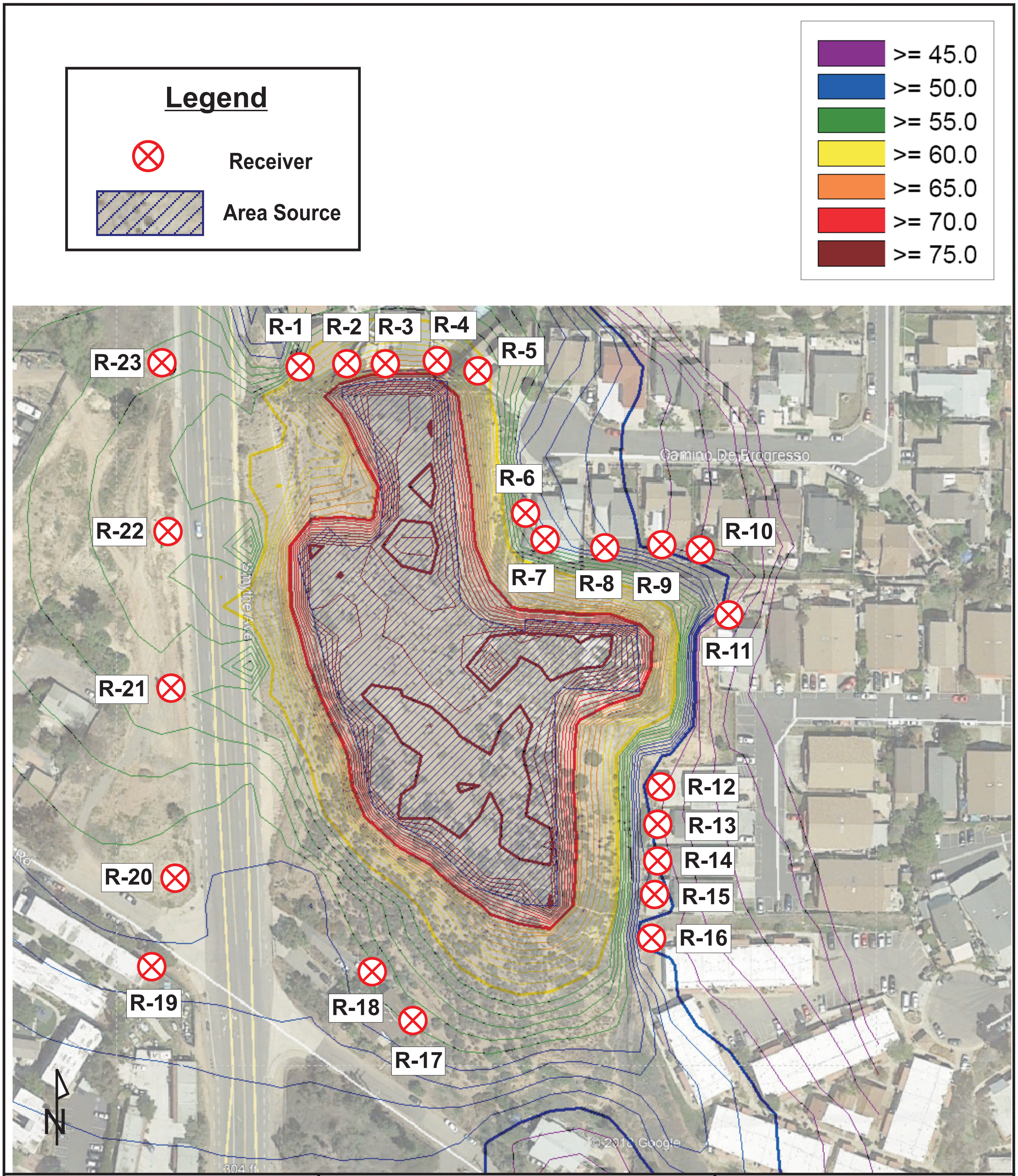
Satellite Aerial Photograph Showing Grading Construction Noise Contours for Stage 1
Job # B80404N1

Figure 6



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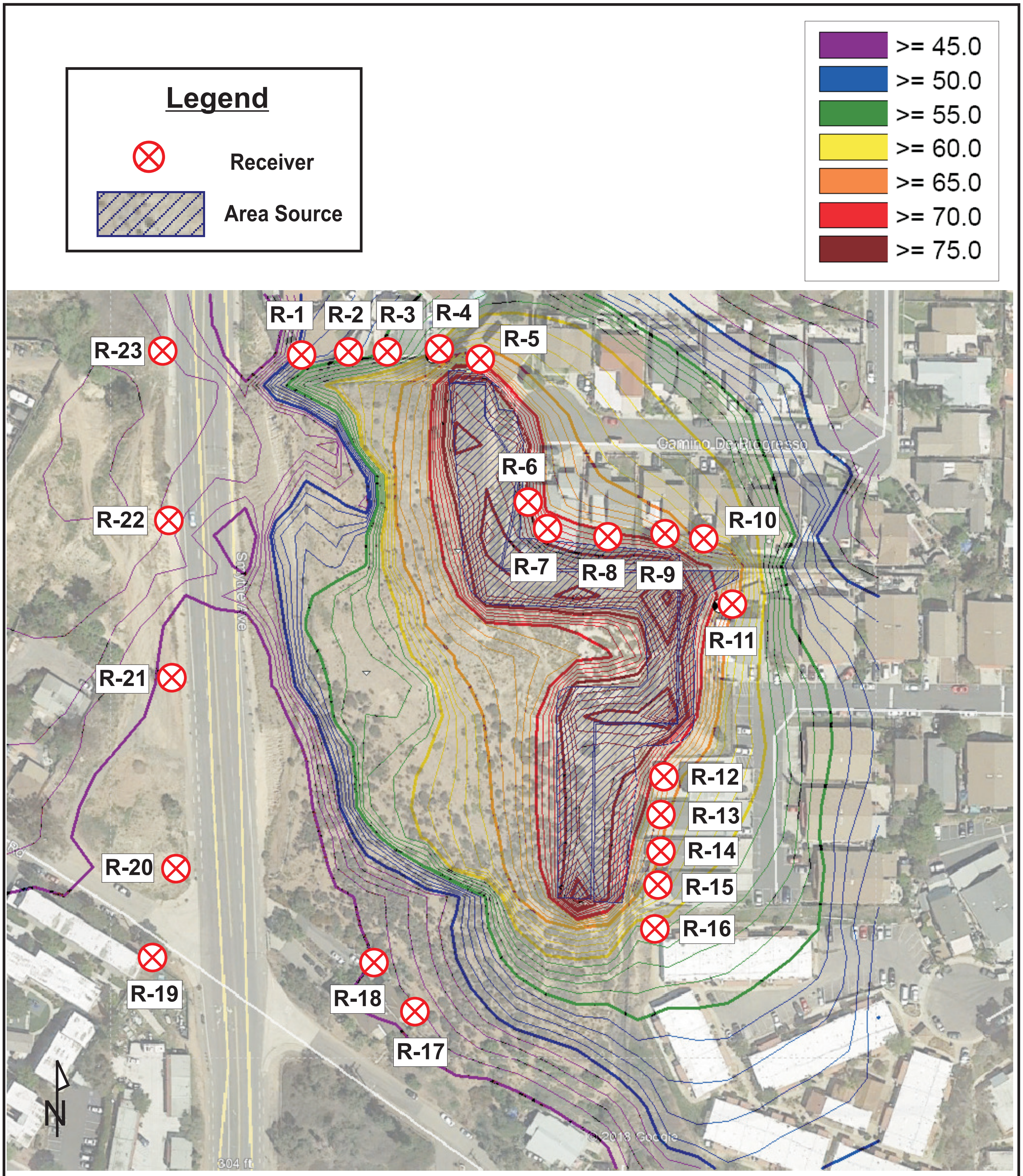
Satellite Aerial Photograph Showing Grading Construction Noise Contours for Stage 2 Job # B80404N1

Figure 7



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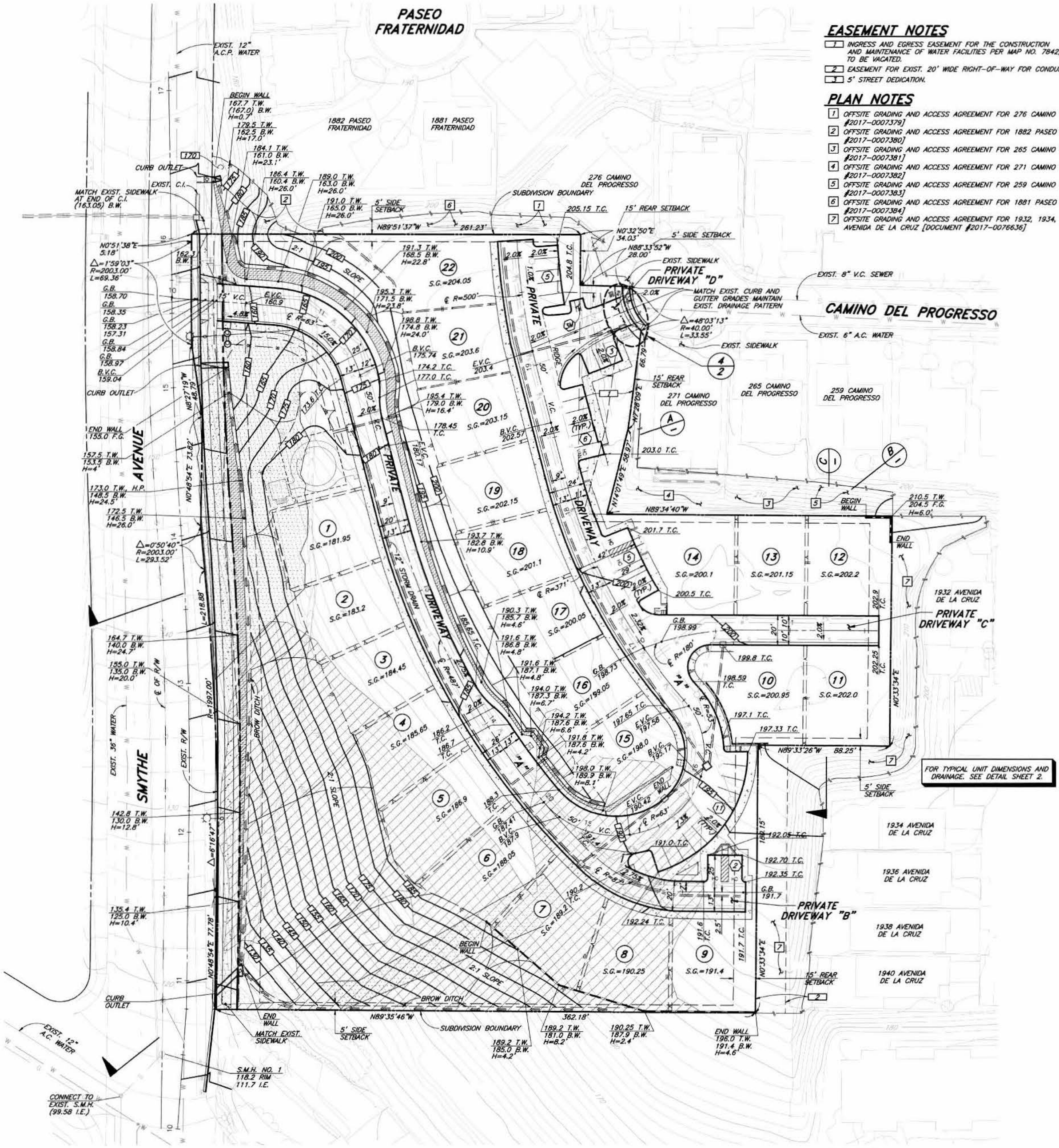
Satellite Aerial Photograph Showing Grading Construction Noise Contours for Stage 3
Job # B80404N1

Figure 8

APPENDIX A

Project Plans

PRELIMINARY GRADING PLAN FOR:
PACIFICA RIDGE



FOR TYPICAL UNIT DIMENSIONS AND DRAINAGE. SEE DETAIL SHEET 2.

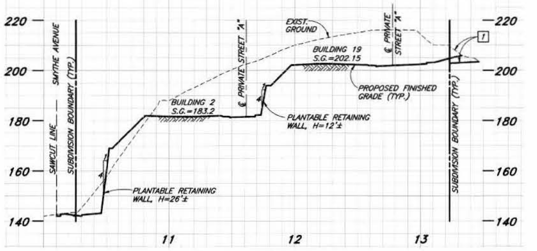
FOR IMPROVEMENT NOTES SEE TENTATIVE MAP SHEET.

EASEMENT NOTES

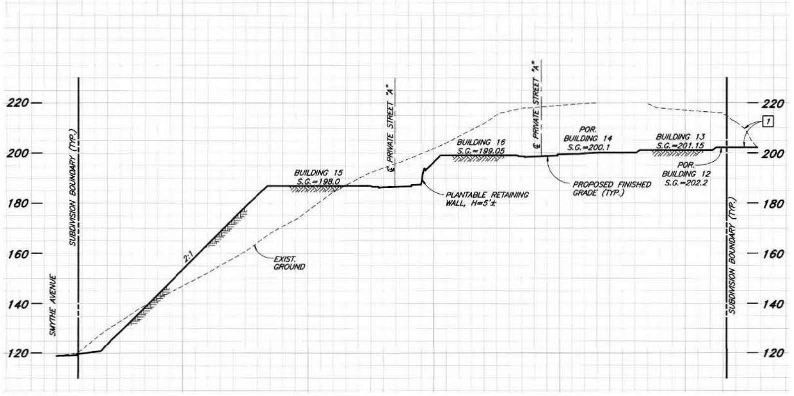
- 1 INGRESS AND EGRESS EASEMENT FOR THE CONSTRUCTION AND MAINTENANCE OF WATER FACILITIES PER MAP NO. 7842, TO BE VACATED.
- 2 EASEMENT FOR EXIST. 20' WIDE RIGHT-OF-WAY FOR CONDUIT.
- 3 5' STREET DEDICATION.

PLAN NOTES

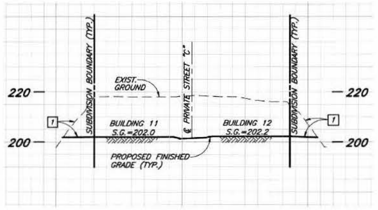
- 1 OFFSITE GRADING AND ACCESS AGREEMENT FOR 276 CAMINO DEL PROGRESSO [DOCUMENT #2017-0007379]
- 2 OFFSITE GRADING AND ACCESS AGREEMENT FOR 1882 PASEO FRATERNIDAD [DOCUMENT #2017-0007380]
- 3 OFFSITE GRADING AND ACCESS AGREEMENT FOR 265 CAMINO DEL PROGRESSO [DOCUMENT #2017-0007381]
- 4 OFFSITE GRADING AND ACCESS AGREEMENT FOR 271 CAMINO DEL PROGRESSO [DOCUMENT #2017-0007382]
- 5 OFFSITE GRADING AND ACCESS AGREEMENT FOR 259 CAMINO DEL PROGRESSO [DOCUMENT #2017-0007383]
- 6 OFFSITE GRADING AND ACCESS AGREEMENT FOR 1881 PASEO FRATERNIDAD [DOCUMENT #2017-0007384]
- 7 OFFSITE GRADING AND ACCESS AGREEMENT FOR 1932, 1934, 1936, 1938, AND 1940 AVENIDA DE LA CRUZ [DOCUMENT #2017-0076636]



A SITE SECTION
SCALE: 1" = 40'(H), 1" = 20'(V)



B SITE SECTION
SCALE: 1" = 40'(H), 1" = 20'(V)



C SITE SECTION
SCALE: 1" = 40'(H), 1" = 20'(V)

LEGEND

▨	INDICATES SENSITIVE BIOLOGICAL RESOURCE AREA
░	INDICATES SLOPES 25% GREATER AND OVER 50' IN HEIGHT

SCALE: 1" = 30'

GRAPHIC SCALE
30 0 30 60 90

STEPHEN C. OTT
No. C70666
Exp. 6/30/19

SB&O INC.
PLANNING ENGINEERING SURVEYING
3990 Ruffin Road, Suite 120
San Diego, Ca. 92123
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Stephen C Ott 11-07-17
STEPHEN C. OTT P.E. C70666 DATE

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Prepared By:
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–
–

Project Name:
PACIFICA RIDGE

Sheet Title:
TITLE SHEET, TENTATIVE MAP, PRELIMINARY GRADING, SITE DEVELOPMENT PLAN, A.D.A. PATHWAY AND SLOPE ANALYSIS

Original Date: 10-16-14
Sheet 3 of 19
DEP NO.:

71172TM03-RG

T.M. APPROVAL NO.: 1381777

71170.20

APPENDIX B

Pertinent Sections of the City of San Diego Municipal Code and CEQA Regulations

Article 9.5: Noise Abatement and Control

Division 4: Limits

("Noise Level Limits, Standards and Control"
added 9–18–1973 by O–11122 N.S.)
(Retitled to "Limits" on 9–22–1976 by O–11916 N.S.)

§59.5.0401 Sound Level Limits

(a) It shall be unlawful for any person to cause noise by any means to the extent that the one–hour average sound level exceeds the applicable limit given in the following table, at any location in the City of San Diego on or beyond the boundaries of the property on which the noise is produced. The noise subject to these limits is that part of the total noise at the specified location that is due solely to the action of said person.

TABLE OF APPLICABLE LIMITS

Land Use	Time of Day	One-Hour Average Sound Level (decibels)
1. Single Family Residential	7 a.m. to 7 p.m. 7 p.m. to 10 p.m. 10 p.m. to 7 a.m.	50 45 40
2. Multi-Family Residential (Up to a maximum density of 1/2000)	7 a.m. to 7 p.m. 7 p.m. to 10 p.m. 10 p.m. to 7 a.m.	55 50 45
3. All other Residential	7 a.m. to 7 p.m. 7 p.m. to 10 p.m. 10 p.m. to 7 a.m.	60 55 50
4. Commercial	7 a.m. to 7 p.m. 7 p.m. to 10 p.m. 10 p.m. to 7 a.m.	65 60 60
5. Industrial or Agricultural	any time	75

(b) The sound level limit at a location on a boundary between two zoning districts is the arithmetic mean of the respective limits for the two districts. Permissible construction noise level limits shall be governed by Sections 59.5.0404 of this article.

(c) Fixed–location public utility distribution or transmission facilities located on or adjacent to a property line shall be subject to the noise level limits of Part A. of this section, measured at or beyond six feet from the boundary of the easement upon which the equipment is located.

(d) This section does not apply to firework displays authorized by permit from the Fire Department.

(e) This section does not apply to noise generated by helicopters at heliports or helistops authorized by a conditional use permit, nor to any roller coaster operated on City–owned parkland.

(Amended 9–11–1989 by O–17337 N.S.)
(Amended 11-28-2005 by O-19446 N.S.; effective 2-9-2006.)

§59.5.0402 Motor Vehicles

(a) Off–Highway

(1) Except as otherwise provided for in this article, it shall be unlawful to operate any motor vehicle of any type on any site, other than on a public street or highway as defined in the California Vehicle Code, in any manner so as to cause noise in excess of those noise levels permitted for on– highway motor vehicles as specified in the table for “45 mile– per–hour or less speed limits” contained in Section 23130 of the California Vehicle Code, and as corrected for distances set forth in subsection A.2. below.

(2) Corrections

The maximum noise level as the off–highway vehicle passes may be measured at a distance of other than fifty (50) feet from the center line of travel, provided the measurement is further adjusted by adding algebraically the applicable correction as follows:

Distance (Feet)	**Correction (decibels)**
25	-6
28	-5
32	-4
35	-3
40	-2
45	-1
50 (preferred distance)	0
56	+1
63	+2
70	+3
80	+4
90	+5
100	+6

(3) A measured noise level thus corrected shall be deemed in violation of this section if it exceeds the applicable noise–level limit as specified above.

(b) Nothing in this section shall apply to authorized emergency vehicles when being used in emergency situations, including the blowing of sirens and/or horns.

(“Motor Vehicles” renumbered from Sec. 59.5.0403 on 9–22–1976 by O–11916 N.S.)

§59.5.0403 Watercraft

Violations for excessive noise of watercraft operating in waters under the jurisdiction of The City of San Diego shall be prosecuted under applicable provisions of the California Harbors and Navigation Code. Permits issued by The City of San Diego for the operation of watercraft not in compliance with noise criteria of the Harbors and Navigation Code shall be reviewed and approved by the Administrator prior to issuance.

(“Watercraft” renumbered from Sec. 59.5.0407 and amended 9–22–1976 by O–11916 N.S.)

§59.5.0404 Construction Noise

(a) It shall be unlawful for any person, between the hours of 7:00 p.m. of any day and 7:00 a.m. of the following day, or on legal holidays as specified in Section 21.04 of the San Diego Municipal Code, with exception of Columbus Day and Washington’s Birthday, or on Sundays, to erect, construct, demolish, excavate for, alter or repair any building or structure in such a manner as to create disturbing, excessive or offensive noise unless a permit has been applied for and granted beforehand by the Noise Abatement and Control Administrator. In granting such permit, the Administrator shall consider whether the construction noise in the vicinity of the proposed work site would be less objectionable at night than during the daytime because of different population densities or different neighboring activities; whether obstruction and interference with traffic particularly on streets of major importance, would be less objectionable at night than during the daytime; whether the type of work to be performed emits noises at such a low level as to not cause significant disturbances in the vicinity of the work site; the character and nature of the neighborhood of the proposed work site; whether great economic hardship would occur if the work were spread over a longer time; whether proposed night work is in the general public interest; and he shall prescribe such conditions, working times, types of construction equipment to be used, and permissible noise levels as he deems to be required in the public interest.

(b) Except as provided in subsection C. hereof, it shall be unlawful for any person, including The City of San Diego, to conduct any construction activity so as to cause, at or beyond the property lines of any property zoned residential, an average sound level greater than 75 decibels during the 12–hour period from 7:00 a.m. to 7:00 p.m.

(c) The provisions of subsection B. of this section shall not apply to construction equipment used in connection with emergency work, provided the Administrator is notified within 48 hours after commencement of work.

(Amended 1–3–1984 by O–16100 N.S.)

§59.5.0406 Refuse Vehicles and Parking Lot Sweepers

No person shall operate or permit to be operated a refuse compacting, processing, or collection vehicle between the hours of 7:00 p.m. to 6:00 a.m. or a parking lot sweeper between the hours of 7:00 p.m. to 7:00 a.m. in any residential area unless a permit has been applied for and granted by the Administrator.

(“Refuse Vehicles” added 9–18–1973 by O–11122 N.S.; amended 9–22–1976 by O–11916 N.S.)

(Amended 6-9-2010 by O-19960 N.S.; effective 7-9-2010.)

CEQA CHECKLIST

For each item, the following options can be selected:

1. Potentially Significant Impact
2. Less Than Significant With Mitigation Incorporation
3. Less Than Significant Impact
4. No Impact

XI. NOISE –

Would the project result in:

a) Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?

b) Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?

c) A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?

d) A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?

e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?

f) For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?

Association of Envrionmental Professionals. *California Environmental Equality Act (CEQA) Statutes and Guidelines, 2007.*

APPENDIX C

Cadna Analysis Data and Results

Cadna Noise Model - Sound Levels - Phases 1 & 2

Name	ID	Type	Oktave Spectrum (dB)										Source
			63	125	250	500	1000	2000	4000	8000	A	lin	
Excavator	W1	Lw (c)	110.0	113.0	106.0	103.0	102.0	100.0	99.0	96.0	108.0	116.0	DEFRA
Excavator P1A1	W1.1	Lw (c)	105.5	108.5	101.5	98.5	97.5	95.5	94.5	91.5	103.5	111.5	DEFRA
Excavator P1A2	W1.2	Lw (c)	105.3	108.3	101.3	98.3	97.3	95.3	94.3	91.3	103.3	111.3	DEFRA
Excavator P1A3	W1.3	Lw (c)	104.8	107.8	100.8	97.8	96.8	94.8	93.8	90.8	102.8	110.8	DEFRA
Dozer	W2	Lw (c)	119.0	120.0	111.0	103.0	104.0	100.0	98.0	94.0	110.1	123.0	DEFRA
Dozer P1A1	W2.1	Lw (c)	114.5	115.5	106.5	98.5	99.5	95.5	93.5	89.5	105.6	118.5	DEFRA
Dozer P1A2	W2.2	Lw (c)	114.3	115.3	106.3	98.3	99.3	95.3	93.3	89.3	105.4	118.3	DEFRA
Dozer P1A3	W2.3	Lw (c)	113.8	114.8	105.8	97.8	98.8	94.8	92.8	88.8	104.9	117.8	DEFRA
Loader	W3	Lw (c)	117.0	112.0	107.0	108.0	103.0	100.0	94.0	87.0	109.0	119.1	DEFRA
Loader P1A1	W3.1	Lw (c)	112.5	107.5	102.5	103.5	98.5	95.5	89.5	82.5	104.5	114.6	DEFRA
Loader P1A2	W3.2	Lw (c)	112.3	107.3	102.3	103.3	98.3	95.3	89.3	82.3	104.3	114.4	DEFRA
Loader P1A3	W3.3	Lw (c)	111.8	106.8	101.8	102.8	97.8	94.8	88.8	81.8	103.8	113.9	DEFRA
Dump Truck	W4	Lw (c)	117.7	113.7	104.7	102.7	104.7	101.7	97.7	89.7	108.9	119.7	DEFRA
Dump Truck P1A1	W4.1	Lw (c)	113.2	109.2	100.2	98.2	100.2	97.2	93.2	85.2	104.4	115.2	DEFRA
Dump Truck P1A2	W4.2	Lw (c)	113.0	109.0	100.0	98.0	100.0	97.0	93.0	85.0	104.2	115.0	DEFRA
Dump Truck P1A3	W4.3	Lw (c)	112.5	108.5	99.5	97.5	99.5	96.5	92.5	84.5	103.7	114.5	DEFRA
Water Truck	W5	Lw (c)	112.7	103.2	100.3	100.3	105.6	106.5	98.6	94.7	110.5	115.0	Brutoco
Water Truck P1A1	W5.1	Lw (c)	108.2	98.7	95.8	95.8	101.1	102.0	94.1	90.2	106.0	110.5	Brutoco
Water Truck P1A2	W5.2	Lw (c)	108.0	98.5	95.6	95.6	100.9	101.8	93.9	90.0	105.8	110.3	Brutoco
Water Truck P1A3	W5.3	Lw (c)	107.5	98.0	95.1	95.1	100.4	101.3	93.4	89.5	105.3	109.8	Brutoco

Cadna Noise Model - Sound Levels - Phase 3

Name	ID	Type	Oktave Spectrum (dB)										Source
			63	125	250	500	1000	2000	4000	8000	A	lin	
Excavator	W1	Lw (c)	110.0	113.0	106.0	103.0	102.0	100.0	99.0	96.0	108.0	116.0	DEFRA
Excavator P1A1	W1.1	Lw (c)	105.5	108.5	101.5	98.5	97.5	95.5	94.5	91.5	103.5	111.5	DEFRA
Excavator P1A2	W1.2	Lw (c)	105.3	108.3	101.3	98.3	97.3	95.3	94.3	91.3	103.3	111.3	DEFRA
Excavator P1A3	W1.3	Lw (c)	104.8	107.8	100.8	97.8	96.8	94.8	93.8	90.8	102.8	110.8	DEFRA
Excavator P3A1	W1.4	Lw (c)	103.0	106.0	99.0	96.0	95.0	93.0	92.0	89.0	101.0	109.0	DEFRA
Excavator P3A2	W1.5	Lw (c)	109.0	112.0	105.0	102.0	101.0	99.0	98.0	95.0	107.0	115.0	DEFRA
Dozer	W2	Lw (c)	119.0	120.0	111.0	103.0	104.0	100.0	98.0	94.0	110.1	123.0	DEFRA
Dozer P1A1	W2.1	Lw (c)	114.5	115.5	106.5	98.5	99.5	95.5	93.5	89.5	105.6	118.5	DEFRA
Dozer P1A2	W2.2	Lw (c)	114.3	115.3	106.3	98.3	99.3	95.3	93.3	89.3	105.4	118.3	DEFRA
Dozer P1A3	W2.3	Lw (c)	113.8	114.8	105.8	97.8	98.8	94.8	92.8	88.8	104.9	117.8	DEFRA
Dozer P3A1	W2.4	Lw (c)	112.0	113.0	104.0	96.0	97.0	93.0	91.0	87.0	103.1	116.0	DEFRA
Dozer P3A2	W2.5	Lw (c)	118.0	119.0	110.0	102.0	103.0	99.0	97.0	93.0	109.1	122.0	DEFRA
Loader	W3	Lw (c)	117.0	112.0	107.0	108.0	103.0	100.0	94.0	87.0	109.0	119.1	DEFRA
Loader P1A1	W3.1	Lw (c)	112.5	107.5	102.5	103.5	98.5	95.5	89.5	82.5	104.5	114.6	DEFRA
Loader P1A2	W3.2	Lw (c)	112.3	107.3	102.3	103.3	98.3	95.3	89.3	82.3	104.3	114.4	DEFRA
Loader P1A3	W3.3	Lw (c)	111.8	106.8	101.8	102.8	97.8	94.8	88.8	81.8	103.8	113.9	DEFRA
Loader P3A1	W3.4	Lw (c)	110.0	105.0	100.0	101.0	96.0	93.0	87.0	80.0	102.0	112.1	DEFRA
Loader P3A2	W3.5	Lw (c)	116.0	111.0	106.0	107.0	102.0	99.0	93.0	86.0	108.0	118.1	DEFRA
Dump Truck	W4	Lw (c)	117.7	113.7	104.7	102.7	104.7	101.7	97.7	89.7	108.9	119.7	DEFRA
Dump Truck P1A1	W4.1	Lw (c)	113.2	109.2	100.2	98.2	100.2	97.2	93.2	85.2	104.4	115.2	DEFRA
Dump Truck P1A2	W4.2	Lw (c)	113.0	109.0	100.0	98.0	100.0	97.0	93.0	85.0	104.2	115.0	DEFRA
Dump Truck P1A3	W4.3	Lw (c)	112.5	108.5	99.5	97.5	99.5	96.5	92.5	84.5	103.7	114.5	DEFRA
Dump Truck P3A1	W4.4	Lw (c)	110.7	106.7	97.7	95.7	97.7	94.7	90.7	82.7	101.9	112.7	DEFRA
Dump Truck P3A2	W4.5	Lw (c)	116.7	112.7	103.7	101.7	103.7	100.7	96.7	88.7	107.9	118.7	DEFRA
Water Truck	W5	Lw (c)	112.7	103.2	100.3	100.3	105.6	106.5	98.6	94.7	110.5	115.0	Brutoco
Water Truck P1A1	W5.1	Lw (c)	108.2	98.7	95.8	95.8	101.1	102.0	94.1	90.2	106.0	110.5	Brutoco
Water Truck P1A2	W5.2	Lw (c)	108.0	98.5	95.6	95.6	100.9	101.8	93.9	90.0	105.8	110.3	Brutoco
Water Truck P1A3	W5.3	Lw (c)	107.5	98.0	95.1	95.1	100.4	101.3	93.4	89.5	105.3	109.8	Brutoco
Water Truck P3A1	W5.4	Lw (c)	105.7	96.2	93.3	93.3	98.6	99.5	91.6	87.7	103.5	108.0	Brutoco
Water Truck P3A2	W5.5	Lw (c)	111.7	102.2	99.3	99.3	104.6	105.5	97.6	93.7	109.5	114.0	Brutoco

Cadna Noise Model - Area Sources - Phase 1							
Name	**ID**	**Result. PWL**	**Result. PWL"**	**Lw / Li**		**Operating Time (min)**	**Moving Point Source Number**
		Day	**Day**	**Type**	**Value**		
		(dBA)	**(dBA)**				
Excavator (Phase 1 Area 1)	S1.1	103.5	70.6	PWL-Pt	W1.1	24	1
Excavator (Phase 1 Area 2)	S1.2	103.3	71.2	PWL-Pt	W1.2	24	1
Excavator (Phase 1 Area 3)	S1.3	102.8	71.2	PWL-Pt	W1.3	24	1
Dozer (Phase 1 Area 1)	S2.1	105.6	72.7	PWL-Pt	W2.1	24	1
Dozer (Phase 1 Area 2)	S2.2	105.4	73.3	PWL-Pt	W2.2	24	1
Dozer (Phase 1 Area 3)	S2.3	104.9	73.3	PWL-Pt	W2.3	24	1
Loader (Phase 1 Area 1)	S3.1	104.5	71.6	PWL-Pt	W3.1	24	1
Loader (Phase 1 Area 2)	S3.2	104.3	72.2	PWL-Pt	W3.2	24	1
Loader (Phase 1 Area 3)	S3.3	103.8	72.2	PWL-Pt	W3.3	24	1
Dump Truck (Phase 1 Area 1)	S4.1	107.4	74.5	PWL-Pt	W4.1	24	2
Dump Truck (Phase 1 Area 2)	S4.2	107.2	75.2	PWL-Pt	W4.2	24	2
Drump Truck (Phase 1 Area 3)	S4.3	106.7	75.1	PWL-Pt	W4.3	24	2
Water Truck (Phase 1 Area 1)	S5.1	106.0	73.1	PWL-Pt	W5.1	24	1
Water Truck (Phase 1 Area 2)	S5.2	105.8	73.8	PWL-Pt	W5.2	24	1
Water Truck (Phase 1 Area 3)	S5.3	105.3	73.7	PWL-Pt	W5.3	24	1

Cadna Noise Model - Area Sources - Phase 2							
Name	**ID**	**Result. PWL**	**Result. PWL"**	**Lw / Li**		**Operating Time (min)**	**Moving Point Source Number**
		Day	**Day**	**Type**	**Value**		
		(dBA)	**(dBA)**				
Excavator Phase 2	S1	111.0	71.3	PWL-Pt	W1	24	2
Dozer Phase 2	S2	113.1	73.4	PWL-Pt	W2	24	2
Loader Phase 2	S3	112.0	72.3	PWL-Pt	W3	24	2
Dump Truck Phase 2	S4	113.7	74.0	PWL-Pt	W4	24	3
Water Truck Phase 2	S5	110.5	70.9	PWL-Pt	W5	24	1

Cadna Noise Model - Area Sources - Phase 3							
Name	**ID**	**Result. PWL**	**Result. PWL"**	**Lw / Li**		**Operating Time (min)**	**Moving Point Source Number**
		Day	**Day**	**Type**	**Value**		
		(dBA)	**(dBA)**				
Excavator (Phase 3, Area 1)	S1.1	101.0	69.5	PWL-Pt	W1.4	24	1
Excavator (Phase 3, Area 2)	S1.2	107.0	71.0	PWL-Pt	W1.5	24	1
Excavator (Phase 3, Area 1)	S2.1	103.1	71.6	PWL-Pt	W2.4	24	1
Excavator (Phase 3, Area 2)	S2.2	109.1	73.1	PWL-Pt	W2.5	24	1
Excavator (Phase 3, Area 1)	S3.1	102.0	70.5	PWL-Pt	W3.4	24	1
Excavator (Phase 3, Area 2)	S3.2	108.0	72.0	PWL-Pt	W3.5	24	1
Excavator (Phase 3, Area 1)	S4.1	101.9	70.4	PWL-Pt	W4.4	24	1
Excavator (Phase 3, Area 2)	S4.2	107.9	71.9	PWL-Pt	W4.5	24	1
Excavator (Phase 3, Area 1)	S5.1	103.5	72.0	PWL-Pt	W5.4	24	1
Excavator (Phase 3, Area 2)	S5.2	109.5	73.5	PWL-Pt	W5.5	24	1

Cadna Noise Model - Area Sources - Phase 1

Area	Height	Coordinates			Area	Height	Coordinates			Area	Height	Coordinates		
		X	Y	Z			X	Y	Z			X	Y	Z
	(m)	(m)	(m)	(m)		(m)	(m)	(m)	(m)		(m)	(m)	(m)	(m)
1	1.52	148.06	327.09	45.73	2	1.52	216.67	390.77	64.26	3	1.52	171.08	330.02	57.72
	1.52	149.95	327.40	45.73		1.52	216.64	391.72	64.04		1.52	173.60	330.02	58.19
	1.52	152.47	327.82	45.73		1.52	216.72	392.09	64.02		1.52	175.98	330.29	58.80
	1.52	155.20	327.82	47.24		1.52	216.72	392.48	64.02		1.52	179.42	330.29	59.61
	1.52	159.40	328.45	49.98		1.52	216.69	393.11	63.67		1.52	182.20	330.29	60.28
	1.52	162.55	328.98	52.15		1.52	216.69	393.69	63.17		1.52	184.45	330.29	60.81
	1.52	166.12	328.98	54.54		1.52	216.72	394.50	62.59		1.52	187.36	330.29	61.31
	1.52	169.28	330.03	56.66		1.52	216.70	394.95	62.38		1.52	192.78	330.16	62.15
	1.52	170.75	329.71	57.47		1.52	215.59	395.13	62.23		1.52	195.83	330.16	62.61
	1.52	171.17	332.66	57.96		1.52	214.51	395.17	62.26		1.52	199.26	330.16	63.19
	1.52	171.06	335.91	58.52		1.52	213.15	395.21	62.30		1.52	203.37	330.16	63.92
	1.52	171.06	340.01	59.03		1.52	211.70	395.24	62.35		1.52	206.01	329.76	64.22
	1.52	171.06	343.37	59.44		1.52	210.02	395.53	62.24		1.52	209.85	329.36	64.64
	1.52	171.17	347.57	60.23		1.52	208.42	395.94	62.09		1.52	213.55	329.36	64.92
	1.52	171.01	351.58	60.94		1.52	205.52	395.80	62.21		1.52	216.86	329.63	65.16
	1.52	170.85	354.82	61.00		1.52	203.30	395.63	62.25		1.52	218.98	329.60	65.29
	1.52	170.96	357.34	61.12		1.52	200.59	395.60	62.19		1.52	218.83	332.62	65.43
	1.52	170.96	360.28	61.21		1.52	197.22	395.30	62.26		1.52	218.59	336.93	65.63
	1.52	171.06	363.54	61.39		1.52	194.31	394.91	62.33		1.52	218.38	341.19	65.77
	1.52	170.64	367.22	61.41		1.52	191.86	394.61	62.37		1.52	218.02	344.31	65.83
	1.52	170.64	370.47	61.49		1.52	189.91	394.47	62.31		1.52	218.04	348.20	65.85
	1.52	170.64	373.31	61.56		1.52	188.58	394.34	62.29		1.52	217.75	351.96	65.85
	1.52	170.22	376.67	61.53		1.52	185.24	393.85	62.30		1.52	217.69	354.47	65.85
	1.52	170.22	379.72	61.64		1.52	182.37	393.35	62.34		1.52	217.51	357.28	65.85
	1.52	169.91	382.97	61.61		1.52	179.75	392.95	62.04		1.52	217.53	359.94	65.85
	1.52	169.70	385.70	61.53		1.52	176.27	392.40	61.68		1.52	214.77	360.15	65.85
	1.52	170.12	387.91	61.46		1.52	173.73	390.75	61.76		1.52	211.60	360.38	65.85
	1.52	170.38	391.32	61.15		1.52	170.16	390.88	61.15		1.52	207.73	360.14	65.70
	1.52	169.33	392.01	60.98		1.52	169.76	387.84	61.39		1.52	203.90	360.19	65.45
	1.52	166.91	393.11	60.18		1.52	169.76	385.32	61.56		1.52	200.98	360.19	65.26
	1.52	164.97	399.36	58.03		1.52	169.89	381.75	61.59		1.52	196.62	360.19	64.89
	1.52	162.18	402.24	55.76		1.52	170.29	379.50	61.65		1.52	191.61	359.96	64.42
	1.52	158.35	405.92	53.50		1.52	170.29	376.33	61.54		1.52	186.10	359.81	63.87
	1.52	153.20	408.23	51.83		1.52	170.16	373.55	61.43		1.52	179.78	359.79	63.20
	1.52	153.04	391.79	51.62		1.52	170.69	370.37	61.50		1.52	176.05	360.07	62.83
	1.52	150.47	391.80	51.07		1.52	170.29	367.33	61.30		1.52	173.20	360.32	62.00
	1.52	147.11	391.48	50.73		1.52	170.82	363.23	61.29		1.52	171.22	360.32	61.30
	1.52	146.38	390.96	50.62		1.52	171.13	360.33	61.27		1.52	170.82	356.88	61.05
	1.52	146.17	387.81	50.30		1.52	173.07	360.45	61.96		1.52	170.82	354.10	60.97
	1.52	146.17	384.44	49.58		1.52	175.58	360.19	62.77		1.52	171.25	350.36	60.93
	1.52	145.95	381.61	48.78		1.52	182.20	359.66	63.44		1.52	171.35	347.49	60.33
	1.52	146.06	378.98	48.78		1.52	187.53	359.96	64.03		1.52	171.25	344.25	59.66
	1.52	146.38	376.25	48.78		1.52	191.86	360.12	64.45		1.52	171.25	340.90	59.25
	1.52	146.48	373.83	48.78		1.52	195.78	360.23	64.81		1.52	171.28	338.03	58.91
	1.52	146.59	371.73	48.78		1.52	199.26	360.19	65.12		1.52	171.08	333.99	58.13
	1.52	146.59	369.00	48.78		1.52	202.86	360.25	65.38					
	1.52	146.80	365.85	48.78		1.52	207.84	360.20	65.71					
	1.52	146.69	362.38	48.52		1.52	211.70	360.45	65.85					
	1.52	146.69	359.76	48.28		1.52	214.25	360.31	65.85					
	1.52	146.69	357.03	48.03		1.52	217.63	359.99	65.85					
	1.52	147.01	353.03	47.68		1.52	217.43	366.30	65.85					
	1.52	147.01	350.51	47.62		1.52	217.16	371.57	65.73					
	1.52	146.90	347.99	47.02		1.52	217.04	376.33	65.42					
	1.52	147.32	344.63	46.00		1.52	216.75	380.51	65.24					
	1.52	147.32	342.00	45.73		1.52	216.70	384.25	65.04					
	1.52	147.74	338.96	45.73		1.52	216.69	385.81	64.93					
	1.52	148.16	335.49	45.73		1.52	216.73	387.38	64.80					
	1.52	147.64	332.03	45.73		1.52	216.80	388.46	64.71					
	1.52	147.95	329.19	45.73		1.52	216.69	389.59	64.61					
						1.52	216.69	390.14	64.44					

Cadna Noise Model - Area Source - Phase 2												
Area	Height	Coordinates			Height	Coordinates			Height	Coordinates		
		X	Y	Z		X	Y	Z		X	Y	Z
	(m)	(m)	(m)	(m)	(m)	(m)	(m)	(m)	(m)	(m)	(m)	(m)
1	1.52	215.50	390.38	62.20	1.52	193.62	350.37	59.64	1.52	252.43	219.79	58.42
	1.52	215.53	390.61	62.20	1.52	193.00	343.93	59.11	1.52	252.38	222.98	58.86
	1.52	215.53	390.95	62.49	1.52	185.28	339.16	55.13	1.52	252.36	224.61	58.82
	1.52	215.56	391.24	62.75	1.52	184.00	338.37	55.01	1.52	252.32	227.40	58.61
	1.52	215.56	391.74	63.18	1.52	183.06	339.27	54.88	1.52	252.25	232.94	58.19
	1.52	215.58	392.13	63.52	1.52	180.55	341.66	54.88	1.52	251.94	237.64	57.91
	1.52	215.58	392.48	63.82	1.52	180.25	341.95	54.88	1.52	252.10	244.63	58.21
	1.52	215.58	392.69	64.00	1.52	180.11	342.08	54.88	1.52	252.02	250.18	58.47
	1.52	215.61	392.87	63.89	1.52	177.10	344.95	54.88	1.52	252.02	250.72	58.49
	1.52	215.61	393.11	63.69	1.52	175.67	346.31	54.88	1.52	252.00	251.74	58.54
	1.52	215.61	393.26	63.57	1.52	169.79	340.82	54.88	1.52	252.00	252.23	58.56
	1.52	215.61	393.50	63.38	1.52	166.87	338.09	54.88	1.52	251.85	263.17	59.06
	1.52	215.61	393.81	63.13	1.52	165.47	336.78	54.88	1.52	251.85	263.26	59.06
	1.52	215.61	393.95	63.02	1.52	167.41	329.26	54.88	1.52	251.84	263.88	59.09
	1.52	215.66	394.16	62.86	1.52	167.56	328.67	54.88	1.52	251.78	268.43	59.30
	1.52	215.66	394.55	62.60	1.52	170.10	318.84	54.88	1.52	251.75	271.08	59.42
	1.52	215.66	394.68	62.52	1.52	170.84	315.94	55.30	1.52	251.74	271.62	59.45
	1.52	215.64	394.97	62.34	1.52	171.77	312.36	55.41	1.52	251.72	273.19	62.14
	1.52	212.51	395.15	62.33	1.52	171.97	311.58	55.40	1.52	251.71	274.04	62.33
	1.52	208.37	395.91	62.16	1.52	174.47	301.84	55.29	1.52	251.70	274.82	62.45
	1.52	198.52	395.52	62.17	1.52	175.04	300.44	55.30	1.52	251.67	276.99	60.26
	1.52	194.48	394.93	62.28	1.52	175.34	299.69	55.30	1.52	251.62	280.68	60.88
	1.52	192.57	394.82	62.23	1.52	176.83	295.97	55.37	1.52	251.62	280.92	60.91
	1.52	188.65	394.38	62.27	1.52	177.44	294.43	55.07	1.52	251.54	286.86	60.92
	1.52	185.65	393.95	62.25	1.52	182.94	280.70	56.40	1.52	251.50	289.67	60.95
	1.52	180.54	393.17	62.20	1.52	183.00	280.53	56.40	1.52	252.75	290.98	60.98
	1.52	180.44	392.92	62.29	1.52	185.68	273.85	56.40	1.52	254.28	292.58	60.98
	1.52	180.44	392.61	62.45	1.52	186.37	272.13	56.40	1.52	256.44	292.49	60.98
	1.52	180.38	392.29	62.59	1.52	190.48	254.82	56.40	1.52	256.96	292.47	60.98
	1.52	180.41	391.90	62.79	1.52	190.89	253.14	56.40	1.52	279.56	291.52	60.98
	1.52	180.46	391.50	62.81	1.52	199.87	247.26	56.40	1.52	279.36	299.53	60.98
	1.52	180.36	391.11	62.68	1.52	206.72	242.77	56.50	1.52	279.23	305.12	60.98
	1.52	180.30	390.65	62.16	1.52	207.27	242.41	56.53	1.52	279.20	306.22	60.98
	1.52	181.16	389.58	61.98	1.52	213.12	238.58	56.58	1.52	279.03	313.36	60.98
	1.52	182.32	388.13	61.74	1.52	217.04	234.58	56.51	1.52	274.59	313.59	60.98
	1.52	183.84	386.24	61.42	1.52	217.64	233.97	56.51	1.52	274.55	313.59	60.98
	1.52	184.27	385.70	61.33	1.52	217.68	233.92	56.51	1.52	242.54	315.27	60.98
	1.52	186.62	382.77	61.05	1.52	217.98	233.62	56.51	1.52	241.56	315.33	60.98
	1.52	186.91	382.41	61.05	1.52	218.36	233.23	56.52	1.52	241.62	311.51	60.98
	1.52	188.21	380.78	61.04	1.52	224.36	227.11	55.17	1.52	226.09	316.14	60.83
	1.52	188.37	380.58	61.04	1.52	225.82	225.61	55.14	1.52	221.18	321.04	61.16
	1.52	189.37	379.33	61.03	1.52	233.32	223.12	55.42	1.52	220.77	321.45	61.14
	1.52	189.57	379.09	61.03	1.52	239.28	221.13	56.84	1.52	220.00	322.23	61.10
	1.52	190.49	377.94	61.04	1.52	239.47	221.06	56.84	1.52	218.98	337.74	61.48
	1.52	190.64	376.95	61.02	1.52	241.71	220.32	57.05	1.52	218.88	339.15	61.51
	1.52	190.75	376.23	61.02	1.52	247.95	220.01	57.79	1.52	217.93	353.60	62.00
	1.52	191.01	374.55	61.02	1.52	248.39	219.99	57.85	1.52	217.90	354.07	62.00
	1.52	193.28	359.92	61.00	1.52	248.64	219.98	57.88	1.52	216.92	368.86	62.04
	1.52	193.33	359.60	61.00	1.52	248.94	219.96	57.91	1.52	216.89	369.32	62.04
	1.52	194.06	354.92	60.98	1.52	249.28	219.95	57.96	1.52	216.89	369.37	62.04
	1.52	193.86	352.82	60.06								

Cadna Noise Model - Area Sources - Phase 3

Area	Height	Coordinates			Height	Coordinates			Area	Height	Coordinates			Height	Coordinates		
		X	Y	Z		X	Y	Z			X	Y	Z		X	Y	Z
	(m)	(m)	(m)	(m)	(m)	(m)	(m)	(m)		(m)	(m)	(m)	(m)	(m)	(m)	(m)	(m)
1	1.52	278.84	268.62	61.37	1.52	300.59	328.30	62.81	2	1.52	294.10	328.47	63.69	1.52	221.13	347.08	61.39
	1.52	279.26	264.46	59.94	1.52	301.33	328.30	62.80		1.52	294.07	333.63	61.83	1.52	222.51	327.59	61.37
	1.52	279.67	258.21	59.66	1.52	302.38	328.36	62.80		1.52	286.39	334.76	61.64	1.52	224.57	321.48	61.14
	1.52	278.01	244.37	59.67	1.52	303.14	328.33	62.80		1.52	278.16	335.91	61.48	1.52	228.36	318.32	61.04
	1.52	276.42	231.54	59.73	1.52	304.21	328.33	62.80		1.52	266.60	336.85	62.41	1.52	232.31	316.90	61.06
	1.52	276.92	229.12	59.46	1.52	305.39	328.36	62.80		1.52	250.84	338.43	62.78	1.52	278.86	315.64	61.59
	1.52	276.42	225.79	59.41	1.52	306.42	328.33	62.80		1.52	249.34	338.56	62.80	1.52	280.86	314.53	61.59
	1.52	275.17	220.45	59.37	1.52	307.49	328.33	62.80		1.52	248.05	338.64	62.80	1.52	282.70	310.16	61.59
	1.52	274.92	218.12	59.05	1.52	308.31	328.36	62.80		1.52	246.72	338.81	62.80	1.52	283.34	292.51	61.59
	1.52	265.50	218.53	59.78	1.52	308.97	328.36	62.80		1.52	245.05	338.89	62.80	1.52	280.91	289.72	61.59
	1.52	265.49	222.66	59.64	1.52	309.88	328.28	62.80		1.52	243.59	338.89	62.80	1.52	256.63	289.77	61.59
	1.52	265.97	253.89	64.18	1.52	310.91	328.25	62.80		1.52	242.51	339.10	62.80	1.52	253.96	288.06	61.34
	1.52	266.00	263.00	64.68	1.52	311.67	328.25	62.80		1.52	241.05	339.15	62.80	1.52	253.23	282.98	60.79
	1.52	266.13	277.51	66.02	1.52	312.59	328.28	62.80		1.52	242.68	367.61	61.38	1.52	253.64	219.66	58.26
	1.52	267.85	277.63	66.47	1.52	313.37	328.27	62.80		1.52	241.84	369.76	61.49	1.52	264.64	219.61	58.26
	1.52	270.06	277.47	66.47	1.52	313.62	325.90	61.59		1.52	242.57	370.97	61.33	1.52	265.43	278.13	61.59
	1.52	272.37	277.37	66.47	1.52	304.61	321.52	61.87		1.52	241.63	373.02	61.61	1.52	292.92	277.71	61.59
	1.52	274.21	277.37	66.47	1.52	304.19	321.01	62.01		1.52	240.84	375.28	61.84	1.52	293.46	327.49	61.59
	1.52	276.05	277.37	66.47	1.52	303.69	320.19	61.65		1.52	240.21	377.48	62.05	1.52	276.44	327.70	61.59
	1.52	278.67	277.47	66.47	1.52	303.30	319.54	61.33		1.52	240.16	379.42	62.19	1.52	261.64	327.96	61.59
	1.52	280.82	277.52	66.39	1.52	302.87	318.70	61.44		1.52	238.76	381.45	62.32	1.52	233.94	328.49	61.59
	1.52	281.87	277.37	66.27	1.52	302.51	318.12	61.83		1.52	234.16	381.90	62.75	1.52	238.69	348.17	61.59
	1.52	284.37	277.36	66.15	1.52	301.98	317.17	61.71		1.52	231.74	390.21	62.80	1.52	239.82	362.09	61.88
	1.52	285.35	277.34	66.10	1.52	301.46	316.29	62.28		1.52	234.42	389.02	62.54	1.52	240.53	362.88	61.88
	1.52	286.46	277.34	66.05	1.52	301.04	315.26	62.01		1.52	227.54	394.57	62.66	1.52	240.78	362.16	61.96
	1.52	287.40	277.29	65.99	1.52	300.46	313.87	61.53		1.52	217.29	394.77	62.57	1.52	239.51	348.85	62.80
	1.52	288.19	277.31	65.96	1.52	300.20	313.08	61.56		1.52	217.41	394.03	62.88	1.52	239.31	347.59	62.80
	1.52	289.04	277.34	65.93	1.52	299.46	310.54	61.76		1.52	217.41	393.65	63.19	1.52	239.11	346.53	62.80
	1.52	289.83	277.31	65.88	1.52	298.88	307.20	62.10		1.52	217.41	393.28	63.50	1.52	238.84	345.38	62.84
	1.52	290.64	277.32	65.85	1.52	298.71	303.45	62.26		1.52	217.41	392.94	63.77	1.52	238.54	344.32	64.00
	1.52	291.55	277.27	65.85	1.52	299.30	298.70	61.93		1.52	217.41	392.49	64.02	1.52	237.51	339.95	64.65
	1.52	292.29	277.34	65.66	1.52	298.98	290.78	62.31		1.52	217.41	391.90	64.02	1.52	237.01	337.89	64.85
	1.52	292.99	277.36	65.22	1.52	298.73	281.12	62.05		1.52	217.41	391.36	64.02	1.52	236.81	336.97	64.95
	1.52	293.45	277.37	64.92	1.52	298.75	279.94	62.03		1.52	217.49	391.11	64.02	1.52	236.59	336.21	65.21
	1.52	293.48	278.13	64.63	1.52	298.67	278.53	62.15		1.52	217.48	390.69	64.02	1.52	236.30	335.14	65.40
	1.52	293.51	278.66	64.63	1.52	298.69	277.52	62.10		1.52	220.27	390.78	64.02	1.52	236.13	334.56	65.52
	1.52	293.50	279.04	65.06	1.52	298.49	276.84	62.21		1.52	224.57	390.87	63.81	1.52	235.97	333.70	65.63
	1.52	293.54	282.41	65.85	1.52	298.33	276.21	62.28		1.52	227.89	390.78	63.13	1.52	235.76	332.94	65.84
	1.52	293.60	284.76	65.85	1.52	298.22	275.64	62.22		1.52	229.71	390.84	63.40	1.52	235.38	331.01	65.85
	1.52	293.63	287.16	65.85	1.52	298.07	275.06	62.16		1.52	229.61	379.65	62.39	1.52	235.17	330.05	65.85
	1.52	293.63	288.70	65.85	1.52	297.76	274.48	62.08		1.52	230.68	377.96	62.20	1.52	234.95	329.16	66.44
	1.52	293.68	291.03	66.46	1.52	297.39	273.88	61.94		1.52	232.22	375.64	62.17	1.52	237.01	329.10	66.44
	1.52	293.67	293.77	66.46	1.52	296.70	273.15	61.86		1.52	233.83	373.34	62.14	1.52	238.76	329.10	66.43
	1.52	293.79	298.07	66.46	1.52	296.15	272.59	61.71		1.52	235.78	370.25	62.08	1.52	244.26	329.01	66.46
	1.52	293.84	301.44	66.46	1.52	295.16	271.99	61.60		1.52	237.03	368.35	62.05	1.52	246.43	328.93	66.46
	1.52	293.92	304.31	66.46	1.52	294.21	271.62	61.58		1.52	239.12	365.13	61.99	1.52	249.84	328.95	66.46
	1.52	293.92	306.64	66.46	1.52	293.27	271.49	61.63		1.52	239.87	364.02	61.97	1.52	252.20	328.94	66.46
	1.52	293.98	312.26	65.85	1.52	292.22	271.23	61.61		1.52	239.33	363.58	61.91	1.52	259.51	328.85	66.46
	1.52	294.05	315.81	65.24	1.52	291.61	270.99	61.54		1.52	229.22	379.49	62.18	1.52	273.97	328.68	65.99
	1.52	294.11	321.74	65.06	1.52	290.04	270.60	61.41		1.52	229.41	390.37	62.19	1.52	282.14	328.55	65.28
	1.52	294.11	324.60	64.84	1.52	288.57	270.52	61.45		1.52	217.63	390.53	62.18	1.52	288.18	328.55	64.67
	1.52	294.21	328.37	63.51	1.52	287.67	270.38	61.39									
	1.52	295.63	328.41	63.87	1.52	286.49	270.26	61.40									
	1.52	296.55	328.38	63.64	1.52	285.57	270.31	61.49									
	1.52	297.44	328.33	63.47	1.52	283.97	270.33	61.66									
	1.52	298.52	328.30	63.23	1.52	282.45	270.28	61.74									
	1.52	299.62	328.30	63.00	1.52	280.88	269.86	61.74									

Cadna Noise Model - Noise Levels at Receivers - Phase 1

Name	Level Lr	Height	Coordinates		
	Day		X	Y	Z
	(dBA)	(m)	(m)	(m)	(m)
1	71.9	1.52	168.16	398.62	60.63
2	68.5	1.52	182.87	399.63	62.07
3	69.0	1.52	196.83	399.56	62.25
4	68.6	1.52	211.98	399.76	62.50
5	65.1	1.52	226.37	397.70	63.85
6	58.5	1.52	243.60	351.47	64.33
7	58.4	1.52	248.91	341.00	64.74
8	54.7	1.52	269.33	339.75	63.27
9	52.3	1.52	287.21	339.67	61.75
10	51.2	1.52	300.72	337.08	61.21
11	45.0	1.52	309.21	316.83	62.48
12	40.8	1.52	287.71	259.74	60.97
13	40.1	1.52	286.38	247.32	59.66
14	40.5	1.52	286.38	235.40	59.19
15	41.4	1.52	285.96	224.15	59.02
16	39.7	1.52	285.39	209.16	56.40
17	48.4	1.52	190.90	198.35	42.46
18	47.6	1.52	205.25	181.65	43.18
19	53.2	1.52	117.57	199.81	36.01
20	55.9	1.52	100.26	289.85	42.73
21	61.3	1.52	126.43	229.50	38.11
22	66.2	1.52	124.02	292.91	43.90
23	64.9	1.52	123.35	343.58	47.54

Cadna Noise Model - Noise Levels at Receivers - Phase 2

Name	Level Lr	Height	Coordinates		
	Day		X	Y	Z
	(dBA)	(m)	(m)	(m)	(m)
1	60.5	1.52	168.16	398.62	60.36
2	65.7	1.52	182.87	399.63	62.07
3	67.3	1.52	196.83	399.56	62.25
4	66.5	1.52	211.98	399.76	62.50
5	61.5	1.52	226.37	397.70	63.85
6	54.2	1.52	243.60	351.47	64.33
7	54.5	1.52	248.91	341.00	64.74
8	51.2	1.52	269.33	339.75	63.27
9	49.1	1.52	287.21	339.67	61.75
10	47.9	1.52	300.72	337.08	61.21
11	48.2	1.52	309.21	316.83	62.48
12	49.1	1.52	287.71	259.74	60.97
13	48.7	1.52	286.38	247.32	59.66
14	49.3	1.52	286.38	235.40	59.19
15	50.4	1.52	285.96	224.15	59.02
16	49.6	1.52	285.39	209.16	56.40
17	54.7	1.52	190.90	198.35	42.46
18	55.3	1.52	205.25	181.65	43.18
19	53.5	1.52	117.57	199.81	36.01
20	54.2	1.52	100.26	289.85	42.73
21	57.7	1.52	126.43	229.50	38.11
22	58.9	1.52	124.02	292.91	43.90
23	57.8	1.52	123.35	343.58	47.54

Cadna Noise Model - Noise Levels at Receivers - Phase 3

Name	Level Lr	Height	Coordinates		
	Day		X	Y	Z
	(dBA)	(m)	(m)	(m)	(m)
1	51.5	1.52	168.16	398.62	60.36
2	53.7	1.52	182.87	399.63	62.07
3	55.4	1.52	196.83	399.56	62.25
4	60.9	1.52	211.98	399.76	62.50
5	68.5	1.52	226.37	397.70	63.85
6	72.7	1.52	243.60	351.47	64.33
7	72.4	1.52	248.91	341.00	64.74
8	71.7	1.52	269.33	339.75	63.27
9	68.1	1.52	287.21	339.67	61.75
10	64.6	1.52	300.72	337.08	61.21
11	67.3	1.52	309.21	316.83	62.48
12	67.1	1.52	287.71	259.74	60.97
13	66.2	1.52	286.38	247.32	59.66
14	64.9	1.52	286.38	235.40	59.19
15	63.7	1.52	285.96	224.15	59.02
16	59.0	1.52	285.39	209.16	56.40
17	44.6	1.52	190.90	198.35	42.46
18	45.6	1.52	205.25	181.65	43.18
19	44.4	1.52	117.57	199.81	36.01
20	43.6	1.52	100.26	289.85	42.73
21	44.8	1.52	126.43	229.50	38.11
22	47.6	1.52	124.02	292.91	43.90
23	48.2	1.52	123.35	343.58	47.54

Cadna Noise Model - Height Points - Phase 3

Name	Coordinates		
	X	Y	Z
	(m)	(m)	(m)
HP1	190.11	293.59	56.23
HP2	220.46	334.24	61.63

Geometrie Höhenlinien Terrain Contour Lines - Phase 1

Name	M.	ID	OnlyPts	Height		Coordinates		
				Begin	End	x	y	z
				(m)	(m)	(m)	(m)	(m)
120ft/36.6				36.59		126.39	230.98	36.59
						126.89	228.73	36.59
						128.06	228.31	36.59
						130.48	228.56	36.59
						130.98	229.23	36.59
						130.90	229.81	36.59
						132.06	230.06	36.59
						132.90	229.23	36.59
						134.57	228.14	36.59
						138.98	225.89	36.59
						141.99	224.97	36.59
						147.66	225.22	36.59
						151.52	225.51	36.59
						151.65	224.30	36.59
						153.64	223.12	36.59
						154.59	221.86	36.59
						155.46	219.81	36.59
						158.12	211.14	36.59
						159.58	208.76	36.59
						161.42	207.01	36.59
						157.96	203.51	36.59
						156.92	201.01	36.59
						157.37	197.84	36.59
						159.46	194.17	36.59
						160.63	191.34	36.59
						162.96	189.55	36.59
						173.10	181.00	36.59

Name	M.	ID	OnlyPts	Height		Coordinates		
				Begin	End	x	y	z
				(m)	(m)	(m)	(m)	(m)
						207.78	154.54	36.59
						262.83	123.04	36.59
130ft/39.6m				39.63		185.70	201.15	39.63
						183.49	202.07	39.63
						181.95	203.11	39.63
						177.86	207.53	39.63
						175.28	209.40	39.63
						173.11	211.19	39.63
						170.90	214.49	39.63
						169.07	216.86	39.63
						165.45	219.82	39.63
						163.61	223.65	39.63
						157.90	230.20	39.63
						157.57	234.70	39.63
						156.97	238.95	39.63
						156.60	244.65	39.63
						156.15	247.53	39.63
						156.21	252.76	39.63
						155.89	257.54	39.63
						155.42	261.00	39.63
						155.08	263.44	39.63
						154.21	264.23	39.63
						153.51	264.11	39.63
						151.54	263.30	39.63
						151.43	264.69	39.63
						147.49	264.30	39.63
						141.18	263.85	39.63
						135.20	265.14	39.63
						131.28	266.45	39.63
						131.23	264.95	39.63
						130.36	264.98	39.63
						126.19	265.90	39.63
140ft/42.7m				42.68		202.45	189.53	42.68
						197.82	194.67	42.68
						195.83	197.40	42.68
						192.78	201.08	42.68
						189.11	205.91	42.68
						185.22	212.64	42.68
						182.49	216.10	42.68
						179.58	219.54	42.68
						171.60	229.04	42.68
						165.78	236.65	42.68
						163.76	239.69	42.68
						163.03	242.54	42.68
						163.40	243.20	42.68
						163.40	243.70	42.68
						163.13	244.09	42.68
						162.64	243.73	42.68
						162.64	243.23	42.68
						162.27	242.57	42.68
						161.91	242.31	42.68
						161.41	242.37	42.68
						160.78	242.84	42.68
						160.45	243.96	42.68
						160.39	247.04	42.68
						159.59	261.23	42.68
						158.28	273.74	42.68
						157.97	275.84	42.68
						157.05	279.80	42.68
						154.22	294.39	42.68
						152.90	301.14	42.68
						152.53	303.19	42.68
						149.76	302.23	42.68

Name	M.	ID	OnlyPts	Height		Coordinates		
				Begin	End	x	y	z
				(m)	(m)	(m)	(m)	(m)
						149.69	303.37	42.68
						141.15	301.96	42.68
						139.81	301.98	42.68
						136.60	302.65	42.68
						131.05	304.61	42.68
						131.05	303.32	42.68
						129.34	303.90	42.68
						128.55	303.73	42.68
						127.76	301.27	42.68
						127.55	298.22	42.68
						127.01	293.34	42.68
						126.30	289.43	42.68
150ft/45.7m				45.73		126.34	331.37	45.73
						127.00	342.49	45.73
						130.51	340.70	45.73
						130.28	342.25	45.73
						135.01	341.43	45.73
						137.99	341.39	45.73
						141.53	341.79	45.73
						146.79	343.68	45.73
						146.98	341.99	45.73
						149.77	341.91	45.73
						150.98	336.06	45.73
						152.53	328.52	45.73
						154.18	321.24	45.73
						155.86	313.18	45.73
						157.51	301.55	45.73
						161.19	282.69	45.73
						162.61	278.44	45.73
						163.40	275.60	45.73
						163.61	274.55	45.73
						163.58	273.45	45.73
						163.24	271.30	45.73
						162.85	269.22	45.73
						162.87	266.20	45.73
						163.06	262.29	45.73
						163.40	259.61	45.73
						164.24	258.51	45.73
						165.03	258.43	45.73
						165.34	258.98	45.73
						165.45	259.43	45.73
						165.68	259.93	45.73
						166.00	259.98	45.73
						166.18	259.56	45.73
						166.08	258.98	45.73
						166.00	258.22	45.73
						166.13	257.69	45.73
						166.81	257.14	45.73
						168.73	254.70	45.73
						169.94	253.02	45.73
						170.78	251.65	45.73
						171.59	250.03	45.73
						171.98	249.24	45.73
						173.85	247.37	45.73
						175.24	245.51	45.73
						176.24	244.14	45.73
						184.90	231.85	45.73
						188.29	227.23	45.73
						192.97	220.98	45.73
						194.12	219.35	45.73
						195.96	215.86	45.73
						197.43	213.45	45.73
						198.64	211.82	45.73

Name	M.	ID	OnlyPts	Height		Coordinates		
				Begin	End	x	y	z
				(m)	(m)	(m)	(m)	(m)
						201.55	208.67	45.73
						206.25	203.10	45.73
						209.59	198.64	45.73
						212.08	195.98	45.73
						213.48	194.22	45.73
						214.81	191.49	45.73
						216.47	189.47	45.73
160ft/48.78m				48.78		126.28	378.92	48.78
						126.45	380.80	48.78
						127.13	381.78	48.78
						127.97	381.91	48.78
						129.91	381.78	48.78
						129.95	383.03	48.78
						137.91	381.41	48.78
						144.91	382.09	48.78
						149.12	383.26	48.78
						149.42	380.36	48.78
						149.96	377.26	48.78
						151.79	361.94	48.78
						152.56	355.85	48.78
						154.21	345.43	48.78
						156.46	334.55	48.78
						157.84	327.44	48.78
						159.48	318.48	48.78
						160.27	313.92	48.78
						160.92	309.75	48.78
						161.48	305.50	48.78
						162.03	302.72	48.78
						162.96	297.85	48.78
						164.40	291.07	48.78
						165.21	285.28	48.78
						165.63	281.17	48.78
						165.71	279.44	48.78
						165.78	278.50	48.78
						165.57	277.75	48.78
						165.44	276.73	48.78
						165.55	275.84	48.78
						166.01	274.48	48.78
						166.67	274.02	48.78
						167.61	273.77	48.78
						168.13	273.84	48.78
						168.44	274.36	48.78
						168.51	274.73	48.78
						168.51	275.29	48.78
						168.92	275.59	48.78
						169.17	275.17	48.78
						169.24	274.61	48.78
						169.03	274.31	48.78
						169.15	273.73	48.78
						169.38	272.90	48.78
						170.20	270.88	48.78
						173.22	265.79	48.78
						176.01	261.75	48.78
						184.12	251.18	48.78
						186.04	249.09	48.78
						192.60	238.71	48.78
						194.60	235.59	48.78
						197.40	232.42	48.78
						201.96	226.96	48.78
						204.96	221.00	48.78
						210.09	214.33	48.78
						218.82	201.91	48.78
						222.53	196.90	48.78

Name	M.	ID	OnlyPts	Height		Coordinates		
				Begin	End	x	y	z
				(m)	(m)	(m)	(m)	(m)
						229.33	189.40	48.78
170ft/51.8m				51.83		126.41	429.85	51.83
						129.61	428.43	51.83
						130.87	426.17	51.83
						130.82	428.85	51.83
						135.81	425.49	51.83
						138.54	424.86	51.83
						141.90	424.55	51.83
						147.84	426.54	51.83
						150.54	428.08	51.83
						150.34	425.75	51.83
						151.84	427.67	51.83
						154.92	409.83	51.83
						155.09	407.37	51.83
						156.57	404.32	51.83
						156.46	404.09	51.83
						155.80	403.95	51.83
						155.17	402.76	51.83
						155.21	399.84	51.83
						154.84	396.61	51.83
						153.98	391.50	51.83
						153.65	389.23	51.83
						153.61	387.84	51.83
						153.59	385.11	51.83
						153.84	383.17	51.83
						155.86	367.51	51.83
						157.74	353.22	51.83
						157.69	352.88	51.83
						160.38	338.35	51.83
						162.61	325.97	51.83
						164.66	314.76	51.83
						166.76	301.61	51.83
						168.16	293.33	51.83
						168.51	291.00	51.83
						168.59	289.25	51.83
						168.68	288.46	51.83
						169.20	287.54	51.83
						170.10	286.98	51.83
						170.45	287.37	51.83
						171.18	288.08	51.83
						171.55	288.02	51.83
						171.83	287.48	51.83
						171.97	287.00	51.83
						171.91	286.31	51.83
						171.97	285.89	51.83
						172.30	284.70	51.83
						172.85	283.31	51.83
						173.81	281.64	51.83
						183.29	269.22	51.83
						191.61	257.27	51.83
						200.11	244.29	51.83
						209.80	231.60	51.83
						214.07	226.91	51.83
						216.39	224.13	51.83
						218.81	220.80	51.83
						222.08	215.11	51.83
						224.58	210.92	51.83
						227.46	206.60	51.83
						229.64	203.87	51.83
						234.75	197.60	51.83
						237.88	194.24	51.83
						239.27	192.81	51.83
						241.42	190.43	51.83

Name	M.	ID	OnlyPts	Height		Coordinates		
				Begin	End	x	y	z
				(m)	(m)	(m)	(m)	(m)
						242.65	189.35	51.83
						246.42	186.56	51.83
						264.69	177.56	51.83
						285.07	162.21	51.83
						295.12	142.63	51.83
						310.48	127.01	51.83
						372.41	112.72	51.83
180ft/54.9m				54.88		156.18	441.96	54.88
						157.90	426.87	54.88
						161.01	404.77	54.88
						161.43	399.67	54.88
						160.70	399.39	54.88
						160.12	398.81	54.88
						159.52	397.91	54.88
						159.07	396.52	54.88
						158.57	393.90	54.88
						158.28	391.74	54.88
						158.15	390.33	54.88
						157.86	388.22	54.88
						157.89	385.83	54.88
						158.05	383.21	54.88
						158.47	381.06	54.88
						160.15	368.69	54.88
						160.36	366.69	54.88
						162.22	353.19	54.88
						166.03	332.34	54.88
						168.10	320.73	54.88
						169.71	309.89	54.88
						170.81	303.43	54.88
						171.46	301.64	54.88
						172.09	300.59	54.88
						172.44	300.41	54.88
						172.62	300.78	54.88
						172.62	301.09	54.88
						172.83	301.62	54.88
						173.07	301.72	54.88
						173.30	301.54	54.88
						173.38	300.54	54.88
						173.46	299.83	54.88
						174.01	298.15	54.88
						174.72	296.63	54.88
						177.48	291.93	54.88
						178.48	290.56	54.88
						183.54	282.97	54.88
						186.22	280.24	54.88
						188.93	277.56	54.88
						189.85	276.41	54.88
						197.33	266.06	54.88
						200.06	262.25	54.88
						202.77	258.05	54.88
						204.84	254.85	54.88
						209.39	248.52	54.88
						213.14	242.92	54.88
						216.82	238.20	54.88
						221.10	232.87	54.88
						223.51	229.77	54.88
						225.04	227.53	54.88
						226.90	224.54	54.88
						228.16	222.54	54.88
						229.32	220.00	54.88
						230.39	218.00	54.88
						231.63	216.19	54.88
						233.36	214.09	54.88

Name	M.	ID	OnlyPts	Height		Coordinates		
				Begin	End	x	y	z
				(m)	(m)	(m)	(m)	(m)
						243.52	202.82	54.88
						245.76	201.04	54.88
						254.55	196.39	54.88
						261.15	193.97	54.88
						264.64	193.00	54.88
						267.79	192.29	54.88
						271.31	191.03	54.88
						273.67	190.03	54.88
						275.98	189.90	54.88
						276.93	191.71	54.88
						277.43	193.84	54.88
						277.74	196.49	54.88
						277.98	198.70	54.88
						277.74	201.38	54.88
						277.87	204.24	54.88
						278.82	205.69	54.88
						279.21	207.66	54.88
						279.84	211.67	54.88
						280.39	213.27	54.88
						281.29	214.61	54.88
						282.10	215.06	54.88
						283.91	215.24	54.88
						301.90	215.17	54.88
						315.74	215.80	54.88
190ft/57.9m				57.93		162.61	421.05	57.93
						163.45	414.65	57.93
						163.86	409.55	57.93
						164.93	396.39	57.93
						164.53	396.06	57.93
						163.82	395.48	57.93
						163.15	394.50	57.93
						162.72	393.43	57.93
						162.34	391.70	57.93
						162.17	390.22	57.93
						162.15	388.47	57.93
						162.07	385.74	57.93
						162.32	383.01	57.93
						163.24	377.63	57.93
						166.16	357.00	57.93
						167.47	348.04	57.93
						170.55	333.57	57.93
						172.85	324.55	57.93
						173.03	325.36	57.93
						173.26	325.96	57.93
						173.26	326.59	57.93
						173.14	327.32	57.93
						173.35	327.90	57.93
						173.62	328.05	57.93
						173.74	327.88	57.93
						173.99	327.17	57.93
						174.01	326.76	57.93
						173.81	326.42	57.93
						173.87	325.34	57.93
						174.20	323.86	57.93
						175.14	322.07	57.93
						176.43	319.77	57.93
						177.35	317.23	57.93
						178.50	312.52	57.93
						181.04	305.66	57.93
						182.23	302.85	57.93
						183.66	300.24	57.93
						184.96	298.41	57.93
						185.98	296.89	57.93

Name	M.	ID	OnlyPts	Height		Coordinates		
				Begin	End	x	y	z
				(m)	(m)	(m)	(m)	(m)
						186.87	295.32	57.93
						188.29	292.82	57.93
						189.42	291.55	57.93
						190.17	290.74	57.93
						191.52	289.61	57.93
						192.84	288.09	57.93
						194.23	286.15	57.93
						195.75	283.92	57.93
						196.65	282.75	57.93
						200.40	278.71	57.93
						204.51	273.81	57.93
						206.82	270.50	57.93
						210.47	265.06	57.93
						214.60	258.93	57.93
						216.45	256.08	57.93
						220.49	250.66	57.93
						225.73	243.67	57.93
						231.29	237.88	57.93
						233.04	235.94	57.93
						235.13	233.88	57.93
						236.86	231.83	57.93
						238.92	228.77	57.93
						241.53	225.08	57.93
						243.69	223.02	57.93
						246.84	219.87	57.93
						251.95	215.70	57.93
						254.78	213.60	57.93
						262.64	209.59	57.93
						267.95	206.74	57.93
						270.12	205.47	57.93
						271.81	204.49	57.93
						272.94	204.13	57.93
						273.25	204.13	57.93
						273.58	204.34	57.93
						273.75	204.74	57.93
						273.94	205.43	57.93
						274.58	208.70	57.93
						274.75	210.53	57.93
						274.94	212.14	57.93
						275.92	215.01	57.93
						276.25	216.16	57.93
						276.31	217.52	57.93
						276.92	218.52	57.93
						277.44	218.91	57.93
						277.71	219.39	57.93
						277.54	219.75	57.93
						280.04	223.89	57.93
						282.29	232.10	57.93
						284.01	239.91	57.93
						287.72	248.91	57.93
						292.75	253.01	57.93
						297.51	257.78	57.93
						301.22	263.47	57.93
						304.93	267.44	57.93
						305.46	271.68	57.93
						305.59	276.71	57.93
						307.18	280.94	57.93
						311.15	284.65	57.93
						315.12	287.69	57.93
190ft/57.9m				57.93		182.51	442.63	57.93
						181.25	436.11	57.93
						180.98	431.49	57.93
						182.14	429.81	57.93

Name	M.	ID	OnlyPts	Height		Coordinates		
				Begin	End	x	y	z
				(m)	(m)	(m)	(m)	(m)
						182.40	426.56	57.93
						184.82	425.03	57.93
						189.23	424.19	57.93
						193.48	424.03	57.93
						197.84	425.03	57.93
						203.52	427.19	57.93
						205.46	429.60	57.93
						207.46	430.44	57.93
						209.19	432.28	57.93
						209.40	433.49	57.93
						208.51	434.49	57.93
						207.93	435.59	57.93
						208.03	436.06	57.93
						209.56	436.38	57.93
						213.60	436.38	57.93
						216.65	437.22	57.93
						219.22	437.43	57.93
						225.95	439.32	57.93
						226.31	440.21	57.93
						226.26	442.47	57.93
200ft/60.9m				60.98		260.18	350.87	60.98
						259.44	363.00	60.98
						257.03	363.31	60.98
						255.19	363.52	60.98
						254.14	364.52	60.98
						252.83	365.05	60.98
						250.94	365.83	60.98
						250.04	366.78	60.98
						249.83	367.62	60.98
						246.89	367.88	60.98
						244.66	369.15	60.98
						245.81	369.41	60.98
						249.07	369.99	60.98
						251.33	371.66	60.98
						253.69	374.60	60.98
						254.11	377.33	60.98
						253.85	380.22	60.98
						252.85	384.00	60.98
						251.43	387.52	60.98
						249.49	389.36	60.98
						248.18	390.57	60.98
						248.56	413.14	60.98
						254.91	413.75	60.98
						256.59	413.64	60.98
						259.30	413.64	60.98
						253.57	414.69	60.98
						249.79	415.19	60.98
						248.85	415.19	60.98
						247.35	415.58	60.98
						245.75	416.14	60.98
						244.36	416.16	60.98
						241.70	417.84	60.98
						240.10	418.63	60.98
						238.47	419.10	60.98
						237.06	418.84	60.98
						235.95	418.39	60.98
						235.11	417.66	60.98
						234.59	417.21	60.98
						231.41	414.95	60.98
						226.13	409.89	60.98
						218.46	402.48	60.98
						217.36	401.30	60.98
						215.55	399.38	60.98

Name	M.	ID	OnlyPts	Height		Coordinates		
				Begin	End	x	y	z
				(m)	(m)	(m)	(m)	(m)
						213.32	397.73	60.98
						212.61	397.31	60.98
						212.03	397.28	60.98
						211.06	397.39	60.98
						209.74	397.67	60.98
						208.64	397.86	60.98
						206.96	397.88	60.98
						201.63	397.65	60.98
						196.35	397.36	60.98
						193.07	396.97	60.98
						189.23	396.76	60.98
						185.66	395.99	60.98
						181.33	395.23	60.98
						178.81	394.71	60.98
						176.24	394.63	60.98
						173.90	394.31	60.98
						172.03	393.68	60.98
						170.30	392.74	60.98
						170.12	392.19	60.98
						169.83	391.84	60.98
						169.41	392.11	60.98
						168.80	392.37	60.98
						168.02	392.29	60.98
						167.52	391.84	60.98
						167.52	391.00	60.98
						167.88	390.19	60.98
						168.57	389.51	60.98
						168.33	388.80	60.98
						168.04	388.14	60.98
						167.81	386.93	60.98
						167.70	384.89	60.98
						167.67	382.76	60.98
						167.86	379.90	60.98
						168.51	374.28	60.98
						169.09	368.18	60.98
						169.88	364.64	60.98
						170.20	361.54	60.98
						170.59	356.81	60.98
						171.06	351.61	60.98
						171.40	349.96	60.98
						172.61	346.78	60.98
						173.19	345.76	60.98
						173.45	345.52	60.98
						173.64	345.76	60.98
						173.69	346.18	60.98
						173.71	346.73	60.98
						173.79	347.17	60.98
						173.92	347.36	60.98
						174.16	347.28	60.98
						174.16	346.99	60.98
						174.32	346.31	60.98
						174.61	345.62	60.98
						175.42	344.52	60.98
						176.37	343.16	60.98
						178.94	339.69	60.98
						182.88	334.04	60.98
						184.61	331.42	60.98
						188.50	324.93	60.98
						191.05	321.91	60.98
						192.86	319.44	60.98
						196.27	313.17	60.98
						197.56	310.43	60.98
						199.77	306.23	60.98

Name	M.	ID	OnlyPts	Height		Coordinates		
				Begin	End	x	y	z
				(m)	(m)	(m)	(m)	(m)
						202.31	302.98	60.98
						204.07	300.64	60.98
						206.93	295.73	60.98
						208.98	293.34	60.98
						211.37	291.26	60.98
						212.29	290.16	60.98
						213.18	288.82	60.98
						222.38	275.85	60.98
						224.06	272.99	60.98
						227.29	268.99	60.98
						229.73	266.37	60.98
						231.02	264.79	60.98
						234.17	260.22	60.98
						237.79	256.23	60.98
						241.10	252.82	60.98
						242.10	251.32	60.98
						243.49	248.88	60.98
						245.59	244.76	60.98
						246.77	242.60	60.98
						249.50	240.16	60.98
						251.00	238.95	60.98
						253.42	236.85	60.98
						255.75	234.30	60.98
						257.67	231.81	60.98
						259.46	229.89	60.98
						262.19	227.37	60.98
						267.05	225.61	60.98
						270.75	224.04	60.98
						273.06	223.41	60.98
						273.59	224.77	60.98
						274.03	226.92	60.98
						274.40	229.94	60.98
						275.00	233.59	60.98
						275.77	238.51	60.98
						276.40	245.67	60.98
						276.79	249.82	60.98
						277.26	254.76	60.98
						277.52	260.41	60.98
						277.66	263.35	60.98
						277.94	266.26	60.98
						278.15	267.03	60.98
						278.60	267.71	60.98
						279.57	268.50	60.98
						280.49	268.78	60.98
						282.04	269.13	60.98
						285.01	269.44	60.98
						288.50	269.81	60.98
						291.60	270.12	60.98
						294.75	270.81	60.98
						297.04	271.75	60.98
						298.88	273.28	60.98
						300.08	274.80	60.98
						300.58	275.59	60.98
						300.71	277.37	60.98
						300.63	279.53	60.98
						300.48	282.34	60.98
						300.63	284.36	60.98
						301.08	289.61	60.98
						301.03	291.16	60.98
						300.92	291.61	60.98
						300.48	292.89	60.98
						300.35	293.52	60.98
						300.35	294.86	60.98

Name	M.	ID	OnlyPts	Height		Coordinates		
				Begin	End	x	y	z
				(m)	(m)	(m)	(m)	(m)
						300.48	296.46	60.98
						300.50	298.04	60.98
						300.40	299.22	60.98
						300.11	300.90	60.98
						300.00	302.48	60.98
						300.00	306.15	60.98
						300.16	308.78	60.98
						300.45	311.93	60.98
						301.00	314.09	60.98
						302.00	316.84	60.98
						303.29	319.34	60.98
						304.99	321.12	60.98
						305.83	321.88	60.98
						307.31	322.57	60.98
						310.77	324.07	60.98
						312.25	324.66	60.98
						313.63	325.55	60.98
						314.07	325.99	60.98
						313.88	326.66	60.98
						313.80	326.91	60.98
						314.03	327.18	60.98
						314.28	327.18	60.98
						314.40	326.70	60.98
						314.38	325.93	60.98
						314.53	325.55	60.98
						315.88	325.07	60.98
200ft/60.9m				60.98		316.00	332.46	60.98
						312.21	333.21	60.98
						310.59	333.00	60.98
						310.04	333.16	60.98
						309.67	333.41	60.98
						309.33	333.79	60.98
						308.63	334.08	60.98
						307.92	334.12	60.98
						307.33	333.87	60.98
						298.04	334.71	60.98
						295.12	335.37	60.98
						293.83	335.41	60.98
						292.28	335.41	60.98
						290.95	335.21	60.98
						285.99	335.79	60.98
						282.65	336.25	60.98
						280.07	336.62	60.98
						278.32	336.71	60.98
						277.57	336.33	60.98
						276.90	336.67	60.98
						276.49	337.87	60.98
						276.61	340.88	60.98
						276.28	345.04	60.98
						275.98	345.46	60.98
						274.90	344.88	60.98
						273.98	344.34	60.98
						273.78	343.13	60.98
						273.03	342.46	60.98
						272.23	342.08	60.98
						270.77	342.13	60.98
						269.27	342.00	60.98
						268.15	342.34	60.98
						266.52	343.09	60.98
						264.52	343.88	60.98
						262.98	344.17	60.98
						261.94	344.29	60.98
						261.14	346.42	60.98

Name	M.	ID	OnlyPts	Height		Coordinates		
				Begin	End	x	y	z
				(m)	(m)	(m)	(m)	(m)
						260.27	350.05	60.98
210ft/64m				64.02		190.26	390.29	64.02
						184.21	384.50	64.02
						183.25	383.17	64.02
						182.78	380.89	64.02
						182.62	374.97	64.02
						183.28	369.84	64.02
						185.03	365.07	64.02
						186.52	361.73	64.02
						187.28	360.24	64.02
						188.34	357.66	64.02
						189.33	354.45	64.02
						189.80	352.00	64.02
						190.72	349.29	64.02
						192.88	345.02	64.02
						198.57	338.11	64.02
						204.65	329.11	64.02
						208.00	323.81	64.02
						210.51	320.37	64.02
						213.99	316.50	64.02
						215.87	313.99	64.02
						218.62	308.13	64.02
						220.47	303.93	64.02
						223.91	297.41	64.02
						227.42	291.42	64.02
						229.73	287.98	64.02
						232.98	284.04	64.02
						234.90	281.03	64.02
						235.89	278.91	64.02
						237.51	276.86	64.02
						239.40	275.21	64.02
						241.45	273.82	64.02
						251.90	265.28	64.02
						252.96	264.02	64.02
						254.98	261.01	64.02
						257.16	258.20	64.02
						260.24	255.69	64.02
						264.28	253.01	64.02
						267.09	251.22	64.02
						269.61	250.23	64.02
						271.39	250.16	64.02
						272.19	250.66	64.02
						272.45	252.44	64.02
						273.28	257.18	64.02
						274.04	263.00	64.02
						273.91	266.47	64.02
						275.26	271.30	64.02
						276.32	272.83	64.02
						279.27	273.62	64.02
						283.01	274.12	64.02
						286.81	274.35	64.02
						291.25	274.15	64.02
						293.53	275.17	64.02
						295.48	276.10	64.02
						295.88	276.63	64.02
						295.78	277.03	64.02
						295.32	277.06	64.02
						294.82	277.29	64.02
						294.42	278.02	64.02
						294.45	278.38	64.02
						294.92	278.38	64.02
						295.45	278.58	64.02
						295.65	278.88	64.02

Name	M.	ID	OnlyPts	Height		Coordinates		
				Begin	End	x	y	z
				(m)	(m)	(m)	(m)	(m)
						296.27	280.10	64.02
						296.41	282.59	64.02
						296.74	284.51	64.02
						297.00	290.10	64.02
						296.97	295.66	64.02
						296.87	305.38	64.02
						296.84	308.56	64.02
						297.17	311.17	64.02
						297.86	312.90	64.02
						299.25	315.24	64.02
						300.81	317.63	64.02
						301.60	319.31	64.02
						301.73	320.94	64.02
						301.40	323.91	64.02
						300.54	326.26	64.02
						300.08	326.56	64.02
						299.19	326.92	64.02
						295.15	328.31	64.02
						293.56	328.74	64.02
						292.04	328.88	64.02
						290.72	329.11	64.02
						290.09	329.31	64.02
						289.19	329.31	64.02
						288.40	329.31	64.02
						287.64	329.47	64.02
						287.70	329.77	64.02
						288.37	329.84	64.02
						289.29	329.70	64.02
						289.89	329.64	64.02
						290.62	329.74	64.02
						291.15	330.07	64.02
						290.72	330.46	64.02
						290.19	330.53	64.02
						287.34	331.09	64.02
						281.52	331.76	64.02
						275.23	332.35	64.02
						268.45	333.01	64.02
						264.97	333.54	64.02
						263.58	333.21	64.02
						262.09	333.21	64.02
						260.74	333.57	64.02
						259.91	334.07	64.02
						259.45	334.67	64.02
						258.95	335.06	64.02
						258.59	334.83	64.02
						258.39	334.24	64.02
						257.86	333.87	64.02
						257.36	333.57	64.02
						255.64	333.51	64.02
						249.89	333.94	64.02
						243.90	334.01	64.02
						240.12	334.17	64.02
						238.93	334.63	64.02
						238.47	336.55	64.02
						238.32	338.22	64.02
						238.26	339.68	64.02
						238.57	341.24	64.02
						238.63	341.96	64.02
						238.53	343.60	64.02
						238.47	344.90	64.02
						238.46	345.20	64.02
						238.23	345.38	64.02
						237.73	345.34	64.02

Name	M.	ID	OnlyPts	Height		Coordinates		
				Begin	End	x	y	z
				(m)	(m)	(m)	(m)	(m)
						237.15	345.19	64.02
						236.58	344.82	64.02
						236.29	344.43	64.02
						235.81	344.21	64.02
						235.34	344.17	64.02
						235.04	344.37	64.02
						234.69	345.53	64.02
						234.73	346.28	64.02
						234.66	347.48	64.02
						234.88	349.12	64.02
						234.43	351.49	64.02
						233.93	354.58	64.02
						234.35	356.62	64.02
						234.43	357.73	64.02
						234.04	359.59	64.02
						233.12	362.87	64.02
						232.59	366.34	64.02
						232.22	370.96	64.02
						231.88	376.19	64.02
						231.54	380.07	64.02
						231.31	383.25	64.02
						231.07	384.78	64.02
						230.89	384.36	64.02
						230.75	383.67	64.02
						230.73	382.94	64.02
						230.52	382.75	64.02
						230.05	383.59	64.02
						230.20	384.15	64.02
						230.15	385.17	64.02
						229.36	386.48	64.02
						228.05	387.72	64.02
						225.76	389.00	64.02
						224.61	389.69	64.02
						223.14	390.84	64.02
						220.30	391.45	64.02
						218.52	391.66	64.02
						216.78	391.79	64.02
						215.65	391.89	64.02
						215.13	392.23	64.02
						216.55	392.31	64.02
						218.20	392.08	64.02
						220.75	392.16	64.02
						219.01	392.50	64.02
						216.78	392.71	64.02
						213.24	392.73	64.02
						209.46	392.92	64.02
						205.86	392.94	64.02
						203.36	393.02	64.02
						200.97	392.84	64.02
						199.29	392.58	64.02
						201.66	392.42	64.02
						207.30	392.39	64.02
						209.93	392.42	64.02
						211.74	392.31	64.02
						210.24	392.02	64.02
						208.33	392.00	64.02
						203.13	391.71	64.02
						200.03	391.63	64.02
						196.40	391.58	64.02
						194.62	391.31	64.02
						192.78	390.92	64.02
						190.26	390.34	64.02
212ft/64.6m				64.63		281.40	329.52	64.63

Name	M.	ID	OnlyPts	Height		Coordinates		
				Begin	End	x	y	z
				(m)	(m)	(m)	(m)	(m)
						282.46	329.09	64.63
						285.63	328.95	64.63
						288.51	328.56	64.63
						291.49	328.00	64.63
						294.04	327.37	64.63
						296.75	325.38	64.63
						299.33	322.93	64.63
						299.57	320.52	64.63
						299.70	317.08	64.63
						299.20	316.08	64.63
						298.61	315.39	64.63
						297.45	314.03	64.63
						296.55	311.35	64.63
						296.26	307.58	64.63
						296.39	300.03	64.63
						296.26	295.80	64.63
						296.32	289.25	64.63
						296.29	284.81	64.63
						295.93	283.06	64.63
						295.69	281.37	64.63
						295.66	280.18	64.63
						295.13	278.76	64.63
						294.30	278.76	64.63
						293.61	278.82	64.63
						292.91	278.82	64.63
						293.15	278.09	64.63
						293.78	277.73	64.63
						294.21	277.47	64.63
						294.54	276.97	64.63
						294.27	276.54	64.63
						292.95	275.78	64.63
						291.13	275.12	64.63
						289.44	275.02	64.63
						286.23	275.12	64.63
						282.52	274.95	64.63
						279.45	274.75	64.63
						276.67	274.16	64.63
						275.87	273.63	64.63
						275.01	272.34	64.63
						273.89	269.79	64.63
						273.39	268.17	64.63
						273.13	266.68	64.63
						273.26	265.42	64.63
						273.19	262.77	64.63
						273.06	259.96	64.63
						272.63	258.11	64.63
						272.23	256.49	64.63
						271.57	255.92	64.63
						270.91	256.49	64.63
						270.15	257.28	64.63
						268.36	258.11	64.63
						265.62	259.10	64.63
						262.31	261.19	64.63
						260.59	262.77	64.63
						257.41	266.22	64.63
						255.22	267.94	64.63
						253.37	268.96	64.63
						250.99	270.38	64.63
						246.32	273.73	64.63
						239.74	278.06	64.63
						237.46	280.25	64.63
						234.58	284.88	64.63
						232.39	288.92	64.63

Name	M.	ID	OnlyPts	Height		Coordinates		
				Begin	End	x	y	z
				(m)	(m)	(m)	(m)	(m)
						230.71	290.93	64.63
						228.32	294.74	64.63
						227.26	298.08	64.63
						226.57	300.17	64.63
						225.31	302.58	64.63
						224.25	304.20	64.63
						221.70	310.32	64.63
						220.08	314.49	64.63
						218.20	316.55	64.63
						214.52	320.78	64.63
						213.03	322.67	64.63
						210.78	327.20	64.63
						208.77	331.27	64.63
						207.31	333.89	64.63
						205.76	335.71	64.63
						204.70	336.76	64.63
						203.47	337.89	64.63
						202.55	339.58	64.63
						201.62	341.93	64.63
						200.06	344.90	64.63
						196.69	350.93	64.63
						195.17	354.57	64.63
						193.94	359.53	64.63
						192.62	364.82	64.63
						191.76	367.93	64.63
						190.07	374.62	64.63
						190.00	376.54	64.63
						190.80	379.75	64.63
						192.85	382.79	64.63
						195.13	385.77	64.63
						197.35	387.36	64.63
						199.47	388.55	64.63
						201.65	389.34	64.63
						206.88	390.44	64.63
						210.95	390.73	64.63
						214.09	390.54	64.63
						217.80	389.08	64.63
						221.44	386.27	64.63
						225.54	383.69	64.63
						227.93	382.30	64.63
						229.88	380.44	64.63
						230.11	379.09	64.63
						230.01	377.90	64.63
						230.21	376.41	64.63
						230.67	376.97	64.63
						230.74	378.26	64.63
						230.94	379.72	64.63
						231.73	377.27	64.63
						231.57	375.08	64.63
						232.03	364.92	64.63
						232.99	359.60	64.63
						233.35	355.76	64.63
						233.05	354.33	64.63
						233.02	352.28	64.63
						233.78	350.10	64.63
						233.72	348.64	64.63
						233.25	344.44	64.63
						233.25	342.49	64.63
						233.78	340.21	64.63
						234.38	339.58	64.63
						235.64	339.87	64.63
						236.50	340.37	64.63
						237.59	340.01	64.63

Name	M.	ID	OnlyPts	Height		Coordinates		
				Begin	End	x	y	z
				(m)	(m)	(m)	(m)	(m)
						237.70	339.54	64.63
						237.49	339.18	64.63
						237.51	338.82	64.63
						237.70	338.60	64.63
						237.55	337.38	64.63
						237.85	335.52	64.63
						238.46	333.45	64.63
						239.13	333.39	64.63
						242.50	333.18	64.63
						250.22	333.18	64.63
						254.72	332.72	64.63
						256.85	332.60	64.63
						258.35	333.51	64.63
						259.10	333.64	64.63
						259.72	333.14	64.63
						262.02	332.47	64.63
						269.14	332.18	64.63
						275.90	331.39	64.63
						282.10	330.73	64.63
						285.06	330.39	64.63
						285.20	330.02	64.63
						285.01	329.65	64.63
						281.62	329.60	64.63
214ft/65.2m				65.24		222.43	323.13	65.24
						224.89	319.42	65.24
						226.98	315.07	65.24
						227.75	312.88	65.24
						228.12	309.44	65.24
						228.54	307.46	65.24
						229.06	305.42	65.24
						230.27	302.64	65.24
						231.27	300.54	65.24
						232.08	298.54	65.24
						232.04	297.45	65.24
						231.81	296.08	65.24
						231.64	294.37	65.24
						232.00	292.57	65.24
						233.21	290.87	65.24
						234.31	289.16	65.24
						235.06	287.22	65.24
						235.58	285.80	65.24
						236.54	284.22	65.24
						238.00	282.15	65.24
						239.94	280.25	65.24
						242.90	278.23	65.24
						247.03	276.09	65.24
						249.84	275.04	65.24
						252.89	274.04	65.24
						254.83	273.67	65.24
						256.51	273.85	65.24
						257.12	273.56	65.24
						257.54	272.54	65.24
						258.45	270.83	65.24
						259.95	269.50	65.24
						262.48	268.04	65.24
						265.85	267.04	65.24
						266.50	266.93	65.24
						267.25	266.70	65.24
						268.00	266.14	65.24
						269.04	265.04	65.24
						269.85	263.87	65.24
						270.31	262.91	65.24
						271.21	261.91	65.24

Name	M.	ID	OnlyPts	Height		Coordinates		
				Begin	End	x	y	z
				(m)	(m)	(m)	(m)	(m)
						271.90	261.60	65.24
						272.13	261.93	65.24
						272.38	262.83	65.24
						272.46	264.37	65.24
						272.46	265.98	65.24
						272.46	267.66	65.24
						273.29	270.73	65.24
						274.19	273.04	65.24
						275.46	274.61	65.24
						277.48	275.44	65.24
						280.28	275.65	65.24
						284.76	275.90	65.24
						287.66	275.71	65.24
						290.28	275.88	65.24
						292.06	276.45	65.24
						292.94	277.07	65.24
						293.05	277.78	65.24
						292.71	278.28	65.24
						292.01	278.74	65.24
						291.85	279.24	65.24
						292.83	279.29	65.24
						293.57	279.10	65.24
						294.32	279.07	65.24
						294.56	279.14	65.24
						294.81	279.63	65.24
						295.19	280.29	65.24
						295.16	281.18	65.24
						295.21	282.12	65.24
						295.38	283.77	65.24
						295.58	285.54	65.24
						295.73	290.15	65.24
						295.67	292.78	65.24
						295.57	295.81	65.24
						295.47	297.53	65.24
						295.54	302.66	65.24
						295.64	308.31	65.24
						295.85	311.05	65.24
						296.17	312.77	65.24
						296.61	313.86	65.24
						296.63	314.76	65.24
						296.36	315.17	65.24
						295.50	316.03	65.24
						295.27	316.68	65.24
						295.09	317.98	65.24
						294.83	318.76	65.24
						293.90	319.52	65.24
						292.28	320.45	65.24
						291.22	321.00	65.24
						289.83	321.87	65.24
						289.33	322.49	65.24
						288.84	323.46	65.24
						288.32	324.83	65.24
						288.39	325.84	65.24
						287.86	327.13	65.24
						287.15	327.75	65.24
						285.66	328.06	65.24
						281.59	328.64	65.24
						279.89	328.82	65.24
						278.91	329.04	65.24
						277.44	329.04	65.24
						276.31	329.12	65.24
						275.00	329.48	65.24
						278.07	329.91	65.24

Name	M.	ID	OnlyPts	Height		Coordinates		
				Begin	End	x	y	z
				(m)	(m)	(m)	(m)	(m)
						275.42	330.49	65.24
						272.65	330.96	65.24
						269.58	331.12	65.24
						266.35	331.39	65.24
						263.47	331.45	65.24
						261.83	331.49	65.24
						260.54	331.65	65.24
						260.01	331.98	65.24
						259.39	332.30	65.24
						258.69	332.30	65.24
						257.90	332.21	65.24
						257.14	331.98	65.24
						256.62	331.82	65.24
						255.35	331.70	65.24
						254.29	331.78	65.24
						253.45	332.03	65.24
						251.74	332.16	65.24
						246.43	332.25	65.24
						243.63	332.15	65.24
						241.02	332.25	65.24
						237.74	332.54	65.24
						237.25	333.27	65.24
						237.02	334.22	65.24
						236.88	335.34	65.24
						236.73	335.97	65.24
						236.32	336.38	65.24
						235.71	336.35	65.24
						234.60	336.07	65.24
						234.29	335.66	65.24
						233.89	335.11	65.24
						233.24	335.11	65.24
						232.91	335.94	65.24
						232.42	338.14	65.24
						232.27	340.39	65.24
						232.20	341.99	65.24
						232.09	343.81	65.24
						231.92	344.82	65.24
						232.09	346.34	65.24
						232.58	348.41	65.24
						232.47	350.74	65.24
						232.22	353.26	65.24
						232.15	356.75	65.24
						232.04	358.85	65.24
						231.79	360.99	65.24
						231.39	364.49	65.24
						231.18	366.76	65.24
						231.11	368.73	65.24
						231.23	370.27	65.24
						231.23	371.59	65.24
						230.98	372.50	65.24
						230.66	372.04	65.24
						230.56	371.10	65.24
						230.50	370.42	65.24
						230.56	369.41	65.24
						230.35	368.81	65.24
						230.18	368.66	65.24
						229.74	369.32	65.24
						229.77	370.58	65.24
						229.89	371.10	65.24
						229.85	372.49	65.24
						229.47	373.46	65.24
						228.96	374.34	65.24
						228.15	374.82	65.24

Name	M.	ID	OnlyPts	Height		Coordinates		
				Begin	End	x	y	z
				(m)	(m)	(m)	(m)	(m)
						226.82	375.05	65.24
						225.35	375.26	65.24
						223.66	375.71	65.24
						221.17	376.92	65.24
						218.63	378.42	65.24
						217.92	379.10	65.24
						216.91	380.51	65.24
						215.77	382.06	65.24
						214.93	382.89	65.24
						213.80	383.09	65.24
						212.66	383.14	65.24
						209.70	382.76	65.24
						207.43	382.31	65.24
						204.65	381.40	65.24
						202.70	380.66	65.24
						201.05	379.53	65.24
						199.19	377.73	65.24
						198.20	376.44	65.24
						197.85	375.28	65.24
						197.67	373.96	65.24
						197.75	372.39	65.24
						198.23	368.85	65.24
						199.14	364.59	65.24
						200.12	361.66	65.24
						200.60	360.32	65.24
						202.09	357.64	65.24
						203.63	355.48	65.24
						204.92	353.46	65.24
						205.51	352.28	65.24
						206.18	350.63	65.24
						207.22	347.72	65.24
						208.62	344.29	65.24
						209.70	342.04	65.24
						211.14	339.39	65.24
						212.71	336.86	65.24
						214.37	334.48	65.24
						215.62	332.89	65.24
						217.11	330.97	65.24
						219.13	328.34	65.24
						220.59	326.17	65.24
						221.56	324.67	65.24
						222.44	323.28	65.24
216ft/65.9m				65.85		210.20	368.71	65.85
						212.24	371.02	65.85
						213.51	371.28	65.85
						214.82	370.86	65.85
						224.01	366.66	65.85
						226.26	365.96	65.85
						227.78	366.16	65.85
						228.61	366.16	65.85
						229.04	365.50	65.85
						229.77	363.81	65.85
						229.80	362.03	65.85
						229.80	361.03	65.85
						229.64	360.44	65.85
						229.83	359.05	65.85
						230.20	358.95	65.85
						230.33	359.68	65.85
						230.60	360.44	65.85
						230.40	361.26	65.85
						230.60	362.29	65.85
						230.76	363.61	65.85
						231.13	362.29	65.85

Name	M.	ID	OnlyPts	Height		Coordinates		
				Begin	End	x	y	z
				(m)	(m)	(m)	(m)	(m)
						231.06	360.70	65.85
						230.96	358.12	65.85
						231.32	355.57	65.85
						231.32	352.13	65.85
						231.46	348.26	65.85
						231.06	345.94	65.85
						230.83	343.20	65.85
						231.19	341.01	65.85
						230.96	338.73	65.85
						230.76	336.05	65.85
						231.32	333.96	65.85
						232.61	331.95	65.85
						233.34	331.71	65.85
						234.17	332.01	65.85
						235.86	332.77	65.85
						236.45	331.88	65.85
						237.61	331.35	65.85
						239.56	331.25	65.85
						247.11	331.38	65.85
						250.29	331.45	65.85
						258.06	330.85	65.85
						261.87	330.59	65.85
						267.33	330.26	65.85
						271.96	330.06	65.85
						256.31	329.63	65.85
						272.95	329.17	65.85
						275.33	328.31	65.85
						277.65	327.64	65.85
						279.24	327.64	65.85
						281.49	327.71	65.85
						282.55	327.15	65.85
						283.11	325.46	65.85
						283.08	323.74	65.85
						282.78	322.51	65.85
						282.45	321.75	65.85
						282.85	321.19	65.85
						284.27	319.87	65.85
						285.63	318.94	65.85
						288.74	317.82	65.85
						289.80	316.96	65.85
						290.06	315.76	65.85
						290.69	313.88	65.85
						291.52	313.65	65.85
						293.04	313.55	65.85
						295.26	312.85	65.85
						295.42	311.99	65.85
						294.99	310.01	65.85
						295.02	307.69	65.85
						294.92	301.70	65.85
						294.79	295.65	65.85
						294.99	285.78	65.85
						294.73	283.20	65.85
						294.26	280.89	65.85
						293.83	279.66	65.85
						293.53	279.40	65.85
						293.24	279.36	65.85
						292.81	279.50	65.85
						292.14	279.66	65.85
						291.65	279.50	65.85
						291.52	278.93	65.85
						291.68	278.47	65.85
						292.38	277.97	65.85
						292.24	277.74	65.85

Name	M.	ID	OnlyPts	Height		Coordinates		
				Begin	End	x	y	z
				(m)	(m)	(m)	(m)	(m)
						291.75	277.21	65.85
						290.66	276.78	65.85
						288.21	276.55	65.85
						286.72	276.62	65.85
						284.60	276.68	65.85
						283.28	276.72	65.85
						280.96	276.68	65.85
						278.88	276.45	65.85
						276.16	275.82	65.85
						274.74	275.36	65.85
						274.28	274.67	65.85
						273.28	273.08	65.85
						272.32	270.26	65.85
						272.12	268.94	65.85
						272.12	268.05	65.85
						271.60	267.25	65.85
						270.74	268.08	65.85
						268.52	268.94	65.85
						267.56	269.47	65.85
						267.46	269.74	65.85
						267.13	270.69	65.85
						266.70	270.93	65.85
						265.94	270.99	65.85
						265.01	271.03	65.85
						263.98	271.36	65.85
						262.73	272.18	65.85
						260.51	273.90	65.85
						258.43	275.53	65.85
						257.90	275.56	65.85
						257.23	275.56	65.85
						256.61	276.09	65.85
						255.88	275.99	65.85
						254.39	276.02	65.85
						252.93	275.99	65.85
						251.97	276.52	65.85
						251.44	277.02	65.85
						250.02	277.15	65.85
						248.63	277.41	65.85
						245.98	278.44	65.85
						243.17	279.99	65.85
						240.19	282.28	65.85
						238.57	284.03	65.85
						236.98	286.05	65.85
						236.19	288.33	65.85
						235.06	291.54	65.85
						234.53	293.43	65.85
						233.74	295.02	65.85
						233.34	296.87	65.85
						233.18	298.79	65.85
						232.95	301.77	65.85
						233.08	304.84	65.85
						233.54	308.19	65.85
						233.77	312.52	65.85
						233.71	315.37	65.85
						233.28	317.22	65.85
						232.61	319.37	65.85
						231.59	321.49	65.85
						230.73	322.88	65.85
						230.53	323.41	65.85
						230.23	324.53	65.85
						229.97	325.39	65.85
						228.88	326.82	65.85
						227.58	328.01	65.85

Name	M.	ID	OnlyPts	Height		Coordinates		
				Begin	End	x	y	z
				(m)	(m)	(m)	(m)	(m)
						225.80	331.65	65.85
						224.81	333.90	65.85
						223.32	335.78	65.85
						221.33	337.70	65.85
						220.07	339.85	65.85
						217.92	345.38	65.85
						216.66	347.50	65.85
						215.21	349.22	65.85
						213.46	352.56	65.85
						211.54	357.23	65.85
						209.95	359.44	65.85
						209.22	361.89	65.85
						209.05	365.17	65.85
						209.62	367.39	65.85
						210.18	368.58	65.85
218ft/66.5				66.46		238.18	306.60	66.46
						239.44	311.11	66.46
						242.15	318.07	66.46
						243.06	320.44	66.46
						243.10	321.82	66.46
						242.19	323.78	66.46
						241.19	325.16	66.46
						239.31	327.49	66.46
						239.44	327.99	66.46
						240.02	328.66	66.46
						242.15	329.07	66.46
						245.98	329.41	66.46
						249.11	329.16	66.46
						253.69	328.53	66.46
						258.57	327.82	66.46
						260.41	327.37	66.46
						260.99	326.41	66.46
						261.45	324.66	66.46
						261.53	323.28	66.46
						262.03	321.70	66.46
						263.07	319.82	66.46
						264.24	318.82	66.46
						264.99	317.65	66.46
						265.37	316.65	66.46
						265.95	315.53	66.46
						266.70	314.52	66.46
						268.04	314.15	66.46
						271.00	313.69	66.46
						274.29	313.32	66.46
						277.25	313.44	66.46
						279.21	314.32	66.46
						282.04	314.98	66.46
						284.00	315.44	66.46
						285.92	315.40	66.46
						286.96	314.98	66.46
						287.38	314.19	66.46
						287.88	312.65	66.46
						288.55	311.23	66.46
						289.47	309.90	66.46
						290.26	308.60	66.46
						291.22	308.56	66.46
						292.26	309.02	66.46
						293.26	309.69	66.46
						293.93	309.69	66.46
						294.18	309.06	66.46
						294.51	305.77	66.46
						294.51	301.35	66.46
						294.13	297.72	66.46

Name	M.	ID	OnlyPts	Height		Coordinates		
				Begin	End	x	y	z
				(m)	(m)	(m)	(m)	(m)
						294.22	296.14	66.46
						294.43	293.35	66.46
						294.26	291.68	66.46
						293.80	290.34	66.46
						292.72	288.93	66.46
						291.22	287.42	66.46
						290.13	285.88	66.46
						289.05	283.46	66.46
						288.42	281.05	66.46
						288.09	279.29	66.46
						288.01	278.46	66.46
						287.38	277.75	66.46
						286.88	277.38	66.46
						285.71	277.21	66.46
						284.05	277.59	66.46
						282.29	277.71	66.46
						280.21	277.50	66.46
						278.79	277.25	66.46
						278.04	276.96	66.46
						276.00	276.96	66.46
						274.83	277.04	66.46
						274.41	276.84	66.46
						273.25	275.92	66.46
						272.66	275.17	66.46
						271.95	274.83	66.46
						271.00	275.29	66.46
						269.91	276.13	66.46
						268.62	276.38	66.46
						267.29	276.54	66.46
						265.45	276.50	66.46
						264.66	276.42	66.46
						262.28	277.25	66.46
						261.16	277.42	66.46
						259.82	277.46	66.46
						258.99	277.34	66.46
						258.28	277.29	66.46
						256.86	278.13	66.46
						255.82	278.42	66.46
						255.49	278.04	66.46
						254.86	277.84	66.46
						254.11	277.75	66.46
						253.49	277.79	66.46
						253.03	278.00	66.46
						252.69	278.75	66.46
						251.48	279.25	66.46
						250.11	279.17	66.46
						248.44	279.38	66.46
						246.31	280.34	66.46
						244.10	281.84	66.46
						243.10	283.13	66.46
						242.69	284.92	66.46
						242.56	286.59	66.46
						243.06	289.09	66.46
						243.31	290.93	66.46
						243.10	292.68	66.46
						242.06	293.93	66.46
						241.02	294.93	66.46
						239.89	295.43	66.46
						238.81	297.14	66.46
						238.43	298.01	66.46
						238.27	299.89	66.46
						237.93	303.14	66.46
						237.98	304.31	66.46

Name	M.	ID	OnlyPts	Height		Coordinates		
				Begin	End	x	y	z
				(m)	(m)	(m)	(m)	(m)
						238.18	306.48	66.46
220ft/67m				67.07		270.97	310.81	67.07
						273.09	311.77	67.07
						269.84	311.90	67.07
						269.42	311.48	67.07
						269.76	311.02	67.07
						270.72	310.73	67.07
220ft/67.1m				67.07		269.47	285.45	67.07
						270.19	285.32	67.07
						272.84	285.71	67.07
						279.79	287.17	67.07
						280.42	287.90	67.07
						280.48	288.46	67.07
						280.42	290.91	67.07
						280.15	292.69	67.07
						279.56	293.92	67.07
						278.43	294.68	67.07
						277.18	295.14	67.07
						275.98	295.18	67.07
						274.83	295.01	67.07
						273.63	294.25	67.07
						273.34	293.62	67.07
						272.87	292.46	67.07
						271.78	288.86	67.07
						271.19	287.57	67.07
						269.53	285.71	67.07
220ft/67.1m				67.07		254.49	307.71	67.07
						257.60	308.83	67.07
						260.78	309.36	67.07
						263.76	310.16	67.07
						266.54	311.15	67.07
						266.40	311.68	67.07
						265.54	312.01	67.07
						263.26	314.98	67.07
						262.29	316.71	67.07
						261.53	317.37	67.07
						260.16	317.50	67.07
						259.79	317.81	67.07
						259.66	319.20	67.07
						258.95	321.54	67.07
						258.37	321.99	67.07
						257.32	321.46	67.07
						257.14	320.78	67.07
						256.38	319.15	67.07
						254.91	317.03	67.07
						253.96	316.32	67.07
						252.31	315.29	67.07
						251.36	314.45	67.07
						250.63	313.30	67.07
						250.44	312.25	67.07
						250.73	310.43	67.07
						251.68	308.99	67.07
						253.02	307.89	67.07
						254.04	307.62	67.07
						254.43	307.60	67.07
192ft/58.5m				58.54		305.04	381.86	58.54
						305.17	381.14	58.54
						304.45	378.69	58.54
						306.43	378.09	58.54
						308.95	376.57	58.54
						309.87	374.91	58.54
						309.87	373.13	58.54
						308.68	371.08	58.54

Name	M.	ID	OnlyPts	Height		Coordinates		
				Begin	End	x	y	z
				(m)	(m)	(m)	(m)	(m)
						307.75	369.49	58.54
						310.20	369.46	58.54
						310.25	368.12	58.54
						311.22	367.07	58.54
						310.93	366.47	58.54
						310.75	361.27	58.54
						310.46	353.20	58.54
						312.19	351.97	58.54
196ft/59.8m				59.76		277.35	379.20	59.76
						279.19	377.16	59.76
						279.90	375.24	59.76
						279.52	372.99	59.76
						278.52	370.20	59.76
						281.19	369.99	59.76
						284.19	367.20	59.76
						289.82	367.24	59.76
						293.53	367.11	59.76
						294.03	363.24	59.76
						293.45	336.88	59.76
						293.61	336.34	59.76
						295.57	336.18	59.76
						299.28	336.30	59.76
						310.62	335.18	59.76
Various Height						54.53	430.87	51.83
						61.41	248.76	36.59
206ft/62.8				62.80		315.92	327.21	62.80
						315.32	327.96	62.80
						314.98	328.20	62.80
						314.10	328.46	62.80
						313.72	328.46	62.80
						313.37	328.14	62.80
						313.40	327.15	62.80
						313.41	326.42	62.80
						313.01	326.05	62.80
						310.43	324.79	62.80
						306.58	323.11	62.80
						304.74	322.43	62.80
						301.31	317.15	62.80
						299.95	314.79	62.80
						298.98	312.93	62.80
						298.32	310.72	62.80
						298.14	307.10	62.80
						298.16	302.32	62.80
						298.28	292.69	62.80
						298.06	287.16	62.80
						297.73	283.36	62.80
						297.45	280.91	62.80
						297.27	279.50	62.80
						297.37	278.94	62.80
						297.57	278.43	62.80
						297.55	277.87	62.80
						297.42	277.59	62.80
						296.99	277.44	62.80
						296.59	277.40	62.80
						296.38	277.18	62.80
						296.67	276.85	62.80
						297.17	276.64	62.80
						297.42	276.18	62.80
						296.96	275.18	62.80
						295.88	274.26	62.80
						293.96	273.47	62.80
						291.46	272.89	62.80
						289.46	272.55	62.80

Name	M.	ID	OnlyPts	Height		Coordinates		
				Begin	End	x	y	z
				(m)	(m)	(m)	(m)	(m)
						286.50	272.47	62.80
						284.17	272.39	62.80
						281.96	271.76	62.80
						279.50	270.93	62.80
						278.08	270.64	62.80
						276.92	269.68	62.80
						275.67	267.80	62.80
						275.21	265.39	62.80
						275.37	263.30	62.80
						275.33	262.18	62.80
						275.00	258.59	62.80
						274.29	251.26	62.80
						273.71	246.22	62.80
						273.25	242.13	62.80
						272.87	238.97	62.80
						272.75	237.80	62.80
						272.54	237.01	62.80
						270.50	237.51	62.80
						267.42	239.72	62.80
						261.00	244.68	62.80
						256.79	247.68	62.80
						254.16	250.72	62.80
						249.91	256.14	62.80
						246.58	259.76	62.80
						240.58	266.22	62.80
						234.37	273.01	62.80
						232.50	274.80	62.80
						225.79	285.31	62.80
						216.99	296.89	62.80
						212.62	303.22	62.80
						206.99	312.39	62.80
						203.62	317.39	62.80
						200.88	322.47	62.80
						199.21	325.97	62.80
						197.09	330.14	62.80
						194.80	333.60	62.80
						192.79	335.60	62.80
						190.83	337.39	62.80
						188.96	340.15	62.80
						187.12	343.31	62.80
						185.21	345.40	62.80
						183.75	348.07	62.80
						181.00	352.69	62.80
						178.12	356.28	62.80
						175.74	360.11	62.80
						175.45	360.51	62.80
						174.88	361.93	62.80
						174.75	363.17	62.80
						174.70	364.37	62.80
						174.95	364.75	62.80
						175.15	366.62	62.80
						175.13	369.08	62.80
						175.05	372.29	62.80
						174.80	376.25	62.80
						174.17	381.05	62.80
						174.09	383.76	62.80
						174.38	382.70	62.80
						174.88	384.81	62.80
						176.30	387.12	62.80
						177.90	389.06	62.80
						178.82	390.01	62.80
						180.44	390.85	62.80
						180.92	392.19	62.80

Name	M.	ID	OnlyPts	Height		Coordinates		
				Begin	End	x	y	z
				(m)	(m)	(m)	(m)	(m)
						182.86	392.76	62.80
						185.01	393.02	62.80
						194.44	394.14	62.80
						198.18	394.48	62.80
						207.24	394.91	62.80
						217.69	394.11	62.80
						220.44	393.95	62.80
						224.28	393.75	62.80
						228.18	393.19	62.80
						228.77	392.92	62.80
						229.75	392.49	62.80
						231.62	391.06	62.80
						231.25	391.08	62.80
						230.75	390.92	62.80
						230.59	390.46	62.80
						230.73	390.00	62.80
						231.63	389.42	62.80
						232.38	387.39	62.80
						233.32	383.46	62.80
						233.65	382.14	62.80
						233.61	377.91	62.80
						233.40	376.87	62.80
						233.02	375.75	62.80
						232.79	374.66	62.80
						233.34	370.79	62.80
						233.67	369.06	62.80
						234.36	366.46	62.80
						236.13	359.98	62.80
						236.50	357.73	62.80
						236.61	356.77	62.80
						236.63	354.97	62.80
						236.92	353.91	62.80
						237.48	354.04	62.80
						237.98	354.43	62.80
						238.59	355.43	62.80
						239.05	356.35	62.80
						239.94	357.18	62.80
						240.36	357.50	62.80
						240.69	357.28	62.80
						240.77	356.63	62.80
						240.77	355.08	62.80
186ft/56.7m				56.71		294.97	218.30	56.71
						280.14	217.88	56.71
						279.72	217.51	56.71
						278.59	216.34	56.71
						277.63	214.42	56.71
						276.84	212.05	56.71
						276.34	209.22	56.71
						275.13	200.55	56.71
						274.84	198.63	56.71
						274.55	198.21	56.71
						273.88	198.17	56.71
						273.09	198.30	56.71
						266.72	200.34	56.71
						260.09	202.46	56.71
						255.84	204.34	56.71
						251.01	207.47	56.71
						246.17	211.26	56.71
						240.96	215.88	56.71
						236.96	220.38	56.71
						232.17	227.38	56.71
						225.23	237.64	56.71
						217.62	246.43	56.71

Name	M.	ID	OnlyPts	Height		Coordinates		
				Begin	End	x	y	z
				(m)	(m)	(m)	(m)	(m)
						209.81	257.88	56.71
						198.77	273.56	56.71
						194.40	278.71	56.71
						189.18	285.13	56.71
						186.73	287.78	56.71
						182.89	293.93	56.71
						181.11	296.18	56.71
						179.72	297.83	56.71
						176.87	304.38	56.71
						175.19	307.49	56.71
						174.46	309.77	56.71
						174.39	311.26	56.71
						174.42	312.52	56.71
						174.29	313.24	56.71
						174.09	312.85	56.71
						173.80	311.72	56.71
						173.66	310.90	56.71
						173.40	310.23	56.71
						173.04	310.66	56.71
						172.44	311.99	56.71
						172.18	313.74	56.71
						171.15	319.10	56.71
						169.36	329.95	56.71
						165.49	350.62	56.71
						164.02	359.21	56.71
						162.80	367.43	56.71
						162.12	373.09	56.71
						161.47	377.78	56.71
						160.97	380.87	56.71
						160.58	384.96	56.71
						160.36	387.52	56.71
						160.38	390.10	56.71
						160.56	392.56	56.71
						161.12	394.63	56.71
						161.75	395.80	56.71
						162.27	396.63	56.71
						163.05	397.12	56.71
						163.38	397.47	56.71
						163.31	401.30	56.71
						163.16	403.93	56.71
						163.04	405.58	56.71
						162.68	409.18	56.71
						162.25	411.47	56.71
						162.16	412.93	56.71
						162.16	414.51	56.71
						162.18	416.41	56.71
						162.04	417.51	56.71
						161.19	420.66	56.71

Geometrie Höhenlinien Terrain Contour Lines - Phase 2

Name	M.	ID	OnlyPts	Height		Coordinates		
				Begin	End	x	y	z
				(m)	(m)	(m)	(m)	(m)
120ft/36.6				36.59		126.39	230.98	36.59
						126.89	228.73	36.59
						128.06	228.31	36.59
						130.48	228.56	36.59
						130.98	229.23	36.59
						130.90	229.81	36.59
						132.06	230.06	36.59
						132.90	229.23	36.59
						134.57	228.14	36.59
						138.98	225.89	36.59
						141.99	224.97	36.59
						147.66	225.22	36.59
						151.52	225.51	36.59
						151.65	224.30	36.59
						153.41	223.31	36.59
						154.48	222.02	36.59
						155.56	219.39	36.59
						158.12	211.14	36.59
						159.58	208.76	36.59
						161.42	207.01	36.59
						157.96	203.51	36.59
						156.92	201.01	36.59
						157.37	197.84	36.59
						159.46	194.17	36.59
						160.63	191.34	36.59
						162.96	189.55	36.59
						173.10	181.00	36.59
						207.78	154.54	36.59
						262.83	123.04	36.59
130ft/39.6m				39.63		185.70	201.15	39.63
						183.49	202.07	39.63
						181.95	203.11	39.63
						177.86	207.53	39.63
						175.28	209.40	39.63
						173.11	211.19	39.63
						170.90	214.49	39.63
						169.07	216.86	39.63
						166.14	219.32	39.63
130ft/39.6m				39.63		154.21	264.23	39.63
						153.51	264.11	39.63
						151.54	263.30	39.63
						151.43	264.69	39.63
						147.49	264.30	39.63
						141.18	263.85	39.63
						135.20	265.14	39.63
						131.28	266.45	39.63
						131.23	264.95	39.63
						130.36	264.98	39.63
						126.19	265.90	39.63
140ft/42.7m				42.68		202.45	189.53	42.68
						197.82	194.67	42.68
						195.83	197.40	42.68
						192.78	201.08	42.68
						189.11	205.91	42.68
						185.22	212.64	42.68
						182.49	216.10	42.68
						179.83	219.25	42.68

Name	M.	ID	OnlyPts	Height		Coordinates		
				Begin	End	x	y	z
				(m)	(m)	(m)	(m)	(m)
						170.83	229.60	42.68
						163.63	239.47	42.68
						158.86	261.26	42.68
140ft/42.7m				42.68		152.90	301.14	42.68
						152.53	303.19	42.68
						149.76	302.23	42.68
						149.69	303.37	42.68
						141.15	301.96	42.68
						139.81	301.98	42.68
						136.60	302.65	42.68
						131.05	304.61	42.68
						131.05	303.32	42.68
						129.34	303.90	42.68
						128.55	303.73	42.68
						127.76	301.27	42.68
						127.55	298.22	42.68
						127.01	293.34	42.68
						126.30	289.43	42.68
150ft/45.7m				45.73		126.34	331.37	45.73
						127.00	342.49	45.73
						130.51	340.70	45.73
						130.28	342.25	45.73
						135.01	341.43	45.73
						137.99	341.39	45.73
						141.53	341.79	45.73
						146.79	343.68	45.73
						146.98	341.99	45.73
						149.77	341.91	45.73
						150.98	336.06	45.73
150ft/45.7m				45.73		158.90	279.85	45.73
						164.32	266.18	45.73
						169.49	242.25	45.73
						176.18	233.02	45.73
						183.57	224.67	45.73
						194.12	219.35	45.73
						195.96	215.86	45.73
						197.43	213.45	45.73
						198.64	211.82	45.73
						201.55	208.67	45.73
						206.25	203.10	45.73
						209.59	198.64	45.73
						212.08	195.98	45.73
						213.48	194.22	45.73
						214.81	191.49	45.73
						216.47	189.47	45.73
160ft/48.78m				48.78		126.28	378.92	48.78
						126.45	380.80	48.78
						127.13	381.78	48.78
						127.97	381.91	48.78
						129.91	381.78	48.78
						129.95	383.03	48.78
						137.91	381.41	48.78
						144.91	382.09	48.78
						149.12	383.26	48.78
160ft/48.78m				48.78		158.84	296.08	48.78
						166.65	277.76	48.78
						170.29	268.30	48.78
						175.05	244.94	48.78
						181.40	236.74	48.78
						187.49	230.26	48.78
						196.95	225.62	48.78
						206.62	218.88	48.78
						210.09	214.33	48.78

Name	M.	ID	OnlyPts	Height		Coordinates		
				Begin	End	x	y	z
				(m)	(m)	(m)	(m)	(m)
						218.82	201.91	48.78
						222.53	196.90	48.78
						229.33	189.40	48.78
170ft/51.8m				51.83		126.41	429.85	51.83
						129.61	428.43	51.83
						130.87	426.17	51.83
						130.82	428.85	51.83
						135.81	425.49	51.83
						138.54	424.86	51.83
						141.90	424.55	51.83
						147.84	426.54	51.83
						150.54	428.08	51.83
						150.34	425.75	51.83
						151.84	427.67	51.83
						154.92	409.83	51.83
						155.09	407.37	51.83
170ft/51.8m				51.83		159.52	321.53	51.83
						161.77	314.36	51.83
						162.10	308.78	51.83
						166.52	296.44	51.83
						167.27	291.61	51.83
						172.69	279.77	51.83
						173.44	277.11	51.83
						176.02	270.85	51.83
						180.86	247.85	51.83
						185.63	241.60	51.83
						190.78	235.88	51.83
						196.56	232.94	51.83
						201.12	230.42	51.83
						213.46	223.12	51.83
						219.97	218.88	51.83
						222.08	215.11	51.83
						224.58	210.92	51.83
						227.46	206.60	51.83
						229.64	203.87	51.83
						234.75	197.60	51.83
						237.88	194.24	51.83
						239.27	192.81	51.83
						241.42	190.43	51.83
						242.65	189.35	51.83
						246.42	186.56	51.83
						264.69	177.56	51.83
						285.07	162.21	51.83
						295.12	142.63	51.83
						310.48	127.01	51.83
						372.41	112.72	51.83
180ft/54.9m				54.88		156.18	441.96	54.88
						157.90	426.87	54.88
						161.10	403.10	54.88
						160.96	402.06	54.88
						160.44	401.48	54.88
						159.28	400.33	54.88
						157.92	398.81	54.88
						157.18	397.55	54.88
						156.34	395.39	54.88
180ft/54.9m				54.88		229.90	218.76	54.88
						231.63	216.19	54.88
						233.36	214.09	54.88
						243.52	202.82	54.88
						245.76	201.04	54.88
						254.55	196.39	54.88
						261.15	193.97	54.88
						264.64	193.00	54.88

Name	M.	ID	OnlyPts	Height		Coordinates		
				Begin	End	x	y	z
				(m)	(m)	(m)	(m)	(m)
						267.79	192.29	54.88
						271.31	191.03	54.88
						273.67	190.03	54.88
						275.98	189.90	54.88
						276.93	191.71	54.88
						277.43	193.84	54.88
						277.74	196.49	54.88
						277.98	198.70	54.88
						277.74	201.38	54.88
						277.87	204.24	54.88
						278.82	205.69	54.88
						279.21	207.66	54.88
						279.84	211.67	54.88
						280.39	213.27	54.88
						281.29	214.61	54.88
						282.10	215.06	54.88
						283.91	215.24	54.88
						301.90	215.17	54.88
						315.74	215.80	54.88
190ft/57.9m				57.93		162.61	421.05	57.93
						163.45	414.65	57.93
						163.86	409.55	57.93
						164.76	399.48	57.93
						164.70	398.15	57.93
						164.11	396.69	57.93
						163.38	395.60	57.93
						162.65	394.68	57.93
						162.02	393.35	57.93
						161.66	392.03	57.93
						161.46	390.31	57.93
						161.99	388.72	57.93
						162.88	387.33	57.93
						164.34	385.88	57.93
						165.20	385.28	57.93
						166.22	384.68	57.93
						167.91	384.35	57.93
						168.51	383.76	57.93
190ft/57.9m				57.93		248.90	218.12	57.93
190ft/57.9m				57.93		277.71	219.39	57.93
						277.54	219.75	57.93
190ft/57.9m				57.93		248.80	218.22	57.93
						254.78	213.60	57.93
						262.64	209.59	57.93
						267.95	206.74	57.93
						270.12	205.47	57.93
						271.81	204.49	57.93
						272.94	204.13	57.93
						273.25	204.13	57.93
						273.58	204.34	57.93
						273.75	204.74	57.93
						273.94	205.43	57.93
						274.58	208.70	57.93
						274.75	210.53	57.93
						274.94	212.14	57.93
						275.92	215.01	57.93
						276.25	216.16	57.93
						276.31	217.52	57.93
						276.92	218.52	57.93
						277.44	218.91	57.93
						277.54	219.75	57.93
						280.04	223.89	57.93
						282.29	232.10	57.93
						284.01	239.91	57.93

Name	M.	ID	OnlyPts	Height		Coordinates		
				Begin	End	x	y	z
				(m)	(m)	(m)	(m)	(m)
						287.72	248.91	57.93
						292.75	253.01	57.93
						297.51	257.78	57.93
						301.22	263.47	57.93
						304.93	267.44	57.93
						305.46	271.68	57.93
						305.59	276.71	57.93
						307.18	280.94	57.93
						311.15	284.65	57.93
						315.12	287.69	57.93
190ft/57.9m				57.93		182.51	442.63	57.93
						181.25	436.11	57.93
						180.98	431.49	57.93
						182.14	429.81	57.93
						182.40	426.56	57.93
						184.82	425.03	57.93
						189.23	424.19	57.93
						193.48	424.03	57.93
						197.84	425.03	57.93
						203.52	427.19	57.93
						205.46	429.60	57.93
						207.46	430.44	57.93
						209.19	432.28	57.93
						209.40	433.49	57.93
						208.51	434.49	57.93
						207.93	435.59	57.93
						208.03	436.06	57.93
						209.56	436.38	57.93
						213.60	436.38	57.93
						216.65	437.22	57.93
						219.22	437.43	57.93
						225.95	439.32	57.93
						226.31	440.21	57.93
						226.26	442.47	57.93
200ft/60.9m				60.98		260.18	350.87	60.98
						259.44	363.00	60.98
						257.03	363.31	60.98
						255.19	363.52	60.98
						254.14	364.52	60.98
						252.83	365.05	60.98
						250.94	365.83	60.98
						250.04	366.78	60.98
						249.83	367.62	60.98
						246.89	367.88	60.98
						244.66	369.15	60.98
						245.81	369.41	60.98
						249.07	369.99	60.98
						251.33	371.66	60.98
						253.69	374.60	60.98
						254.11	377.33	60.98
						253.85	380.22	60.98
						252.85	384.00	60.98
						251.43	387.52	60.98
						249.49	389.36	60.98
						248.18	390.57	60.98
						248.56	413.14	60.98
						254.91	413.75	60.98
						256.59	413.64	60.98
						259.30	413.64	60.98
						253.57	414.69	60.98
						249.79	415.19	60.98
						248.85	415.19	60.98
						247.35	415.58	60.98

Name	M.	ID	OnlyPts	Height		Coordinates		
				Begin	End	x	y	z
				(m)	(m)	(m)	(m)	(m)
						245.75	416.14	60.98
						244.36	416.16	60.98
						241.70	417.84	60.98
						240.10	418.63	60.98
						238.47	419.10	60.98
						237.06	418.84	60.98
						235.95	418.39	60.98
						235.11	417.66	60.98
						234.59	417.21	60.98
						231.41	414.95	60.98
						226.13	409.89	60.98
						218.46	402.48	60.98
						217.36	401.30	60.98
						215.55	399.38	60.98
						213.32	397.73	60.98
						212.61	397.31	60.98
						212.03	397.28	60.98
						211.06	397.39	60.98
						209.74	397.67	60.98
						208.64	397.86	60.98
						206.96	397.88	60.98
						201.63	397.65	60.98
						196.35	397.36	60.98
						193.07	396.97	60.98
						189.23	396.76	60.98
						185.66	395.99	60.98
						181.33	395.23	60.98
						178.81	394.71	60.98
						176.24	394.63	60.98
						173.90	394.31	60.98
						172.03	393.68	60.98
						170.30	392.74	60.98
						170.12	392.19	60.98
						169.83	391.84	60.98
						168.80	392.37	60.98
200ft/60.9m				60.98		169.83	391.84	60.98
						169.41	392.11	60.98
200ft/60.9m				60.98		253.46	249.60	60.98
						253.42	236.85	60.98
						255.75	234.30	60.98
						257.67	231.81	60.98
						259.46	229.89	60.98
						262.19	227.37	60.98
						267.05	225.61	60.98
						270.75	224.04	60.98
						273.06	223.41	60.98
						273.59	224.77	60.98
						274.03	226.92	60.98
						274.40	229.94	60.98
						275.00	233.59	60.98
						275.77	238.51	60.98
						276.40	245.67	60.98
						276.79	249.82	60.98
						277.26	254.76	60.98
						277.52	260.41	60.98
						277.66	263.35	60.98
						277.94	266.26	60.98
						278.15	267.03	60.98
						278.60	267.71	60.98
						279.57	268.50	60.98
						280.49	268.78	60.98
						282.04	269.13	60.98
						285.01	269.44	60.98

Name	M.	ID	OnlyPts	Height		Coordinates		
				Begin	End	x	y	z
				(m)	(m)	(m)	(m)	(m)
						288.50	269.81	60.98
						291.60	270.12	60.98
						294.75	270.81	60.98
						297.04	271.75	60.98
						298.88	273.28	60.98
						300.08	274.80	60.98
						300.58	275.59	60.98
						300.71	277.37	60.98
						300.63	279.53	60.98
						300.48	282.34	60.98
						300.63	284.36	60.98
						301.08	289.61	60.98
						301.03	291.16	60.98
						300.92	291.61	60.98
						300.48	292.89	60.98
						300.35	293.52	60.98
						300.35	294.86	60.98
						300.48	296.46	60.98
						300.50	298.04	60.98
						300.40	299.22	60.98
						300.11	300.90	60.98
						300.00	302.48	60.98
						300.00	306.15	60.98
						300.16	308.78	60.98
						300.45	311.93	60.98
						301.00	314.09	60.98
						302.00	316.84	60.98
						303.29	319.34	60.98
						304.99	321.12	60.98
						305.83	321.88	60.98
						307.31	322.57	60.98
						310.77	324.07	60.98
						312.25	324.66	60.98
						313.63	325.55	60.98
						314.38	325.93	60.98
						314.40	326.70	60.98
						314.28	327.18	60.98
						314.03	327.18	60.98
						313.80	326.91	60.98
						313.88	326.66	60.98
						314.38	325.93	60.98
						314.53	325.55	60.98
						315.88	325.07	60.98
200ft/60.9m				60.98		316.00	332.46	60.98
						312.21	333.21	60.98
						310.59	333.00	60.98
						310.04	333.16	60.98
						309.67	333.41	60.98
						309.33	333.79	60.98
						308.63	334.08	60.98
						307.92	334.12	60.98
						307.33	333.87	60.98
						298.04	334.71	60.98
						295.12	335.37	60.98
						293.83	335.41	60.98
						292.28	335.41	60.98
						290.95	335.21	60.98
						285.99	335.79	60.98
						282.65	336.25	60.98
						280.07	336.62	60.98
						278.32	336.71	60.98
						277.57	336.33	60.98
						276.90	336.67	60.98

Name	M.	ID	OnlyPts	Height		Coordinates		
				Begin	End	x	y	z
				(m)	(m)	(m)	(m)	(m)
						276.49	337.87	60.98
						276.61	340.88	60.98
						276.28	345.04	60.98
						275.98	345.46	60.98
						274.90	344.88	60.98
						273.98	344.34	60.98
						273.78	343.13	60.98
						273.03	342.46	60.98
						272.23	342.08	60.98
						270.77	342.13	60.98
						269.27	342.00	60.98
						268.15	342.34	60.98
						266.52	343.09	60.98
						264.52	343.88	60.98
						262.98	344.17	60.98
						261.94	344.29	60.98
						261.14	346.42	60.98
						260.27	350.05	60.98
210ft/64m				64.02		252.96	264.02	64.02
						254.98	261.01	64.02
						257.16	258.20	64.02
						260.24	255.69	64.02
						264.28	253.01	64.02
						267.09	251.22	64.02
						269.61	250.23	64.02
						271.39	250.16	64.02
						272.19	250.66	64.02
						272.45	252.44	64.02
						273.28	257.18	64.02
						274.04	263.00	64.02
						273.91	266.47	64.02
						275.26	271.30	64.02
						276.32	272.83	64.02
						279.27	273.62	64.02
						283.01	274.12	64.02
						286.81	274.35	64.02
						291.25	274.15	64.02
						293.53	275.17	64.02
						295.48	276.10	64.02
						295.88	276.63	64.02
						295.78	277.03	64.02
						295.32	277.06	64.02
						294.82	277.29	64.02
						294.42	278.02	64.02
						294.45	278.38	64.02
						294.92	278.38	64.02
						295.45	278.58	64.02
						295.65	278.88	64.02
						296.27	280.10	64.02
						296.41	282.59	64.02
						296.74	284.51	64.02
						297.00	290.10	64.02
						296.97	295.66	64.02
						296.87	305.38	64.02
						296.84	308.56	64.02
						297.17	311.17	64.02
						297.86	312.90	64.02
						299.25	315.24	64.02
						300.81	317.63	64.02
						301.60	319.31	64.02
						301.73	320.94	64.02
						301.40	323.91	64.02
						300.54	326.26	64.02

Name	M.	ID	OnlyPts	Height		Coordinates		
				Begin	End	x	y	z
				(m)	(m)	(m)	(m)	(m)
						300.08	326.56	64.02
						299.19	326.92	64.02
						295.15	328.31	64.02
						293.56	328.74	64.02
						292.04	328.88	64.02
						290.72	329.11	64.02
						290.09	329.31	64.02
						289.29	329.70	64.02
						288.37	329.84	64.02
						287.70	329.77	64.02
						287.64	329.47	64.02
						288.40	329.31	64.02
						289.19	329.31	64.02
						290.09	329.31	64.02
						290.62	329.74	64.02
						291.15	330.07	64.02
						290.72	330.46	64.02
						290.19	330.53	64.02
						287.34	331.09	64.02
						281.52	331.76	64.02
						275.23	332.35	64.02
						268.45	333.01	64.02
						264.97	333.54	64.02
						263.58	333.21	64.02
						262.09	333.21	64.02
						260.74	333.57	64.02
						259.91	334.07	64.02
						259.45	334.67	64.02
						258.95	335.06	64.02
						258.59	334.83	64.02
						258.39	334.24	64.02
						257.86	333.87	64.02
						257.36	333.57	64.02
						255.64	333.51	64.02
						249.89	333.94	64.02
						243.90	334.01	64.02
						240.12	334.17	64.02
						238.93	334.63	64.02
						238.47	336.55	64.02
						238.32	338.22	64.02
						238.26	339.68	64.02
						238.57	341.24	64.02
						238.63	341.96	64.02
						238.53	343.60	64.02
						238.47	344.90	64.02
						238.46	345.20	64.02
						238.23	345.38	64.02
						237.73	345.34	64.02
						237.15	345.19	64.02
						236.58	344.82	64.02
						235.81	344.21	64.02
						235.34	344.17	64.02
						235.04	344.37	64.02
						234.69	345.53	64.02
						234.73	346.28	64.02
						234.66	347.48	64.02
						234.88	349.12	64.02
						234.43	351.49	64.02
						233.93	354.58	64.02
						234.35	356.62	64.02
						234.43	357.73	64.02
						234.04	359.59	64.02
						233.12	362.87	64.02

Name	M.	ID	OnlyPts	Height		Coordinates		
				Begin	End	x	y	z
				(m)	(m)	(m)	(m)	(m)
						232.59	366.34	64.02
						232.22	370.96	64.02
						231.88	376.19	64.02
						231.54	380.07	64.02
						231.31	383.25	64.02
						231.07	384.78	64.02
						231.07	384.78	64.02
						230.75	383.67	64.02
						230.73	382.94	64.02
						230.52	382.75	64.02
						230.05	383.59	64.02
						230.20	384.15	64.02
						230.15	385.17	64.02
						229.36	386.48	64.02
						228.05	387.72	64.02
						225.76	389.00	64.02
						224.61	389.69	64.02
						223.14	390.84	64.02
						220.30	391.45	64.02
						218.52	391.66	64.02
						217.49	391.70	64.02
						218.20	392.08	64.02
						220.75	392.16	64.02
						219.01	392.50	64.02
						217.37	392.64	64.02
						214.66	392.74	64.02
						210.00	392.94	64.02
						205.64	392.87	64.02
						202.66	392.77	64.02
						199.42	392.54	64.02
						211.82	392.25	64.02
						206.83	391.75	64.02
						200.21	391.62	64.02
						196.57	391.58	64.02
						195.05	391.45	64.02
						193.80	391.15	64.02
210ft/64m				64.02		236.58	344.82	64.02
						236.29	344.43	64.02
212ft/64.6m				64.63		217.63	389.05	64.63
						221.44	386.27	64.63
						225.54	383.69	64.63
						227.93	382.30	64.63
						229.88	380.44	64.63
						230.11	379.09	64.63
						230.01	377.90	64.63
						230.21	376.41	64.63
						230.67	376.97	64.63
						230.74	378.26	64.63
						230.94	379.72	64.63
						231.73	377.27	64.63
						231.57	375.08	64.63
						232.03	364.92	64.63
						232.99	359.60	64.63
						233.35	355.76	64.63
						233.05	354.33	64.63
						233.02	352.28	64.63
						233.78	350.10	64.63
						233.72	348.64	64.63
						233.25	344.44	64.63
						233.25	342.49	64.63
						233.78	340.21	64.63
						234.38	339.58	64.63
						235.64	339.87	64.63

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Name	M.	ID	OnlyPts	Height		Coordinates		
				Begin	End	x	y	z
				(m)	(m)	(m)	(m)	(m)
						236.50	340.37	64.63
						237.59	340.01	64.63
						237.49	339.18	64.63
						237.70	338.60	64.63
						237.55	337.38	64.63
						237.85	335.52	64.63
						238.46	333.45	64.63
						239.13	333.39	64.63
						242.50	333.18	64.63
						250.22	333.18	64.63
						254.72	332.72	64.63
						256.85	332.60	64.63
						258.35	333.51	64.63
						259.10	333.64	64.63
						259.72	333.14	64.63
						262.02	332.47	64.63
						269.14	332.18	64.63
						275.90	331.39	64.63
						282.10	330.73	64.63
						285.06	330.39	64.63
						285.20	330.02	64.63
						285.01	329.65	64.63
						281.40	329.52	64.63
						282.46	329.09	64.63
						285.63	328.95	64.63
						288.51	328.56	64.63
						291.49	328.00	64.63
						294.04	327.37	64.63
						296.75	325.38	64.63
						299.33	322.93	64.63
						299.57	320.52	64.63
						299.70	317.08	64.63
						299.20	316.08	64.63
						298.61	315.39	64.63
						297.45	314.03	64.63
						296.55	311.35	64.63
						296.26	307.58	64.63
						296.39	300.03	64.63
						296.26	295.80	64.63
						296.32	289.25	64.63
						296.29	284.81	64.63
						295.93	283.06	64.63
						295.69	281.37	64.63
						295.66	280.18	64.63
						295.13	278.76	64.63
						294.30	278.76	64.63
						293.61	278.82	64.63
						292.91	278.82	64.63
						293.15	278.09	64.63
						293.78	277.73	64.63
						294.21	277.47	64.63
						294.54	276.97	64.63
						294.27	276.54	64.63
						292.95	275.78	64.63
						291.13	275.12	64.63
						289.44	275.02	64.63
						286.23	275.12	64.63
						282.52	274.95	64.63
						279.45	274.75	64.63
						276.67	274.16	64.63
						275.87	273.63	64.63
						275.01	272.34	64.63
						273.89	269.79	64.63

Name	M.	ID	OnlyPts	Height		Coordinates		
				Begin	End	x	y	z
				(m)	(m)	(m)	(m)	(m)
						273.39	268.17	64.63
						273.13	266.68	64.63
						273.26	265.42	64.63
						273.19	262.77	64.63
						273.06	259.96	64.63
						272.63	258.11	64.63
						272.23	256.49	64.63
						271.57	255.92	64.63
						270.91	256.49	64.63
						270.15	257.28	64.63
						268.36	258.11	64.63
						265.62	259.10	64.63
						262.31	261.19	64.63
						260.59	262.77	64.63
						257.41	266.22	64.63
						255.22	267.94	64.63
						253.37	268.96	64.63
212ft/64.6m				64.63		237.70	339.54	64.63
						237.49	339.18	64.63
212ft/64.6m				64.63		237.51	338.82	64.63
						237.70	338.60	64.63
214ft/65.2m				65.24		252.89	274.04	65.24
						254.83	273.67	65.24
						256.51	273.85	65.24
						257.12	273.56	65.24
						257.54	272.54	65.24
						258.45	270.83	65.24
						259.95	269.50	65.24
						262.48	268.04	65.24
						265.85	267.04	65.24
						266.50	266.93	65.24
						267.25	266.70	65.24
						268.00	266.14	65.24
						269.04	265.04	65.24
						269.85	263.87	65.24
						270.31	262.91	65.24
						271.21	261.91	65.24
						271.90	261.60	65.24
						272.13	261.93	65.24
						272.38	262.83	65.24
						272.46	264.37	65.24
						272.46	265.98	65.24
						272.46	267.66	65.24
						273.29	270.73	65.24
						274.19	273.04	65.24
						275.46	274.61	65.24
						277.48	275.44	65.24
						280.28	275.65	65.24
						284.76	275.90	65.24
						287.66	275.71	65.24
						290.28	275.88	65.24
						292.06	276.45	65.24
						292.94	277.07	65.24
						293.05	277.78	65.24
						292.71	278.28	65.24
						292.01	278.74	65.24
						291.85	279.24	65.24
						292.83	279.29	65.24
						293.57	279.10	65.24
						294.32	279.07	65.24
						294.56	279.14	65.24
						294.81	279.63	65.24
						295.19	280.29	65.24

Name	M.	ID	OnlyPts	Height		Coordinates		
				Begin	End	x	y	z
				(m)	(m)	(m)	(m)	(m)
						295.16	281.18	65.24
						295.21	282.12	65.24
						295.38	283.77	65.24
						295.58	285.54	65.24
						295.73	290.15	65.24
						295.67	292.78	65.24
						295.57	295.81	65.24
						295.47	297.53	65.24
						295.54	302.66	65.24
						295.64	308.31	65.24
						295.85	311.05	65.24
						296.17	312.77	65.24
						296.61	313.86	65.24
						296.63	314.76	65.24
						296.36	315.17	65.24
						295.50	316.03	65.24
						295.27	316.68	65.24
						295.09	317.98	65.24
						294.83	318.76	65.24
						293.90	319.52	65.24
						292.28	320.45	65.24
						291.22	321.00	65.24
						289.83	321.87	65.24
						289.33	322.49	65.24
						288.84	323.46	65.24
						288.32	324.83	65.24
						288.39	325.84	65.24
						287.86	327.13	65.24
						287.15	327.75	65.24
						285.66	328.06	65.24
						281.59	328.64	65.24
						279.89	328.82	65.24
						278.91	329.04	65.24
						277.44	329.04	65.24
						276.31	329.12	65.24
						275.00	329.48	65.24
						278.07	329.91	65.24
						275.42	330.49	65.24
						272.65	330.96	65.24
						269.58	331.12	65.24
						266.35	331.39	65.24
						263.47	331.45	65.24
						261.83	331.49	65.24
						260.54	331.65	65.24
						260.01	331.98	65.24
						259.39	332.30	65.24
						258.69	332.30	65.24
						257.90	332.21	65.24
						257.14	331.98	65.24
						256.62	331.82	65.24
						255.35	331.70	65.24
						254.29	331.78	65.24
						253.45	332.03	65.24
						251.74	332.16	65.24
						246.43	332.25	65.24
						243.63	332.15	65.24
						241.02	332.25	65.24
						237.74	332.54	65.24
						237.25	333.27	65.24
						237.02	334.22	65.24
						236.88	335.34	65.24
						236.73	335.97	65.24
						236.32	336.38	65.24

Name	M.	ID	OnlyPts	Height		Coordinates		
				Begin	End	x	y	z
				(m)	(m)	(m)	(m)	(m)
						235.71	336.35	65.24
						234.60	336.07	65.24
						234.29	335.66	65.24
						233.89	335.11	65.24
						233.24	335.11	65.24
						232.91	335.94	65.24
						232.42	338.14	65.24
						232.27	340.39	65.24
						232.20	341.99	65.24
						232.09	343.81	65.24
						231.92	344.82	65.24
						232.09	346.34	65.24
						232.58	348.41	65.24
						232.47	350.74	65.24
						232.22	353.26	65.24
						232.15	356.75	65.24
						232.04	358.85	65.24
						231.79	360.99	65.24
						231.39	364.49	65.24
						231.18	366.76	65.24
						231.11	368.73	65.24
						231.23	370.27	65.24
						231.23	371.59	65.24
						230.98	372.50	65.24
						230.66	372.04	65.24
						230.56	371.10	65.24
						230.50	370.42	65.24
						230.56	369.41	65.24
						230.35	368.81	65.24
						230.18	368.66	65.24
						229.74	369.32	65.24
						229.77	370.58	65.24
						229.89	371.10	65.24
						229.85	372.49	65.24
						229.47	373.46	65.24
						228.96	374.34	65.24
						228.15	374.82	65.24
						226.82	375.05	65.24
						225.35	375.26	65.24
						223.66	375.71	65.24
						221.17	376.92	65.24
						218.40	378.66	65.24
218ft/66.5				66.46		233.66	317.06	66.46
						241.48	316.44	66.46
						242.15	318.07	66.46
						243.06	320.44	66.46
						243.10	321.82	66.46
						242.19	323.78	66.46
						241.19	325.16	66.46
						239.31	327.49	66.46
						239.44	327.99	66.46
						240.02	328.66	66.46
						242.15	329.07	66.46
						245.98	329.41	66.46
						249.11	329.16	66.46
						253.69	328.53	66.46
						258.57	327.82	66.46
						260.41	327.37	66.46
						260.99	326.41	66.46
						261.45	324.66	66.46
						261.53	323.28	66.46
						262.03	321.70	66.46
						263.07	319.82	66.46

Name	M.	ID	OnlyPts	Height		Coordinates		
				Begin	End	x	y	z
				(m)	(m)	(m)	(m)	(m)
						264.24	318.82	66.46
						264.99	317.65	66.46
						265.37	316.65	66.46
						265.95	315.53	66.46
218ft/66.5				66.46		278.62	315.84	66.46
						280.21	314.48	66.46
						282.04	314.98	66.46
						284.00	315.44	66.46
						285.92	315.40	66.46
						286.96	314.98	66.46
						287.38	314.19	66.46
						287.88	312.65	66.46
						288.55	311.23	66.46
						289.47	309.90	66.46
						290.26	308.60	66.46
						291.22	308.56	66.46
						292.26	309.02	66.46
						293.26	309.69	66.46
						293.93	309.69	66.46
						294.18	309.06	66.46
						294.51	305.77	66.46
						294.51	301.35	66.46
						294.13	297.72	66.46
						294.22	296.14	66.46
						294.43	293.35	66.46
						294.26	291.68	66.46
						293.80	290.34	66.46
						292.72	288.93	66.46
						291.22	287.42	66.46
						290.13	285.88	66.46
						289.05	283.46	66.46
						288.42	281.05	66.46
						288.09	279.29	66.46
						288.01	278.46	66.46
						287.38	277.75	66.46
						286.88	277.38	66.46
						285.71	277.21	66.46
						284.05	277.59	66.46
						282.29	277.71	66.46
						280.21	277.50	66.46
						278.79	277.25	66.46
						278.04	276.96	66.46
						276.00	276.96	66.46
						274.83	277.04	66.46
						274.41	276.84	66.46
						273.25	275.92	66.46
						272.66	275.17	66.46
						271.95	274.83	66.46
						271.00	275.29	66.46
						269.91	276.13	66.46
						268.62	276.38	66.46
						267.29	276.54	66.46
						265.45	276.50	66.46
						264.66	276.42	66.46
						262.28	277.25	66.46
						261.16	277.42	66.46
						259.82	277.46	66.46
						258.99	277.34	66.46
						258.28	277.29	66.46
						256.86	278.13	66.46
						255.82	278.42	66.46
						254.86	277.84	66.46
						254.11	277.75	66.46

Name	M.	ID	OnlyPts	Height		Coordinates		
				Begin	End	x	y	z
				(m)	(m)	(m)	(m)	(m)
						253.49	277.79	66.46
						253.03	278.00	66.46
218ft/66.5				66.46		255.82	278.42	66.46
						255.49	278.04	66.46
220ft/67.1m				67.07		262.84	315.71	67.07
						262.29	316.71	67.07
						261.53	317.37	67.07
						260.16	317.50	67.07
						259.79	317.81	67.07
						259.66	319.20	67.07
						258.95	321.54	67.07
						258.37	321.99	67.07
						257.32	321.46	67.07
						257.14	320.78	67.07
						256.38	319.15	67.07
						254.91	317.03	67.07
						253.96	316.32	67.07
192ft/58.5m				58.54		305.04	381.86	58.54
						305.17	381.14	58.54
						304.45	378.69	58.54
						306.43	378.09	58.54
						308.95	376.57	58.54
						309.87	374.91	58.54
						309.87	373.13	58.54
						308.68	371.08	58.54
						307.75	369.49	58.54
						310.20	369.46	58.54
						310.25	368.12	58.54
						311.22	367.07	58.54
						310.93	366.47	58.54
						310.75	361.27	58.54
						310.46	353.20	58.54
						312.19	351.97	58.54
196ft/59.8m				59.76		277.35	379.20	59.76
						279.19	377.16	59.76
						279.90	375.24	59.76
						279.52	372.99	59.76
						278.52	370.20	59.76
						281.19	369.99	59.76
						284.19	367.20	59.76
						289.82	367.24	59.76
						293.53	367.11	59.76
						294.03	363.24	59.76
						293.45	336.88	59.76
						293.61	336.34	59.76
						295.57	336.18	59.76
						299.28	336.30	59.76
						310.62	335.18	59.76
Various Height						54.53	430.87	51.83
						61.41	248.76	36.59
206ft/62.8				62.80		315.92	327.21	62.80
						315.32	327.96	62.80
						314.98	328.20	62.80
						314.10	328.46	62.80
						313.72	328.46	62.80
						313.37	328.14	62.80
						313.40	327.15	62.80
						313.41	326.42	62.80
						313.01	326.05	62.80
						310.43	324.79	62.80
						306.58	323.11	62.80
						304.74	322.43	62.80
						301.31	317.15	62.80

Name	M.	ID	OnlyPts	Height		Coordinates		
				Begin	End	x	y	z
				(m)	(m)	(m)	(m)	(m)
						299.95	314.79	62.80
						298.98	312.93	62.80
						298.32	310.72	62.80
						298.14	307.10	62.80
						298.16	302.32	62.80
						298.28	292.69	62.80
						298.06	287.16	62.80
						297.73	283.36	62.80
						297.45	280.91	62.80
						297.27	279.50	62.80
						297.37	278.94	62.80
						297.57	278.43	62.80
						297.55	277.87	62.80
						297.42	277.59	62.80
						296.99	277.44	62.80
						296.59	277.40	62.80
						296.38	277.18	62.80
						296.67	276.85	62.80
						297.17	276.64	62.80
						297.42	276.18	62.80
						296.96	275.18	62.80
						295.88	274.26	62.80
						293.96	273.47	62.80
						291.46	272.89	62.80
						289.46	272.55	62.80
						286.50	272.47	62.80
						284.17	272.39	62.80
						281.96	271.76	62.80
						279.50	270.93	62.80
						278.08	270.64	62.80
						276.92	269.68	62.80
						275.67	267.80	62.80
						275.21	265.39	62.80
						275.37	263.30	62.80
						275.33	262.18	62.80
						275.00	258.59	62.80
						274.29	251.26	62.80
						273.71	246.22	62.80
						273.25	242.13	62.80
						272.87	238.97	62.80
						272.75	237.80	62.80
						272.54	237.01	62.80
						270.50	237.51	62.80
						267.42	239.72	62.80
						261.00	244.68	62.80
						256.79	247.68	62.80
						253.11	252.11	62.80
206ft/62.8				62.80		180.14	391.42	62.80
						180.37	391.85	62.80
						181.46	392.44	62.80
						183.11	392.68	62.80
						187.08	393.27	62.80
						190.19	393.60	62.80
						196.01	394.23	62.80
						199.68	394.56	62.80
						204.05	394.86	62.80
						207.36	394.89	62.80
						209.11	394.82	62.80
						210.93	394.49	62.80
						217.69	394.11	62.80
						220.44	393.95	62.80
						224.28	393.75	62.80
						228.18	393.19	62.80

Name	M.	ID	OnlyPts	Height		Coordinates		
				Begin	End	x	y	z
				(m)	(m)	(m)	(m)	(m)
						228.77	392.92	62.80
						229.75	392.49	62.80
						231.62	391.06	62.80
						231.62	391.06	62.80
						230.75	390.92	62.80
						230.59	390.46	62.80
						230.73	390.00	62.80
						231.63	389.42	62.80
						232.38	387.39	62.80
						233.32	383.46	62.80
						233.65	382.14	62.80
						233.61	377.91	62.80
						233.40	376.87	62.80
						233.02	375.75	62.80
						232.79	374.66	62.80
						233.34	370.79	62.80
						233.67	369.06	62.80
						234.36	366.46	62.80
						236.13	359.98	62.80
						236.50	357.73	62.80
						236.61	356.77	62.80
						236.63	354.97	62.80
						236.92	353.91	62.80
						237.48	354.04	62.80
						237.98	354.43	62.80
						238.59	355.43	62.80
						239.05	356.35	62.80
						239.94	357.18	62.80
						240.36	357.50	62.80
						240.69	357.28	62.80
						240.77	356.63	62.80
						240.77	355.08	62.80
216ft/65.9m				65.85		218.70	377.75	65.85
						219.23	368.76	65.85
						224.01	366.66	65.85
						226.26	365.96	65.85
						227.78	366.16	65.85
						228.61	366.16	65.85
						229.04	365.50	65.85
						229.77	363.81	65.85
						229.80	362.03	65.85
						229.80	361.03	65.85
						229.64	360.44	65.85
						230.20	358.95	65.85
						230.20	358.95	65.85
						230.33	359.68	65.85
						230.60	360.44	65.85
						230.40	361.26	65.85
						230.60	362.29	65.85
						230.76	363.61	65.85
						231.13	362.29	65.85
						231.06	360.70	65.85
						230.96	358.12	65.85
						231.32	355.57	65.85
						231.32	352.13	65.85
						231.46	348.26	65.85
						231.06	345.94	65.85
						230.83	343.20	65.85
						231.19	341.01	65.85
						230.96	338.73	65.85
						230.76	336.05	65.85
						231.32	333.96	65.85
						232.61	331.95	65.85

Name	M.	ID	OnlyPts	Height		Coordinates		
				Begin	End	x	y	z
				(m)	(m)	(m)	(m)	(m)
						233.34	331.71	65.85
						234.17	332.01	65.85
						235.86	332.77	65.85
						236.45	331.88	65.85
						237.61	331.35	65.85
						239.56	331.25	65.85
						247.11	331.38	65.85
						250.29	331.45	65.85
						258.06	330.85	65.85
						261.87	330.59	65.85
						267.33	330.26	65.85
						271.96	330.06	65.85
						256.31	329.63	65.85
						272.95	329.17	65.85
						275.33	328.31	65.85
						277.65	327.64	65.85
						279.24	327.64	65.85
						281.49	327.71	65.85
						282.55	327.15	65.85
						283.11	325.46	65.85
						283.08	323.74	65.85
						282.78	322.51	65.85
						282.45	321.75	65.85
						282.85	321.19	65.85
						284.27	319.87	65.85
						285.63	318.94	65.85
						288.74	317.82	65.85
						289.80	316.96	65.85
						290.06	315.76	65.85
						290.69	313.88	65.85
						291.52	313.65	65.85
						293.04	313.55	65.85
						295.26	312.85	65.85
						295.42	311.99	65.85
						294.99	310.01	65.85
						295.02	307.69	65.85
						294.92	301.70	65.85
						294.79	295.65	65.85
						294.99	285.78	65.85
						294.73	283.20	65.85
						294.26	280.89	65.85
						293.83	279.66	65.85
						293.53	279.40	65.85
						293.24	279.36	65.85
						292.14	279.66	65.85
						291.65	279.50	65.85
						291.52	278.93	65.85
						291.68	278.47	65.85
						292.38	277.97	65.85
						292.24	277.74	65.85
						291.75	277.21	65.85
						290.66	276.78	65.85
						288.21	276.55	65.85
						286.72	276.62	65.85
						284.60	276.68	65.85
						283.28	276.72	65.85
						280.96	276.68	65.85
						278.88	276.45	65.85
						276.16	275.82	65.85
						274.74	275.36	65.85
						274.28	274.67	65.85
						273.28	273.08	65.85
						272.32	270.26	65.85

Name	M.	ID	OnlyPts	Height		Coordinates		
				Begin	End	x	y	z
				(m)	(m)	(m)	(m)	(m)
						272.12	268.94	65.85
						272.12	268.05	65.85
						271.60	267.25	65.85
						270.74	268.08	65.85
						268.52	268.94	65.85
						267.56	269.47	65.85
						267.46	269.74	65.85
						267.13	270.69	65.85
						266.70	270.93	65.85
						265.94	270.99	65.85
						265.01	271.03	65.85
						263.98	271.36	65.85
						262.73	272.18	65.85
						260.51	273.90	65.85
						258.43	275.53	65.85
						257.90	275.56	65.85
						257.23	275.56	65.85
						256.61	276.09	65.85
						255.88	275.99	65.85
						254.39	276.02	65.85
						252.93	275.99	65.85
216ft/65.9m				65.85		293.24	279.36	65.85
						292.81	279.50	65.85
216ft/65.9m				65.85		233.47	316.66	65.85
						232.61	319.37	65.85
						231.59	321.49	65.85
						230.73	322.88	65.85
						230.53	323.41	65.85
						230.23	324.53	65.85
						229.97	325.39	65.85
						228.88	326.82	65.85
						227.58	328.01	65.85
						225.80	331.65	65.85
						224.81	333.90	65.85
						223.32	335.78	65.85
						221.65	337.52	65.85
						219.43	368.15	65.85
220ft/67.1m				67.07		272.03	289.81	67.07
						271.19	287.57	67.07
						269.47	285.45	67.07
						270.19	285.32	67.07
						272.84	285.71	67.07
						279.79	287.17	67.07
						280.42	287.90	67.07
						280.48	288.46	67.07
						280.54	289.99	67.07
186ft/56.7m				56.71		294.97	218.30	56.71
						280.14	217.88	56.71
						279.72	217.51	56.71
						278.59	216.34	56.71
						277.63	214.42	56.71
						276.84	212.05	56.71
						276.34	209.22	56.71
						275.13	200.55	56.71
						274.84	198.63	56.71
						274.55	198.21	56.71
						273.88	198.17	56.71
						273.09	198.30	56.71
						266.72	200.34	56.71
						260.09	202.46	56.71
						255.84	204.34	56.71
						251.01	207.47	56.71
						246.17	211.26	56.71

Name	M.	ID	OnlyPts	Height		Coordinates		
				Begin	End	x	y	z
				(m)	(m)	(m)	(m)	(m)
						240.96	215.88	56.71
						238.55	218.59	56.71
186ft/56.7m				56.71		158.55	388.75	56.71
						158.30	390.58	56.71
						158.72	392.75	56.71
						159.47	395.17	56.71
						160.47	396.75	56.71
						161.56	398.09	56.71
						162.39	398.84	56.71
						162.81	399.50	56.71
						163.31	401.30	56.71
						163.16	403.93	56.71
						163.04	405.58	56.71
						162.68	409.18	56.71
						162.25	411.47	56.71
						162.16	412.93	56.71
						162.16	414.51	56.71
						162.18	416.41	56.71
						162.04	417.51	56.71
						161.19	420.66	56.71
*125ft/38.1m				38.11		157.24	229.91	38.11
						166.17	219.33	38.11
*130ft/39.6m				39.63		170.94	219.57	39.63
						158.44	235.69	39.63
*135ft/41.2m				41.16		175.45	219.46	41.16
						166.21	230.18	41.16
						160.80	238.10	41.16
*145ft/44.2m				44.21		187.16	219.26	44.21
						181.80	222.14	44.21
						175.76	228.71	44.21
						166.52	240.78	44.21
						160.59	267.20	44.21
						158.80	268.14	44.21
*155ft/47.3m				47.26		201.16	219.37	47.26
						185.57	227.62	47.26
						178.82	234.61	47.26
						172.49	243.29	47.26
						167.24	267.46	47.26
						163.48	277.63	47.26
						158.65	286.21	47.26
*165ft/50.3m				50.30		213.03	219.33	50.30
						198.21	228.46	50.30
						189.08	233.09	50.30
						182.66	240.50	50.30
						178.16	246.58	50.30
						173.20	269.41	50.30
						169.36	279.40	50.30
						164.73	289.92	50.30
						163.61	295.34	50.30
						158.51	309.10	50.30
*175ft/53.4m				53.35		225.04	218.99	53.35
						220.20	222.91	53.35
						209.37	228.74	53.35
						201.03	234.50	53.35
						192.45	238.41	53.35
						183.69	249.33	53.35
						178.94	271.75	53.35
						176.19	278.17	53.35
						173.94	285.01	53.35
						170.02	293.43	53.35
						169.19	298.76	53.35
						165.19	309.68	53.35
						164.69	314.43	53.35

Name	M.	ID	OnlyPts	Height		Coordinates		
				Begin	End	x	y	z
				(m)	(m)	(m)	(m)	(m)
						162.61	323.77	53.35
						161.02	330.52	53.35
						160.44	336.85	53.35
						161.02	340.10	53.35
						162.44	342.77	53.35
						166.94	349.02	53.35
						168.61	353.44	53.35
						169.27	356.11	53.35
						170.52	358.02	53.35
						172.02	358.44	53.35
						174.11	358.69	53.35
						175.44	358.02	53.35
						176.40	357.36	53.35
						177.76	356.34	53.35
						180.54	356.80	53.35
						180.70	355.91	53.35
						187.81	358.98	53.35
*175ft/53.4m				53.35		155.01	399.70	53.35
						155.92	401.41	53.35
						157.17	402.78	53.35
						158.30	403.74	53.35
						158.55	404.66	53.35
						158.51	405.57	53.35
*180ft/54.9m				54.88		230.74	219.03	54.88
						222.14	225.51	54.88
						201.37	237.95	54.88
						194.49	241.39	54.88
						186.62	250.52	54.88
						182.12	272.22	54.88
						178.08	282.87	54.88
						173.25	294.71	54.88
						172.20	299.02	54.88
						168.00	311.20	54.88
						167.79	315.40	54.88
						164.75	326.75	54.88
						163.59	337.14	54.88
						163.46	337.87	54.88
						163.92	339.39	54.88
						164.58	340.19	54.88
						172.59	348.02	54.88
						173.65	348.55	54.88
						174.57	348.55	54.88
						175.53	348.42	54.88
						176.23	348.12	54.88
						181.12	342.20	54.88
						184.23	341.91	54.88
						184.40	340.19	54.88
						189.82	344.65	54.88
*185ft/56.4m				56.40		216.07	232.46	56.40
						204.57	239.80	56.40
						196.15	243.97	56.40
						189.31	252.22	56.40
						185.06	273.47	56.40
						182.31	280.39	56.40
*185ft/56.4m				56.40		204.00	284.84	56.40
						207.05	292.40	56.40
*170ft/51.8m				51.83		158.60	342.64	51.83
						164.29	350.91	51.83
						164.89	352.10	51.83
						166.54	357.26	51.83
						167.47	359.05	51.83
						169.12	360.77	51.83
						171.84	361.96	51.83

Name	M.	ID	OnlyPts	Height		Coordinates		
				Begin	End	x	y	z
				(m)	(m)	(m)	(m)	(m)
						175.01	363.28	51.83
						176.86	365.00	51.83
						177.39	364.21	51.83
						183.08	369.96	51.83
*165ft/50.3m				50.30		158.14	347.55	50.30
						162.24	353.43	50.30
						162.77	354.56	50.30
						162.90	355.88	50.30
						163.23	357.60	50.30
						164.69	360.52	50.30
						169.39	367.26	50.30
						170.58	369.91	50.30
						171.11	369.58	50.30
						172.89	377.65	50.30
*160ft/48.8m				48.78		157.61	352.31	48.78
						159.00	354.16	48.78
						159.40	354.96	48.78
						159.73	355.88	48.78
						161.38	368.19	48.78
						160.45	371.43	48.78
						162.31	371.17	48.78
						160.92	379.51	48.78
*195ft/59.5m	+			59.45		253.12	270.53	59.45
						250.70	272.44	59.45
*195ft/59.5m				59.45		187.76	371.54	59.45
						187.17	374.46	59.45
						186.09	376.62	59.45
						184.51	378.04	59.45
						182.51	380.04	59.45
						179.50	382.13	59.45
						177.34	383.46	59.45
						172.25	385.71	59.45
						169.83	387.05	59.45
						166.83	387.80	59.45
						165.83	388.55	59.45
						165.10	389.57	59.45
						164.71	390.76	59.45
						164.87	391.82	59.45
						165.24	392.62	59.45
						165.93	393.41	59.45
						166.59	393.84	59.45
*200ft/60.9m				60.98		252.52	281.02	60.98
						253.11	287.35	60.98
						253.61	289.27	60.98
						254.94	290.27	60.98
						280.87	290.35	60.98
						282.87	292.44	60.98
						282.29	299.44	60.98
						263.89	299.99	60.98
						262.05	300.82	60.98
						256.47	306.49	60.98
*200ft/60.9m				60.98		241.27	316.07	60.98
						277.79	314.87	60.98
						279.70	313.87	60.98
						281.20	311.70	60.98
						281.90	310.37	60.98
						282.45	306.20	60.98
						244.97	306.49	60.98
						241.29	308.81	60.98
						241.05	312.49	60.98
						229.71	315.91	60.98
						228.12	317.24	60.98
*200ft/60.9m				60.98		194.69	351.98	60.98

Name	M.	ID	OnlyPts	Height		Coordinates		
				Begin	End	x	y	z
				(m)	(m)	(m)	(m)	(m)
						192.77	359.73	60.98
						190.11	374.74	60.98
						189.77	376.49	60.98
						188.86	377.99	60.98
						187.77	379.32	60.98
						186.27	380.91	60.98
						183.35	383.66	60.98
						181.02	385.07	60.98
						176.85	387.58	60.98
						173.35	388.74	60.98
						171.01	390.16	60.98
						169.10	390.58	60.98
						167.76	391.08	60.98
Various Height						216.13	390.58	62.20
						217.71	369.15	62.07
						219.49	353.71	62.07
						220.54	338.27	61.63
						222.22	322.09	61.28
						227.69	317.79	60.98
Various Height				66.77		282.99	306.00	66.77
						283.36	299.38	66.77
						283.76	293.19	66.77
Various Height				66.77		257.49	281.34	66.77
						257.74	284.80	66.77
						259.20	286.51	66.77
						263.16	287.22	66.77
Various Height						252.90	270.45	59.45
						252.24	238.35	57.93
						252.09	219.66	58.35
*190ft/57.9m				57.93		247.08	241.37	57.93
						245.40	242.31	57.93
						242.88	248.72	57.93
						239.51	253.66	57.93
						238.88	254.39	57.93
						236.57	261.95	57.93
*195ft/59.5m				59.45		214.19	291.62	59.45
						210.27	298.62	59.45
						206.43	306.38	59.45
						203.18	314.55	59.45
						200.60	321.22	59.45
						193.51	344.81	59.45
*204ft/62.2m				62.20		176.56	390.89	62.20
						215.52	390.62	62.20

Geometrie Höhenlinien Terrain Contour Lines - Phase 3

Name	M.	ID	OnlyPts	Height		Coordinates		
				Begin	End	x	y	z
				(m)	(m)	(m)	(m)	(m)
120ft/36.6				36.59		126.39	230.98	36.59
						126.89	228.73	36.59
						128.06	228.31	36.59
						130.48	228.56	36.59
						130.98	229.23	36.59
						130.90	229.81	36.59
						132.06	230.06	36.59
						132.90	229.23	36.59
						134.57	228.14	36.59
						138.98	225.89	36.59
						141.99	224.97	36.59
						147.66	225.22	36.59
						151.52	225.51	36.59
						151.65	224.30	36.59
						153.41	223.31	36.59
						154.48	222.02	36.59
						155.56	219.39	36.59
						158.12	211.14	36.59
						159.58	208.76	36.59
						161.42	207.01	36.59
						157.96	203.51	36.59
						156.92	201.01	36.59
						157.37	197.84	36.59
						159.46	194.17	36.59
						160.63	191.34	36.59
						162.96	189.55	36.59
						173.10	181.00	36.59
						207.78	154.54	36.59
						262.83	123.04	36.59
130ft/39.6m				39.63		185.70	201.15	39.63
						183.49	202.07	39.63
						181.95	203.11	39.63
						177.86	207.53	39.63

Name	M.	ID	OnlyPts	Height		Coordinates		
				Begin	End	x	y	z
				(m)	(m)	(m)	(m)	(m)
						175.28	209.40	39.63
						173.11	211.19	39.63
						170.90	214.49	39.63
						169.07	216.86	39.63
						166.00	219.32	39.63
130ft/39.6m				39.63		154.21	264.23	39.63
						153.51	264.11	39.63
						151.54	263.30	39.63
						151.43	264.69	39.63
						147.49	264.30	39.63
						141.18	263.85	39.63
						135.20	265.14	39.63
						131.28	266.45	39.63
						131.23	264.95	39.63
						130.36	264.98	39.63
						126.19	265.90	39.63
140ft/42.7m				42.68		202.45	189.53	42.68
						197.82	194.67	42.68
						195.83	197.40	42.68
						192.78	201.08	42.68
						189.11	205.91	42.68
						185.22	212.64	42.68
						182.49	216.10	42.68
						179.83	219.25	42.68
						170.83	229.60	42.68
						163.63	239.47	42.68
						158.86	261.26	42.68
140ft/42.7m				42.68		152.90	301.14	42.68
						152.53	303.19	42.68
						149.76	302.23	42.68
						149.69	303.37	42.68
						141.15	301.96	42.68
						139.81	301.98	42.68
						136.60	302.65	42.68
						131.05	304.61	42.68
						131.05	303.32	42.68
						129.34	303.90	42.68
						128.55	303.73	42.68
						127.76	301.27	42.68
						127.55	298.22	42.68
						127.01	293.34	42.68
						126.30	289.43	42.68
150ft/45.7m				45.73		126.34	331.37	45.73
						127.00	342.49	45.73
						130.51	340.70	45.73
						130.28	342.25	45.73
						135.01	341.43	45.73
						137.99	341.39	45.73
						141.53	341.79	45.73
						146.79	343.68	45.73
						146.98	341.99	45.73
						149.77	341.91	45.73
						150.98	336.06	45.73
150ft/45.7m				45.73		194.12	219.35	45.73
						195.96	215.86	45.73
						197.43	213.45	45.73
						198.64	211.82	45.73
						201.55	208.67	45.73
						206.25	203.10	45.73
						209.59	198.64	45.73
						212.08	195.98	45.73
						213.48	194.22	45.73
						214.81	191.49	45.73

Name	M.	ID	OnlyPts	Height		Coordinates		
				Begin	End	x	y	z
				(m)	(m)	(m)	(m)	(m)
						216.47	189.47	45.73
160ft/48.78m				48.78		126.28	378.92	48.78
						126.45	380.80	48.78
						127.13	381.78	48.78
						127.97	381.91	48.78
						129.91	381.78	48.78
						129.95	383.03	48.78
						137.91	381.41	48.78
						144.91	382.09	48.78
						149.12	383.26	48.78
160ft/48.78m				48.78		206.62	218.88	48.78
						210.09	214.33	48.78
						218.82	201.91	48.78
						222.53	196.90	48.78
						229.33	189.40	48.78
170ft/51.8m				51.83		126.41	429.85	51.83
						129.61	428.43	51.83
						130.87	426.17	51.83
						130.82	428.85	51.83
						135.81	425.49	51.83
						138.54	424.86	51.83
						141.90	424.55	51.83
						147.84	426.54	51.83
						150.54	428.08	51.83
						150.34	425.75	51.83
						151.84	427.67	51.83
						154.92	409.83	51.83
						155.09	407.37	51.83
170ft/51.8m				51.83		159.52	321.53	51.83
						161.77	314.36	51.83
						162.10	308.78	51.83
						166.52	296.44	51.83
						167.27	291.61	51.83
						172.69	279.77	51.83
						173.44	277.11	51.83
						176.02	270.85	51.83
						180.86	247.85	51.83
						185.63	241.60	51.83
						190.78	235.88	51.83
						196.56	232.94	51.83
						201.12	230.42	51.83
						213.46	223.12	51.83
						219.97	218.88	51.83
						222.08	215.11	51.83
						224.58	210.92	51.83
						227.46	206.60	51.83
						229.64	203.87	51.83
						234.75	197.60	51.83
						237.88	194.24	51.83
						239.27	192.81	51.83
						241.42	190.43	51.83
						242.65	189.35	51.83
						246.42	186.56	51.83
						264.69	177.56	51.83
						285.07	162.21	51.83
						295.12	142.63	51.83
						310.48	127.01	51.83
						372.41	112.72	51.83
180ft/54.9m				54.88		156.18	441.96	54.88
						157.90	426.87	54.88
						161.10	403.10	54.88
						160.96	402.06	54.88
						160.44	401.48	54.88

Name	M.	ID	OnlyPts	Height		Coordinates		
				Begin	End	x	y	z
				(m)	(m)	(m)	(m)	(m)
						159.28	400.33	54.88
						157.92	398.81	54.88
						157.18	397.55	54.88
						156.34	395.39	54.88
180ft/54.9m				54.88		229.90	218.76	54.88
						231.63	216.19	54.88
						233.36	214.09	54.88
						243.52	202.82	54.88
						245.76	201.04	54.88
						254.55	196.39	54.88
						261.15	193.97	54.88
						264.64	193.00	54.88
						267.79	192.29	54.88
						271.31	191.03	54.88
						273.67	190.03	54.88
						275.98	189.90	54.88
						276.93	191.71	54.88
						277.43	193.84	54.88
						277.74	196.49	54.88
						277.98	198.70	54.88
						277.74	201.38	54.88
						277.87	204.24	54.88
						278.82	205.69	54.88
						279.21	207.66	54.88
						279.84	211.67	54.88
						280.39	213.27	54.88
						281.29	214.61	54.88
						282.10	215.06	54.88
						283.91	215.24	54.88
						301.90	215.17	54.88
						315.74	215.80	54.88
190ft/57.9m				57.93		248.90	218.12	57.93
190ft/57.9m				57.93		248.80	218.22	57.93
						254.78	213.60	57.93
						262.64	209.59	57.93
						267.95	206.74	57.93
						270.12	205.47	57.93
						271.81	204.49	57.93
						272.94	204.13	57.93
						273.25	204.13	57.93
						273.58	204.34	57.93
						273.75	204.74	57.93
						273.94	205.43	57.93
						274.58	208.70	57.93
						274.75	210.53	57.93
						274.94	212.14	57.93
						275.92	215.01	57.93
						276.25	216.16	57.93
						276.31	217.52	57.93
						276.92	218.52	57.93
						277.44	218.91	57.93
						277.71	219.39	57.93
						277.54	219.75	57.93
						280.04	223.89	57.93
						282.29	232.10	57.93
						284.01	239.91	57.93
						287.72	248.91	57.93
						292.75	253.01	57.93
						297.51	257.78	57.93
						301.22	263.47	57.93
						304.93	267.44	57.93
						305.46	271.68	57.93
						305.59	276.71	57.93

Name	M.	ID	OnlyPts	Height		Coordinates		
				Begin	End	x	y	z
				(m)	(m)	(m)	(m)	(m)
						307.18	280.94	57.93
						311.15	284.65	57.93
						315.12	287.69	57.93
190ft/57.9m				57.93		182.51	442.63	57.93
						181.25	436.11	57.93
						180.98	431.49	57.93
						182.14	429.81	57.93
						182.40	426.56	57.93
						184.82	425.03	57.93
						189.23	424.19	57.93
						193.48	424.03	57.93
						197.84	425.03	57.93
						203.52	427.19	57.93
						205.46	429.60	57.93
						207.46	430.44	57.93
						209.19	432.28	57.93
						209.40	433.49	57.93
						208.51	434.49	57.93
						207.93	435.59	57.93
						208.03	436.06	57.93
						209.56	436.38	57.93
						213.60	436.38	57.93
						216.65	437.22	57.93
						219.22	437.43	57.93
						225.95	439.32	57.93
						226.31	440.21	57.93
						226.26	442.47	57.93
200ft/60.9m				60.98		260.18	350.87	60.98
						259.44	363.00	60.98
						257.03	363.31	60.98
						255.19	363.52	60.98
						254.14	364.52	60.98
						252.83	365.05	60.98
						250.94	365.83	60.98
						250.04	366.78	60.98
						249.83	367.62	60.98
						246.89	367.88	60.98
						244.66	369.15	60.98
						245.81	369.41	60.98
						249.07	369.99	60.98
						251.33	371.66	60.98
						253.69	374.60	60.98
						254.11	377.33	60.98
						253.85	380.22	60.98
						252.85	384.00	60.98
						251.43	387.52	60.98
						249.49	389.36	60.98
						248.18	390.57	60.98
						248.56	413.14	60.98
						254.91	413.75	60.98
						256.59	413.64	60.98
						259.30	413.64	60.98
						253.57	414.69	60.98
						249.79	415.19	60.98
						248.85	415.19	60.98
						247.35	415.58	60.98
						245.75	416.14	60.98
						244.36	416.16	60.98
						241.70	417.84	60.98
						240.10	418.63	60.98
						238.47	419.10	60.98
						237.06	418.84	60.98
						235.95	418.39	60.98

Name	M.	ID	OnlyPts	Height		Coordinates		
				Begin	End	x	y	z
				(m)	(m)	(m)	(m)	(m)
						235.11	417.66	60.98
						234.59	417.21	60.98
						231.41	414.95	60.98
						226.13	409.89	60.98
						218.46	402.48	60.98
						217.36	401.30	60.98
						215.55	399.38	60.98
						213.32	397.73	60.98
						212.61	397.31	60.98
						212.03	397.28	60.98
						211.06	397.39	60.98
						209.74	397.67	60.98
						208.64	397.86	60.98
						206.96	397.88	60.98
						201.63	397.65	60.98
						196.35	397.36	60.98
						193.07	396.97	60.98
						189.23	396.76	60.98
						185.66	395.99	60.98
						181.33	395.23	60.98
						178.81	394.71	60.98
						176.24	394.63	60.98
						173.90	394.31	60.98
						172.03	393.68	60.98
						170.30	392.74	60.98
						170.12	392.19	60.98
						169.83	391.84	60.98
						169.41	392.11	60.98
						168.80	392.37	60.98
200ft/60.9m				60.98		265.35	226.18	60.98
						270.75	224.04	60.98
						273.06	223.41	60.98
						273.59	224.77	60.98
						274.03	226.92	60.98
						274.40	229.94	60.98
						275.00	233.59	60.98
						275.77	238.51	60.98
						276.40	245.67	60.98
						276.79	249.82	60.98
						277.26	254.76	60.98
						277.52	260.41	60.98
						277.66	263.35	60.98
						277.94	266.26	60.98
						278.15	267.03	60.98
						278.60	267.71	60.98
						279.57	268.50	60.98
						280.49	268.78	60.98
						282.04	269.13	60.98
						285.01	269.44	60.98
						288.50	269.81	60.98
						291.60	270.12	60.98
						294.75	270.81	60.98
						297.04	271.75	60.98
						298.88	273.28	60.98
						300.08	274.80	60.98
						300.58	275.59	60.98
						300.71	277.37	60.98
						300.63	279.53	60.98
						300.48	282.34	60.98
						300.63	284.36	60.98
						301.08	289.61	60.98
						301.03	291.16	60.98
						300.92	291.61	60.98

Name	M.	ID	OnlyPts	Height		Coordinates		
				Begin	End	x	y	z
				(m)	(m)	(m)	(m)	(m)
						300.48	292.89	60.98
						300.35	293.52	60.98
						300.35	294.86	60.98
						300.48	296.46	60.98
						300.50	298.04	60.98
						300.40	299.22	60.98
						300.11	300.90	60.98
						300.00	302.48	60.98
						300.00	306.15	60.98
						300.16	308.78	60.98
						300.45	311.93	60.98
						301.00	314.09	60.98
						302.00	316.84	60.98
						303.29	319.34	60.98
						304.99	321.12	60.98
						305.83	321.88	60.98
						307.31	322.57	60.98
						310.77	324.07	60.98
						312.25	324.66	60.98
						313.63	325.55	60.98
						314.07	325.99	60.98
						313.88	326.66	60.98
						313.80	326.91	60.98
						314.03	327.18	60.98
						314.28	327.18	60.98
						314.40	326.70	60.98
						314.38	325.93	60.98
						314.53	325.55	60.98
						315.88	325.07	60.98
200ft/60.9m				60.98		316.00	332.46	60.98
						312.21	333.21	60.98
						310.59	333.00	60.98
						310.04	333.16	60.98
						309.67	333.41	60.98
						309.33	333.79	60.98
						308.63	334.08	60.98
						307.92	334.12	60.98
						307.33	333.87	60.98
						298.04	334.71	60.98
						295.12	335.37	60.98
						293.83	335.41	60.98
						292.28	335.41	60.98
						290.95	335.21	60.98
						285.99	335.79	60.98
						282.65	336.25	60.98
						280.07	336.62	60.98
						278.32	336.71	60.98
						277.57	336.33	60.98
						276.90	336.67	60.98
						276.49	337.87	60.98
						276.61	340.88	60.98
						276.28	345.04	60.98
						275.98	345.46	60.98
						274.90	344.88	60.98
						273.98	344.34	60.98
						273.78	343.13	60.98
						273.03	342.46	60.98
						272.23	342.08	60.98
						270.77	342.13	60.98
						269.27	342.00	60.98
						268.15	342.34	60.98
						266.52	343.09	60.98
						264.52	343.88	60.98

Name	M.	ID	OnlyPts	Height		Coordinates		
				Begin	End	x	y	z
				(m)	(m)	(m)	(m)	(m)
						262.98	344.17	60.98
						261.94	344.29	60.98
						261.14	346.42	60.98
						260.27	350.05	60.98
210ft/64m				64.02		265.73	252.10	64.02
						269.61	250.23	64.02
						271.39	250.16	64.02
						272.19	250.66	64.02
						272.45	252.44	64.02
						273.28	257.18	64.02
						274.04	263.00	64.02
						273.91	266.47	64.02
						275.26	271.30	64.02
						276.32	272.83	64.02
						279.27	273.62	64.02
						283.01	274.12	64.02
						286.81	274.35	64.02
						291.25	274.15	64.02
						293.53	275.17	64.02
						295.48	276.10	64.02
						295.88	276.63	64.02
						295.78	277.03	64.02
						295.32	277.06	64.02
						294.82	277.29	64.02
						294.42	278.02	64.02
						294.45	278.38	64.02
						294.92	278.38	64.02
						295.45	278.58	64.02
						295.65	278.88	64.02
						296.27	280.10	64.02
						296.41	282.59	64.02
						296.74	284.51	64.02
						297.00	290.10	64.02
						296.97	295.66	64.02
						296.87	305.38	64.02
						296.84	308.56	64.02
						297.17	311.17	64.02
						297.86	312.90	64.02
						299.25	315.24	64.02
						300.34	317.65	64.02
						300.66	319.39	64.02
						300.87	321.04	64.02
						301.40	323.91	64.02
						300.54	326.26	64.02
						300.08	326.56	64.02
						299.19	326.92	64.02
						295.15	328.31	64.02
						293.56	328.74	64.02
						292.04	328.88	64.02
						290.72	329.11	64.02
						290.09	329.31	64.02
						289.19	329.31	64.02
						288.40	329.31	64.02
						287.64	329.47	64.02
						287.70	329.77	64.02
						288.37	329.84	64.02
						289.29	329.70	64.02
						289.89	329.64	64.02
						290.62	329.74	64.02
						291.15	330.07	64.02
						290.72	330.46	64.02
						290.19	330.53	64.02
						287.34	331.09	64.02

Name	M.	ID	OnlyPts	Height		Coordinates		
				Begin	End	x	y	z
				(m)	(m)	(m)	(m)	(m)
						281.52	331.76	64.02
						275.23	332.35	64.02
						268.45	333.01	64.02
						264.97	333.54	64.02
						263.58	333.21	64.02
						262.09	333.21	64.02
						260.74	333.57	64.02
						259.91	334.07	64.02
						259.45	334.67	64.02
						258.95	335.06	64.02
						258.59	334.83	64.02
						258.39	334.24	64.02
						257.86	333.87	64.02
						257.36	333.57	64.02
						255.64	333.51	64.02
						249.89	333.94	64.02
						243.90	334.01	64.02
						240.12	334.17	64.02
						238.93	334.63	64.02
						238.47	336.55	64.02
						238.32	338.22	64.02
						238.26	339.68	64.02
						238.57	341.24	64.02
						238.63	341.96	64.02
						238.53	343.60	64.02
						238.47	344.90	64.02
210ft/64m				64.02		231.54	380.07	64.02
						231.31	383.25	64.02
						231.07	384.78	64.02
						230.89	384.36	64.02
						230.75	383.67	64.02
						230.73	382.94	64.02
						230.52	382.75	64.02
						230.05	383.59	64.02
						230.20	384.15	64.02
						230.15	385.17	64.02
						229.68	386.06	64.02
						229.72	386.47	64.02
210ft/64m				64.02		217.52	390.67	64.02
						223.26	390.68	64.02
						220.30	391.45	64.02
						218.52	391.66	64.02
						217.49	391.70	64.02
210ft/64m				64.02		217.46	392.10	64.02
						218.20	392.08	64.02
						220.75	392.16	64.02
						219.01	392.50	64.02
						217.37	392.64	64.02
						214.55	392.72	64.02
						213.81	392.82	64.02
						211.92	392.88	64.02
						209.69	392.88	64.02
						206.46	393.01	64.02
						203.24	392.85	64.02
						201.24	392.88	64.02
						199.17	392.69	64.02
						200.22	392.38	64.02
						207.04	392.38	64.02
						210.74	392.40	64.02
						211.90	392.25	64.02
						210.93	392.09	64.02
						202.76	391.64	64.02
						199.40	391.54	64.02

Name	M.	ID	OnlyPts	Height		Coordinates		
				Begin	End	x	y	z
				(m)	(m)	(m)	(m)	(m)
						196.80	391.64	64.02
						195.10	391.43	64.02
						193.94	391.12	64.02
212ft/64.6m				64.63		294.04	327.37	64.63
						296.75	325.38	64.63
						299.33	322.93	64.63
						299.57	320.52	64.63
						298.75	317.31	64.63
						298.73	315.95	64.63
						298.61	315.39	64.63
						297.45	314.03	64.63
						296.55	311.35	64.63
						296.26	307.58	64.63
						296.39	300.03	64.63
						296.26	295.80	64.63
						296.32	289.25	64.63
						296.29	284.81	64.63
						295.93	283.06	64.63
						295.69	281.37	64.63
						295.66	280.18	64.63
						295.13	278.76	64.63
						294.30	278.76	64.63
						293.26	278.82	64.63
						293.20	279.15	64.63
						293.21	279.18	65.24
						294.32	279.07	65.24
						294.56	279.14	65.24
						294.81	279.63	65.24
						295.19	280.29	65.24
						295.16	281.18	65.24
						295.21	282.12	65.24
						295.38	283.77	65.24
						295.58	285.54	65.24
						295.73	290.15	65.24
						295.67	292.78	65.24
						295.57	295.81	65.24
						295.47	297.53	65.24
						295.54	302.66	65.24
						295.64	308.31	65.24
						295.85	311.05	65.24
						296.17	312.77	65.24
						296.61	313.86	65.24
						296.63	314.76	65.24
						296.36	315.17	65.24
						295.50	316.03	65.24
						295.27	316.68	65.24
						295.09	317.98	65.24
						294.83	318.76	65.24
						293.90	319.52	65.24
						293.86	313.33	65.24
212ft/64.6m				64.63		293.18	278.76	64.63
						293.15	278.09	64.63
						293.78	277.73	64.63
						294.21	277.47	64.63
						294.54	276.97	64.63
						294.27	276.54	64.63
						292.95	275.78	64.63
						291.13	275.12	64.63
						289.44	275.02	64.63
						286.23	275.12	64.63
						282.52	274.95	64.63
						279.45	274.75	64.63
						276.67	274.16	64.63

Name	M.	ID	OnlyPts	Height		Coordinates		
				Begin	End	x	y	z
				(m)	(m)	(m)	(m)	(m)
						275.87	273.63	64.63
						275.01	272.34	64.63
						273.89	269.79	64.63
						273.39	268.17	64.63
						273.13	266.68	64.63
						273.26	265.42	64.63
						273.19	262.77	64.63
						273.06	259.96	64.63
						272.63	258.11	64.63
						272.23	256.49	64.63
						271.57	255.92	64.63
						270.91	256.49	64.63
						270.15	257.28	64.63
						268.36	258.11	64.63
						265.70	259.20	64.63
						265.75	266.60	64.63
212ft/64.6m				64.63		237.59	340.01	64.63
						237.70	339.54	64.63
						237.49	339.18	64.63
						237.51	338.82	64.63
						237.70	338.60	64.63
						237.55	337.38	64.63
						237.85	335.52	64.63
						238.46	333.45	64.63
						239.13	333.39	64.63
						242.50	333.18	64.63
						250.22	333.18	64.63
						254.72	332.72	64.63
						256.85	332.60	64.63
						258.35	333.51	64.63
						259.10	333.64	64.63
						259.72	333.14	64.63
						262.02	332.47	64.63
						269.14	332.18	64.63
						275.90	331.39	64.63
						282.10	330.73	64.63
						285.06	330.39	64.63
						285.20	330.02	64.63
						285.01	329.65	64.63
						281.62	329.60	64.63
						282.46	329.09	64.63
						285.63	328.95	64.63
						289.51	328.42	64.63
214ft/65.2m				65.24		265.92	266.98	65.24
						267.25	266.70	65.24
						268.00	266.14	65.24
						269.04	265.04	65.24
						269.85	263.87	65.24
						270.31	262.91	65.24
						271.21	261.91	65.24
						271.90	261.60	65.24
						272.13	261.93	65.24
						272.38	262.83	65.24
						272.46	264.37	65.24
						272.46	265.98	65.24
						272.46	267.66	65.24
						273.29	270.73	65.24
						274.19	273.04	65.24
						275.46	274.61	65.24
						277.48	275.44	65.24
						280.28	275.65	65.24
						284.76	275.90	65.24
						287.66	275.71	65.24

Name	M.	ID	OnlyPts	Height		Coordinates		
				Begin	End	x	y	z
				(m)	(m)	(m)	(m)	(m)
						290.28	275.88	65.24
						292.06	276.45	65.24
						292.94	277.07	65.24
						293.02	277.56	65.24
214ft/65.2m				65.24		283.21	328.46	65.24
						281.59	328.64	65.24
						279.89	328.82	65.24
						278.91	329.04	65.24
						277.44	329.04	65.24
						276.31	329.12	65.24
						275.00	329.48	65.24
						278.07	329.91	65.24
						275.42	330.49	65.24
						272.65	330.96	65.24
						269.58	331.12	65.24
						266.35	331.39	65.24
						263.47	331.45	65.24
						261.83	331.49	65.24
						260.54	331.65	65.24
						260.01	331.98	65.24
						259.39	332.30	65.24
						258.69	332.30	65.24
						257.90	332.21	65.24
						257.14	331.98	65.24
						256.62	331.82	65.24
						255.35	331.70	65.24
						254.29	331.78	65.24
						253.45	332.03	65.24
						251.74	332.16	65.24
						246.43	332.25	65.24
						243.63	332.15	65.24
						241.02	332.25	65.24
						237.74	332.54	65.24
						237.25	333.27	65.24
						237.02	334.22	65.24
						236.88	335.34	65.24
						236.73	335.97	65.24
						236.13	336.50	65.24
218ft/66.5				66.46		279.68	277.37	66.46
						278.79	277.25	66.46
						278.04	276.96	66.46
						276.00	276.96	66.46
						274.83	277.04	66.46
						274.41	276.84	66.46
						273.25	275.92	66.46
						272.66	275.17	66.46
						271.95	274.83	66.46
						271.00	275.29	66.46
						269.91	276.13	66.46
						268.62	276.38	66.46
						267.29	276.54	66.46
						265.68	276.32	66.46
192ft/58.5m				58.54		305.04	381.86	58.54
						305.17	381.14	58.54
						304.45	378.69	58.54
						306.43	378.09	58.54
						308.95	376.57	58.54
						309.87	374.91	58.54
						309.87	373.13	58.54
						308.68	371.08	58.54
						307.75	369.49	58.54
						310.20	369.46	58.54
						310.25	368.12	58.54

Name	M.	ID	OnlyPts	Height		Coordinates		
				Begin	End	x	y	z
				(m)	(m)	(m)	(m)	(m)
						311.22	367.07	58.54
						310.93	366.47	58.54
						310.75	361.27	58.54
						310.46	353.20	58.54
						312.19	351.97	58.54
196ft/59.8m				59.76		277.35	379.20	59.76
						279.19	377.16	59.76
						279.90	375.24	59.76
						279.52	372.99	59.76
						278.52	370.20	59.76
						281.19	369.99	59.76
						284.19	367.20	59.76
						289.82	367.24	59.76
						293.53	367.11	59.76
						294.03	363.24	59.76
						293.45	336.88	59.76
						293.61	336.34	59.76
						295.57	336.18	59.76
						299.28	336.30	59.76
						310.62	335.18	59.76
Various Height						54.53	430.87	51.83
						61.41	248.76	36.59
206ft/62.8				62.80		315.92	327.21	62.80
						315.32	327.96	62.80
						314.98	328.20	62.80
						314.10	328.46	62.80
						313.72	328.46	62.80
						313.37	328.14	62.80
						313.40	327.15	62.80
						313.41	326.42	62.80
						313.01	326.05	62.80
						310.43	324.79	62.20
						306.58	323.11	62.20
						304.74	322.43	62.80
						304.42	322.19	62.80
						303.90	321.58	62.80
						303.45	320.69	62.80
						302.77	318.96	62.80
						301.96	317.67	62.80
						301.46	316.65	62.80
206ft/62.8				62.80		299.25	328.68	62.80
						300.30	328.41	62.80
						301.67	327.95	62.80
						305.17	327.77	62.80
						306.46	327.60	62.80
						307.30	327.37	62.80
						308.09	326.45	62.80
						308.24	325.37	62.80
						307.78	324.68	62.80
						307.19	324.25	62.80
						306.34	324.20	62.80
						305.61	323.93	62.80
						304.63	323.33	62.80
						303.82	322.35	62.80
						301.31	317.15	62.80
						299.95	314.79	62.80
						298.98	312.93	62.80
						298.32	310.72	62.80
						298.14	307.10	62.80
						298.16	302.32	62.80
						298.28	292.69	62.80
						298.06	287.16	62.80
						297.73	283.36	62.80

Name	M.	ID	OnlyPts	Height		Coordinates		
				Begin	End	x	y	z
				(m)	(m)	(m)	(m)	(m)
						297.45	280.91	62.80
						297.27	279.50	62.80
						297.37	278.94	62.80
						297.57	278.43	62.80
						297.55	277.87	62.80
						297.42	277.59	62.80
						296.99	277.44	62.80
						296.59	277.40	62.80
						296.38	277.18	62.80
						296.67	276.85	62.80
						297.17	276.64	62.80
						297.42	276.18	62.80
						296.96	275.18	62.80
						295.88	274.26	62.80
						293.96	273.47	62.80
						291.46	272.89	62.80
						289.46	272.55	62.80
						286.50	272.47	62.80
						284.17	272.39	62.80
						281.96	271.76	62.80
						279.50	270.93	62.80
						278.08	270.64	62.80
						276.92	269.68	62.80
						275.67	267.80	62.80
						275.21	265.39	62.80
						275.37	263.30	62.80
						275.33	262.18	62.80
						275.00	258.59	62.80
						274.29	251.26	62.80
						273.71	246.22	62.80
						273.25	242.13	62.80
						272.87	238.97	62.80
						272.75	237.80	62.80
						272.54	237.01	62.80
						270.50	237.51	62.80
						265.49	241.26	62.80
206ft/62.8				62.80		179.98	391.25	62.80
						180.42	391.85	62.80
						181.45	392.53	62.80
						184.57	393.03	62.80
						188.19	393.48	62.80
						195.28	394.29	62.80
						199.67	394.66	62.80
						202.58	394.63	62.80
						207.49	394.87	62.80
						211.87	394.42	62.80
						214.86	394.19	62.80
						216.52	394.16	62.80
						217.69	394.11	62.80
						220.44	393.95	62.80
						224.28	393.75	62.80
						228.18	393.19	62.80
						228.77	392.92	62.80
						229.75	392.49	62.80
						231.62	391.06	62.80
						231.25	391.08	62.80
						230.75	390.92	62.80
						230.59	390.46	62.80
						230.73	390.00	62.80
						231.63	389.42	62.80
						232.38	387.39	62.80
						233.32	383.46	62.80
						233.65	382.14	62.80

Name	M.	ID	OnlyPts	Height		Coordinates		
				Begin	End	x	y	z
				(m)	(m)	(m)	(m)	(m)
						233.65	379.62	62.80
206ft/62.8				62.80		238.65	345.48	62.80
						239.37	348.48	62.80
						240.36	357.50	62.80
						240.69	357.28	62.80
206ft/62.8				62.80		240.69	357.28	62.80
						240.77	356.63	62.80
206ft/62.8				62.80		240.77	356.63	62.80
						241.11	355.08	62.80
						241.43	345.94	62.80
						241.30	344.39	62.80
						241.22	343.19	62.80
						240.85	341.98	62.80
						240.10	338.81	62.80
						240.10	337.98	62.80
						240.51	337.23	62.80
						241.30	336.56	62.80
						242.30	336.31	62.80
						246.30	335.77	62.80
						254.35	335.39	62.80
						256.22	335.31	62.80
						257.10	334.89	62.80
						258.01	335.35	62.80
						258.39	336.02	62.80
						258.68	336.31	62.80
						259.31	336.39	62.80
						259.72	335.89	62.80
						260.22	335.52	62.80
						260.97	335.19	62.80
						261.72	335.31	62.80
						263.01	335.23	62.80
						266.72	335.14	62.80
						268.76	334.94	62.80
						276.22	334.39	62.80
						290.57	332.48	62.80
						293.07	331.64	62.80
						298.52	331.60	62.80
						304.78	330.69	62.80
						311.90	330.64	62.80
						314.15	330.19	62.80
216ft/65.9m				65.85		273.14	328.71	66.46
						262.35	328.84	66.46
						250.58	329.06	66.46
						249.11	329.16	66.46
						245.98	329.41	66.46
						242.15	329.07	66.46
						241.61	328.92	66.46
						234.66	329.11	65.85
						235.39	333.44	65.85
						236.45	331.88	65.85
						237.61	331.35	65.85
						239.56	331.25	65.85
						247.11	331.38	65.85
						250.29	331.45	65.85
						258.06	330.85	65.85
						261.87	330.59	65.85
						267.33	330.26	65.85
						271.96	330.06	65.85
						256.31	329.63	65.85
						272.95	329.17	65.85
						274.58	328.53	65.85
						280.36	328.44	65.85
216ft/65.9m				65.85		293.82	309.73	66.46

Name	M.	ID	OnlyPts	Height		Coordinates		
				Begin	End	x	y	z
				(m)	(m)	(m)	(m)	(m)
						293.93	309.69	66.46
						294.18	309.06	66.46
						294.51	305.77	66.46
						294.51	301.35	66.46
						294.13	297.72	66.46
						294.22	296.14	66.46
						294.43	293.35	66.46
						294.26	291.68	66.46
						293.46	289.63	66.46
						293.82	309.81	65.85
						293.90	313.27	65.85
						295.26	312.85	65.85
						295.42	311.99	65.85
						294.99	310.01	65.85
						295.02	307.69	65.85
						294.92	301.70	65.85
						294.79	295.65	65.85
						294.99	285.78	65.85
						294.73	283.20	65.85
						294.26	280.89	65.85
						293.83	279.66	65.85
						293.53	279.40	65.85
						293.24	279.36	65.85
						293.39	289.55	65.85
216ft/65.9m				65.85		292.00	277.46	65.85
						290.66	276.78	65.85
						288.21	276.55	65.85
						286.72	276.62	65.85
						284.60	276.68	65.85
						283.28	276.72	65.85
						280.96	276.68	65.85
						278.88	276.45	65.85
						276.16	275.82	65.85
						274.74	275.36	65.85
						274.28	274.67	65.85
						273.28	273.08	65.85
						272.32	270.26	65.85
						272.12	268.94	65.85
						272.12	268.05	65.85
						271.60	267.25	65.85
						270.74	268.08	65.85
						268.52	268.94	65.85
						267.56	269.47	65.85
						267.46	269.74	65.85
						267.13	270.69	65.85
						266.70	270.93	65.85
						265.67	270.98	65.85
186ft/56.7m				56.71		294.97	218.30	56.71
						280.14	217.88	56.71
						279.72	217.51	56.71
						278.59	216.34	56.71
						277.63	214.42	56.71
						276.84	212.05	56.71
						276.34	209.22	56.71
						275.13	200.55	56.71
						274.84	198.63	56.71
						274.55	198.21	56.71
						273.88	198.17	56.71
						273.09	198.30	56.71
						266.72	200.34	56.71
						260.09	202.46	56.71
						255.84	204.34	56.71
						251.01	207.47	56.71

Name	M.	ID	OnlyPts	Height		Coordinates		
				Begin	End	x	y	z
				(m)	(m)	(m)	(m)	(m)
						246.17	211.26	56.71
						240.96	215.88	56.71
						238.55	218.59	56.71
186ft/56.7m				56.71		163.31	401.30	56.71
						163.16	403.93	56.71
						163.04	405.58	56.71
						162.68	409.18	56.71
						162.25	411.47	56.71
						162.16	412.93	56.71
						162.16	414.51	56.71
						162.18	416.41	56.71
						162.04	417.51	56.71
						161.19	420.66	56.71
190ft/57.9m				57.93		162.61	421.05	57.93
						163.45	414.65	57.93
						163.86	409.55	57.93
						164.76	399.48	57.93
						164.70	398.15	57.93
						164.11	396.69	57.93
						163.38	395.60	57.93
						162.65	394.68	57.93
						162.02	393.35	57.93
						161.66	392.03	57.93
						161.46	390.31	57.93
						161.99	388.72	57.93
						162.88	387.33	57.93
						164.34	385.88	57.93
						165.20	385.28	57.93
						166.22	384.68	57.93
						167.91	384.35	57.93
						168.51	383.76	57.93
*125ft/38.1m				38.11		158.39	230.12	38.11
						167.33	219.54	38.11
*130ft/39.6m				39.63		170.94	219.57	39.63
						158.44	235.69	39.63
*135ft/41.2m				41.16		175.45	219.46	41.16
						166.21	230.18	41.16
						160.80	238.10	41.16
*145ft/44.2m				44.21		187.16	219.26	44.21
						181.80	222.14	44.21
						175.76	228.71	44.21
						166.52	240.78	44.21
						160.59	267.20	44.21
						158.80	268.14	44.21
*150ft/45.7m				45.73		194.41	219.33	45.73
						183.57	224.67	45.73
						176.18	233.02	45.73
						169.49	242.25	45.73
						164.32	266.18	45.73
						158.90	279.85	45.73
*155ft/47.3m				47.26		201.16	219.37	47.26
						185.57	227.62	47.26
						178.82	234.61	47.26
						172.49	243.29	47.26
						167.24	267.46	47.26
						163.48	277.63	47.26
						158.65	286.21	47.26
*160ft/48.8m				48.78		206.61	219.21	48.78
						196.95	225.62	48.78
						187.49	230.26	48.78
						181.40	236.74	48.78
						175.05	244.94	48.78
						170.29	268.30	48.78

Name	M.	ID	OnlyPts	Height		Coordinates		
				Begin	End	x	y	z
				(m)	(m)	(m)	(m)	(m)
						166.65	277.76	48.78
						158.84	296.08	48.78
*165ft/50.3m				50.30		213.03	219.33	50.30
						198.21	228.46	50.30
						189.08	233.09	50.30
						182.66	240.50	50.30
						178.16	246.58	50.30
						173.20	269.41	50.30
						169.36	279.40	50.30
						164.73	289.92	50.30
						163.61	295.34	50.30
						158.51	309.10	50.30
*175ft/53.4m				53.35		225.04	218.99	53.35
						220.20	222.91	53.35
						209.37	228.74	53.35
						201.03	234.50	53.35
						192.45	238.41	53.35
						183.69	249.33	53.35
						178.94	271.75	53.35
						176.19	278.17	53.35
						173.94	285.01	53.35
						170.02	293.43	53.35
						169.19	298.76	53.35
						165.19	309.68	53.35
						164.69	314.43	53.35
						162.61	323.77	53.35
						161.02	330.52	53.35
						160.44	336.85	53.35
						161.02	340.10	53.35
						162.44	342.77	53.35
						166.94	349.02	53.35
						168.61	353.44	53.35
						169.27	356.11	53.35
						170.52	358.02	53.35
						172.02	358.44	53.35
						174.11	358.69	53.35
						175.44	358.02	53.35
						176.40	357.36	53.35
						177.76	356.34	53.35
						180.54	356.80	53.35
						180.70	355.91	53.35
						187.81	358.98	53.35
*175ft/53.4m				53.35		155.01	399.70	53.35
						155.92	401.41	53.35
						157.17	402.78	53.35
						158.30	403.74	53.35
						158.55	404.66	53.35
						158.51	405.57	53.35
*180ft/54.9m				54.88		230.74	219.03	54.88
						222.14	225.51	54.88
						201.37	237.95	54.88
						194.49	241.39	54.88
						186.62	250.52	54.88
						182.12	272.22	54.88
						178.08	282.87	54.88
						173.25	294.71	54.88
						172.20	299.02	54.88
						168.00	311.20	54.88
						167.79	315.40	54.88
						164.75	326.75	54.88
						163.59	337.14	54.88
						163.46	337.87	54.88
						163.92	339.39	54.88

Name	M.	ID	OnlyPts	Height		Coordinates		
				Begin	End	x	y	z
				(m)	(m)	(m)	(m)	(m)
						164.58	340.19	54.88
						172.59	348.02	54.88
						173.65	348.55	54.88
						174.57	348.55	54.88
						175.53	348.42	54.88
						176.23	348.12	54.88
						181.12	342.20	54.88
						184.23	341.91	54.88
						184.40	340.19	54.88
						189.82	344.65	54.88
*185ft/56.4m				56.40		216.07	232.46	56.40
						204.57	239.80	56.40
						196.15	243.97	56.40
						189.31	252.22	56.40
						185.06	273.47	56.40
						182.31	280.39	56.40
*185ft/56.4m				56.40		158.55	388.75	56.40
						158.30	390.58	56.40
						158.72	392.75	56.40
						159.47	395.17	56.40
						160.47	396.75	56.40
						161.56	398.09	56.40
						162.39	398.84	56.40
						162.81	399.50	56.40
						162.97	401.09	56.40
*185ft/56.4m				56.40		204.00	284.84	56.40
						207.05	292.40	56.40
*170ft/51.8m				51.83		158.60	342.64	51.83
						164.29	350.91	51.83
						164.89	352.10	51.83
						166.54	357.26	51.83
						167.47	359.05	51.83
						169.12	360.77	51.83
						171.84	361.96	51.83
						175.01	363.28	51.83
						176.86	365.00	51.83
						177.39	364.21	51.83
						183.08	369.96	51.83
*165ft/50.3m				50.30		158.14	347.55	50.30
						162.24	353.43	50.30
						162.77	354.56	50.30
						162.90	355.88	50.30
						163.23	357.60	50.30
						164.69	360.52	50.30
						169.39	367.26	50.30
						170.58	369.91	50.30
						171.11	369.58	50.30
						172.89	377.65	50.30
*160ft/48.8m				48.78		157.61	352.31	48.78
						159.00	354.16	48.78
						159.40	354.96	48.78
						159.73	355.88	48.78
						161.38	368.19	48.78
						160.45	371.43	48.78
						162.31	371.17	48.78
						160.92	379.51	48.78
*195ft/59.5m	+			59.45		260.76	263.30	59.45
						258.64	265.88	59.45
						254.71	269.60	59.45
						250.70	272.44	59.45
*195ft/59.5m				59.45		187.76	371.54	59.45
						187.17	374.46	59.45
						186.09	376.62	59.45

Name	M.	ID	OnlyPts	Height		Coordinates		
				Begin	End	x	y	z
				(m)	(m)	(m)	(m)	(m)
						184.51	378.04	59.45
						182.51	380.04	59.45
						179.50	382.13	59.45
						177.34	383.46	59.45
						172.25	385.71	59.45
						169.83	387.05	59.45
						166.83	387.80	59.45
						165.83	388.55	59.45
						165.10	389.57	59.45
						164.71	390.76	59.45
						164.87	391.82	59.45
						165.24	392.62	59.45
						165.93	393.41	59.45
						166.59	393.84	59.45
*200ft/60.9m				60.98		216.52	293.76	60.98
						208.01	310.43	60.98
						203.76	321.10	60.98
						200.76	331.43	60.98
						194.69	351.98	60.98
						192.77	359.73	60.98
						190.11	374.74	60.98
						189.77	376.49	60.98
						188.86	377.99	60.98
						187.77	379.32	60.98
						186.27	380.91	60.98
						183.35	383.66	60.98
						181.02	385.07	60.98
						176.85	387.58	60.98
						173.35	388.74	60.98
						171.01	390.16	60.98
						169.10	390.58	60.98
						167.76	391.08	60.98
*190ft/57.9m				57.93		247.08	241.37	57.93
						245.40	242.31	57.93
						242.88	248.72	57.93
						239.51	253.66	57.93
						238.88	254.39	57.93
						236.57	261.95	57.93
*195ft/59.5m				59.45		231.10	266.01	59.45
						214.19	291.62	59.45
						210.27	298.62	59.45
						206.43	306.38	59.45
						203.18	314.55	59.45
						200.60	321.22	59.45
						193.51	344.81	59.45
200ft/60.9m				60.98		262.88	299.73	60.98
						256.26	306.55	60.98
200ft/60.9m				60.98		240.62	313.17	60.98
						229.80	315.69	60.98
						228.86	316.84	60.98
Lots (202ft/61.5m				61.59		293.57	327.96	61.59
						276.64	328.35	61.59
						275.84	328.48	61.59
						261.69	328.48	61.59
						261.29	328.48	61.59
						232.45	328.75	61.59
						244.23	306.92	61.59
						261.03	306.26	61.59
						261.69	306.26	61.59
						275.58	306.26	61.59
						276.51	306.26	61.59
						293.57	306.18	61.59
						293.81	327.74	61.59

Name	M.	ID	OnlyPts	Height		Coordinates		
				Begin	End	x	y	z
				(m)	(m)	(m)	(m)	(m)
Lots (202ft/61.5m)				61.59		293.45	299.03	61.59
						254.70	299.69	61.59
						251.28	296.53	61.59
						254.03	290.94	61.59
						259.45	277.86	61.59
						293.12	277.61	61.59
						293.45	298.94	61.59
Lots (various)	+					178.10	390.82	62.19
						229.44	390.55	62.19
						229.42	379.47	62.19
						240.47	362.58	61.90
						239.01	348.17	61.59
						234.18	329.04	61.28
Lots (various)	+					265.59	277.13	61.90
						265.52	260.99	59.45
						265.39	240.28	58.26
						264.97	219.28	58.26
						247.98	219.31	58.26
						247.53	219.28	58.02
						242.03	219.16	58.02
						228.63	223.79	58.01
196ft/59.7m	+			59.76		279.43	263.97	59.76
						278.77	256.80	59.76
						278.24	251.77	59.76
						277.88	246.58	59.76
						276.52	233.15	59.76
						275.96	228.82	59.76
						275.00	222.30	59.76
						274.04	218.93	59.76
						274.04	216.91	59.76
						273.48	215.36	59.76
						272.62	214.76	59.76
						271.46	215.26	59.76
						271.07	215.75	59.76
						265.33	218.50	59.76
208ft/63.4m	+			63.40		230.01	392.22	63.40
						227.26	392.39	63.40
						226.42	392.31	63.40
						224.92	392.14	63.40
						225.34	391.64	63.40
						226.55	391.47	63.40
						227.67	391.31	63.40
						228.22	390.93	63.40
						229.80	390.56	63.40
						229.80	389.18	63.40
						230.42	386.97	63.40
						231.09	388.64	63.40
						231.55	387.56	63.40
						231.63	386.22	63.40
						231.84	384.72	63.40
						232.55	383.01	63.40
						232.76	381.43	63.40
						232.76	379.80	63.40
208ft/63.4m	+			63.40		265.68	246.73	63.40
						267.78	245.39	63.40
						270.30	244.05	63.40
						272.03	243.31	63.40
						272.32	243.47	63.40
						272.42	243.79	63.40
						272.61	245.26	63.40
						273.37	250.98	63.40
						273.87	256.10	63.40
						274.37	259.67	63.40

Name	M.	ID	OnlyPts	Height		Coordinates		
				Begin	End	x	y	z
				(m)	(m)	(m)	(m)	(m)
						274.55	262.42	63.40
						274.60	264.05	63.40
						274.63	266.26	63.40
						274.86	267.60	63.40
218ft/66.5m	+			66.47		266.02	277.71	66.47
						279.88	277.60	66.47
202ft/61.6m	+			61.59		265.40	230.56	61.59
						271.42	227.58	61.59
						272.68	227.42	61.59
						272.88	227.45	61.59
						273.21	228.31	61.59
						273.70	230.26	61.59
						274.10	233.70	61.59
						274.56	237.60	61.59
204ft/62.2m	+			62.20		265.60	239.92	62.20
						265.57	235.25	62.20
						269.93	232.84	62.20
						271.59	232.24	62.20
						272.58	232.24	62.20
						272.81	232.87	62.20
						273.31	234.23	62.20
						273.80	238.83	62.20
218ft/66.5m	+			66.46		242.04	328.94	66.46
						255.78	328.82	66.46

CULTURAL RESOURCES ASSESSMENT
FOR THE
PACIFICA RIDGE PROJECT

CITY OF SAN DIEGO

SAN DIEGO COUNTY, CALIFORNIA

LSA

September 2015

CULTURAL RESOURCES ASSESSMENT FOR THE PACIFICA RIDGE PROJECT

CITY OF SAN DIEGO

SAN DIEGO COUNTY, CALIFORNIA

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LSA Project No. RRE1301

National Archeological Database (NADB) Information:
Type of Investigation: Intensive Pedestrian Survey
USGS Quadrangle: *Imperial Beach* 7.5-minute
Sites: CA-SDI-21642 and CA-SDI-21643
Keywords: Water Catchment Basin, Lithic Scatter, *Imperial Beach* 7.5-minute Quadrangle

LSA

September 2015

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MANAGEMENT SUMMARY

LSA Associates, Inc. (LSA) has been contracted by Raintree Residential, LLC to conduct an intensive pedestrian survey for the Pacifica Ridge Project. The approximately 4.2-acre project site is located in Otay Mesa, southeast of the City of San Diego in San Diego County, California.

This report includes a discussion of the results of the cultural records search, the natural and cultural setting, results of the field survey, and management recommendations. For this study, 4.2 acres were surveyed in 10-meter intervals. Department of Parks and Recreation (DPR) 523 site forms were completed for newly discovered cultural resources.

The records search, conducted at the South Coastal Information Center (SCIC), concluded that 10 previous cultural resource studies have been conducted and one cultural resource (P-37-25680) has been recorded within a quarter-mile of the project area. P-37-25680 represents a segment of the Union Pacific Railroad. No cultural resources were recorded within the project area. One previous survey conducted in 1996 included the project area; however, no cultural resources were recorded within the current project area. Historic topographic maps and aerial photographs of the project area were also examined.

A Sacred Lands File (SLF) search was conducted with the Native American Heritage Commission (NAHC). Based on the results of the SLF search, no Native American resources have been recorded within the project area.

An intensive pedestrian field survey was performed on March 7, 2014. One newly recorded historic resource (CA-SDI-21642) and one prehistoric resource (CA-SDI-21643) were observed. Surface visibility was varied throughout the project area, and several areas were obscured by dense vegetation. The project area is currently vacant, though it has recently been used as an opportunistic refuse dump.

The resources observed include the ruins of a water catchment basin (CA-SDI-21642) from the mid-20th century and a sparse prehistoric lithic scatter (CA-SDI-21643). Site CA-SDI-21642 does not appear to be eligible for listing in the California Register of Historical Resources (California Register), as it is not associated with an important historical event or significant individual, does not represent unique architectural design, or have potential to contribute important information to the historical or archaeological record. The surface manifestations of Site CA-SDI-21643 do not appear to be eligible for listing in the California Register; however, it cannot be said with scientific certainty that a subsurface component does not exist within this site. Dense vegetation limited the accuracy of assessing the site boundary. In addition, the project area is in a depositional environment. Therefore, the presence of a qualified archaeological monitor is recommended during ground-disturbing work within the southern half of the project area near Site CA-SDI-21643. This will aid in finding the site boundary and provide an opportunity to evaluate any observed subsurface deposit if present. In consideration of published significance thresholds, the proposed project will not have a significant impact on historical resources.

INTRODUCTION

LSA was contracted to provide technical studies and management recommendations for the Pacifica Ridge Project. The project area is approximately 4.2-acres. The project is located in the community of Otay Mesa, southeast of the City of San Diego in southeast San Diego County.

A records search at the SCIC, located at San Diego State University, was conducted on December 17, 2013, to establish the status and extent of previous surveys in the project area and note what types of resources might be expected to occur within the proposed project.

LSA conducted an intensive pedestrian survey of the project area. Qualified archaeologists systematically walked the property in 10-meter-wide transects, per standard archaeological procedure. In accordance with guidelines published by the California Office of Historic Preservation, all man-made resources greater than 45 years in age were documented.

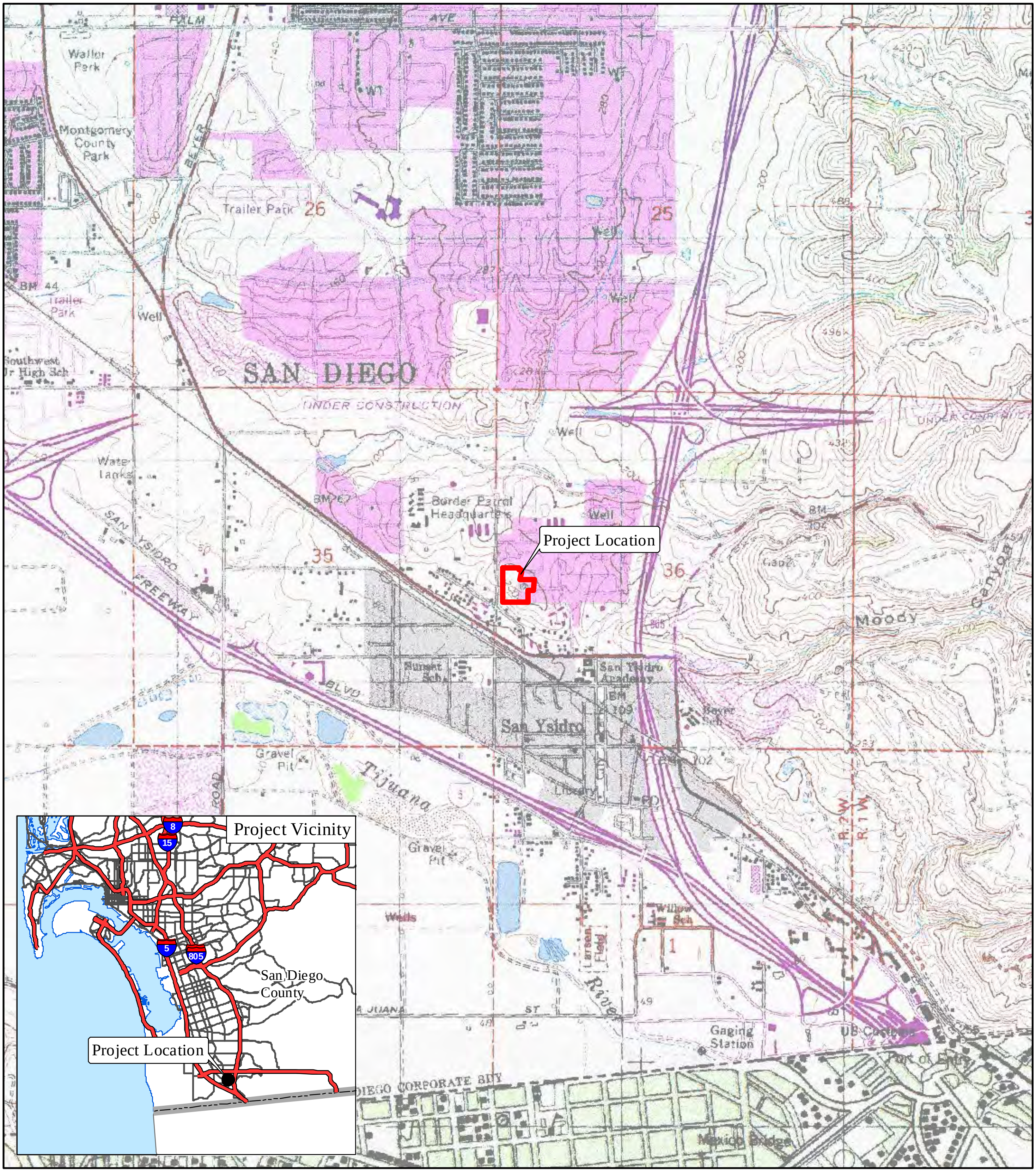
In addition to performing a cultural resources records search and historical background research, the purpose of the intensive pedestrian survey was to record all surface manifestations of human activity greater than 45 years in age. The identification effort was performed in accordance with the Secretary of the Interior's Standards for Identification. All work was supervised and field directed by Roderic McLean, M.A., RPA. Mr. McLean exceeds the Secretary of Interior's Qualification Standards for Archaeology. The survey results are supplemented with LSA's management recommendations. LSA was also tasked to complete this cultural resources technical report providing the results of the study. The report is prepared in accordance with Archaeological Resource Management Report (ARMR): Recommended Contents and Format (Office of Historic Preservation 1990) and the City of San Diego Historical Resources Guidelines (City of San Diego 2001a).

OBJECTIVES

LSA's objectives were (1) to observe and accurately document all resources greater than 45 years in age in the project area in order to comply with CEQA Guidelines, (2) to provide the needed data for management recommendations, and (3) to provide a report that meets the State Office of Historic Preservation standards. LSA's goal was to locate, by systematic survey, all unrecorded and previously recorded sites within the project area.

PROJECT DESCRIPTION

The project area encompasses approximately 4.2 acres and is located northeast of the intersection of Smythe Avenue and Foothill Drive in the community of Otay Mesa, San Diego, San Diego County, California (Figure 1). The project area is located in Township 18 South, Range 2 West, in Sections 35 and 36 on the *Imperial Beach, California* 7.5-minute USGS topographic quadrangle map. The survey area consisted of the project area, approximately 4.2 acres. The regulatory framework and methods



LSA

FIGURE 1

LEGEND

🟥 Project Footprint

SOURCE: USGS 7.5' Quad. (Imperial Beach, 1975)

Pacifica Ridge

Project Location

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used for determining impacts to cultural resources are defined in Section 15064.5 of the California Environmental Quality Act (CEQA) Guidelines.

REGULATORY CONTEXT

The CEQA Guidelines require the consideration of effects on historical resources for a proposed project during the planning process. This process requires (a) the identification of cultural resources that may be affected by the project, (b) an evaluation of the significance of the resource, (c) an assessment to determine whether a project may have a significant effect on archaeological resources, and (d) the development of a research design and data recovery program to address or avoid impacts to the resource that may occur as a result of the project.

The significance criteria for assessing the impacts to cultural resources come from the CEQA Environmental Checklist (Appendix G of CEQA Guidelines). According to the CEQA Checklist, a project causes a potentially significant impact if it would:

- Cause a substantial adverse change in the significance of a historical resource as defined in Section 15064.5;
- Cause a substantial adverse change in the significance of an archaeological resource pursuant to Section 15064.5; and/or
- Disturb any human remains, including those interred outside of formal cemeteries.

Historical resources, as defined by Section 15064.5, include:

1. A resource listed in, or determined to be eligible by the State Historical Resources Commission, for listing in the California Register.
2. A resource included in a local register of historical resources, as defined in Section 5020.1(k) of the Public Resources Code or identified as significant in a historical resource survey meeting the requirements of Section 5024.1 of the Public Resources Code, shall be presumed to be historically or culturally significant. Public agencies must treat any such resource as significant unless the preponderance of evidence demonstrates that it is not historically or culturally significant.
3. Any object, building, structure, site, area, place, record or manuscript which a lead agency determines to be historically significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural annals of California may be considered to be a historical resource, provided the lead agency's determination is supported by substantial evidence in light of the whole record. Generally, a resource shall be considered by the lead agency to be "historically significant" if the resource meets the criteria for listing in the California Register (Pub. Res. Code Section 5024.1, Title 14 CCR, Section 4852) including the following:
   A. It is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage;
   B. It is associated with the lives of persons important in our past;

   C. It embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values; and/or
   D. It has yielded, or may be likely to yield, information important in prehistory or history.

4. If a resource is not listed in, or determined to be eligible for listing in the California Register, not included in a local register of historical resources (pursuant to Section 5020.1(k) of the Public Resources Code), or identified in an historical resources survey (meeting the criteria in Section 5024.1(g) of the Public Resource Code) does not preclude a lead agency from determining that the resource may be an historical resource as defined in Public Resource Code Sections 5020.1(j) or 5024.1.

PROJECT PERSONNEL

Roderic McLean, M.A. RPA, served as Principal Investigator for the current project. Mr. McLean exceeds the Secretary of the Interior's Qualifications Standards for Archaeology, and has been practicing professional archaeology for over 20 years.

Jacqueline Hall, B.A., participated in the pedestrian survey, prepared report graphics, and contributed to the summary report. Ms. Hall has a B.A. in Anthropology from San Diego State University, and has more than five years of experience as a professional archaeologist.

Chris Morgan, M.A. RPA, participated in the pedestrian survey and contributed to the summary report. Mr. Morgan has a M.A. in Biological Anthropology from the University of Oklahoma, and more than seven years of experience as a professional archaeologist.

SETTING

NATURAL SETTING

Geological Setting

The project area is located in the community of Otay Mesa and part of the Peninsular Ranges Geomorphic Province (Norris and Webb 1990). The Peninsular Ranges trend northwest to southeast and include the Laguna Mountains, which lie northeast of the project area. The province consists of rugged mountains underlain by Jurassic metavolcanic and metasedimentary rocks, and Cretaceous igneous rocks of the southern California batholith (Norris and Webb 1990).

Sediments within the project area consist of the Otay Formation (To). It is described as poorly indurated massive light-colored sandstone, siltstone, and claystone, interbedded with bentonite lenses from the Oligocene to Miocene periods (Kennedy and Tan 1977). These are alluvial fan and fluvial deposits, divided into a lower conglomerate, a middle gritstone, and an upper mudstone/sandstone.

The soils that occur in the Otay Mesa community are in the Group IV Soil Association. They develop on marine terraces and coastal foothills, and are characterized as excessively to moderately well-drained, nearly level to steep, loamy coarse sands to clay loams (U.S. Department of Agriculture 1973).

Biological Setting

The project area is characterized by maritime succulent scrub and nonnative vegetation. Maritime succulent scrub includes plant species such as coastal cholla, California sagebrush, California buckwheat, and jojoba. Several San Diego barrel cacti are located in the project area as well. Nonnative places, such as fennel, shortpod mustard, ripgut brome, Russian thistle, and African fountain grass grow throughout the project area (Morales 2013). Animals in the area include rabbits, mice, birds, and coyotes.

Current Land Use

The project area is currently vacant land. Several concentrations of modern trash indicate it has been recently used as an unofficial refuse dump. The project area is covered in vegetation there is evidence of small animals and birds.

CULTURAL SETTING

Prehistory

San Diego County archaeological investigations indicate humans have inhabited the area for at least 10,000 years. Malcolm Rogers was the first to develop a cultural chronology of the region. In general, the prehistory of San Diego can be divided into three consecutive periods: Paleo-Indian, Archaic, and Late Prehistoric (Bull 1983; Ezell 1987; Moriarty 1966; Warren et al. 1993).

The earliest sites in San Diego County are identified as the Paleo-Indian period (9,000 to 8,000 YBP [years before present]), and include the San Dieguito, La Jolla, and Pauma complexes. Most of these sites are located around inland dry lakes, on old terrace deposits in the California desert, and on or near the coast, on mesas or terraces. The artifacts associated with this period are heavily patinated felsite tools consisting primarily of scrapers, scraper planes, choppers, large blades, and large projectile points.

Around 8,000 years ago, changes in technology begin to appear in the archaeological record. During the Early Archaic period, there is an increase in the use of grinding and seed processing technology and a change in mortuary practices, indicating population movements or internal change (Moratto 1984). There is a marked increase in the exploitation of plant and animal resources inland and on the coast. Artifacts associated with this period include an increase of Pinto and Elko series projectile points, large bifaces, manos, metates, and core tools.

The Late Prehistoric period is characterized by a series of dramatic technological changes indicating that around 2,000 YBP, people from the Colorado River area migrated to the Southern California region. This period is characterized by the appearance of smaller projectile points, ceramics, permanent bedrock milling sites, and cremation burials. There also appears to be an increase in the establishment of permanent or semi-permanent seasonal villages, indicating a shift to inland plant food collection and processing.

Ethnography

The project area is within the traditional cultural territory of the Diegueño (Kumeyaay) (Kroeber 1925:709–725). The name Diegueño comes from “San Diegueño,” a collective Spanish name for natives inhabiting the area near Mission San Diego and the nearby presidio (Luomala 1978:592). Like other Native American groups in Southern California, the Diegueño were semi-nomadic hunter-gatherers who subsisted by exploitation of seasonably available plant and animal resources and were first encountered by the Spanish in the late 18th century. They have been generally divided into linguistically similar northern and southern groups (Kroeber 1925). The traditional territory of the Diegueño extended from present-day Escondido on the north, south into northern Baja California. Kroeber (1925:709) states that the southern boundary of the Diegueño is difficult to determine and that 60 miles south of the San Diego area, native Yuman language is similar to that of the Diegueño. Kroeber (1925:709) also describes an imprecise eastern territorial boundary for the Diegueño stating that it is not known what natives inhabited the area east of the Salton Sea.

Since the 1950s, the native names Ipai and Tipai have been used instead of Diegueño to describe native people of the area (Luomala 1978:592). The name Tipai designates the northern group inhabiting an area from the San Luis Rey River south to the northern edge of San Diego Bay, while the name Ipai designates the southern group inhabiting the area of San Diego Bay southward to a point south of Ensenada in Baja California, and eastward well east of the Salton Sea. As such, the current project area was occupied by the Diegueño as described by Kroeber (1925:709-725), or by the Ipai, as described by Luomala (1978:592-609).

History

In California, the historic era is generally divided into three periods: the Spanish or Mission Period (1769–1821), the Mexican or Rancho Period (1821–1848), and the American Period (1848–present). The Spanish Period (and Euro-American history) began in San Diego County in 1769 with arrival of Gaspar de Portolá, who established Mission San Diego de Alcala near the site of a village known as Nipaguay.

In 1821, Mexico overthrew Spanish rule and the missions began to decline. By 1833, the Mexican government had passed the Secularization Act, and the missions, reorganized as parish churches, lost their vast land holdings and released their neophytes. During the Mexican Rancho Period, the ranchos were predominantly devoted to cattle, with great tracts of land used for grazing. Until the Gold Rush of 1849, livestock and horticulture dominated the economics of California (Ingersoll 1904; Beattie and Beattie 1951).

San Diego. San Diego became an American city in 1846 and was incorporated by the end of the decade, but initial growth was slow due to a combination of natural and political causes: a drought, failure of transcontinental railroad promotion, and the Civil War. This would change in the late 1860s with the arrival of Alonzo Horton, entrepreneur and land developer, who was responsible for New San Diego (modern downtown) in the 1870s (City of San Diego 2009). As the southernmost port on the west coast of the United States, San Diego experienced a commercial boom that was greatly enhanced by the establishment of multiple naval facilities and an Army airfield by the beginning of World War I (Pourade 1967). The City also enjoyed the establishment of the facilities of major aerospace companies such as Ryan Aircraft and Consolidated Aviation, which went on to design and/or produce large numbers of aircraft, missiles, and aviation components for the military from the 1930s to the present.

METHODS

DEFINITIONS OF ARCHAEOLOGICAL RESOURCE TYPES

The archaeological resources expected in the project area include both prehistoric resources and historic-age resources. The following resource types may occur within the project area:

Prehistoric Resources

- **Artifact Scatter.** This type of site contains a light surface scatter of artifacts such as cores, bifaces, ground stone or milling tools, ceramic sherds, and debitage. Artifact scatters may represent short-term resting areas, lithic reduction stations, or other special-purpose sites. Ecofacts, such as bone and shell, are not present at sites of this type.
- **Ceramic Scatters.** Similar to sparse lithic scatters but with ceramics instead of lithics. The sherds in ceramic scatters are dispersed rather than clustered and can be attributed to more than one vessel.
- **Habitation Site.** This type of site can include an artifact scatter as well as other evidence of human occupation such as bedrock milling features or other resource processing locations. House pits, hearth features, and discrete refuse areas can be present within a habitation site.
- **Isolate.** A small number of artifacts (3 or fewer) that are not part of a feature or a site.
- **Lithic Scatter.** A lithic or flake scatter contains a scatter of only flaked stone artifacts such as cores, lithic debitage, or bifaces that may have been created from one or more distinct lithic reduction episodes. If no subsurface distribution is evident, a lithic scatter is often referred to as a "sparse lithic scatter."

Historic Resources

Historic sites are those with buildings, structures, or artifactual remains of historic activities greater than 45 years old (per Office of Historic Preservation Guidelines [1995]).

- **Historic Artifact Scatters.** Trash scatters of historic bottles, cans, crockery, decorative glass, and other elements that are not associated with structural remains or other fixed features.
- **Historic Homestead.** The homestead, as a resource, can include building foundations, outbuildings, irrigation features, household refuse or other evidence of long-term occupation.
- **Water Conveyance.** Irrigation was the key to the early success of farming and ranching activities. A water conveyance feature can include any means of transporting water from one location to another, such as a pipeline, ditch, or well standpipe.

RESEARCH METHODS

A cultural records search was completed at the SCIC at San Diego State University. The records search included an examination of previously recorded cultural resources within a quarter-mile radius of the project area, including previous cultural studies completed in the area. Additionally, historic maps were examined for evidence of historic-age occupation within a quarter-mile radius of the project area. The National Register of Historic Places (National Register), California Register, and the Office of Historic Preservation, Historic Property Directory were also examined for historic properties within the project area.

Additional archival research included an examination of historic aerial photographs of the area to determine past land use and to identify any resources that may be present within the project area.

A Sacred Lands File (SLF) search was conducted with the Native American Heritage Commission (NAHC) in Sacramento. The search includes an examination of existing files at the NAHC to determine the presence of resources that are recorded as significant to Native American tribes that may not be recorded at the SCIC.

FIELD METHODS

The approximately 4.2-acre project area was surveyed on foot in parallel transects spaced approximately 10 meters apart. The pedestrian survey was completed on March 7, 2014, by LSA archaeologists Jacqueline Hall and Chris Morgan. Per the California Office of Historic Preservation (1995), LSA examined the surface and subsurface exposures such as rodent burrows and cut banks for physical manifestations of human activity greater than 45 years in age. Areas that were not safely accessible due to dense cholla were avoided.

Documentation of newly recorded resources included field notes, photographs, and the collection of GPS data. DPR forms were completed for all cultural resources observed within the project area and are located in Appendix A.

REPORT OF FINDINGS

RECORD SEARCH RESULTS

A records search was performed on December 17, 2013, at the SCIC and included a quarter-mile buffer around the project area. Records and maps were examined in a quarter-mile radius around the project area to determine whether previously recorded cultural resources had been observed within the vicinity. A total of 10 cultural resource studies have been conducted and one cultural resource had been identified within a quarter-mile of the project area. One cultural resources study occurred within the project area with negative results. Table A summarizes the previous studies.

Table A: Previously Studies within a Quarter-Mile of the Project Area

Author	Title	Date
Carrico, Richard and Lesley C. Eckhardt	Cultural Resources Reconnaissance of the San Diego Fixed Guideway Project Centre City to San Ysidro	1978
Carrico, Richard and Terri Jacques	Archaeological/Historical Survey of the United States Border Patrol Sector Headquarters San Ysidro, CA	1981
Jacques, Terri and Richard Carrico	Archaeological/Historical Survey of the United States Border Patrol Sector Headquarters San Ysidro, California	1981
Kyle, Carolyn et al.	Cultural Resource Constraint Level Analysis for the San Ysidro Redevelopment Project, San Ysidro, California	1996
McKenna, Jeanette A.	A Phase 1 Cultural Resources Investigation of the Vesta Telecommunications Inc. Fiber Optic Alignment, River County to San Diego County, California	2000
Collett, Russell O. and Charles S. Bull	Beyer Property Cultural Resource Survey Results	2004
Bonner, Wane H. and Marnie Aislin-Kay	Cultural Resource Records Search and Site Visit Results for Sprint Telecommunications Facility Candidate SD34XC831C (Vista Terrace Park), 301 Athey Avenue, San Ysidro, San Diego County, California	2005
Rosenberg, Seth A. and Brian F. Smith	A Phase I Archaeological Assessment for the Las Palmas Project San Ysidro, California	2006
Robbins-Wade, Mary	Archaeological Resources Analysis for the Master Stormwater System Maintenance Program, San Diego, California	2008
Clowery, Sara C.	Cultural Resources Survey Report CIIT Building Extension Project	2010

*Highlighted entry overlaps the Project Area

The one cultural resource was located within a quarter-mile radius of the project area is a segment of the Union Pacific Railroad and is listed in Table B. It is approximately 530 feet southwest of the project area.

Table B: Previously Recorded Resources within a Quarter-Mile of the Project Area

Primary Number	Description	Recorder (Date)
P-37-025680	Union Pacific Railroad	S. Wee and P. Ferrell (2000) D. Iversen (2005) B. Williams (2009) A. Giacinto and S. Wolf (2012) B. Comeau (2013)

In addition, historic topographic maps and aerial photographs of the project area were also examined.

SACRED LANDS FILE SEARCH

A request for a SLF search was submitted to the NAHC on August 20, 2015. A response was received on September 11, 2015. Based on the results of the SLF search, there are no significant resources within the project area. Although there are no resources on file with the NAHC, the potential for important resources exists, and further consultation between the lead agency and the individuals provided by the NAHC should be considered. The NAHC consultation letter is provided in Appendix B.

SURVEY RESULTS

During the survey, two previously unrecorded resources were identified. Site CA-SDI-21642 represents a historic-age water catchment basin, while Site CA-SDI-21643 is a sparse, prehistoric lithic scatter. Figure 2 shows these newly recorded resources.

CA-SDI-21642

The site is located in the northeast section of the project area on top of a small knoll. It is the remnants of a water catchment basin from the mid-20th century measuring approximately 90 feet long and 115 feet in wide. It exhibits poor integrity, and only the southeast corner remains standing. Based on historic aerial photographs, the basin was built by 1953 and abandoned and filled-in by 1971 (NETR 2009). Because it was filled with non-native soil, the likelihood of encountering diagnostic artifacts associated with the basin is low. No artifacts were found in association with the basin foundations, though modern trash was scattered throughout the site.

CA-SDI-21643

This resource consists of a sparse, prehistoric lithic scatter located on a southwest-facing slope covering an area approximately 40 meters long and 15 meters wide. A total of five pieces of debitage were observed. These consisted of three secondary flakes, one tertiary flake, and one secondary piece of angular waste. All of the flakes were made of a light grayish-green, aphanitic metavolcanic material, likely Santiago Peak Volcanic. It is possible there are additional artifacts on the surface, but dense cholla obscures the area. No midden was observed where soil was exposed, and it is unlikely a subsurface deposit exists; however, the potential for subsurface deposits cannot be scientifically ruled out. There is evidence of heavy water runoff down the slope, suggesting the artifacts may have been transported from the original location.

LSA

LEGEND

▭ Cultural Resource

🟥 Project Area

FIGURE 2

N

0 50 100

FEET

Pacifica Ridge

Project Area and Cultural Resources

SOURCE: LSA (03/2014)

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DISCUSSION

The survey resulted in the identification of two cultural resources. Site CA-SDI-21642, a historic-age water catchment basin represents typical water collection practices in the mid-20th century. It does not appear to be eligible for listing in the California Register, as it is not associated with an important historical event or significant individual, does not represent unique architectural design, or have potential to contribute important information to the historical or archaeological record. It exhibits poor integrity. Based on review of historic aerials, this feature is isolated and not associated with any larger ranch complex. It has been filled in with non-native fill soil, causing the potential for the presence of diagnostic artifacts associated with the feature highly unlikely.

Site CA-SDI-21643 represents a sparse prehistoric lithic scatter consisting of five artifacts. The surface manifestations of Site CA-SDI-21643 do not appear to be eligible for listing in the California Register; however, it cannot be said with scientific certainty that a subsurface component does not exist within this site. Dense vegetation limited the accurate definition of the site boundary, and the potential for additional cultural material may be present, albeit very low. In addition, the project area is in a depositional environment.

Per CEQA Significance Determination Thresholds (City of San Diego 2011b), the proposed project will not have a significant impact (no adverse effect) on historical resources. Neither resource is eligible for listing in the California Register. Site CA-SDI-21642 is not eligible for the California Register and Site CA-SDI-21643 is a sparse lithic scatter, and is a non-significant resource type (City of San Diego 2011b:42).

MANAGEMENT RECOMMENDATIONS

CA-SDI-21642 consists of a historic-age water catchment basin feature and no associated artifacts. The site dates to the mid-20th century and exhibits poor integrity. It is filled with nonnative soil, so the likelihood of a subsurface deposit associated with the feature is low. It does not appear to be eligible for listing in the California Register, as it is not associated with an important historical event or significant individual, does not represent unique architectural design, or have potential to contribute important information to the historical or archaeological record. No further studies are recommended.

CA-SDI-21643 consists of a sparse, prehistoric lithic scatter. The site is made up of five pieces of debitage, including three secondary flakes, one tertiary flake, and one secondary piece of angular waste. All of the flakes were made from a light greenish-gray, aphanitic, metavolcanic material. No evidence of a subsurface deposit was observed. Though the locations of the debitage were recorded, it is possible more artifacts exist beneath the cholla. It does not appear to be associated with an important event or person significant to history, and lacks an architectural element, and does not have potential to contribute important information because it is sparse and superficial. No diagnostic, datable artifacts are present which could provide important information about prehistoric lithic technology. Due to poor visibility, monitoring by a qualified archaeologist is recommended during ground disturbing activities in the southern half of the project area. This will aid in finalizing the site boundary and provide an opportunity to evaluate any observed subsurface deposit, if present.

Based on the results of an initial consultation with the NAHC in the form of a SLF search, no tribal cultural properties are located within the project area. However, additional consultation between the lead agency and the individuals and organizations provided by the NAHC should be initiated. The list of individuals and organizations identified by the NAHC is provided as an appendix to this report.

REFERENCES

Beattie, George W., and Helen P. Beattie
1951 Heritage of the Valley: San Bernardino's First Century. Biobooks: Oakland.

Bull, Charles
1983 Shaking the Foundations: Evidence for San Diego Prehistory. Casual Papers, 2(3):15-64. Cultural Resource Management Center, Department of Anthropology, San Diego State University.

City of San Diego
2001a Historical Resources Guidelines. San Diego Municipal Code, Land Development Code. f

2011b California Environmental Quality Act: Significance Determination Thresholds. Development Services Department.

City of San Diego Historical Resources Board
2009 Historical Resource Technical Report Guidelines and Requirements. In Land Development Manual Historical Resources Guidelines Appendix E., Part 1.2 February 2009, revised May 2009

Ezell, Paul
1987 The Harris Site–An Atypical San Dieguito Site or am I Beating a Dead Horse? In San Dieguito–La Jolla: Chronology and Controversy, edited by Dennis Gallegos, pp. 15-22. San Diego Archaeological Society Research Paper No. 1. San Diego.

Ingersoll, L.A.
1904 Ingersoll's Century Annals of San Bernardino County 1769–1904. Los Angeles: By the Author, 1904.

Kennedy, M.P., and Tan S.S.
1977 Geology of National City, Imperial Beach, and Otay Mesa Quadrangle, Southern San Diego Metropolitan area, California Division of Mines and Geology Map.

Kroeber, Alfred L.
1925 Handbook of the Indians of California. Bureau of American Ethnology Bulletin No. 78. Washington D.C.: Smithsonian Institution. Reprinted in 1976, New York: Dover Publications.

Luomala, Katherine
1978 Tipai-Ipai. In R. Heizer ed, Handbook of North American Indians, Vol. 8, California, pp. 592–609. Smithsonian Institution, Washington, D.C.

Morales, Jaime
2014 Letter Report: Re: Rio Vista Parcel Biological Reconnaissance Survey Results (LSA Project No. RRE1301).

Moriarty, James
1966 Culture Phase Divisions Suggested by Typological Change Coordinated with Stratigraphically Controlled Radiocarbon Dating at San Diego. Canadian Journal of Anthropology 4(4):309-358.

Moratto, M.J.
1984 California Archaeology. Academic Press, Inc. San Diego, California.

Nationwide Environmental Title Research, LLC (NETR)
2009 Historic Aerials. http://historicaerials.com/. Accessed March 31, 2014.

Norris, R.M., and R.W. Webb
1990 Geology of California, Second Edition. John Wiley and Sons, Inc., New York.

Office of Historic Preservation (OHP)
1990 Archaeological Resource Management Reports (ARMR): Recommended Contents and Format. Sacramento, California: Office of Historic Preservation.

Pourade, Richard F.
1967 The Rising Tide. Volume Six of a Series on the Historic Birthplace of California: The History of San Diego. San Diego: Union Tribune.

U.S. Department of Agriculture
1973 Soil Survey, San Diego Area, California. Edited by Roy H. Bowman. Soil Conservation Service and Forest Service. December

Warren, Claude N., Gretchen Sieglar, and Frank Dittmer
1993 Paleoindian and Early Archaic Periods. In Historic Properties Background Study for the City of San Diego Clean Water Program. Brian F. Mooney and Associates.

APPENDIX A

DEPARTMENT OF PARKS AND RECREATION (DPR) FORMS

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

PRIMARY RECORD

Primary # P-37-034785
HRI #
Trinomial CA-SDI-21642
NRHP Status Code

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

Page 1 **of** 4 *__Resource Name or #:__ LSA-RRE1301-S-1

P1. Other Identifier:

***P2. Location:** ☐ **Not for Publication** ☒ **Unrestricted** ***a. County:** San Diego

and (P2b and P2c or P2d. Attach a Location Map as necessary.)

***b. USGS 7.5' Quad:** Imperial Beach CA **Date:** 1975 **T** 18S; **R** 2W; NW ¼ **of** SW¼ **of Sec** 36 **;** S.B. **B.M.**

c. Address: 1934 Avenida De La Cruz City: San Diego Zip: 92173

d. UTM: Zone: 11 N; 495489 mE/ 3602630 mN

e. Other Locational Data: (e.g., parcel #, directions to resource, elevation, etc., as appropriate)

The site is located on a parcel with the Assessor's Parcel Number 63806003. The site is located approximately 160 feet northeast of the intersection of Smythe Avenue and Foothill Road. It is situated on the top of a small knoll.

Elevation: 220 feet Above Mean Sea Level

***P3a. Description:** (Describe resource and its major elements. Include design, materials, condition, alterations, size, setting, and boundaries)

This site is the deteriorated foundation of a water catchment basin. The ruins are located on top of a small knoll. Only the southeast corner remains intact. Concrete fragments and rebar are scattered througout the site. Modern trash, including broken glass, beer cans, a spring mattress, tires, andmetal scraps are located throughout the site. No historic-age artifacts were observed in association. The basin has been filled in with a light yellowish-gray sand which appears to be non-native. The structure is present on aerial photographs from 1953 and 1971, but was abandoned and filled in by 1981. The foundation is in poor condition and exhibits poor integrity.

***P3b. Resource Attributes:** (List attributes and codes) AH2. Foundations/structure pads, AH5. Wells/cisterns

***P4. Resources Present:** ☐Building ☐Structure ☐Object ☒Site ☐District ☐Element of District ☐Other (Isolates, etc.)

P5b. Description of Photo: (View, date, accession #)
Overview of LSA-RRE1301-S-1 towards the northwest, 3/7/2014, DSCN1565.JPG

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

***P7. Owner and Address:**
The City of San Diego (Public Agency)

***P8. Recorded by:** (Name, affiliation, and address)
Jacqueline Hall
LSA Associates, Inc.
703 Palomar Airport Road, Suite 260
Carlsbad, CA 92011

***P9. Date Recorded:** March 7, 2014

***P10. Survey Type:** (Describe)
Intensive Pedestrian

***P11. Report Citation:** Hall, Jacqueline. 2014. Cultural Resources Assessment for Rio Vista Parcels, San Diego County, California.

***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 (List):

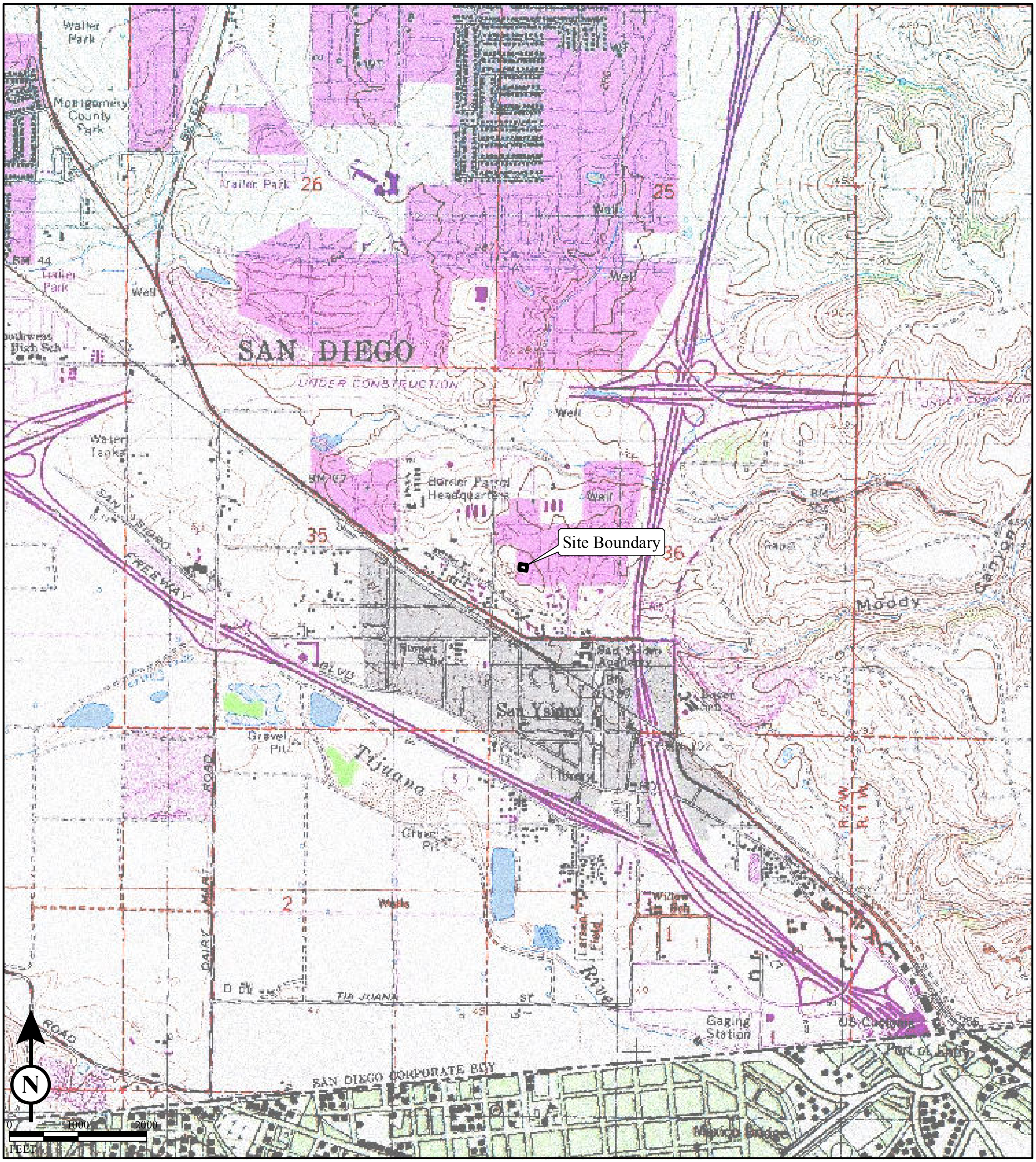
State of California - The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
LOCATION MAP

Primary # P-37-034785
HRI #
Trinomial CA-SDI-21642

Page 2 of 4

***Resource Name or** # (Assigned by recorder) LSA-RRE1301-S-1

*Map Name: USGS 7.5' Quad. *Imperial Beach* *Scale: 1:24000 *Date of Map: 1975



DPR 523K (1/95)

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

Primary # P-37-034785
Trinomial CA-SDI-21642

Page 3 of 4 *__Resource Name or #__: (Assigned by recorder) LSA-RRE1301-S-1

***A1. Dimensions: a. Length ~90 feet (North to South) x b. Width ~115 feet (East to West)**
Method of Measurement: ☐ Paced ☐ Taped ___ ☐ Visual estimate ☒ Other: GIS Measurement
Method of Determination (Check any that apply): ☐ Artifacts ☒ Features ☐ Soil ☐ Vegetation ☒ Topography ☐ Cut bank ☐ Animal burrow ☐ Excavation ☐ Property boundary ☐ Other (Explain):
Reliability of determination: ☒ High ☐ Medium ☐ Low Explain: Features were present and historic aerial photographs confirm the presence of the water catchment basin.
Limitations (Check any that apply) ☐ Restricted access ☐ Paved/built over ☐ Site limits incompletely defined ☒ Disturbances ☐ Vegetation ☐ Other: (Explain): The basin has been filled in and the foundations are in poor condition. Modern trash is present throughout the site

A2. Depth:___________ ☐ None ☒ Unknown Method of Determination: The catchment basin has been filled in with non-native soil. It is unclear how deep the basin goes, but a subsurface component is likely.

***A3. Human Remains:** ☐ Present ☒ Absent ☐ Possible ☐ Unknown (Explain):

***A4. Features** (Number, briefly describe, indicate size, list associated cultural constituents, and show location of each feature on sketch map): The southeast corner of the basin was the only standing piece of the structure remaining. The northern wall measured approximately 15 feet in length while the eastern wall measured approximately 19 feet 3 inches. The wall measured 18 inches wide and was 2 feet 5 inches tall at its highest point. The wall is deteriorating and in poor condition.

***A5. Cultural Constituents:** (Describe and quantify artifacts, ecofacts, cultural residues, etc., not associated with features): Building materials and remnants of the catchment basin are scattered throughout the site. These include fragments of concrete, wire, and rebar.

***A6. Were Specimens Collected?** ☒ No ☐ Yes (If yes, attach Artifact Record or catalog and identify where specimens are curated.)

***A7. Site Condition:** ☐ Good ☐ Fair ☒ Poor (Describe disturbances): The catchment basin has been filled in and all but the southeast corner of the structure is in ruins. The feature and artifacts retain few diagnostic attributes and exhibit poor integrity.

***A8. Nearest Water:** (Type, distance, and direction) The nearest source of water is the Tijuana River 1.25 miles south.

***A9. Elevation:** 220 feet above mean sea level

A10. Environmental Setting: (Describe culturally relevant variables such as vegetation, fauna, soils, geology, landform, slope, aspect, exposure, etc.): Vegetation includes cholla and other coastal sage scrub plants. Animals in the area include rabbits, mice, birds, and coyotes. Soil consisted of light yellowish-brown sand with large volcanic cobbles.

A11. Historical Information:

***A12. Age:** ☐ Prehistoric ☐ Protohistoric ☐ 1542–1769 ☐ 1769–1848 ☐ 1848–1880 ☐ 1880–1914 ☐ 1914–1945 ☒ Post 1945 ☐ Undetermined
Describe position in regional prehistoric chronology or factual historic dates if known: The catchment basin appears on an aerial photograph from 1953 (NETR 2009).

A13. Interpretations (Discuss data potential, function(s), ethnic affiliation, and other interpretations)

A14. Remarks:

A15. References (Documents, informants, maps, and other references):
Nationwide Environmental Title Research, LLC (NETR)
2009 Historic Aerials. http://historicaerials.com/. Accessed March 31, 2014.

A16. Photographs (List subjects, direction of view, and accession numbers or attach a Photograph Record):
Original Media/Negatives Kept at: LSA Associates, Inc. 703 Palomar Airport Road, Suite 260, Carlsbad CA. 92011

***A17. Form Prepared By:** Jacqueline Hall **Date:** March 31, 2014
Affiliation and Address: LSA Associates, Inc. 703 Palomar Airport Road, Suite 260, Carlsbad, CA 92011

State of California - The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
SKETCH MAP

Primary # P-37-034785
HRI #
Trinomial CA-SDI-21642

Page 4 of 4 ***Resource Name or** # (Assigned by recorder): LSA-RRE1301-S-1

*Drawn By: Jacqueline Hall

*Date: 3/31/2014

* Required Information

DPR 523K (1/95)

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

PRIMARY RECORD

Primary # P-37-034786
HRI #
Trinomial CA-SDI-21643
NRHP Status Code

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

Page 1 **of** 5 *__Resource Name or #:__ LSA-RRE1301-S-2

P1. Other Identifier:

***P2. Location:** ☒ **Not for Publication** ☐ **Unrestricted** ***a. County:** San Diego

and (P2b and P2c or P2d. Attach a Location Map as necessary.)

***b. USGS 7.5' Quad:** Imperial Beach CA **Date:** 1975 **T** 18S; **R** 2W; NW ¼ **of** SW¼ **of Sec** 36 **;** S.B. **B.M.**

c. Address: 212 West Foothill Road City: San Diego Zip: 92173

d. UTM: Zone: 11 N; 495433 mE/ 3602556 mN

e. Other Locational Data: (e.g., parcel #, directions to resource, elevation, etc., as appropriate)

The site is located on two parcels. The Assessor's Parcel Numbers are 6381900100 and 6380604100. The site is located approximately 30 meters northeast of the intersection of Smythe Avenue and Foothill Road on the side of a southwestern facing hill. The site is approximately 20 meters north of the residence located at 212 West Foothill Road.

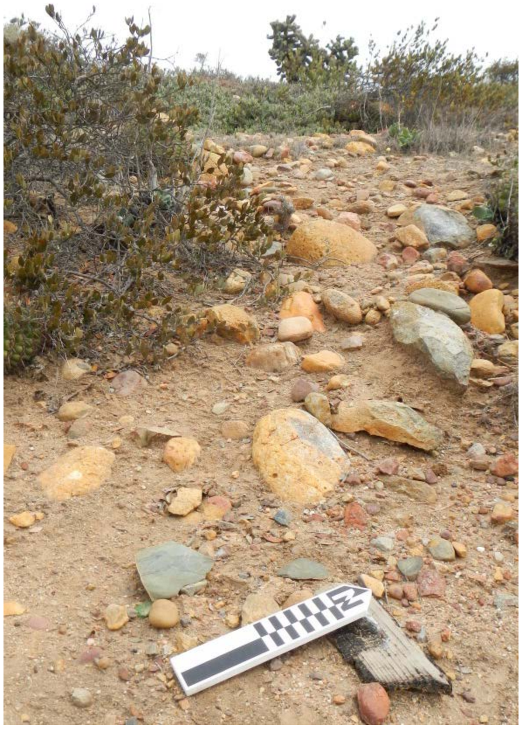
Elevation: 180-200 feet Above Mean Sea Level

***P3a. Description:** (Describe resource and its major elements. Include design, materials, condition, alterations, size, setting, and boundaries)

The site is a sparse, dispersed lithic scatter on the side of a hill. Five pieces of debitage were observed, which include three secondary flakes, one tertiary flake, and one secondary piece of angular waste. The flaking material is fine-grained, aphanitic, greenish-gray metavolcanic stone, and likely Santiago Peak Volcanic. One of the flakes exhibited a light patina. The site is located in an area measuring approximately 40 meters by 15 meters and is situated on a southwestern facing hillside. It is possible the site is more extensive, but dense cholla obscures the area. No midden was observed where soil was exposed. There was evidence of heavy water runoff down the slope of the hill. It is possible the flakes may have been washed down and no longer represent their original location. Vegetation includes cholla and other coastal sage scrub plants.

***P3b. Resource Attributes:** (List attributes and codes) AP12 Quarry, AP2 Lithic Scatter

***P4. Resources Present:** ☐Building ☐Structure ☐Object ☒Site ☐District ☐Element of District ☐Other (Isolates, etc.)



P5b. Description of Photo: (View, date, accession #) Overview Site LSA-RRE1301-S-2 towards the west, 3/7/2014, DSCN1560.JPG

***P6. Date Constructed/Age and Sources:**

☐Historic ☒Prehistoric ☐Both

***P7. Owners and Address':**

Caballero, David
212 Foothill Rd,
San Ysidro, CA

Rio Vista LL
1764 San Diego Ave #200,
San Diego, CA

***P8. Recorded by:** (Name, affiliation, and address)

Jacqueline Hall
LSA Associates, Inc.
703 Palomar Airport Road, Suite 260
Carlsbad, CA 92011

***P9. Date Recorded:** March 7, 2014

***P10. Survey Type:** (Describe)
Intensive Pedestrian

***P11. Report Citation:** Hall, Jacqueline. 2014. Cultural Resources Assessment for Rio Vista Parcels, San Diego County, California.

***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 (List):

State of California - The Resources Agency

DEPARTMENT OF PARKS AND RECREATION

LOCATION MAP

Primary # P-37-034786

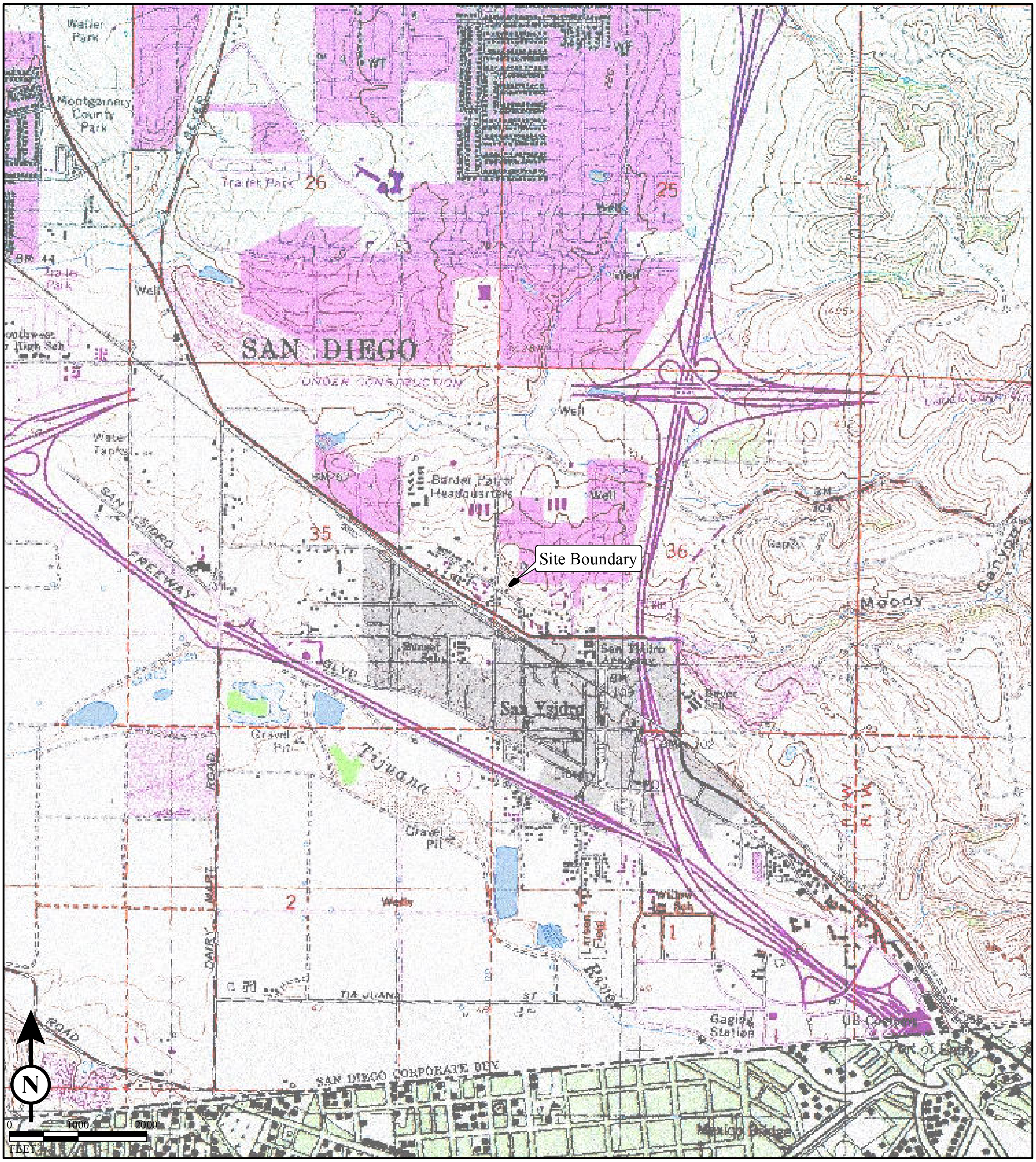
HRI #

Trinomial CA-SDI-21643

Page 2 of 5

***Resource Name or** # (Assigned by recorder) LSA-RRE1301-S-2

*Map Name: USGS 7.5' Quad. *Imperial Beach* *Scale: 1:24000 *Date of Map: 1975



DPR 523K (1/95)

I:\RRE1301\GIS\S-2_loc.mxd (3/31/2014)

State of California — The Resources Agency **Primary #** P-37-034786
DEPARTMENT OF PARKS AND RECREATION **Trinomial** CA-SDI-21643
ARCHAEOLOGICAL SITE RECORD

Page 3 of 5 ***Resource Name or #**: (Assigned by recorder) LSA-RRE1301-S-2

***A1.** **Dimensions: a. Length** ~40 meters **(North to South) x b. Width** ~15 meters **(East to West)**
Method of Measurement: ☐ Paced ☐ Taped ___ ☐ Visual estimate ☒ Other: GIS Measurement
Method of Determination (Check any that apply): ☒ Artifacts ☐ Features ☐ Soil ☐ Vegetation ☒ Topography ☐ Cut bank ☐ Animal burrow ☐ Excavation ☐ Property boundary ☐ Other (Explain):
Reliability of determination: ☐ High ☒ Medium ☐ Low Explain: Visibility was poor due to dense cholla.

Limitations (Check any that apply) ☐ Restricted access ☐ Paved/built over ☒ Site limits incompletely defined ☐ Disturbances ☒ Vegetation ☐ Other: (Explain): Dense cholla made the site difficult to locate. It is possible the site is more extensive and obscured by cholla.

A2. **Depth:**___________ ☐ None ☒ Unknown Method of Determination: No subsurface testing completed

***A3.** **Human Remains:** ☐ Present ☒ Absent ☐ Possible ☐ Unknown (Explain):

***A4.** **Features** (Number, briefly describe, indicate size, list associated cultural constituents, and show location of each feature on sketch map):
No features were present.

***A5.** **Cultural Constituents:** (Describe and quantify artifacts, ecofacts, cultural residues, etc., not associated with features): Five pieces of debitage were observed, including three secondary flakes, one tertiary flake with a split platform, and one secondary piece of angular waste. The flaking material is fine-grained, aphanitic, greenish-gray metavolcanic stone, and likely Santiago Peak Volcanic. One of the secondary flakes exhibited a light patina and one of the secondary flakes had cortex on the platform.

***A6.** **Were Specimens Collected?** ☒ No ☐ Yes (If yes, attach Artifact Record or catalog and identify where specimens are curated.)

***A7.** **Site Condition:** ☐ Good ☒ Fair ☐ Poor (Describe disturbances): Located on a slope, it is possible water runoff has altered the provenience of the artifacts.

***A8.** **Nearest Water:** (Type, distance, and direction) The nearest source of water is the Tijuana River 1.25 miles south.

***A9.** **Elevation:** 180-200 feet above mean sea level

A10. **Environmental Setting:** (Describe culturally relevant variables such as vegetation, fauna, soils, geology, landform, slope, aspect, exposure, etc.): Vegetation includes cholla and other coastal sage scrub plants. Animals in the area include rabbits, mice, birds, and coyotes. Soil consisted of light yellowish-brown sand with large volcanic cobbles.

A11. **Historical Information:**

***A12.** **Age:** ☒ Prehistoric ☐ Protohistoric ☐ 1542–1769 ☐ 1769–1848 ☐ 1848–1880 ☐ 1880–1914 ☐ 1914–1945 ☐ Post 1945 ☐ Undetermined

A13. **Interpretations** (Discuss data potential, function(s), ethnic affiliation, and other interpretations)

A14. **Remarks:**

A15. **References** (Documents, informants, maps, and other references):

A16. **Photographs** (List subjects, direction of view, and accession numbers or attach a Photograph Record): see Continuation Sheet.
Original Media/Negatives Kept at: LSA Associates, Inc. 703 Palomar Airport Road, Suite 260, Carlsbad CA. 92011

***A17.** **Form Prepared By:** Jacqueline Hall **Date:** March 31, 2014
Affiliation and Address: LSA Associates, Inc. 703 Palomar Airport Road, Suite 260, Carlsbad, CA 92011

State of California - The Resources Agency

DEPARTMENT OF PARKS AND RECREATION

SKETCH MAP

Primary # P-37-034786

HRI #

Trinomial CA-SDI-21643

Page 4 of 5 ***Resource Name or** # (Assigned by recorder): LSA-RRE1301-S-2

*Drawn By: Jacqueline Hall *Date: 3/31/2014

* Required Information

DPR 523K (1/95)

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

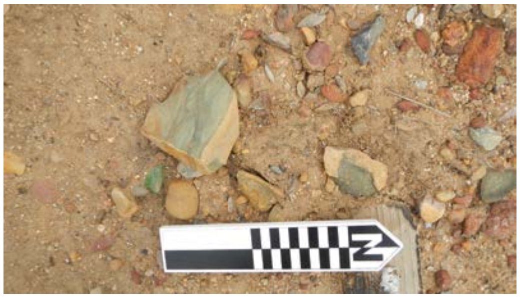
Primary # P-37-034786
HRI#
Trinomial CA-SDI-21643

Page 5 **of** 5 ***Resource Name or #** (Assigned by recorder) LSA-RRE1301-S-2

***Recorded by:** Jacqueline Hall ***Date:** March 31, 2014 ☒ Continuation ☐ Update

Flake 1: Tertiary Flake dorsal view DSCN1556.JPG

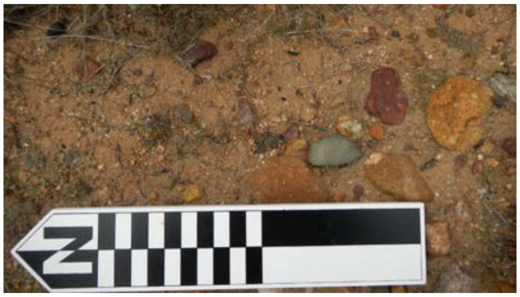
Flake 1: Tertiary Flake ventral view DSCN1557.JPG



Flake 2: Secondary flake and Flake 3: Secondary flake dorsal view DSCN1558.JPG

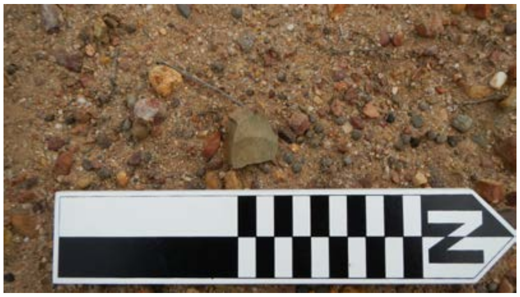
Flake 2: Secondary flake and Flake 3: Secondary flake ventral view DSCN1559.JPG

Flake 4: Secondary flake dorsal view DSCN1561.JPG



Flake 4: Secondary flake ventral view DSCN1562.JPG

Flake 5: secondary angular waste dorsal view DSCN1563.JPG



Flake 5: secondary angular waste ventral view DSCN1564.JPG

APPENDIX B

NATIVE AMERICAN HERITAGE COMMISSION CONSULTATION

STATE OF CALIFORNIA Edmund G. Brown, Jr., *Governor*

NATIVE AMERICAN HERITAGE COMMISSION
1550 Harbor Blvd., Suite 100
West Sacramento, CA 95691
(916) 373-3710
(916) 373-5471 FAX

September 11, 2015

Natalie Brodie
LSA and Associates
703 Palomar Airport Road, Suite 260
Carlsbad, CA 92011

Sent by Email: Natalie.brodie@lsa-assoc.com
Pages: 4

RE: Pacifica Ridge Project, Imperial Beach USGS Quadrangle, San Diego County

Dear Ms. Brodie:

Attached is a consultation list of tribes with traditional lands or cultural places located within the boundaries of the above referenced counties. Please note that the intent above reference codes is to mitigate impacts to tribal cultural resources, as defined, for California Environmental Quality Act (CEQA) projects.

As of July 1, 2015, Public Resources Code Sections 21080.1, 21080.3.1 and 21080.3.2 require public agencies to consult with California Native American tribes identified by the Native American Heritage Commission (NAHC) for the purpose mitigating impacts to tribal cultural resources:

> Within 14 days of determining that an application for a project is complete or a decision by a public agency to undertake a project, the lead agency shall provide formal notification to the designated contact of, or a tribal representative of, traditionally and culturally affiliated California Native American tribes that have requested notice, which shall be accomplished by means of at least one written notification that includes a brief description of the proposed project and its location, the lead agency contact information, and a notification that the California Native American tribe has 30 days to request consultation pursuant to this section. (Public Resources Code Section 21080.1(d))

The law does not preclude agencies from initiating consultation with the tribes that are culturally and traditionally affiliated with their jurisdictions. The NAHC believes that in fact that this is the best practice to ensure that tribes are consulted commensurate with the intent of the law.

In accordance with Public Resources Code Section 21080.1(d), formal notification must include a brief description of the proposed project and its location, the lead agency contact information, and a notification that the California Native American tribe has 30 days to request consultation. The NAHC believes that agencies should also include with their notification letters information regarding any cultural resources assessment that has been completed on the APE, such as:

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 measurers.

      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 pubic 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. A SFL file check was completed for the APE given with negative results.

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.

Lead agencies should be aware that records maintained by the NAHC and CHRIS is not exhaustive, and a negative response to these searches does not preclude the existence of a cultural place. A tribe may be the only source of information regarding the existence of a tribal cultural resource.

This information will aid tribes in determining whether to request formal consultation. In the case that they do, having the information beforehand well help to facilitate the consultation process.

If you receive notification of change of addresses and phone numbers from tribes, please notify me. With your assistance we are able to assure that our consultation list contains current information.

If you have any questions, please contact me at my email address: rob.wood@nahc.ca.gov.

Sincerely,

Rob Wood

Rob Wood
Associate Governmental Program Analyst

Native American Heritage Commission
Tribal Consultation List
San Diego County
September 11, 2015

Barona Group of the Capitan Grande
Clifford LaChappa, Chairperson
1095 Barona Road Diegueno
Lakeside , CA 92040
cloyd@barona-nsn.gov
(619) 443-6612
(6190 443-0681

Ewiiaapaayp Tribal Office
Robert Pinto Sr., Chairperson
4054 Willows Road Diegueno/Kumeyaay
Alpine , CA 91901
wmicklin@leaningrock.net
(619) 445-6315

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

Manzanita Band of Kumeyaay Nation
Angela Elliott Santos, Chairperson
P.O. Box 1302 Diegueno/Kumeyaay
Boulevard , CA 91905
aelliottsantos7@aol.com
(619) 766-4930

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

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

Viejas Band of Kumeyaay Indians
Anthony R. Pico, Chairperson
P.O. Box 908 Diegueno/Kumeyaay
Alpine , CA 91903
jhagen@viejas-nsn.gov
(619) 445-3810

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

Jamul Indian Village
Raymond Hunter, Chairperson
P.O. Box 612 Diegueno/Kumeyaay
Jamul , CA 91935
Rhunter1948@yahoo.com
(619) 669-4785

Mesa Grande Band of Mission Indians
Mark Romero, Chairperson
P.O Box 270 Diegueno
Santa Ysabel , CA 92070
mesagrandeband@msn.com
(760) 782-3818

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 Resources Code and Section 5097.98 of the Public Resources Code.
This list is applicable only for consultation with Native American tribes under Public Resources Code Sections 21080.3.1 and 21080.3.2 Pacifica Ridge Project, Imperial Beach USGS Quadrangle, San Diego County.

Native American Heritage Commission
Tribal Consultation List
San Diego County
September 11, 2015

Kwaaymii Laguna Band of Mission Indians Carmen Lucas P.O. Box 775 Pine Valley , CA 91962 (619) 709-4207	Diegueno-Kwaaymii Kumeyaay
Inaja Band of Mission Indians Rebecca Osuna, Chairman 2005 S. Escondido Blvd. Escondido , CA 92025 (760) 737-7628	Diegueno
Iipay Nation of Santa Ysabel Clint Linton, Director of Cultural Resources P.O. Box 507 Santa Ysabel , CA 92070 cjlinton73@aol.com (760) 803-5694	Diegueno/Kumeyaay
Iipay Nation of Santa Ysabel Virgil Perez, Chairperson P.O. Box 130 Santa Ysabel , CA 92070 (760) 765-0845	Diegueno/Kumeyaay
Ewiiaapaayp Tribal Office Robert Pinto Sr., Chairperson 4054 Willows Road Alpine , CA 91901 wmicklin@leaningrock.net (619) 445-6315	Diegueno/Kumeyaay

This list is current only as of the date of this document.

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This list is applicable only for consultation with Native American tribes under Public Resources Code Sections 21080.3.1 and 21080.3.2 Pacifica Ridge Project, Imperial Beach USGS Quadrangle, San Diego County.

CULTURAL RESOURCES TESTING REPORT

PACIFICA RIDGE PROJECT
CITY OF SAN DIEGO
SAN DIEGO COUNTY, CALIFORNIA

LSA

September 2017

CULTURAL RESOURCES TESTING REPORT

PACIFICA RIDGE PROJECT
CITY OF SAN DIEGO
SAN DIEGO COUNTY, CALIFORNIA

Prepared for:

Michael Kootchick
Raintree Residential, LLC
11855 Sorrento Valley Road Suite D
San Diego, California, 92121

Prepared by:

Rod McLean, MA, RPA
Spencer Bietz, BA
LSA Associates, Inc.
703 Palomar Airport Road, Suite 260
Carlsbad, California 92614-4731
(760) 931-5471

LSA Project No. RRE1301

National Archaeological Data Base Information:
Type of Study: Site Testing
Sites Recorded: CA-SDI-21643 (Update)
USGS Quadrangle: *Imperial Beach, California* 7.5-minute (1975)
Acreage: 4.2 acres
Key Words: CA-SDI-21643, Debitage, Negative Results

September 2017

ABSTRACT

LSA conducted an archaeological testing program for the Pacifica Ridge Project. The testing program was initiated to evaluate Archaeological Site CA-SDI-21643 for listing in the California Register of Historical Resources (California Register), in accordance with the City of San Diego (City) Historical Resources Guidelines (Amended April 30, 2001 by City Manager Document No. C-10912). Testing and evaluation included subsurface exploration within the boundary of Site CA-SDI-21643.

The testing program was conducted pursuant to the compliance requirements of the California Environmental Quality Act (CEQA) and pursuant to the testing plan approved by the City. The testing plan was prepared in accordance with the City's Land Development Code and Historical Resources Guidelines (City of San Diego 2001). The City serves as the Lead Agency for California Environmental Quality Act (CEQA) compliance for the project.

Site CA-SDI-21643 is partially within the boundaries of the proposed project location. According to the City Guidelines, cultural resources that are intact and have the potential to answer important research questions qualify as significant resources. This testing program was conducted in order to assess the presence or absence of subsurface cultural material and, if present, its integrity, and to evaluate the portion of the site present within the project area.

The testing program was conducted on August 30 and 31, 2017, and consisted of the excavation of six shovel test pits (STPs). The testing endeavor determined that no subsurface cultural deposits were present within the site boundary for CA-SDI-21643. Two lithic artifacts, previously identified during initial site recordation, and four new lithic artifacts were recorded and collected from the surface. The testing effort determined that the site does not satisfy the eligibility requirements necessary for inclusion into the California Register. Based on the surficial and subsurface archaeological contexts observed during the testing process, the resource appears to represent opportunistic testing of naturally occurring lithic (cobble) material over an unknown period of time. The site does not contain subsurface contexts that promote additional information for regional historic and prehistoric backgrounds. The site does not exhibit the potential to answer important research questions and is recommended as non-significant. Due to the lack of subsurface archaeological contexts, minimal soil development, loped landform contexts, and a sparse scatter of surficial artifacts, no monitoring by archaeologists is recommended during ground-disturbing activities.

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D: SITE FORM UPDATE (WITH CONFIDENTIAL APPENDICES)

INTRODUCTION

LSA was retained to conduct archaeological testing for the Pacifica Ridge Project. The proposed project is located north of Interstate 5, east of Interstate 805, and south of State Route (SR) 905 within the community of San Ysidro in the City of San Diego, California (Figure 1). Specifically, the project area is located within Township 18 South, Range 2 West, Section 36 of the *Imperial Beach, California* United States Geological Survey (USGS) 7.5-minute topographic quadrangle. The project area is bordered on the west by Smythe Avenue, on the south by Beyer Boulevard, on the north by Avenida de la Madrid, and on the east by Avenida de la Cruz. The project area lies within the RM-1-1 Zone within the San Ysidro Community Plan area.

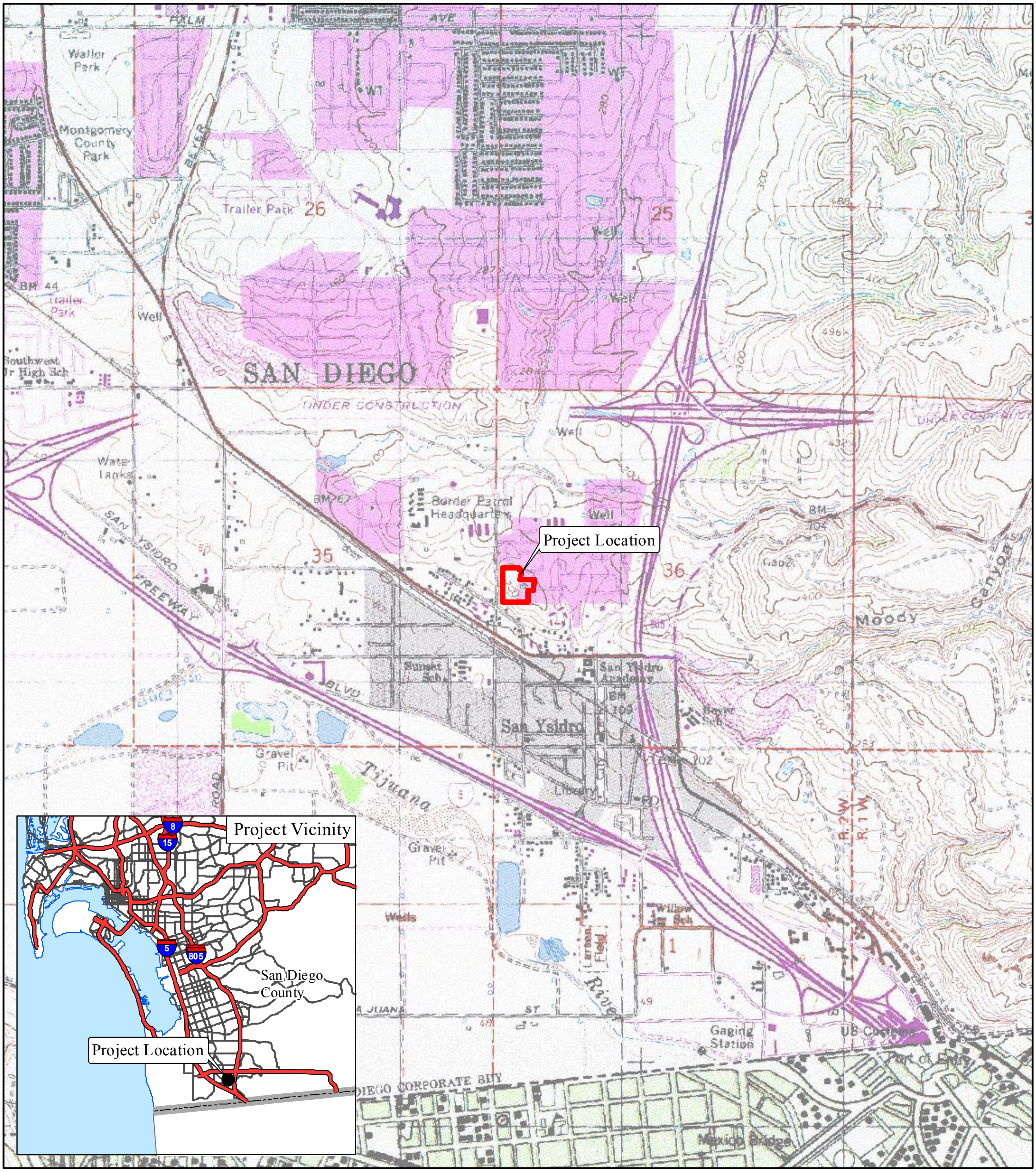
PERSONNEL

The testing program was completed by LSA cultural resources staff. The staff at LSA meets the Federal, State, and local requirement qualifications. Mr. Roderic McLean served as the Project Manager and Principal Investigator for the project. Mr. McLean is a member of the Register of Professional Archaeologists (RPA) and meets the Secretary of Interior standards for a qualified archaeologist. Mr. McLean has an M.A. in Anthropology from California Sate University Fullerton and has extensive experience in local archaeology. Mr. McLean’s résumé is included as Appendix A.

Mr. Spencer Bietz served as field director in the investigation, and also completed the artifact processing, cataloging, and analysis, and assisted in the preparation of the technical report and graphics. Mr. Bietz has a B.A. in Anthropology from the University of California, San Diego, and more than 12 years of experience in California archaeology.

Mr. Michael DeGiovine assisted in the excavation. Mr. DeGiovine has a B.A. in Anthropology from the University of California, San Diego, and more than 12 years of experience in California archaeology.

Mr. Kevin Osuna served as the Native American Monitor for the project. Mr. Osuna is a representative from the Santa Ysabel Band of Kumeyaay Indians and has extensive experience as a Native American monitor in San Diego County.



LSA

LEGEND

🟥 Project Footprint

FIGURE 1

N

0 1000 2000

FEET

SOURCE: USGS 7.5' Quad. (Imperial Beach, 1975)

Pacifica Ridge

Project Location

I:\RRE1301\GIS\ProjLoc.mxd (5/28/2015)

SETTING

Natural Setting

The project is located in the southwestern portion of San Diego County just north of the UnitedStates/Mexico Border. The project site is situated on a terrace in a highly developed urban area, overlooking the Border Field State Park to the west. The project area lies approximately 1.75 miles south of Otay River and nearly 1.25 miles northeast of the Tijuana River. Both rivers would have served as water sources during prehistoric and historic periods.

The project area is located in the City of San Diego community of San Ysidro and part of the Peninsular Ranges Geomorphic Province (Norris and Webb 1990). The Peninsular Ranges trend northwest to southeast and include the Laguna Mountains, which lie northeast of the project area. The province consists of rugged mountains underlain by Jurassic metavolcanic and metasedimentary rocks, and Cretaceous igneous rocks of the southern California batholith (Norris and Webb 1990). The project site contains the Olivenhain Series soil type (United States Department of Agriculture [USDA] 1973), which consist of well-drained moderately deep to deep cobbly loams that have a very cobbly clay subsoil. Olivenhain Series soils are formed in old gravelly and cobbly alluvium, and usually are on discrete marine terraces with slopes ranging between 2 and 50 percent (USDA 1973). The project area solely contains a subsoil of the Olivenhain Series, specifically Olivenhain cobbly loam (OhE), which is strongly sloping to moderately steep and is similar to Olivenhain cobbly loams found on 2 to 9 percent slopes (USDA 1973).

The climate of the region can generally be described as Mediterranean, with cool, wet winters and hot, dry summers. Lack of rainfall limits vegetation growth and habitat types adapted to the dry conditions of the region occur in the project area. Prior to disturbance, the project area would have been dominated by coastal sage scrub. Animal resources in the region include deer, fox, raccoon, skunk, bobcat, coyote, rabbit, and various rodent, reptile, and bird species. Small game, dominated by rabbits, is relatively abundant.

Cultural Setting

San Diego County archaeological investigations indicate humans have inhabited the area for at least 10,000 years. Malcolm Rogers (1945) was the first to develop a cultural chronology of the region. In general, they can be divided into five consecutive periods: Paleoindian, Archaic, Late Prehistoric, Ethnohistoric, and Historic (Bull 1983; Ezell 1987; Moriarty 1966; Warren et al. 1993).

The earliest sites in San Diego County are identified as the Paleoindian period (9,000 to 8,000 YBP [years before present]), and include the San Dieguito, La Jolla and Pauma complex. Most of these sites are located around inland dry lakes, on old terrace deposits in the California desert, and on or near the coast on mesas or terraces. The artifacts associated with this period are heavily patinated felsite tools primarily consisting of scrapers, scraper planes, choppers, large blades, and large projectile points.

Around 8,000 years ago, changes in technology begin to appear in the archaeological record. During the Early Archaic period, there is an increase in the use of grinding and seed processing technology and a change in mortuary practices, indicating population movements or internal change (Moratto 1984). There is a marked increase in the exploitation of plant and animal resources inland and on the coast. Artifacts associated with this period include an increase of Pinto and Elko series projectile points, large bifaces, manos, metates, and core tools.

The Late Prehistoric period is characterized by a series of dramatic technological changes indicating that around 2,000 YBP, people from the Colorado River area migrated to the Southern California region. This period is characterized by the appearance of smaller projectile points, ceramics, permanent bedrock milling sites, and cremation burials. There also appears to be an increase in the establishment of permanent or semi-permanent seasonal villages indicating a shift to inland plant food collection and processing.

The Ethnohistoric period occurred shortly before Europeans colonized Southern California. Documentation by the Spanish and the material culture left by the native people indicate that at the time of contact there were four distinct native groups, Luiseño, Diegueno, Cupeno, and the Cahuilla (Kroeber 1925) in the area. As Southern California was colonized by Europeans, the Native American populations dramatically decreased and were quickly assimilated into the mission system.

In California, the Historic era is generally divided into three periods: the Spanish or Mission Period (1769–1821), the Mexican or Rancho Period (1821–1848), and the American Period (1848–present). The Spanish Period (and Euro-American history) began in San Diego County in 1769 with arrival of Gaspar de Portolá, who established Mission San Diego de Alcala near the site of a village known as Nipaguay. In 1821, Mexico overthrew Spanish rule and the missions began to decline. By 1833, the Mexican government had passed the Secularization Act, and the missions, reorganized as parish churches, lost their vast land holdings, and released their neophytes. During the Mexican Rancho Period, the ranchos were predominantly devoted to cattle, with great tracts of land used for grazing. Until the Gold Rush of 1849, livestock and horticulture dominated the economics of California (Ingersoll 1904; Beattie and Beattie 1951).

San Diego became an American city in 1846 and was incorporated by the end of the decade, but initial growth was slow due to a combination of natural and political causes: a drought, failure of transcontinental railroad promotion, and the Civil War. This would change in the late 1860s with the arrival of Alonzo Horton, entrepreneur and land developer, who was responsible for New San Diego (modern downtown) in the 1870s (City of San Diego Historical Resources Board 2009). As the southernmost port on the west coast of the United States, San Diego experienced a commercial boom that was greatly enhanced by the establishment of multiple naval facilities and an Army airfield by the beginning of World War I (Pourade 1967). The City also enjoyed the establishment of the facilities of major aerospace companies such as Ryan Aircraft and Consolidated Aviation, which went on to design and/or produce large numbers of aircraft, missiles, and aviation components for the military from the 1930s to the present.

PREVIOUS INVESTIGATIONS

In 2015, LSA conducted an intensive pedestrian survey of the project area (Hall and McLean). The survey included a records search at the South Coastal Information Center (SCIC), and a Sacred Lands File Search with the Native American Heritage Commission (NAHC). The SCIC records search concluded that 10 previous cultural resource studies have been conducted and one cultural resource (P-37-25680) had been recorded within a quarter-mile of the project area. P-37-25680 represents a segment of the Union Pacific Railroad. No previously identified cultural resources were recorded within the project area. One previous survey conducted in 1996 included the project area; however, no cultural resources were recorded within the current project area. The Sacred Lands File search resulted in no previously documented Native American resources having been recorded within the project area (Hall and McLean 2015).

LSA surveyed the project area on March 7, 2015. One newly recorded historic resource (CA-SDI-21642) and one prehistoric resource (CA-SDI-21643) were observed (Figure 2). CA-SDI-21642 consisted of the ruins of a water catchment basin from the mid-20th century; CA-SDI-21643 consisted of a sparse prehistoric lithic scatter. Site CA-SDI-21642 was recommended as ineligible for listing in the California Register as it is not associated with an important historical event or significant individual, does not represent unique architectural design, and does not have potential to contribute important information to the historical or archaeological record (Hall and McLean 2015).

LSA

LEGEND

▭ Cultural Resource

🟥 Project Area

FIGURE 2

SOURCE: LSA (03/2014)

Pacifica Ridge

Project Area and Cultural Resources

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SUBSURFACE TESTING PLAN AND RESEARCH DESIGN

LSA was contracted by Raintree Residential, LLC, to perform subsurface exploration and evaluation of previously recorded Site CA-SDI-21643. Prior to the start of the subsurface testing endeavor, LSA submitted a Cultural Resource Testing Plan to the City of San Diego (McLean 2017). The Testing Plan was approved by the City on August 22, 2017. The testing plan included results of previous cultural resource studies conducted by LSA for the project, as well as proposed research designs, research questions, and methodologies. Research designs provide the structural framework that guide resource evaluation, especially in the application of Criterion D of the California Register. The research design for the current testing effort begins with a discussion of LSA's theoretical and methodological approach.

THEORETICAL ORIENTATION

The primary focus of archaeology is to reconstruct history and understand past human behavior. Archaeologists do this by examining the leftover physical remains that are produced by past human activities. The theoretical premise on which most archaeology is based is "Cultural Materialism," which is the idea that human behavior is related to economic, environmental, and social aspects of culture. Archaeologists attempt to understand these aspects of culture statistically by analyzing the physical artifacts left behind as a result of past activities. Artifacts found in situ preserve much of the original context of use and meaning that surrounded the creation and use of the object and direct relationships between the people and their economy and environment, and the social aspects of their culture can be observed.

RESEARCH QUESTIONS

Integrity and Site Formation

Assessing the integrity of the site is critical to the evaluation of a resource. Disturbance to a site can include both natural factors (e.g., flooding and bioturbation) as well as human activities (e.g., agriculture and development). For archaeological purposes, the less disturbed a site is, the more likely it is to provide quality data.

- Is the site located in an erosional environment, in a depositional environment, or a combination of the two? What does this environment indicate about the likelihood of subterranean deposits? Does it make it more or less likely?

If located in a depositional environment, does the site appear to have a relatively even stratigraphic deposition that can be used for chronological purposes?

- Are there other indicators of site formation that are apparent, such as relatively unweathered ecofacts that would have to be buried quickly to be preserved, or aeolian deposits that would have been deposited during periods of low moisture?
- Are there other site formation factors, such as bioturbation, that have affected site formation?

Data Needs: Data indicating the site contains intact, interpretable archaeological strata. If intact subterranean deposits are present, it might be possible to ask questions related to some of the following topics.

Prehistoric Subsistence

Reconstructing prehistoric subsistence patterns is one of the most important regional research topics. "How have people adapted to the environmental changes?" is a key question.

- Are there identifiable changes in the proportion of different artifact types (e.g., flaked or ground stone and faunal remains) over time?
- Are there faunal remains present at the site?
- Does this site represent a focused occupation directed at a particular resource?
- How does the site subsistence pattern relate to the resources available in the area?
- Do the artifacts indicate one-time use or continuous occupation at the site?
- Are differences in artifact types identifiable from various temporal periods at the site?
- What is the site's association with the other sites?
- Are organic residues present on any of the artifacts in the site, and what can they tell us about subsistence when the site deposited?

Data Needs: Sufficient quantities of artifacts representative of activities that took place at the site in interpretable cultural strata. Observation of faunal material in conjunction with tools that were used for food processing.

Chronology

The sequence of prehistoric cultures in the Southern California region has been developed into a three-part chronology, which includes the Paleo-Indian Period (8500–6000 B.C.), the Archaic Period (6000–1 B.C.), and the Late Prehistoric Period (A.D. 1–1769). The chronologies of sites are crucial to understanding how people adapted to environmental change. The Late Prehistoric sites are well documented in the area, but the Paleo-Indian and Archaic periods are poorly understood because they are the most difficult to identify and few sites dating from those periods have been identified and studied in the area.

- What is the chronological range of Site CA-SDI-21643?
- Are there temporally diagnostic artifact types or materials from Site CA-SDI-21643 that can corroborate the chronological placement of the site?
- What do the presence of diagnostic artifact types and/or materials suggest in terms of site age in comparison to similar sites (if they exist) in other areas adjacent to or within the proposed project area?

Data Needs: Sufficient quantities of temporally diagnostic artifacts within interpretable cultural strata that can be compared to similar sites. Material suitable for radiocarbon dating.

Site Structure and Function

Identifying the physical layout of a site is important in understanding how a space was organized and used for both intra- and inter-site analysis. Determining site structure and function helps in reconstructing patterns of behavior.

- Do archaeological materials exist that can help identify probable site function? Are specific human activities indicated?
- Are there discrete loci within the site? If so, can the loci be related to subsistence or other activities (e.g., hunting or tool production)? Does the distribution of loci within the site provide an inherent selective advantage or is the distribution random?

Data Needs: Diagnostic artifacts representing specific kinds of activities that took place at the site. Artifact concentrations that represent specialized activities. Interpretable geomorphologic stratigraphy.

Trade and Economic Exchange

Archaeologists are interested in understanding how cultures interacted with the natural environment and with each other, and how these relationships have changed over time. By examining the provenience of resources used at a site, trade relationships and economic exchanges can be inferred.

- Do traded materials occur at the site? What are the traded materials (or items) and where did they originate? What is the minimal energy cost to transport the item from its source?
- If there are distinctive non-local raw materials at a given site, what is the projected minimum distance that the item(s) would have traveled to be present on the site?
- For artifacts and/or raw materials that have been identified as non-local, are there specific artifact types that occur on this site relative to other sites? Furthermore, are these items related to particular food resources found from specific periods?

Data Needs: Local and/or exotic lithic or other source materials in sufficient quantities from which patterns can be defined.

METHODS

The testing program for Site CA-SDI-21643 was implemented in order to assess the site's eligibility for listing in the California Register. The results of the testing program would establish the presence or absence of a subsurface deposit and, if present, the vertical and horizontal extent of this deposit. The results of the testing program would additionally provide the information necessary to determine whether this cultural resource has the potential to answer any of the above-listed research questions and qualify as significant resource.

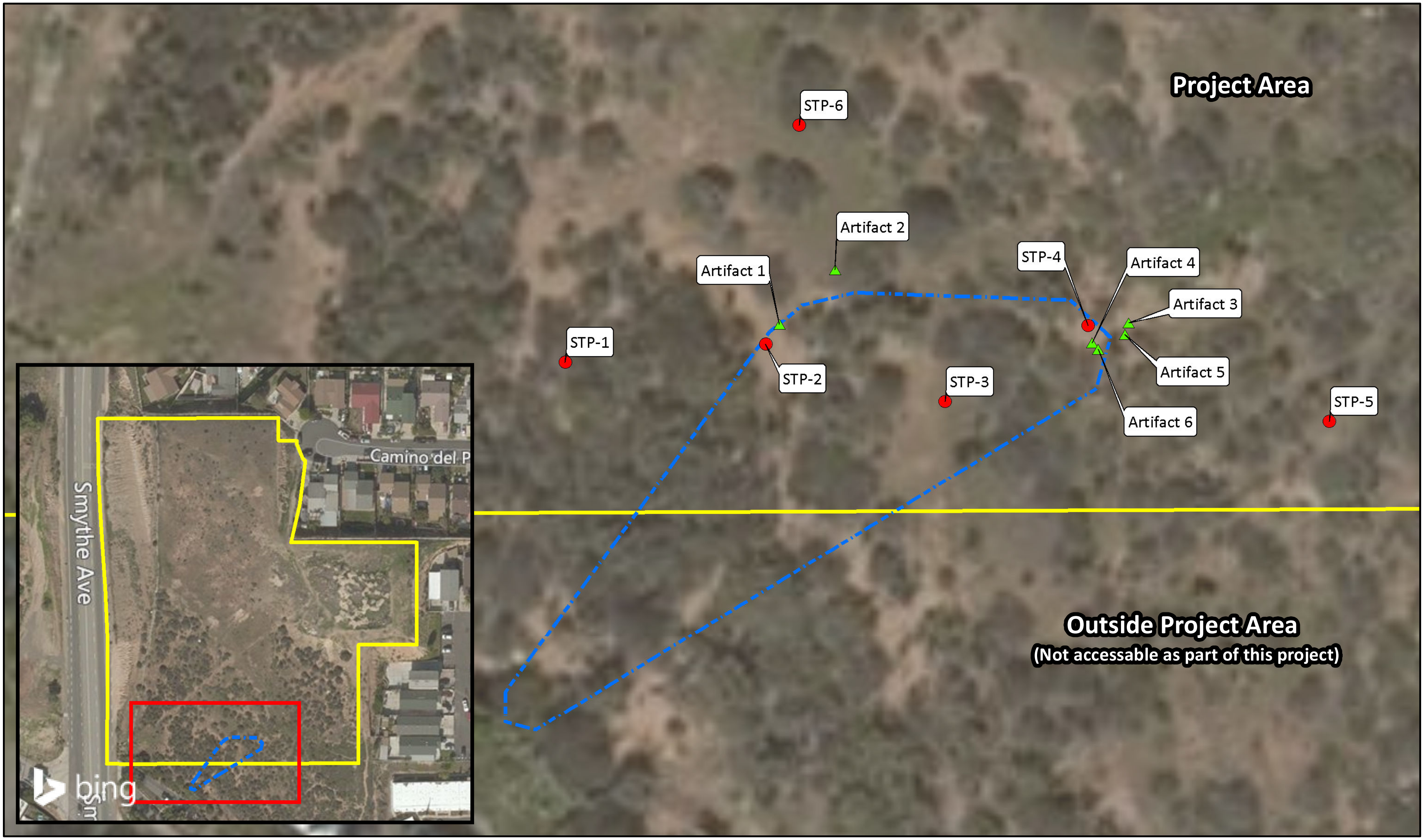
LSA Archaeologists Spencer Bietz, B.A., and Michael De Giovine, B.A., conducted the testing program on August 30 and 31, 2017, for a total of two days. Mr. Bietz served as field director for the duration of the testing endeavor. All archaeological work conducted for this project was conducted under the direction of LSA Associate Roderic McLean, M.A., RPA.

SUBSURFACE EXPLORATION AND TESTING

Subsurface exploration and testing of Site CA-SDI-21643 consisted of the excavation of six 50-centimeter diameter shovel test pits (STPs), which were placed within and adjacent to the current recorded site boundary (Figure 3). Two STPs were placed near the pieces of debitage previously observed within the northern portion of the site. One STP was placed within the central portion of the site and two additional STPs were placed outside the site to confirm its boundaries. The STP locations were initially proposed using aerial imagery and Geographic Information System (GIS) mapping, but were revised in the field if encumbered by impenetrable vegetation. All materials were screened through ⅛-inch mesh in discrete 10-centimeter level increments, with the option to use $^{1}/_{16}$-inch mesh if deemed necessary. STP exploration forms were completed with detailed sediment descriptions and any finds within that level. Each STP was proposed to be excavated to a minimum depth of 50 centimeters, provided no artifacts or subsurface deposits were encountered. The maximum depth was to be at least three sterile levels below any archaeological materials, if so encountered.

LABORATORY AND CATALOGING PROCEDURES

Laboratory work for this project was completed by Mr. Spencer Bietz. Collected material was transferred to LSA's laboratory in Carlsbad for cleaning, analysis, and prepared for curation. Artifacts where collected in sealable plastic bags labeled by provenience and contents. All items were cleaned and brushed with water. The artifacts were separated by provenience level and material class. Each artifact class was counted, weighed, and cataloged. The artifact catalog is included as Appendix B.



LSA

LEGEND

● STP Location

▲ Surface Artifact

▭ CA-SDI-21643 Site Boundary

▭ Project Area Boundary

N

0 15 30
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SOURCE: LSA (03/2014)

FIGURE 3

Pacifica Ridge Project

STP and Surface Artifact Locations

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RESULTS

The subsurface testing exploration resulted in no subsurface deposits identified within any of the six STPs. Three of the STPs were successfully excavated to a depth of 50 centimeters (STPs 2, 3, and 6), while the remaining three had final depths of 45 centimeters (STP 4), 46 centimeters (STP 5), and 47 centimeters (STP 1). All of the STP locations were altered slightly from initial plotting due to impenetrable brush and cactus (previously referenced Figure 3). All of the STPs contained soils consisting of dry, semi-compacted sandy silt with pea-sized angular and sub-angular gravels and small to medium-sized sub-rounded metavolcanic cobbles. This soil structure was present within all levels in each STP. In STPs 1, 4, and 5, the size of the sub-rounded metavolcanic cobbles increased as the test unit depth increased, resulting in impenetrable cobble layers in the bottom depths of each. In STP 3, a second soil type was encountered between 40 centimeters and 50 centimeters depth, consisting of medium brown sandy silt transitioning to dark reddish-brown silty clay intermixed with pea-sized fragments of decomposing rock. The transition to the second soil type occurred between 43 and 46 centimeters in depth. Each STP had limited amounts of subsurface disturbance caused by roots. No evidence of bioturbation was observed in any of the STPs.

Appendix C provides photographic overviews of the STPs.

As Table A shows, six surface artifacts were recorded and collected during the testing effort. Each of the surface artifacts consisted of lithic debitage and was composed of green metavolcanic cobble (Santiago Peak Volcanics). Each artifact’s location was recorded using a Trimble sub-meter Geographic Positioning System unit prior to collection. Two surface artifacts were recorded near the location of STP 2 (Catalog Numbers [Nos.] 1 and 2), and the remaining four artifacts were recorded near the location of STP 4 (Catalog Nos. 3 through 6). Inspection of areas surrounding the remaining STP locations prior to excavation resulted in no additional artifacts located.

SUMMARY OF RESULTS

No cultural materials were recovered from subsurface contexts during the testing effort. All of the STPs were excavated to a minimum depth of 45 centimeters below surface. Three STPs (STP 2, 3, and 6) were successfully excavated to a depth of 50 centimeters below surface. STPs 1, 4, and 5 were unable to reach 50 centimeters total depth due to increases in metavolcanic cobble amounts and cobble size. Soils encountered within the six STPs consisted of a homogenous layer of medium brown sandy silt with sub-angular gravels. Only in STP 3 was a second soil unit encountered, this consisting of a medium brown sandy silt transitioning to dark reddish-brown silty clay intermixed with pea-sized fragments of decomposing rock.

Six artifacts were recorded and collected from the surface. Two of the artifacts were located near STP 2, and the remaining four artifacts were present near STP 4. Two artifacts (Catalog Nos. 4 and 6) were fragments of debitage previously identified and recorded by LSA in 2014. The remaining three fragments of debitage originally recorded during the 2014 survey were could not be located and were not collected.

Site form updates are provided in Appendix D.

Table A: Site CA-SDI-21643 Recovered Artifacts

Catalog No.	Depth	Count	Weight (g)	Object	Type	Material	Length (cm)	Width (cm)	Thickness (cm)	Description
1	Surface	1	28.3	Lithic	Debitage	Metavolcanic	4.6	4.1	1.5	Angular waste fragment with approximately 20% cortex, very fine-grained porphyritic metavolcanic, slight repatination, possibly thermally affected on one margin
2	Surface	1	106.9	Lithic	Core	Metavolcanic	6.0	3.9	3.9	Multi-directional core, no cortex, porphyritic fine-grained metavolcanic, moderate repatination, thermally affected post-repatination
3	Surface	1	286.1	Lithic	Debitage	Metavolcanic	11.0	7.8	3.6	Large secondary flake with approximately 30% cortex, porphyritic fine-grained metavolcanic, slight repatination
4	Surface	1	311.1	Lithic	Debitage	Metavolcanic	10.4	9.3	3.1	Large secondary flake with approximately 25% cortex, porphyritic fine-grained metavolcanic, repatination on one face
5	Surface	1	26.7	Lithic	Debitage	Metavolcanic	6.9	2.6	2.0	Secondary flake with approximately 20% cortex, porphyritic fine-grained metavolcanic
6	Surface	1	6.3	Lithic	Debitage	Metavolcanic	4.0	2.1	0.8	Small secondary flake with less than 10% cortex, fine-grained aphanitic metavolcanic, slight repatination, slightly thermally affected

The assemblage, in its entirety, contains no diagnostic artifacts. The lithic assemblage consisted nearly entirely of early stage lithic reduction waste fragments, with only one fragment of late stage lithic reduction activities (Catalog No. 6). All six fragments of debitage are composed of fine-grained porphyritic metavolcanic cobbles, a material that is locally abundant. No refined lithic tools such as projectile points, scrapers, or planes were recovered. No fragments of debitage displaying evidence of retouching post-creation were recovered. The core fragment (Catalog No. 2) was observed lying in an isolated context, was not in close proximity to other fragments of debitage, and did not appear to represent an element of a lithic reduction locus. After examination of the porphyritic context of the core fragment, it did not appear to be a by-product of reduction activities that created the other five debitage fragments. Furthermore, the lithic assemblage appears to be composed of fragments from several different cobbles, and not from a single parent cobble.

CALIFORNIA REGISTER EVALUATION CRITERIA

Cultural resources investigations are required to comply with local, State, and Federal laws, regulations, and ordinances. Most of these laws overlap and complement each other and provide protection of cultural resources at various jurisdictional levels. The evaluation criteria used by the City of San Diego to determine the significance of a site are defined in Section 15064.5 of the *CEQA Guidelines*. Historical resources, as defined by CEQA, include:

1. A resource listed in, or determined to be eligible by the State Historical Resources Commission, for listing in the California Register of Historical Places.
2. A resource included in a local register of historical resources, as defined in Section 5020.1(k) of the Public Resources Code or identified as significant in a historical resource survey meeting the requirements of Section 5024.1 of the Public Resources Code, shall be presumed to be historically or culturally significant. Public agencies must treat any such resource as significant unless the preponderance of evidence demonstrates that it is not historically or culturally significant.
3. Any object, building, structure, site, area, place, record or manuscript which a lead agency determines to be historically significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural annals of California may be considered to be a historical resource, provided the lead agency's determination is supported by substantial evidence in light of the whole record. Generally, a resource shall be considered by the lead agency to be "historically significant" if the resource meets the criteria for listing in the California Register of Historical Resources (Pub. Res. Code SS5024.1, Title 14 CCR, Section 4852) including the following:
    A. It is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage;
    B. It is associated with the lives of persons important in our past;
    C. It embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values; and/or
    D. It has yielded, or may be likely to yield, information important in prehistory or history.

4. If a resource is not listed in, or determined to be eligible for listing in the California Register of Historical Resources, not included in a local register of historical resources (pursuant to Section 5020.1(k) of the Public Resources Code), or identified in an historical resources survey (meeting the criteria in Section 5024.1(g) of the Public Resource Code) does not preclude a lead agency from determining that the resource may be an historical resource as defined in Public Resource Code Sections 5020.1(j) or 5024.1.

If a resource is listed in the National Register of Historical Places, it is automatically listed in the California Register of Historical Resources.

SIGNIFICANCE

The testing efforts resulted in the identification of a localized scatter of lithic artifacts. The identified scatter was present primarily along the southern and eastern slopes of a cobble terrace within the southern portion of the project area. The scatter was present within a portion of the previously recorded boundary for Site CA-SDI-21643. The remaining areas within the boundary for Site CA-SDI-21643 that fell outside of the limits of the project area were not tested. These untested areas included the lower terrace areas south of the project area. The testing effort indicated a lack of a subsurface cultural presence within any of the six subsurface explorations.

Site Integrity

The project area as a whole, including areas within the previously recorded boundary of Site CA-SDI-21643, displayed evidence of mild levels of disturbance from opportunistic refuse dumping, recreational land use, and pedestrian thoroughfare. The steep topography and dense vegetation/ cactus that is present within the project area appears to serve as a natural barrier that limits entry into portions of the property. All of the hand-excavated subsurface explorations displayed evidence of intact matrix integrity within the stratigraphic layers. The recovered assemblage was present entirely within surficial contexts, and cannot be clearly associated with a specific subsurface stratigraphic layer. The recovered assemblage, coupled with a lack of subsurface deposits and lack of subsurface stratigraphy, suggests that anthropologic activities along the sloped terrace areas were transitory in nature and do no contribute to the potential significance of the site.

Settlement Patterns, Subsistence, Trade, and Ceremonial/Ritual Use

The artifact assemblage recovered during testing efforts suggest that Site CA-SDI-21643 is representative of an opportunistic lithic refinement site, with locally derived resources (local fauna) collected within the immediate vicinity and processed for dietary use. None of the recovered artifacts indicates the site was used for processing or creating items used for regional trade or ceremonial use. All of the recovered artifacts were created using locally derived materials. No fragments of non-local materials, such as obsidian or crypto-crystalline silicates, were observed or recovered. Thus, the assemblage does not indicate regional trade influences were present. When the assemblage is compared to the provenience locations, no indications of localized activity locations such as areas for ceremonial or living area use can be determined when comparing the collected assemblage to the provenience of the testing locations. Furthermore, Site CA-SDI-21643 and the surrounding areas within the project area did not contain rock art or other evidence of modification for ceremonial use. The artifact assemblage does not indicate a change in activity types occurring at the site over time, nor does it indicate a change in either resource quantities or resource types occurring over time. No indications of population size can be determined from either the assemblage of recovered artifacts or from the size or density of the cultural use area within the boundary of Site CA-SDI-21643.

Chronology

The lithic assemblage as a whole lacked temporally diagnostic features and suggests a use period of the site in the Prehistoric periods. Diagnostic artifacts such as pottery, discoidals, projectile points, or lithic tools were not observed or recovered. Therefore, the age of the site is unknown.

Application of California Register Criteria

The results of the testing efforts indicate that the portion of Site CA-SDI-21643 within the project area boundary is ineligible for inclusion in the California Register. The recovered artifact assemblage suggests that the site may have been a lithic source and acquisition locale (quarry) given the availability of cobble material. The site is not associated with events that have significantly contributed to California’s history and cultural heritage and, therefore, does not meet Criterion A for listing in the California Register. The site is not associated with a specific person of historic importance within California and, therefore, is not eligible for listing in the California Register under Criterion B. The artifact assemblage recovered during the testing effort did not display distinctive characteristics of a personal or regional type, region, period, or method of construction. Therefore, the site is ineligible for listing in the California Register under Criterion C. The site also did not display evidence of subsurface deposits and appears unlikely to yield important information about the prehistory or history of California. The artifactual data present cannot answer (address) any of the questions posed in the research design presented earlier. Therefore, the site is ineligible for inclusion in the California Register under Criterion D.

This evaluation effort involves only the portion of the site accessible within the project area and does not evaluate the portion of the site outside the project area (to the south).

MANAGEMENT CONSIDERATIONS

The testing effort at Site CA-SDI-21643 indicated that it does not contain subsurface cultural contexts. The testing effort produced an artifact assemblage collected entirely from the surface of the landform and that exhibited a low quantity of lithic artifacts. No subsurface cultural material or features were discovered or identified. No evidence of soil discoloration (midden) was observed within any of the six STP locations. Based on the surficial and subsurface archaeological contexts observed during the testing process, the resource appears to represent the opportunistic testing of locally available cobble material occurring over an unknown period of time. The site does not contain subsurface contexts that exhibit the potential for additional data. The site does not possess the potential to answer important research questions and is recommended as non-significant. Due to the lack of subsurface archaeological contexts, minimal soil development, sloped landform contexts, and a sparse scatter of surficial artifacts, the potential for buried cultural deposits is remote. Therefore, no monitoring by archaeologists is recommended during ground-disturbing activities. Should archaeological materials be discovered within subsurface contexts during ground-disturbing activities, consultation with a City of San Diego qualified archaeologist is recommended.

REFERENCES

Beattie, George W., and Helen P. Beattie
1951 Heritage of the Valley: San Bernardino's First Century. Biobooks: Oakland.

Bull, Charles
1983 Shaking the Foundations: Evidence for San Diego Prehistory. Casual Papers, 2(3):15–64. Cultural Resource Management Center, Department of Anthropology, San Diego State University.

City of San Diego Historical Resources Board
2009 Historical Resource Technical Report Guidelines and Requirements. In *Land Development Manual Historical Resources Guidelines,* Appendix E., Part 1.2 February 2009, revised May 2009.

Ezell, Paul
1987 The Harris Site–An Atypical San Dieguito Site or am I Beating a Dead Horse? In S*an Dieguito–La Jolla: Chronology and Controversy,* edited by Dennis Gallegos, pp. 15–22. San Diego Archaeological Society Research Paper No. 1. San Diego.

Hall, Jacqueline, and Roderic McLean
2015 Cultural Resources Assessment for the Pacific Ridge Project, City of San Diego, San Diego County, California.

Ingersoll, L.A.
1904 *Ingersoll's Century Annals of San Bernardino County 1769–1904.* Los Angeles: By the Author, 1904.

Kroeber, Alfred L.
1925 *Handbook of the Indians of California.* Bureau of American Ethnology Bulletin No. 78. Washington D.C.: Smithsonian Institution. Reprinted in 1976, New York: Dover Publications.

McLean, Roderic
2017 Cultural Resources Testing Plan, Pacifica Ridge Project, City of San Diego, San Diego County, California.

Moratto, M.J.
1984 *California Archaeology.* Academic Press, Inc. San Diego, California.

Moriarty, J.R., III
1966 Cultural Phase Divisions Suggested by Typological Change Coordinated with Stratigraphically Controlled Radiocarbon Dating in San Diego. *The Anthropological Journal of Canada.* 4(4):20–30.

Norris, R.M., and R.W. Webb
1990 *Geology of California,* Second Edition. John Wiley and Sons, Inc., New York.

Pourade, Richard F.
1967 The Rising Tide. Volume Six of a Series on the Historic Birthplace of California: The History of San Diego. *San Diego: Union Tribune*.

Rogers, Malcolm
1945 An Outline of Yuman Prehistory. *Southwestern Journal of Anthropology* 1(2):167–198.

San Diego, City of
2001 Historical Resources Guidelines. San Diego Municipal Code, Land Development Code.

U.S. Department of Agriculture
1973 Soil Survey, San Diego Area, California. Edited by Roy H. Bowman. Soil Conservation Service and Forest Service. December.

Warren, Claude N., Gretchen Sieglar, and Frank Dittmer
1993 Paleoindian and Early Archaic Periods. In Historic Properties Background Study for the City of San Diego Clean Water Program. Brian F. Mooney and Associates.

APPENDIX A

RÉSUMÉ OF PRINCIPAL INVESTIGATOR

RODERIC NOEL MCLEAN, RPA

ASSOCIATE/ARCHAEOLOGIST

EXPERTISE

Cultural Resources Project Management

Archaeology

Cartography

Forensic Archaeology

EDUCATION

California State University, Fullerton, M.A., Anthropology/Archaeology, 2003. Thesis title: *The Material Culture of Fort Whipple*.

University of California at Los Angeles, B.A., Anthropology/Archaeology, 1978.

West Los Angeles Community College, A.A., Anthropology, 1976.

PROFESSIONAL ORGANIZATIONS/ MEMBERSHIPS

Society for American Archaeology

Association of Environmental Professionals

Pacific Coast Archaeological Society

San Diego County Archaeological Society

PROFESSIONAL RESPONSIBILITIES

Mr. McLean has over 30 years of experience as a professional archaeologist, including almost 13 years as a staff archaeologist with the U.S. Army Corps of Engineers, and extensive experience throughout California, in Nevada and Arizona. Mr. McLean exceeds the Secretary of Interior's *Qualification Standards for Archaeology and Historical Preservation*. Mr. McLean is also certified by the County of San Diego as qualified to direct archaeological studies for California Environmental Quality Act (CEQA) projects and has worked extensively in San Diego County. His area of expertise lies in both prehistoric and historic archaeology, and compliance with Section 106 of the National Historic Preservation Act (NHPA). Mr. McLean is responsible for directing studies and writing cultural resource assessment reports to meet the compliance requirements of the NHPA and CEQA; consulting with the Office of Historic Preservation; conducting Native American consultation; assessing resource significance and project effects; mitigation planning and execution; directing archaeological surveys and excavations; and preparing Historic American Building Survey/Historic American Engineering Record documentation. Additionally, he performs peer and third-party review of draft cultural resources documents, including in support of federal agency compliance with 36 CFR Part 800. Mr. McLean provides mapping and survey instruction to graduate students participating in the annual California State University, Los Angeles field school on San Nicolas Island. He is also an advisory board member for the Master of Arts Degree Program in Applied Archaeology at California State University, San Bernardino.

PROJECT EXPERIENCE

Coastal Rail Trail Project
San Diego County, California
Under contract with the City of Carlsbad, Mr. McLean is directing the cultural resources studies in support of Section 106 and NEPA compliance regarding a planned recreational trail.

Del Mar Fairgrounds
Del Mar, California
Mr. McLean is Principal Investigator for several ongoing studies within and adjacent to the Fairgrounds.

Southern California Edison (SCE), Archaeological on-call, Purchase Order No. 4500031959
Various Locations, California
As Project Manager and Lead Principal Investigator, Mr. McLean is responding to all requests for services and provides the Consultant Work Assignments and cost estimate spreadsheets for approval regarding each

PROFESSIONAL EXPERIENCE

Associate, LSA Associates, Inc., California, 2004–present.

Staff Archaeologist (GS-11), U.S. Army Corps of Engineers, Los Angeles District (southern half of California and entire state of Arizona), 1991–2004.

Forest Service Program oversight, U.S. Forest Service, 1998 and 2000.

Team Anthropologist, U.S. Army Central Identification Laboratory, Hawaii, 1997.

Senior Archaeologist (GS-12), U.S. Army Corps of Engineers, Los Angeles District, September 1–October 31, 1996.

Co-Principal Investigator, INFOTEC Research, 1991.

Field Director, Chambers Group, Inc., Santa Ana, California, 1989–1991.

Field Director, Keith Companies, Costa Mesa, California, 1989.

Field Director, Scientific Resource Surveys, Huntington Beach, California, 1988–1989.

Field Director, Tetra-Tech, Inc., San Bernardino, California, 1988.

Archaeologist/Cartographer, Chambers Group Inc., Santa Ana, California 1987–1988.

Archaeologist, Archaeological Associates, Sun City, California, 1985–1988.

Crew Chief, Harmsworth Associates, Laguna Hills, California, 1987.

Archaeologist, Westec Services, San Diego, California, 1986.

Archaeologist, W & S Consultants, Los Angeles, California, 1985.

Archaeologist, Peak and Associates, Sacramento, California, 1985.

Archaeologist, Louis Berger and Associates, San Bernardino, California, 1985.

PROJECT EXPERIENCE (CONTINUED)

project. Additionally, he reviews the draft reports in the role of Principal Investigator prior to submittal to SCE.

Solar One Project
San Bernardino County, California
As part of as needed services to Stirling Energy Systems, Inc., Mr. McLean (Project Manager and PI) has assembled a team who are reviewing the draft cultural technical documents on behalf of the Bureau of Land Management (BLM). Additionally, he produced a Plan of Development matrix to facilitate the BLM's review of the Application of Certification submitted to the California Energy Commission and the BLM.

Solar Two Project
Imperial County, California
Mr. McLean has assembled a team who are reviewing the draft cultural technical documents on behalf of the BLM and the CEC as part of as needed services to SES. He is acting as Project Manager and Principal Investigator on this project and is also providing Section 106 expertise to the BLM and is managing a team of LSA archaeologists who are providing Native American government-to-government consultation support to the BLM.

Sunrise Powerlink Project
San Diego and Imperial Counties, California
Mr. McLean is Project Manager and Principal Investigator under contract with San Diego Gas & Electric Company to provide third-party review of draft cultural resources documents to the BLM. He is also providing Section 106 expertise to the BLM including preparation of a Programmatic Agreement for the project. Mr. McLean has assembled a team to support the BLM in government to government consultation with Tribes, including organizing meetings and making multiple telephone calls to interested tribes on behalf of the BLM.

El Casco (Oak Valley) System Substation Project
Riverside and San Bernardino Counties, California
Project Manager and Lead Principal Investigator for contract with Southern California Edison regarding identification and evaluation of cultural resources for a proposed substation and reconductor line project.

Los Coches Creek Middle School
Alpine, San Diego County, California
LSA performed an archaeological survey and evaluation of identified archaeological sites at the location of a proposed school. Mr. McLean reviewed and edited the final report.

PROFESSIONAL EXPERIENCE (CONTINUED)

Unit Leader/Excavator, Scientific Resource Surveys, Inc., Huntington Beach, California, 1984–1985.

Excavator/Mapping, Archaeological Associates, Sun City, California, 1984–1985.

Archaeologist/Cartographer, California State University, Fullerton, 1984.

Photographer, Department of Anthropology, California State University, Long Beach, 1983.

Research Assistant, New Mexico Archaeological Services, Inc., Carlsbad, New Mexico, 1981–1982.

Site Director, Center for American Archeology, Kampsville, Illinois, 1979–1981.

Survey Leader/Archaeologist, Illinois State Museum, Springfield, Illinois, 1979.

Archaeologist, Social Process Research Institute, University of California at Santa Barbara, 1978–1979.

GS-5/Archaeologist, National Forest Service, U.S. Department of Agriculture, Modoc National Forest, 1978.

Archaeologist, University of California at Los Angeles, 1978.

PROFESSIONAL CERTIFICATIONS

Register of Professional Archaeologists (RPA)

County of San Diego Certified Consultant

Hazardous Waste Operations/Emergency Response –

40 Hour Course per 29 CFR 1910.120 and GISO 5192

PROJECT EXPERIENCE (CONTINUED)

Sports Arena Arco Station
San Diego, California
LSA performed construction monitoring at the CA-SDI-10530/H West Point Loma Dump site. Mr. McLean reviewed and edited the final report.

South Orange County Transportation Infrastructure Improvement Project
Orange and San Diego Counties, California
Principal Investigator (PI) regarding the identification and evaluation of cultural resources within the project’s area of potential effects (APE).

Fagan Ranch
Ventura County, California
Project Manager for the identification of cultural resources within proposed housing development.

Oak Valley, Champions Golf Course
Riverside County, California
PI for the identification, evaluation, and treatment of cultural resources within proposed housing development.

Truckee Meadows
Washoe County, Nevada
Consultant to the U.S. Army Corps of Engineers in the identification, evaluation, and treatment of cultural resources within proposed flood control project.

SCE Power Pole Upgrades
Santa Catalina Island, California
Co-PI for contract with Southern California Edison regarding identification for cultural resources for planned power pole upgrades.

Laguna Canyon Excavations
Orange County, California
Project Manager for a contract with the California Department of Transportation (Caltrans) regarding the data recovery (mitigation) excavations of prehistoric village site CA-ORA-1055.

Olinda Alpha Landfill Expansion
Orange County, California
Mr. McLean served as the Principal Investigator for surface surveys of proposed landfill expansion.

SPECIAL TRAINING

University of Alabama, Huntsville: Environmental Impact Assessment of Projects

University of Nevada, Reno: Geomorphology in Archaeological Analysis, Native American Grave Protection and Repatriation Act (NAGPRA): Implications and Practical Application

U.S. Department of the Interior: Remote Sensing/Geophysical Techniques for Cultural Resource Management

U.S. General Services Administration: Federal Projects and Historic Preservation Laws

Advisory Council on Historic Preservation: Agreement Documents Preparation

U.S. Army Corps of Engineers:

Cultural Resources

Environmental Laws and Regulations

Global Positioning Systems

Hazardous Waste Operations/Emergency Response (40 Hour Course)

Historic Structures, Maintenance and Repair

Geographic Information Systems (GIS)

Remote Sensing Techniques

TEACHING

Invited instructor of survey and mapping, California State University, Los Angeles (since 1995) for annual field school on San Nicolas Island.

Annual instruction in forensic archaeology at El Toro High School.

ACADEMIC APPOINTMENT

Advisory Board Member, Master of Arts Degree Program in Applied Archaeology at California State University, San Bernardino.

PROJECT EXPERIENCE (CONTINUED)

Diablo Canyon Power Plant
San Luis Obispo County, California
Mr. McLean performed cultural resources inventory of emergency sirens proposed for relocation. The study included monitoring of excavation in sensitive areas. Impacts to resources were successfully avoided. The client was Pacific Gas & Electric Company.

PRE-LSA PROJECT EXPERIENCE

SAN DIEGO COUNTY

Imperial Beach Sand Replenishment Project, U.S. Army Corps of Engineers, L.A. District
Imperial Beach, California
Mr. McLean served as project archaeologist completing field studies and Section 106 compliance documents.

Starwood Development (404 permit), U.S. Army Corps of Engineers, L.A. District
West and Central San Diego County, California. Mr. McLean was responsible for reviewing and approving archaeological studies involving the Harris Site Archaeological District.

Ballast Point Dock Repair, U.S. Army Corps of Engineers, L.A. District
Oceanside, San Diego, California
Mr. McLean was responsible for field studies (both marine and terrestrial) and Section 106 compliance for impacts as a result of proposed dock repair at Ballast Point. Resources included a historic whaling station and portions of historic Fort Guijarros.

Additional San Diego County Projects

- Oceanside Harbor Maintenance
- San Luis Rey River Flood Control, Data Recovery Excavations
- Silver Strand Beach Sand Replenishment
- Joint Task Force-6 Border Fence (studies along border with Mexico)
- Tierrasanta Unexploded Ordnance (UXO) Detection and Removal
- Sports Arena Arco Station (Historic landfill studies)

SAN LUIS OBISPO COUNTY

- **Diablo Canyon Power Plant:** Mr. McLean performed a cultural resources inventory of emergency sirens proposed for relocation. The study included monitoring of excavation in sensitive areas.

APPENDIX B

ARTIFACT CATALOG

Appendix B. Artifact Catalog CA-SDI-21643

Catalog No.	Depth	Count	Weight (g)	Object	Type	Material	Length (cm)	Width (cm)	Thickness (cm)	Description
1	Surface	1	28.3	Lithic	Debitage	Metavolcanic	4.6	4.1	1.5	Angular waste fragment with approximately 20% cortex, very fine-grained porphyritic metavolcanic, slight repatination, possibly thermally affected on one margin
2	Surface	1	106.9	Lithic	Core	Metavolcanic	6.0	3.9	3.9	Multi-directional core, no cortex, porphyritic fine-grained metavolcanic, moderate repatination, thermally affected post-repatination
3	Surface	1	286.1	Lithic	Debitage	Metavolcanic	11.0	7.8	3.6	Large secondary flake with approximately 30% cortex, porphyritic fine-grained metavolcanic, slight repatination
4	Surface	1	311.1	Lithic	Debitage	Metavolcanic	10.4	9.3	3.1	Large secondary flake with approximately 25% cortex, porphyritic fine-grained metavolcanic, repatination on one face
5	Surface	1	26.7	Lithic	Debitage	Metavolcanic	6.9	2.6	2.0	Secondary flake with approximately 20% cortex, porphyritic fine-grained metavolcanic
6	Surface	1	6.3	Lithic	Debitage	Metavolcanic	4.0	2.1	0.8	Small secondary flake with less tan 10% cortex, fine-grained aphanitic metavolcanic, slight repatination, slightly thermally affected

APPENDIX C

PHOTOGRAPHS AND PHOTOGRAPHIC LOG

Photograph 1: Overview of landscape, STP 1 location, view to the south (DSCN3391)

Photograph 2: Overview of STP 1 completed, planview (DSCN3393)

Photograph 3: Overview of STP 2 completed, planview (DSCN3395)

Photograph 4: Overview of STP 3 completed, planview (DSCN3397)

Photograph 5: Overview of STP 4 location, M DeGiovine, and K. Osuna, view to the east (DSCN3399)

Photograph 6: Overview of STP 4 completed, planview (DSCN3401)

Photograph 7: Overview of STP 5 completed, planview (DSCN3403)

Photograph 8: Overview of STP 6 completed, planview (DSCN3407)

APPENDIX D

SITE FORM UPDATE

(With Confidential Appendices)

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

Primary #
HRI#
Trinomial CA-SDI-21643 Update

Page 1 **of** 5 ***Resource Name or #** CA-SDI-21643 Update

***Recorded by:** S. Bietz ***Date:** ☐ Continuation ☒ Update

LSA Associates, Inc. (LSA) conducted an archaeological testing program for the Pacifica Ridge Project. The testing program was initiated to evaluate Archaeological site CA-SDI-21643 for listing in the California Register of Historical Resources (CRHR), in accordance with the City of San Diego (City) Historical Resources Guidelines (Amended April 30, 2001 by City Manager Document No. C-10912). Testing and evaluation included subsurface exploration within the boundary of CA-SDI-21643.

The testing program was conducted pursuant of the California Environmental Quality Act (CEQA), per a testing plan approved by the City of San Diego. The testing plan was created in accordance with the City of San Diego's Land Development Code and Historical Resources Guidelines (City of San Diego 2001). The City of San Diego served as the Lead Agency for CEQA compliance for the project.

Site CA-SDI-21643 is within the boundaries of the project location and has been previously evaluated for eligibility for nomination to the California Register of Historical Resources (California Register). The testing program was conducted in order to assess the presence or absence of subsurface cultural material, integrity, and to evaluate the portion of the site which is present within the proposed project area.

The testing program for Site CA-SDI-21643 was implemented in order to determine the site's eligibility for listing in the California Register. The results of the testing program would establish the presence or absence of a subsurface deposit, and if present, the vertical and horizontal extent of this deposit. The results of the testing program would additionally provide the information necessary to determine whether this cultural resource has the potential to answer the previously listed research questions and qualify as significant resource.

LSA Archaeologists Spencer Bietz, B.A., and Michael De Giovine, B.A., conducted the testing program between August 30 and 31, 2017, for a total of two days. Mr. Bietz served as field director for the duration of the testing endeavor. All archaeological work conducted for this project was conducted under the direction of LSA Associate Roderic McLean, M.A., RPA.

Subsurface testing of Site CA-SDI-21643 consisted of the excavation of six 50-centimeter wide shovel test pits (STPs), which were placed within and adjacent to the current recorded site boundary (attached Figure 3). Two STPs were be placed near the pieces of debitage previously observed within the northern portion of the site. One STP was placed within the central portion of the site, and two additional STPs were placed outside the site to confirm its boundaries. The STP locations were initially proposed using aerial imagery and Geospatial Information System (GIS) mapping, but were revised in the field if encumbered by impenetrable vegetation. All materials were screened through ⅛-inch mesh in discrete 10-centimeter level increments, with the option to use 1/16-inch mesh if deemed necessary. STP exploration forms were completed with detailed sediment descriptions and any finds within that level. Each STP was proposed to be excavated to a minimum depth of 50 centimeters, provided no artifacts or subsurface deposits were encountered. The maximum depth will be at least three sterile levels below any archaeological materials, if so encountered.

The subsurface testing exploration resulted in no subsurface deposits being identified within the six STPs. Three of the STPs were successfully excavated to a depth of 50 cm (STPs 2, 3, 6), while the remaining three had final depths of 45 cm (STP 4), 46 cm (STP 5), and 47 cm (STP 1). All of the STP locations were altered slightly from initial plotting due to impenetrable brush and cactus. All of the STPs contained soils consisting of dry, semi-compacted sandy silts with pea-sized angular and sub-angular gravels and small to medium-sized sub-rounded metavolcanic cobbles. This

CONTINUATION SHEET

Trinomial CA-SDI-21643 Update

***Resource Name or #** CA-SDI-21643 Update

***Recorded by:** S. Bietz ***Date:** ☐ Continuation ☒Update

soil structure was present within all levels in each STP. In STPs 1, 4, and 5, the size of the sub-rounded metavolcanic cobbles increased as the test unit depth increased, resulting in impenetrable rock layers in the bottom depths of each STP. In STP 3, a second soil type was encountered between 40 cm and 50 cm depth, consisting of medium brown sandy silt transitioning to dark reddish-brown silty clay intermixed with pea-sized fragments of decomposing rock. The transition to the second soil type occurred between 43 and 46 cm in depth. Each STP had limited amounts of subsurface disturbance caused by roots. No evidence of bioturbation was observed in any of the STPs.
Six surface artifacts were recorded and collected during the testing effort (Table A). Each of the surface artifacts consisted of lithic debitage, and was composed of green metavolcanic cobble (Santiago Peak Volcanics). Each artifact's location was recorded using a Trimble sub-meter GPS prior to collection. Two surface artifacts were recorded near the location of STP 2 (Catalog Nos. 1 and 2), and the remaining four artifacts were recorded near the location of STP 4 (Catalog Nos. 3-6). Inspection of areas surrounding the remaining STP locations prior to excavation resulted in no additional artifacts being located.

Table A. CA-SDI-21643 Artifact Catalog

Catalog No.	Depth	Count	Weight (g)	Object	Type	Material	Length (cm)	Width (cm)	Thickness (cm)	Description
1	Surface	1	28.3	Lithic	Debitage	Metavolcanic	4.6	4.1	1.5	Angular waste fragment with approximately 20% cortex, very fine-grained porphyritic metavolcanic, slight repatination, possiblly thermally affected on one margin
2	Surface	1	106.9	Lithic	Core	Metavolcanic	6.0	3.9	3.9	Multi-directional core, no cortex, porphyritic fine-grained metavolcanic, moderate repatination, thermally affected post-repatination
3	Surface	1	286.1	Lithic	Debitage	Metavolcanic	11.0	7.8	3.6	Large secondary flake with approximately 30% cortex, porphyritic fine-grained metavolcanic, slight repatination
4	Surface	1	311.1	Lithic	Debitage	Metavolcanic	10.4	9.3	3.1	Large secondary flake with approximately 25% cortex, porphyritic fine-grained metavolcanic, repatination on one face
5	Surface	1	26.7	Lithic	Debitage	Metavolcanic	6.9	2.6	2.0	Secondary flake with approximately 20% cortex, porphyritic fine-grained metavolcanic
6	Surface	1	6.3	Lithic	Debitage	Metavolcanic	4.0	2.1	0.8	Small secondary flake with less tan 10% cortex, fine-grained aphanitic metavolcanic, slight repatination, slightly thermally affected

No cultural materials were recovered from subsurface contexts during the testing effort. All of the STPs were excavated to a minimum depth of 45 cm below surface. Three STPs (STP 2, 3, and 6) were successfully excavated to a depth of 50 cm below surface. STPs 1, 4, and 5 were unable to reach 50 cm total depth due to increases in metavolcanic cobble amounts and cobble size. Soils encountered within the six STPs consisted of a homogenous layer of medium brown sandy silt with sub-angular gravels. Only one STP (STP 3) was a second soil unit encountered, this consisting of a medium brown sandy silt transitioning to dark reddish-brown silty clay intermixed with pea-sized fragments of decomposing rock.

Six artifacts were recorded and collected from the surface. Two of the artifacts were located near STP 2, and the remaining four artifacts were present near STP 4. Two artifacts (Catalog Nos. 4 and 6) were fragments of debitage

***Recorded by:** S. Bietz ***Date:** ☐ Continuation ☒ Update

previously identified and recorded by LSA in 2014. The remaining three fragments of debitage originally recorded during the 2014 survey were unable to be relocated and collected.

Significance

The testing efforts resulted in the identification of a localized scatter of lithic artifacts. The identified scatter was present primarily along the southern and eastern slopes of a cobble terrace within the southern portion of the project area. The scatter was present within a portion of the previously recorded site boundary for CA-SDI-21643. The remaining areas within the site boundary for CA-SDI-21643 that fell outside of the limits of the Project Area were not tested. These untested areas included the lower terrace areas south of the Project Area. The testing effort indicated a lack of a significant subsurface cultural presence within any of the six subsurface explorations.

Site Integrity

The project area as a whole, including areas within the previously recorded site boundary of CA-SDI-21643 displayed evidence of mild levels of disturbance from opportunistic refuse dumping, recreational land-use, and pedestrian thoroughfare. The steep topography and dense vegetation/cactus that is present within the project area appears to serve as a natural barrier that limits entry into portions of the property. All of the hand-excavated subsurface explorations displayed evidence of intact matrix integrity within the stratigraphic layers. The recovered assemblage was present entirely within surficial contexts, and cannot be clearly associated with a specific subsurface stratigraphic layer. The recovered assemblage, coupled with a lack of subsurface deposits and lack of subsurface stratigraphy suggest that anthropologic activities along the sloped terrace areas were transitory in nature, and do no contribute to the potential significance of the site.

Settlement Patterns, Subsistence, Trade, and Ceremonial/Ritual Use

The artifact assemblage recovered during testing efforts suggest that CA-SDI-21643 is representative of an opportunistic lithic refinement site, with locally derived resources (local fauna) being collected within the immediate vicinity and processed for dietary use. None of the recovered artifacts indicate the site was used for processing or creating items used for regional trade or ceremonial use. All of the recovered artifacts were created using locally derived materials. No fragments of non-local materials, such as obsidian or crypto-crystalline silicates, were observed or recovered. Thus, the assemblage does not indicate regional trade influences were present. When the assemblage is compared to the provenience locations, no indications of localized activity locations such as areas for ceremonial or living area use can be determined when comparing the collected assemblage to the provenience of the testing locations. Furthermore, CA-SDI-21643 and the surrounding areas within the Project Area did not contain rock art or other evidence of modification for ceremonial use. The artifact assemblage does not indicate either a change in activity types occurring at the site over time, nor do they indicate a change in either resource quantities or resource types occurring over time. No indications of population size can be determined from either the assemblage of recovered artifacts nor from the size or density of the cultural use area within the site boundary of CA-SDI-21643.

Chronology

The lithic assemblage as a whole lacked temporally diagnostic features, and suggests a use period of the site of either Archaic or Late Prehistoric periods. The testing efforts resulted in the recovery of six fragments of lithic debitage. No remains of faunal or marine resources were observed or recovered. The assemblage, in its entirety, contains no diagnostic artifacts. The lithic assemblage consisted nearly entirely of early stage lithic reduction waste fragments, with only one fragment of late stage lithic reduction activities (Catalog No. 6). All six fragments of debitage are composed of fine-grained porphyritic metavolcanic cobbles, a material which is locally abundant. No

***Recorded by:** S. Bietz ***Date:** ☐ Continuation ☒Update

refined lithic tools such as projectile points, scrapers, or planes were recovered. No fragments of debitage displaying evidence of retouching post-creation were recovered. Diagnostic artifacts such as pottery, discoidals, projectile points, or lithic tools were not observed or recovered. Therefore, the age of the site is unknown.

Application of California Register Criteria

The results of the testing efforts indicate that the portion of CA-SDI-21643 within the project area boundary is ineligible for inclusion in the California Register. The recovered artifact assemblage suggests that the site may have been a local resource processing site. The site is not associated with events that have significantly contributed to California's history and cultural heritage, and therefore does not meet Criterion A for listing in the California Register. The site is not associated with a specific person of historic importance within California, and therefore is not eligible for listing in the California Register under Criterion B. The artifact assemblage recovered during the testing effort did not display distinctive characteristics of a personal or regional type, region, period, or method of construction. Therefore, the site is ineligible for listing in the California Register under Criterion C. The site also did not display evidence of subsurface deposits, and appears unlikely to yield additional information about the prehistory or history of California. Therefore, the site is ineligible for inclusion to the California Register under Criterion D.

MANAGEMENT CONSIDERATIONS

The testing effort at CA-SDI-21643 indicated that the site does not contain subsurface cultural contexts. The testing effort produced an artifact assemblage which was collected entirely from the surface of the landform and exhibited a low quantity of lithic artifacts. No subsurface cultural features were discovered or identified. No evidence of subsurface soil stratification or soil discoloration was observed within any of the six STP locations. The quality of the recovered artifact assemblage is negligible, and was located within the southern portion of the project area. Cultural resource monitoring during ground-disturbing activities is not recommended. However, should archaeological materials be discovered within subsurface contexts during ground-disturbing activities, consultation with a City of San Diego qualified archaeologist is recommended.

State of California - The Resources Agency

DEPARTMENT OF PARKS AND RECREATION

SKETCH MAP

Primary # ______________________

HRI # ______________________

Trinomial ______________________

Page 4 of 5

***Resource Name or** # (Assigned by recorder): CA SDI-21643 Update

*Drawn By: Spencer Bietz

*Date: September 8, 2017

* Required Information

ALLIED EARTH TECHNOLOGY
7915 SILVERTON AVENUE, SUITE 317
SAN DIEGO, CALIFORNIA 92126
TEL : (858) 586-1655 (619) 447-4747
E-MAIL : Robertaet@aol.com

ROBERT CHAN, P.E.

UPDATE OF GEOTECHNICAL INVESTIGATION REPORT
PROPOSED TOWNHOME BUILDING SITE
EAST SIDE OF SMYTHE AVENUE, NORTH OF W. FOOTHILL ROAD
SANYSIDRO AREA, SAN DIEGO, CALIFORNIA

FOR

RAINTREE RESIDENTIAL LLC

PROJECT NO. 13-1350G3

JUNE 1, 2015

ALLIED EARTH TECHNOLOGY
7915 SILVERTON AVENUE, SUITE 317
SAN DIEGO, CALIFORNIA 92126
PH. (858) 586-1665 FAX (858) 586-1650
(619) 447-4747

ROBERT CHAN, P.E.

June 1, 2015

Raintree Residential LLC
P.O. Box 2671
Carlsbad, Ca. 92018

Attn : Mr. Michael Kootichick

Subject : Project No. 13-1350G3
Update of Geotechnical Investigation Report
Proposed Townhome Building Site
East Side of Smythe Avenue, North of W. Foothill Road
San Ysidro area, San Diego, California

Dear Mr. Kootichick :

Reference is made to our Geotechnical Investigation Report for subject property, same Project Number as above, dated October 15, 2014.

Subject property is more specifically referred to as being a portion of the NW ¼ of the SW ¼ of Section 36, T18S, R2W, SB&M (APN 638-060-03, 04, and 41-00), in the City and County of San Diego, State of California.

It is our understanding that the scope of work for subject project has been modified. The purpose of our work is to prepare an update report with current geotechnical recommendations for the site development as presently proposed.

The scope of our work includes a visit to the site, and a review of the following documents and plans :

Tentative Map/Preliminary Grading and Site Development Plan
Pacific Ridge

Prepared by SB&O of San Diego, California

PROPOSED DEVELOPMENT

It is our understanding that the current site development will consist of the construction of 44 condominium units, or 22 duplex lots. The proposed structures will be two-stories in height; of wood-frame/stucco and slab-on-grade construction.

Revised current earthwork quantities consist of 67,625 cubic yards of excavation; 10,155 cubic yards of fill, with 57,470 cubic yards to be exported. The height of the fill slope in the lower, southwest portion of the property will be increased to 55 feet, with slope ratio of 2 : 1 (horizontal : vertical). Segmental retaining walls on the order of 25 feet in maximum height will be constructed along the toe of the proposed fill slope.

FIELD INSPECTION

An inspection of the property was conducted on May 20, 2015, and the site was found to be generally of the same conditions since site investigation was conducted in January, 2014.

FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

In general, we concur and agree with the findings, conclusions and recommendations presented in the above-mentioned Report, and said findings, conclusions and recommendations are still valid and applicable for the proposed site development.

The following addendum recommendations are made, however, as supplement to the recommendations presented in the subject Report, based on current site development plans and applicable codes. If there are discrepancies, the addendum recommendations contained herein will prevail.

Slope Stability

1. The proposed fill slope in the lower, southwesterly portion of the property has been increased from 45 feet to 55 feet in height. Revised slope stability analysis indicates that this slope will be safe against massive slope failure with a factor of safety exceeding 1.5.

2. For such high fill slopes, surface runoff on the slope will accumulate and build up, and erosion and rilling along the toe of the fill slope may occur. It is recommended that a concrete drainage ditch be constructed on a minimum 5-foot wide bench mid-height up the slope to intercept and divert surface runoff.

Design of Segmental Retaining Wall

3. Segmental retaining walls on the order of 25 feet in maximum height are proposed along the toe of the fill slope. In addition to the active and passive pressures presented in the above-mentioned Report, the backfill soils behind the

Retaining walls should have the following soil parameters :

C = 380 psf
ϕ = 34 degrees
γ = 120 pcf
Soil Classification = SW, SP, SM

Grading Plan Review

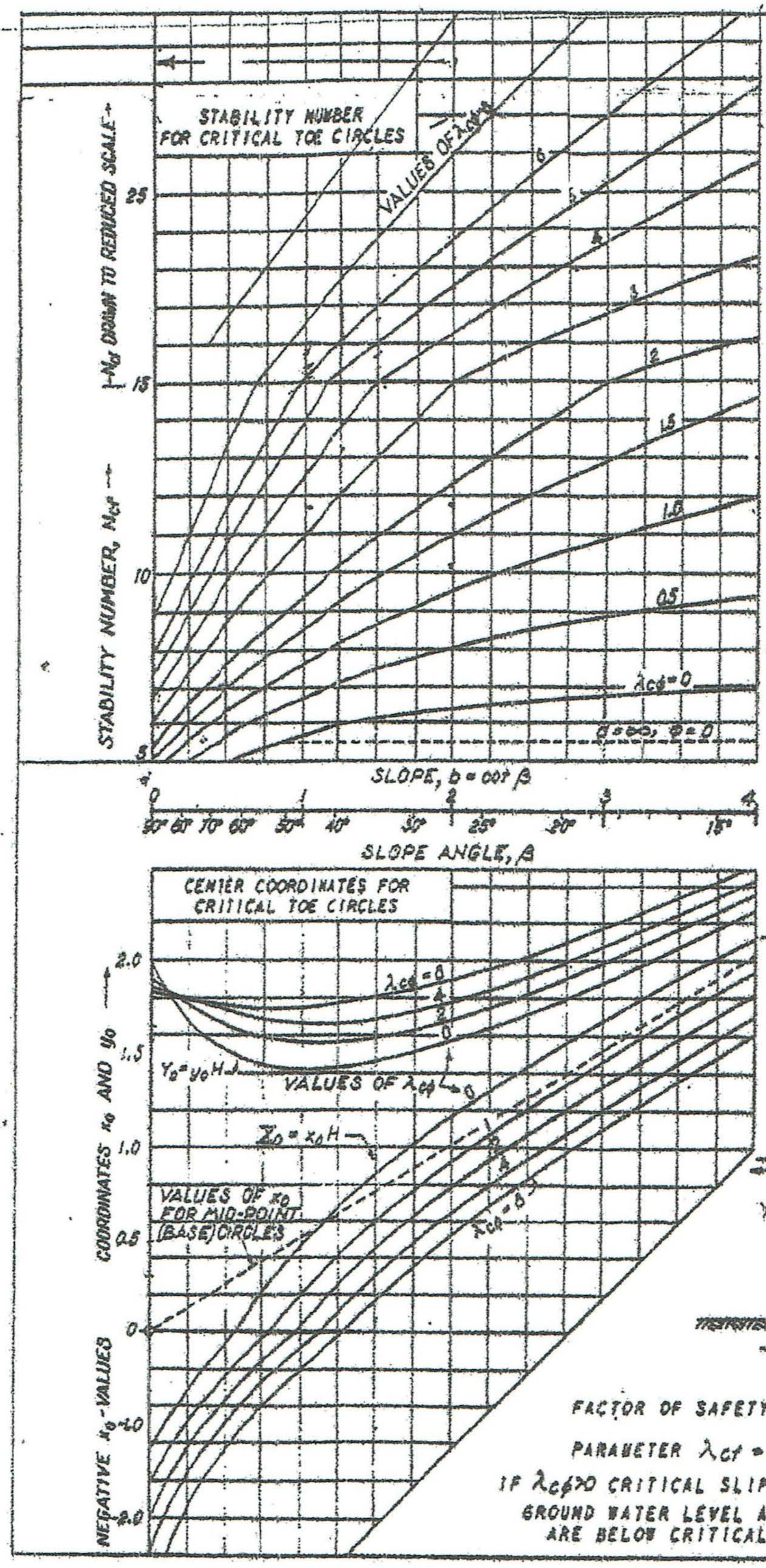
4. It is recommended that our firm review the final grading plans for the proposed site development to verify their compliance with our recommendations.

Respectfully submitted,
ALLIED EARTH TECHNOLOGY

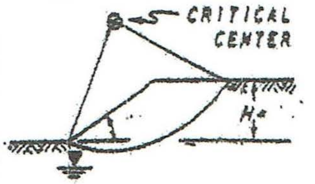
ROBERT CHAN, P.E.

REGISTERED PROFESSIONAL ENGINEER
ROBERT CHAN
No. C-24613
Exp. 12/31/15
CIVIL
STATE OF CALIFORNIA

REGISTERED PROFESSIONAL ENGINEER
ROBERT CHAN
No. G-00198
Exp. 12/31/15
GEOTECHNICAL
STATE OF CALIFORNIA



STABILITY ANALYSIS



ASSUMPTIONS

1. GROUND WATER LEVEL IS BELOW FAILURE SURFACE.
2. NO SURCHARGE OR TENSION CRACKS.

SLOPE HT. INCREASED FROM 45 TO 55 FT.

PROPERTIES

c = 380PSF
φ = 34°
γ = 120 PCF ⑤⑤
H = ~~45~~FT, β = 2 : 1

COMPUTATIONS

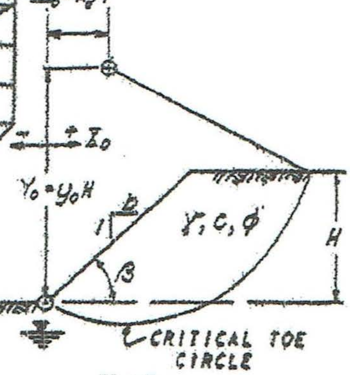
$\lambda_{c\phi} = \frac{120(\cancel{45})(0.675)}{380} = 9.5$ 55

N_{cf} = ~~32~~
x_o =
y_o =
FROM DIAGRAMS

(35) $F_s = \frac{\cancel{32}(380)}{120(\cancel{45})}$ = ~~2.3~~ (2.0) OK (55)

X_o = ( ) = FT
Y_o = ( ) = FT

DEFINITIONS



FACTOR OF SAFETY, $F_S = \frac{N_{cf}\,c}{\gamma H}$

PARAMETER $\lambda_{cf} = \frac{\gamma H \tan\phi}{c}$

IF $\lambda_{c\phi}>0$ CRITICAL SLIP CIRCLE INTERSECTS TOE. GROUND WATER LEVEL AND TOP OF HARD STRATUM ARE BELOW CRITICAL SLIP CIRCLE.

MICHAEL W. HART
ENGINEERING GEOLOGIST
P.O. BOX 261227 • SAN DIEGO • CALIFORNIA • 92196 • 858 578-4672

File No. 903-2014
March 19, 2014 (rev.6/4/2015)

Allied Earth Technology
7915 Silverton, Ste. 317
San Diego, California
92126

Subject: Pacifica Ridge
San Diego, California
GEOLOGIC RECONNAISSANCE

Gentlemen:
This report of geologic reconnaissance is a revision of a previously issued geologic report for the property entitled "Smythe Avenue Townhomes". The report has been revised to reflect the revised grading plan for the site prepared by SB&O Inc., revised dated 5/6/15. The results of this study indicate the site is primarily underlain by dense sandstones of the Lindavista Formation. This unit is in turn underlain by siltstone, claystone and conglomerate of the San Diego Formation. Review of geologic literature and aerial photographs indicates the site is not located on or adjacent to an ancient landslide. If you have any questions after reviewing the report, please contact me at your convenience.

Very truly yours,

MICHAEL W. HART
NO. CEG706
EXP 10/31/16

Michael W. Hart
CEG 706
1cc addressee

GEOLOGIC RECONNAISSANCE
PACIFICA RIDGE
SAN DIEGO, CALIFORNIA

Purpose and Scope

This report presents the findings of a geologic reconnaissance of the residential property located on the east side of Smythe Avenue and north of Foothill Road, San Diego, California (Figure 1). The purpose of this study is to: 1) describe the site's geologic characteristics and potential geologic hazards, and, 2) recommend mitigation measures if required.

The scope of this study included geologic mapping, a study of stereo-pairs of aerial photographs, and a review of readily available geologic literature.

Site and Project Description

The site consists of a 4.07 acre vacant site located on the east side of Smythe Avenue and north of Foothill Road in the San Ysidro area of San Diego, California (Figure 1). The site is bounded on the north and east by cut slopes associated with grading for existing single-family residences and on the west by a road cut that varies in height from essentially zero on the south to 40 feet at the northwest corner of the site. Vacant land covered with native vegetation bounds the site on the south. Elevations on the property vary from a low of 120 feet at the southwest corner of the site to approximately 220 feet near the center of the property.

Development plans call for grading the site to receive 22 residential lots on 4.07 acres. Grading plans for the development by SB&O, Planning, Engineering, and Surveying revised dated 5/6/15 indicate that grading will result in the construction of fill slopes a maximum of 60 feet in height and cut slopes a maximum of 25 feet in height (Figure 2). In some areas as along Smythe Avenue and along the east side of the private driveway, the slopes will be partially supported by retaining walls.

General Geology and Geologic Setting

The property is situated on a broad marine terrace underlain by late Pleistocene sandstones and conglomerates that is dissected by several major westerly flowing drainages. The terrace surface is disrupted by several faults including the La Nacion fault that has been mapped approximately 1/2 mile east the site. The La Nacion fault and several other local and regional faults are discussed in a later section of this report.

During much of the Oligocene through Pleistocene Epochs the site lay beneath shallow marine water and was receiving sediment derived from highlands to the east as well as sediment being transported by marine currents from offshore areas. These sediments underwent regional uplift and are now exposed throughout the highlands east the site as the Otay and San Diego Formations. These older units consist of dense, light gray to yellow-brown, fine to medium-grained sandstone, siltstone, thin beds of claystone, and conglomerate.

STRATIGRAPHY

Geologic units identified in the near surface beneath the site consist of Pleistocene marine sandstones and conglomerate of the Lindavista and Bay Point Formations (Kennedy and Tan, 1977) and clayey siltstone and cobble to boulder conglomerate of the San Diego Formation. These formations are overlain by surficial soils consisting of minor fill and topsoil. These units are described in younger to older order in the following paragraphs.

Bay Point Formation

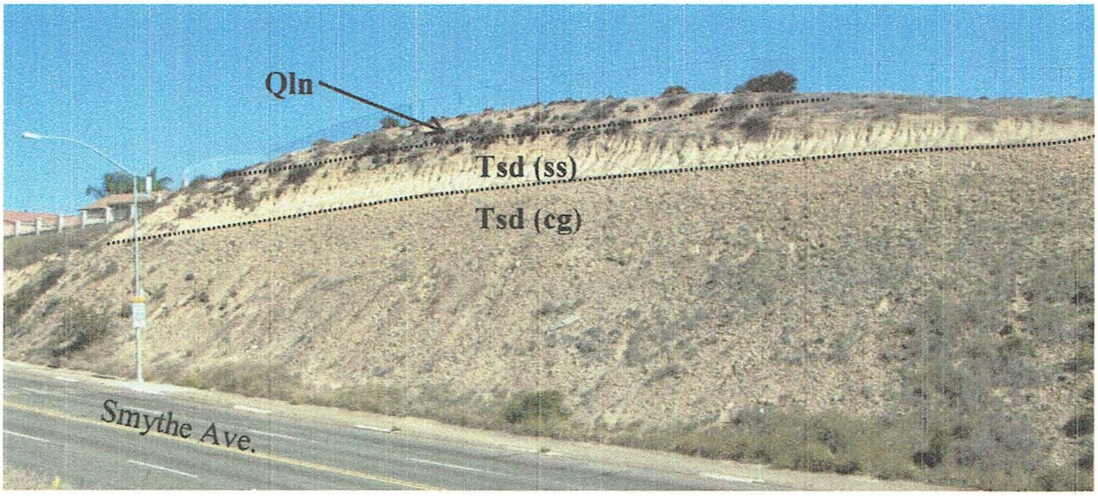
The Bay Point Formation of Late Pleistocene age is exposed at the southerly end of the cut slope along Smythe Avenue. This unit consists of interbedded, light red-brown to brown, fine silty to clayey sands and pebble to cobble conglomerate.

Lindavista Formation

The Lindavista Formation is an early Pleistocene unit that occupies the highest elevations of the site. It generally consists of moderate to well cemented, red to orange brown coarse, gritty sandstone and minor cobble conglomerate. Where observed in the face of cut slopes bounding the site it displays massive horizontal bedding. Its contact with the underlying San Diego Formation may be observed in the upper part of the high cut slope along Smythe Avenue. Based on review of the grading plan, most of the proposed structures in the upper portions of the site will be located within this formation.

San Diego Formation

The Pliocene age San Diego Formation is well exposed in the high road cut along Smythe Avenue (see photograph below) and consists of two members. A lower member consisting of massive boulder and cobble conglomerate and an upper approximately 10 feet thick member that consists of interbedded brown clayey to very fine sandy siltstone (Figures 2 and 3).



Cut slope along the west property line looking northeast along Smythe Avenue. Qln: Lindavista Fm.; Tsd (ss): San Diego Formation, fine clayey to very fine sandy siltstone member; Tsd (cg): San Diego Formation conglomerate member.

Topsoils

Topsoils observed in the road cut along Smythe Way are relatively thin (less than two feet thick) and consist of one to 2 feet of brown, silty sand and sandy clay with cobbles.

Fill

Only scattered thin deposits of uncompacted fill were observed in the upper areas of the property in the area shown on Figure 2. Based on review of the preliminary grading concepts it is likely that these soils will be removed during site grading and placed as compacted soils in lower areas of the site.

Geologic Hazards

Geologic hazards considered for this report consist of landsliding, ground rupture due to faulting, seismic shaking, and secondary effects of faulting such as liquefaction and seismically induced settlement.

Landsliding and Slope Stability: A publication of the California Division of Mines and Geology entitled *Landslide Hazards in the Southern Part of the San Diego Metropolitan Area, San Diego County, California* by Tan (1995) indicates the site lies within Sub-Area 3-1 defined as being generally susceptible to landsliding with slopes that are at or near their stability limits due to a combination or weak materials and steep slopes.

The results of this geologic reconnaissance including review of stereo pairs of aerial photographs indicate the geologic structure in the area of the subject property is not adverse in terms of slope stability. Since the sediments underlying the elevated areas of the site consist of well-cemented sandstone and conglomerate, the landslide hazard at the site is judged to be very low.

Local Faulting: A review of the geologic map of the Imperial Beach Quadrangle by Kennedy and Tan (1977) indicates the property is not underlain by a fault. The closest mapped fault to the site is a short fault segment that extends in a north-south direction just easterly of the Border Patrol Headquarters 600 feet west of the site. The La Nacion fault zone lies approximately one-half mile to the east. This fault juxtaposes sediments of the Late Pleistocene Bay Point Formation and the Pliocene aged San Diego Formation as well as Quaternary stream terrace materials younger than 125ka. Although there are many strands making up the fault zone, the lack of geomorphic expression throughout its length, extending from near the Mexican Border to the San Diego State University area, suggests that none of the faults making up this wide fault zone has been active during the Holocene.

A minor previously unmapped fault was observed at the south end of the road cut along Smythe Avenue (Figure 2). This narrow zone of vertical to steeply west dipping faults displace sediments of the Late Pleistocene Bay Point Formation and extend a short distance into the adjacent conglomerate of the San Diego Formation. Since these faults strike essentially due north (parallel to Smythe Avenue) they do not extend into the areas to be developed on the site and accordingly do not represent a fault rupture hazard to the proposed development.

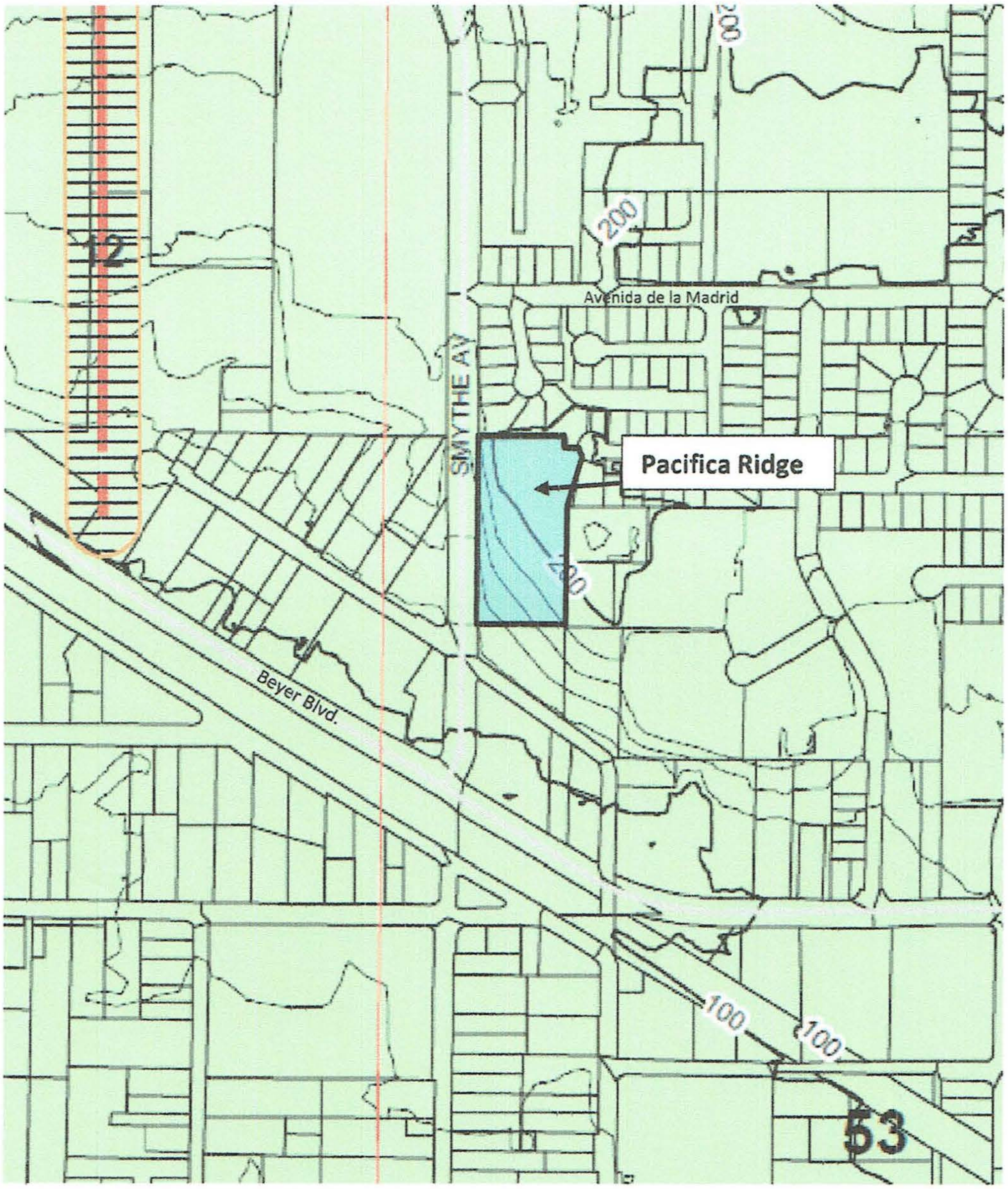
The closest known active fault, is part of the Rose Canyon fault system, and lies approximately 6 miles to the northwest beneath San Diego Bay. A study of topographic maps and aerial photographs (USDA, 1953) indicates the site is not traversed by topographic or vegetation lineaments that might suggest the presence of previously unknown or unmapped active or potentially active faults.

Secondary Effects of Faulting: Secondary effects of faulting include liquefaction and seismically induced settlement. Since the site will be located on shallow compacted fill or dense formational soils, it is concluded that the potential for liquefaction or seismically induced settlement is very low.

Regional Faulting and Seismicity: In addition to seismic shaking generated by local faulting described above, the site will be affected by seismic activity as a result of earthquakes on major active faults located elsewhere in southern California. The nearest of these regional fault systems, the Coronado Bank Fault, lies approximately 14 miles to the west. Other active faults, the Elsinore, San Jacinto, and San Andreas Faults lie approximately 40, 60, and 90 miles, respectively, to the east. Major seismic events on any of the local or regional active faults could subject the site to moderate to severe seismic shaking.

The Rose Canyon fault discussed under the heading "**Local Faulting**" has been active during the Holocene (last 11,000 years) and is the most significant fault to the site with respect to the potential for seismic activity. Lindvall and Rockwell (1995) have described the Rose Canyon fault system in terms of several segments that each has distinctive earthquake potential. The site lies nearest to the Mission Bay segment that extends from San Diego Bay on the south to La Jolla on the north.

According to Lindvall and Rockwell (1995), the Mission Bay and Del Mar fault segments are capable of generating $M_w6.4$ to $M_w6.6$ earthquakes, respectively, with an estimated recurrence time of approximately 720 years for these events and 1800 years for an earthquake event of $M_w6.9$ that would result from rupture of both segments concurrently. Such an event could produce peak ground accelerations at the site on the order of 0.6g (Joyner and Boore, 1982).



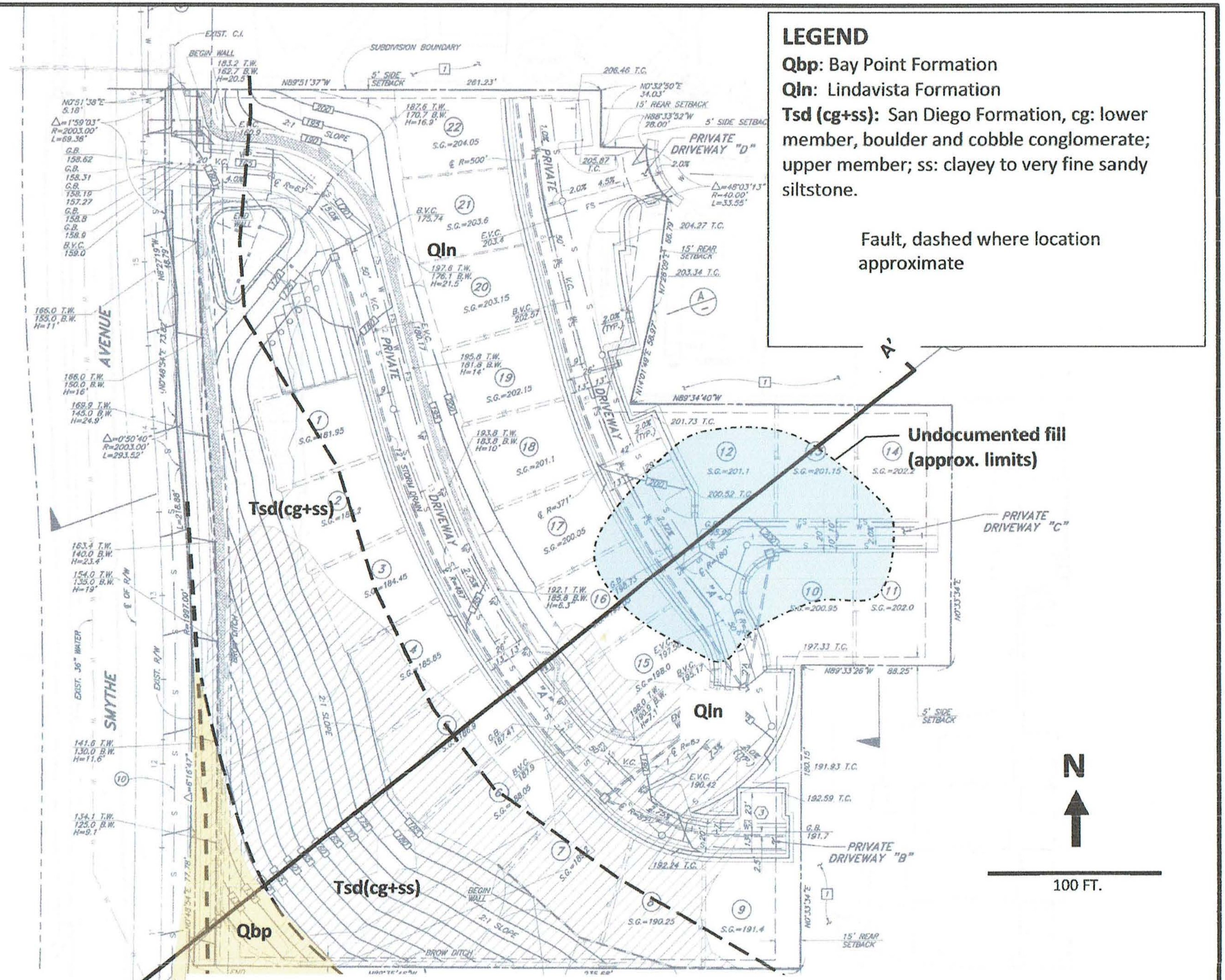
GEOLOGIC HAZARD AND SITE LOCATION MAP, PACIFICA RIDGE
SMYTHE AVENUE NORTH OF FOOTHILL ROAD, SAN DIEGO CALIFORNIA
From City of San Diego Seismic Safety Study

53: Level or sloping terrain, unfavorable geologic structure, low to moderate risk

12: Zone 12 fault, potentially active

N ↑

Figure 1



RECONNAISSANCE GEOLOGIC MAP, PACIFICA RIDGE
SMYTHE AVENUE, SAN DIEGO, CALIFORNIA

Figure 2

GEOLOGIC SECTION A – A', PACIFICA RIDGE
SMYTHE AVENUE, SAN DIEGO CALIFORNIA

Scale: Hor. = 2 x Vert.

LEGEND

Qbp: Bay Point Formation
Qln: Lindavista Formation
Tsd (cg+ss): San Diego Formation, cg: lower member, boulder and cobble conglomerate; upper member; ss: clayey to very fine sandy siltstone.

Fault, dashed where location approximate

Figure 3

Conclusions and Recommendations

1. The formational soils underlying the site consist primarily of sandstones, conglomerate, and clayey siltstone of the Lindavista and San Diego Formations. The sandstones are locally highly cemented and accordingly, grading within this unit may yield oversize materials that could require special handling. This bedrock unit is locally overlain by surficial soils consisting of relatively thin uncompacted fills and topsoils. The topsoil generally consists of sandy clay to clayey sand and cobbles that will likely exhibit high expansive characteristics. Existing fills are considered unsuitable for construction and should be removed and compacted during the proposed grading operation under the supervision of the project geotechnical engineer.

2. It is concluded the site is not underlain by an ancient landslide nor is it situated on a known active or potentially active fault. Cut and fill slopes comprised of sandstone and conglomerate of the Lindavista Formation typically exhibit suitable factors of safety against slope movements at inclinations of 2.0 horizontal to 1.0 vertical.

3. The closest active faulting is associated with the Rose Canyon fault zone that lies approximately 6 miles to the northwest.

4. The site is subject to moderate to severe seismic shaking as a result of earthquakes on local or regional active faults. If the proposed residential project is founded on bedrock or properly compacted fills it will not likely be subject to secondary effects of seismic shaking such as liquefaction, lateral spreading or seismically induced settlement.

Limitations

This report has been prepared exclusively for the use of the Client, and is not intended to be relied upon by any other entities or persons. The purpose and intent of this report is to address geologic conditions and the potential for the site to be impacted by geologic hazards. Foundation design, grading recommendations, and slope stability analyses are beyond the scope of a geologic reconnaissance. Such recommendations may only be made by a geotechnical engineer. 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 are 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 the control of this consultant. Therefore, this report is subject to review and should not be relied upon after a period of three years.

References

Anderson, J. G., Rockwell, T., and Agnew, D.C., 1989, A study of the seismic hazard in San Diego, Earthquake Spectra, vol. 5(2), pp 229-333.

Joyner, W.B. and Boore, D.M. 1982, Prediction of earthquake response spectra, U.S. Geological Survey Open File Report 82-977, 16pp.

Lindvall, S.C., Rockwell, T.K., and Lindvall, C.E., 1990, The seismic hazard of San Diego revised: New evidence of Magnitude 6+ Holocene earthquakes on the Rose Canyon Fault Zone, in Proceedings of U.S. National Conference on Earthquake Engineering, Palm Springs, California, vol 1: Earthquake Engineering Research Inst., p. 679-688.

Kennedy, M.P., and Tan, S.S., 1977, Geology of National City, Imperial Beach and Otay Mesa Quadrangles, south San Diego Metropolitan area, California, Calif. Div. of Mines and Geology Map Sheet 29.

Kennedy, M.P., Tan, S.S., Chapman, R.H., and Chase, G.W., 1975, Character and recency of faulting, San Diego Metropolitan area, California, California Div. of Mines and Geology Special Rept. 123, pp. 33.

Lindvall, S.C., and Rockwell, T.K., 1995, Holocene activity of the Rose Canyon fault zone in San Diego, California, Jour. Geophysical Research, vol. 100, no. B12, Pages 24,121-24-132.

Tan, S.S., 1995, Landslide hazards in the southern part of the San Diego Metropolitan area, San Diego County, California, pp. 1-6.

Treiman, J.A., 1993, The Rose Canyon Fault Zone, southern California, California Div. Mines and Geology, Open File Report 93-02.

October 16, 2014

PRELIMINARY DRAINAGE REPORT

FOR

PACIFICA RIDGE

City of San Diego
Project No. _________
I.O. No. ___________

PREPARED FOR:

PATHFINDER RAINTREE, LLC
11855 Sorrento Valley Road, Suite D
San Diego, CA 92121

PREPARED BY:

SB&O INC.
PLANNING ENGINEERING SURVEYING

3990 RUFFIN ROAD, SUITE 120

SAN DIEGO, CA 92123

858-560-1141

JOB NO. 71170.60

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A. RATIONAL METHOD CALCULATIONS

DRAINAGE MAP – PROPOSED .... MAP POCKET #1

APPENDIX

SELECTED COUNTY OF SAN DIEGO HYDROLOGY MANUAL EXCERPTS

SCOPE OF REPORT

The project proposes a private storm drain system with curb inlets to provide drainage for the private streets and residential lots. Runoff from the majority of the developed site will be intercepted and conveyed to the storm water treatment BMPs and HMP management facilities near the Smythe project entry. The purpose of this report is to document the site drainage areas and estimates for the post development peak flow rates (100-year).

Details and calculations related to treatment and HMP compliance are contained in a separate preliminary Water Quality Technical Report for the project.

Summary of Project Information

Item	Project Information			
Project Name	PACIFICA RIDGE RESIDENTIAL			
Application Number(s)	TBD			
Project Address	Smythe Avenue, San Diego CA 92173			
Assessor Parcel Number(s)	638-060-03.04 & 41			
Gross Project Area	4.35			
Proposed Project Description and Land Use	Single Family Residential			
Project Disturbed Area	3.75			
Predevelopment Impervious Area	0.03			
Proposed Impervious Area	1.94			
Proposed Pervious Area	1.81			
Project Hydrologic Unit Watershed	Tijuana River Hydrologic Area (911.10)			
Project Hydrologic Soil Group	☐ A	☐ B	☐ C	☒ D
Number of Discharge Locations	2			
Required to Implement HMP	☒ Yes		☐ No	
Applicant Contact				

Pre-Project Site Conditions and Drainage Patterns Narrative

The property lies in the San Ysidro community of the City of San Diego, located west of Smythe Avenue, between West Foothill Road and Avenida De La Madrid. The existing undeveloped site is located south of the SR-905 freeway, north of Beyer Blvd, between Interstate 5 & 805 freeways, approximately 1.5 miles north of the International Border Crossing. The property is an infill site with single and multi-family residential developments located to the north, east and south.

The property is an undeveloped hillside, sloping generally southwest. Topography is generally steep (10% to 20%). A large steep cut slope (1.5:1 slope up to 45' in height) is located along the Smythe Avenue frontage. A concrete brow ditch was constructed at the top of the Smythe Avenue cut slope. Drainage from the majority of the site is intercepted by the ditch and routed to the southwest corner of the property. The northern end of the brow ditch is connected to a curb inlet at the northwest corner of the property. Surface runoff from the surface of the cut slope along Smythe Avenue flows down slope and discharges directly to the gutter as well. The southeastern portion of the site flows overland to the residential properties located along West Foothill Road.

Runoff continues southerly to Beyer Blvd, then easterly in the gutter. Storm water is intercepted by the curb inlets located in a localized sump approximately 300' east of the intersection. The storm drain continues southerly to the trolley right-of-way (south of Beyer). The site is tributary to the Tijuana River (911.1), approximately 1 ½ miles southwest of the site.

Vegetation is primarily long grasses in poor condition. Infiltration rates are expected to be poor, consistent with Type D soils. A runoff coefficient of 0.35 (undeveloped / open space) was selected for the pre-development condition.

Proposed Site Development and Drainage Patterns Narrative

"Pacifica Ridge" Residential is a single family residential development in the San Ysidro community of the City of San Diego. The project is located between West Foothill Road and Avenida De La Madrid. The site is located south of the SR-905 freeway, north of Beyer Blvd, between Interstate 5 & 805 freeways, approximately 1.5 miles north of the International Border Crossing. The project proposes 32 detached homes on private streets. The property is an infill site with single and multi-family residential developments located to the north, east and south. The project site is the steep hillside above Smythe Avenue. Due to the steep topography and the grade of street frontage (8%), access from Smythe will be near the northwest corner of the site. Secondary emergency access will be provided by a connection to Camino Del Progresso.

Site grading and development will maintain the general east to west drainage pattern, with discharge to the Smythe Avenue gutter. The majority of the developed site runoff will be collected, treated and then discharged approximately 100' south of the driveway entry.

The concrete brow ditch constructed at the top of the Smythe Avenue cut slope, will remain south of the driveway entry. This ditch flows southerly and then discharges to the Smythe Avenue gutter at the southwest corner of the project. The fill slope in the southwestern portion of the site (below the developed pads) will include terrace and drainage ditches, which will connect to the existing concrete ditch above the Smythe cut slope.

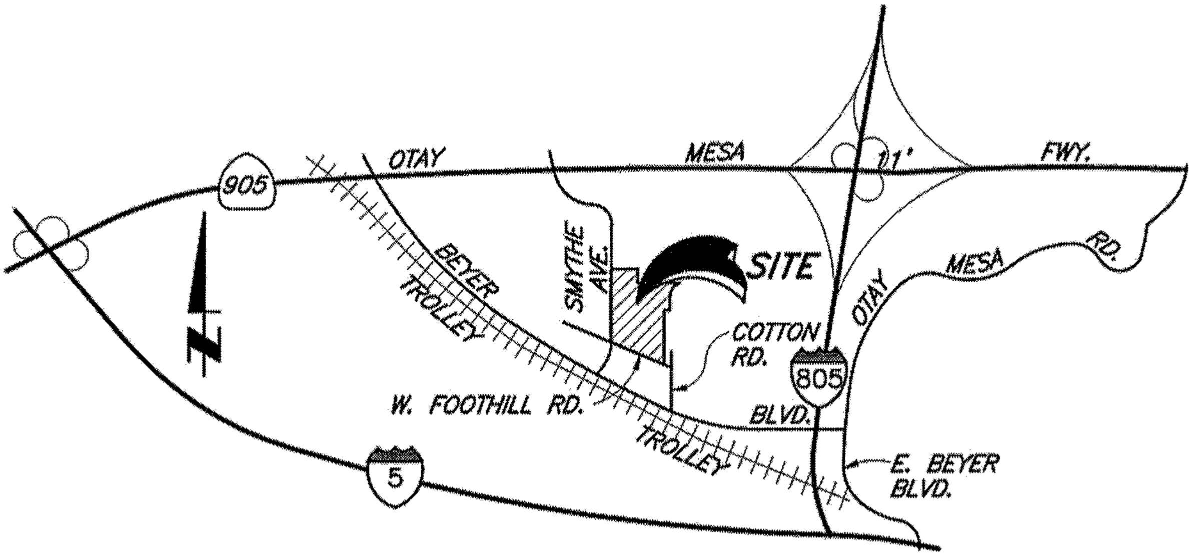
The southeastern portion of the site currently flows southerly to the residential properties located along West Foothill Road. The western portion of this area will be intercepted by a ditch at the toe of the fill slope and be routed to the existing ditch and curb outlet near the southwest corner of the project.

A small portion of the site located north of the entry will be connected to the existing inlet located just north of the project. This portion of the site consists of landscape slope areas above the retaining walls near the entry drive.

All of the site runoff will continue southerly to Beyer Blvd, then easterly in the gutter. Storm water is intercepted by curb inlets located in a localized sump approximately 300' east of the intersection. The storm drain continues southerly to the trolley right-of-way (south of Beyer). The site is tributary to the Tijuana River, approximately 1 ½ miles southwest of the site.

The developed area is approximately 3.0 acres, corresponding to a Medium Density Residential (MDR per Table 3-1 "Runoff Coefficients for Urban Areas"). The impervious ratio for the developed portion of the site is estimated at 64%. A runoff coefficient of 0.6 was selected for the post-development condition (Type "D" soil).

Vicinity Map



VICINITY MAP
NOT TO SCALE

RATIONAL METHOD HYDROLOGY

In accordance with the San Diego County Hydrology Manual, the rational method was used to estimate peak flow rates for a range of storms, using 6-hour rainfall Isopluvial Maps.

The post-development site will consist chiefly of medium density residential lots on narrow private streets. Overland flows paths will be relatively short (<30'). Travel times in the gutter are expected to be minimal due to the combination of short lengths and steep slopes. An initial time of concentration of 5 minutes will be used for the post-development condition. Gutter travel time will be on the order of 1 minute. The time of concentration at the curb inlet is estimated at 6 minutes. Travel time in the pipe from the most remote inlet to the project entry is expected to be approximately 2 minutes, for a total system time of 8 minutes.

Detailed rational method peak flow calculations are provided in Exhibit A. A summary of the system flows is as follows;

Tabulation of Areas Draining to BMP / Hydromodification Facility

Basin	Area (ac)	% IMPERV	C Factor	Time of Concentration (min)	I100 (in/hr)	Q100 (cfs)
A	0.56	63	0.6	6	4.68	1.59
B	0.96	63	0.6	6	4.68	2.70
C	1.45	63	0.6	6	4.68	4.07
Total	2.97	63	0.6	8	3.37	6.94

EXHIBIT A

RATIONAL METHOD CALCULATIONS

Exhibit A

Pacifica Ridge

Preliminary Design 16-Oct-14

Rational Method - County of San Diegc 6 hr Storm
100 Year

P6=	2.0 in	
P24=	4.0 in	D Soils
P6/P24=	0.5	
P6 (Adj)	2.0 in	

Drianage Area

Basin	Area (ac)	% Imp	C	Tc (min)	I (in/hr)	Q100 (cfs)	Comment
A	0.56	63	0.6	6	4.68	1.59	Residential Medium Density
B	0.96	63	0.6	6	4.68	2.70	Residential Medium Density
C	1.45	63	0.6	6	4.68	4.07	Residential Medium Density
D	0.19	1	0.35	5	5.27	0.35	Cut Slope above Walls
E	0.43	0	0.35	5	5.27	0.80	Fill Slope - Upper
F	0.24	0	0.35	5	5.27	0.44	Fill Slope - Lower
G	0.32	0	0.35	5	5.27	0.60	Existing Slope
H	0.04	95	0.9	5	5.27	0.17	Driveway
	4.20						

Developed Area Summary

Basin	Area (ac)	% Imp	C	Tc (min)	I (in/hr)	Q100 (cfs)	Comment
A	0.56	63	0.6	6	4.68	1.59	Residentail MF
B	0.96	63	0.6	6	4.68	2.70	Residentail MF
C	1.45	63	0.6	6	4.68	4.07	Residentail MF
Total	2.97	63	0.6	8	3.89	6.94	To BMP/Hydromod

10yr /100yr

Table 3-1
RUNOFF COEFFICIENTS FOR URBAN AREAS

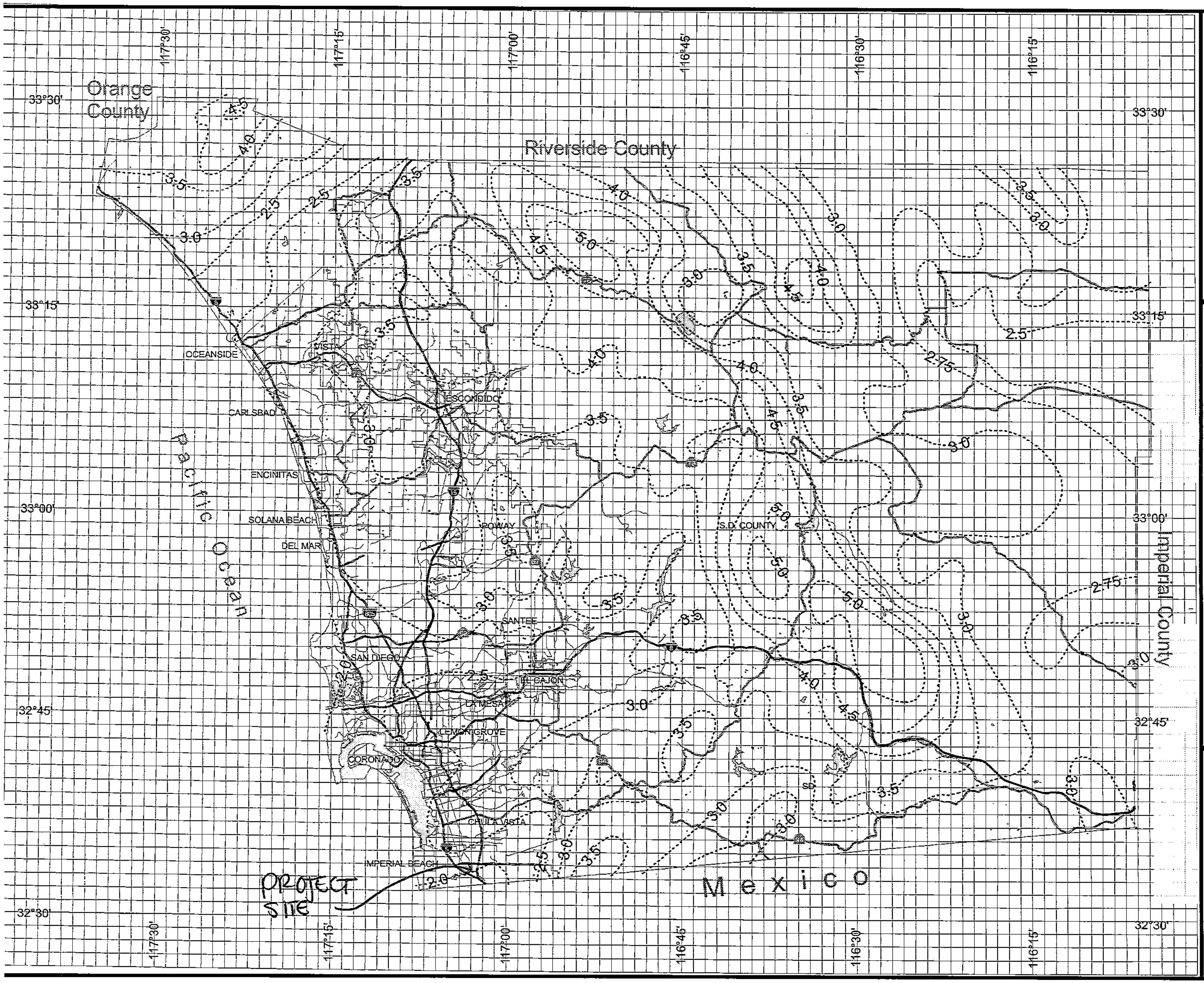
Land Use		Runoff Coefficient "C"				
			Soil Type			
NRCS Elements	County Elements	% IMPER.	A	B	C	D
Undisturbed Natural Terrain (Natural)	Permanent Open Space	0*	0.20	0.25	0.30	0.35
Low Density Residential (LDR)	Residential, 1.0 DU/A or less	10	0.27	0.32	0.36	0.41
Low Density Residential (LDR)	Residential, 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

USE FOR SLOPES TOO

*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



County of San Diego Hydrology Manual

Rainfall Isopluvials

100 Year Rainfall Event - 6 Hours

-------- Isopluvial (inches)

P6 = 2.0

25.5

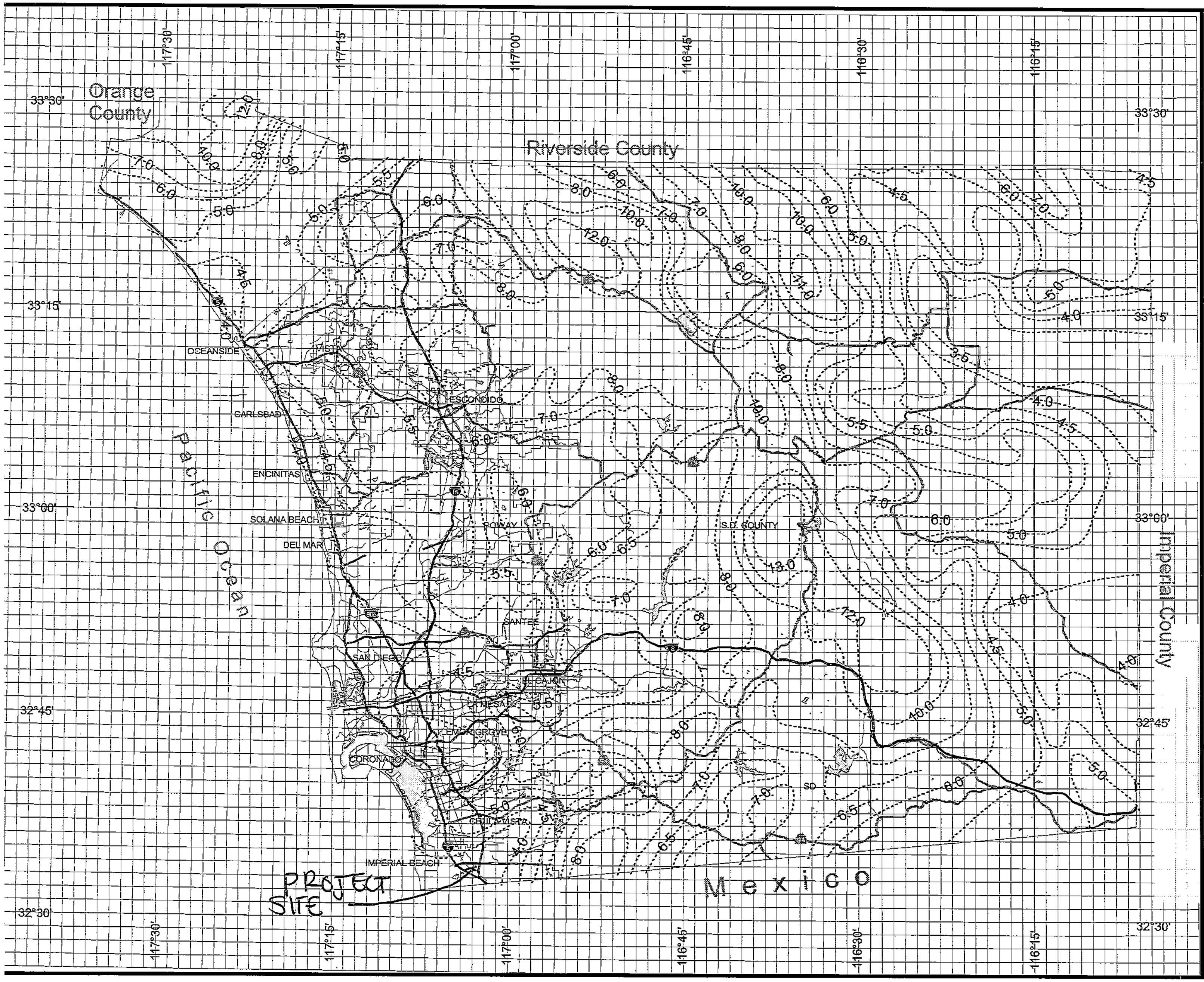
DPW GIS
Department of Public Works
Geographic Information Services

SanGIS
We Have San Diego Covered!

N
W E
S

3 0 3 Miles

71170.60



County of San Diego Hydrology Manual

Rainfall Isopluvials

100 Year Rainfall Event - 24 Hours

------- Isopluvial (inches)

P24 = 4.0

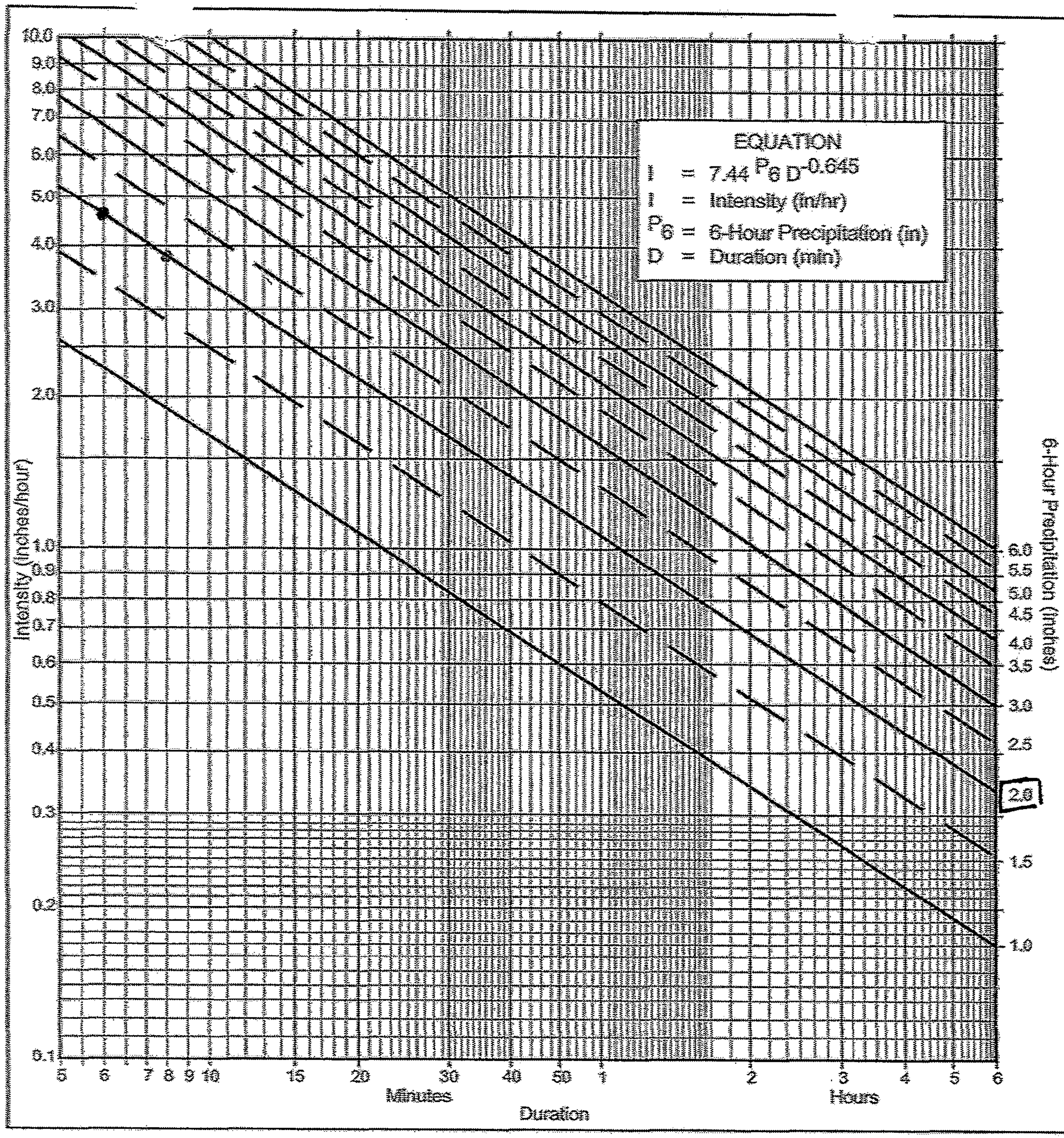
DPW GIS

SanGIS
We Have San Diego Covered!

N
W E
S

3 0 3 Miles

7117066



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 applicaple 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 100 year

(b) $P_6 =$ 2.0 in., $P_{24} =$ 4.0 , $\frac{P_6}{P_{24}} =$ 50 %(2)

(c) Adjusted $P_6^{(2)} =$ 2.0 in.

(d) $t_x =$ 6 min.

(e) I = 4.68 in./hr.

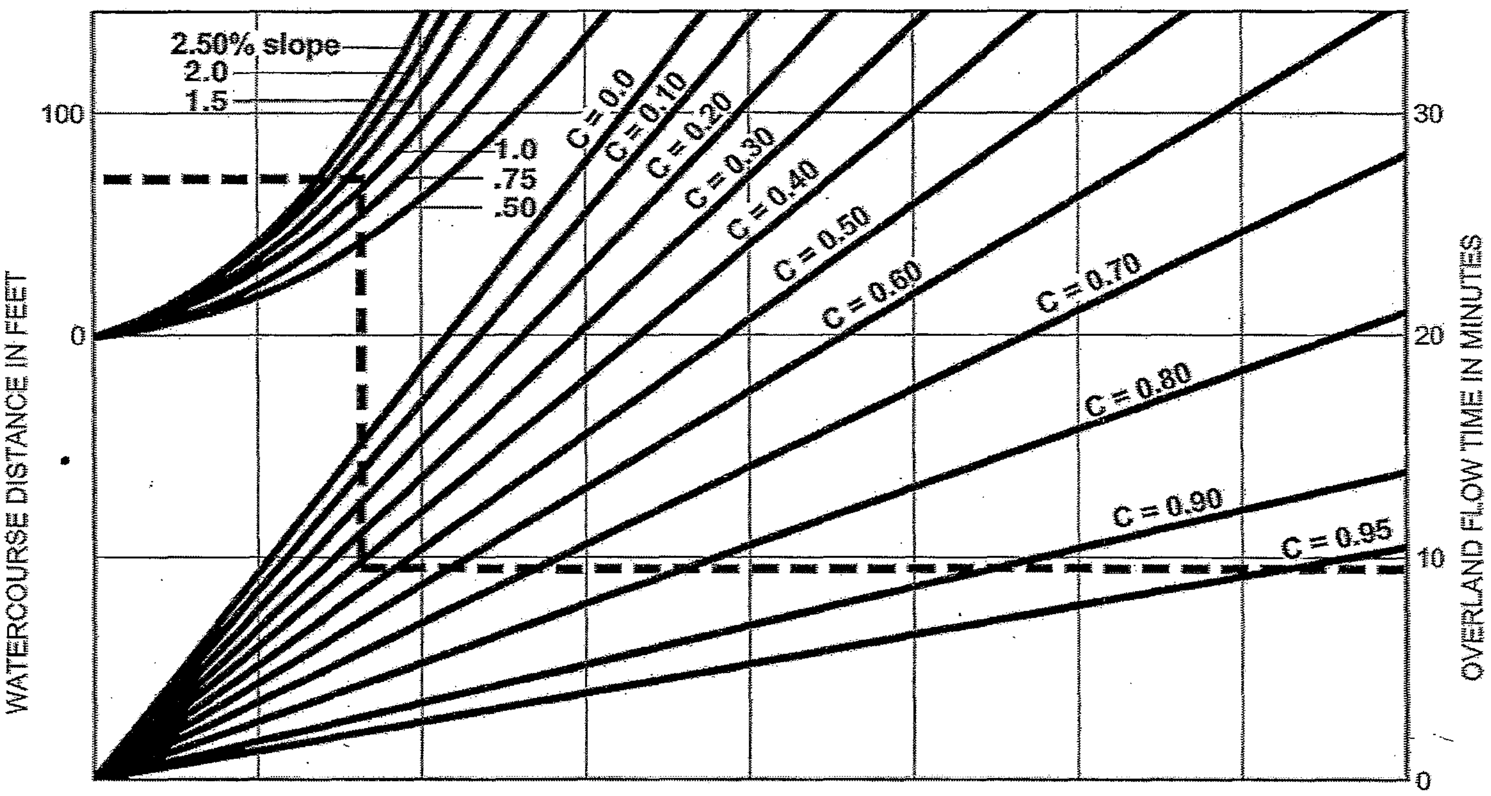
Note: This chart replaces the Intensity-Duration-Frequency curves used since 1965.

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



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

FIGURE

3-3

Rational Formula - Overland Time of Flow Nomograph

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.

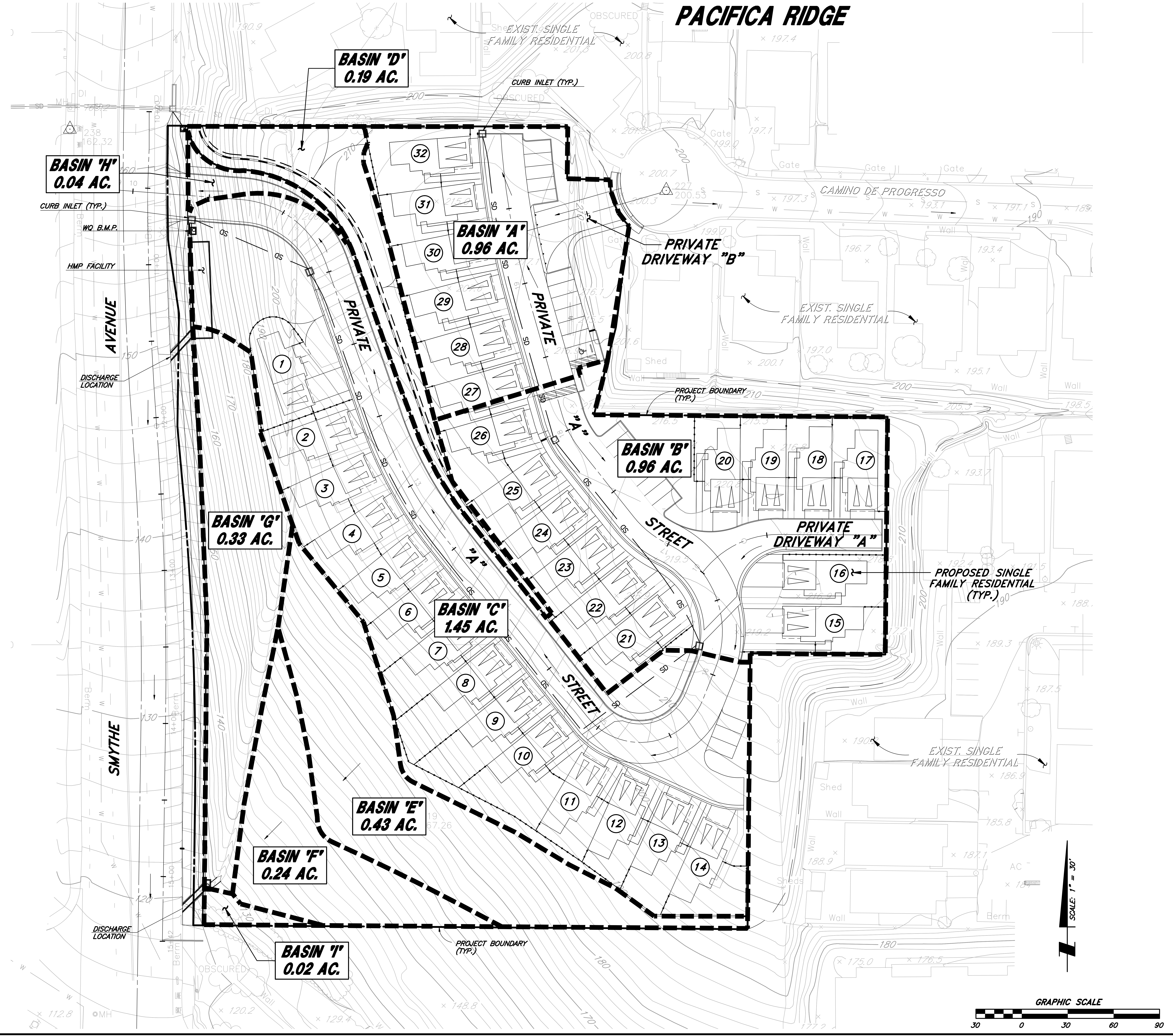
Table 3-2

MAXIMUM OVERLAND FLOW LENGTH (L_M) & INITIAL TIME OF CONCENTRATION (T_i)

Element*	DU/	.5%		1%		2%		3%		5%		10%	
	Acre	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

DRAINAGE MAP FOR:
PACIFICA RIDGE



LEGEND

PROJECT BOUNDARY	— - —
BUILDING NUMBER	⑩
STORM DRAIN	— SD —□
DIRECTION OF DRAINAGE	→
INDICATES BASIN LIMITS	▬ ▬ ▬

SHEET 1 OF 1 SHEETS

SB&O INC.
PLANNING ENGINEERING SURVEYING
3990 Ruffin Road, Suite 120
San Diego, Ca. 92123
858-560-1141
858-560-8157 Fax

DRAINAGE MAP FOR:
PACIFICA RIDGE

The City of San Diego

PRIORITY DEVELOPMENT PROJECT (PDP) STORM WATER QUALITY MANAGEMENT PLAN (SWQMP) FOR

Pacifica Ridge
Project # 393812
Internal Order 2400523

ALLEN L. BUTCHER
No. 47107
CIVIL

ENGINEER OF WORK:

Allen L Butcher, PE C47107

PREPARED FOR:

PATHFINDER RAINTREE, LLC
11855 Sorrento Valley Road, Suite D
San Diego, CA 92121

PREPARED BY:

SB&O INC.
PLANNING ENGINEERING SURVEYING

SB&O, Inc.
3990 RUFFIN ROAD, SUITE 120
SAN DIEGO, CA 92123
858-560-1141 JN 71170.60

DATE:
September 27, 2017

Approved by: City of San Diego Date

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Project Name: **Pacifica Ridge**

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- Attachment 5: Project's Drainage Report
- Attachment 6: Project's Geotechnical and Groundwater Investigation Report

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ACRONYMS

APN	Assessor's Parcel Number
ASBS	Area of Special Biological Significance
BMP	Best Management Practice
CEQA	California Environmental Quality Act
CGP	Construction General Permit
DCV	Design Capture Volume
DMA	Drainage Management Areas
ESA	Environmentally Sensitive Area
GLU	Geomorphic Landscape Unit
GW	Ground Water
HMP	Hydromodification Management Plan
HSG	Hydrologic Soil Group
HU	Harvest and Use
INF	Infiltration
LID	Low Impact Development
LUP	Linear Underground/Overhead Projects
MS4	Municipal Separate Storm Sewer System
N/A	Not Applicable
NPDES	National Pollutant Discharge Elimination System
NRCS	Natural Resources Conservation Service
PDP	Priority Development Project
PE	Professional Engineer
POC	Pollutant of Concern
SC	Source Control
SD	Site Design
SDRWQCB	San Diego Regional Water Quality Control Board
SIC	Standard Industrial Classification
SWPPP	Stormwater Pollutant Protection Plan
SWQMP	Storm Water Quality Management Plan
TMDL	Total Maximum Daily Load
WMAA	Watershed Management Area Analysis
WPCP	Water Pollution Control Program
WQIP	Water Quality Improvement Plan

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CERTIFICATION PAGE

Project Name: Pacifica Ridge
Permit Application Number: 393812

I hereby declare that I am the Engineer in Responsible Charge of design of storm water BMPs for this project, and that I have exercised responsible charge over the design of the project as defined in Section 6703 of the Business and Professions Code, and that the design is consistent with the requirements of the Storm Water Standards, which is based on the requirements of SDRWQCB Order No. R9-2013-0001 as amended by R9-2015-0001 and R9-2015-0100 (MS4 Permit).

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 Storm Water Standards. 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 source control and site design 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 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.

Engineer of Work's Signature, PE Number & Expiration Date

Allen L Butcher, PE C47017 Exp. 12-31-2017
Print Name

SB&O, Inc.
Company

September 27, 2017
Date

REGISTERED PROFESSIONAL ENGINEER
ALLEN L. BUTCHER
No. 47107
CIVIL
STATE OF CALIFORNIA

Engineer's Stamp

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Project Name: **Pacifica Ridge**

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 last column indicate changes that have been made or indicate if response to plan check comments is included. When applicable, insert response to plan check comments.

Submittal Number	Date	Project Status	Changes
1	4/22/16	☑ Preliminary Design/Planning/CEQA ☐ Final Design	Initial Submittal
2	7/12/16	☑ Preliminary Design/Planning/CEQA ☐ Final Design	Revised per Project Mtg to address Smythe frontage
3	6/23/17.	☑ Preliminary Design/Planning/CEQA ☐ Final Design	Revised for addition of dry well treatment solution.
4	9/27/2017.	☑ Preliminary Design/Planning/CEQA ☐ Final Design	Revised DMA Exhibit Updated Geology.

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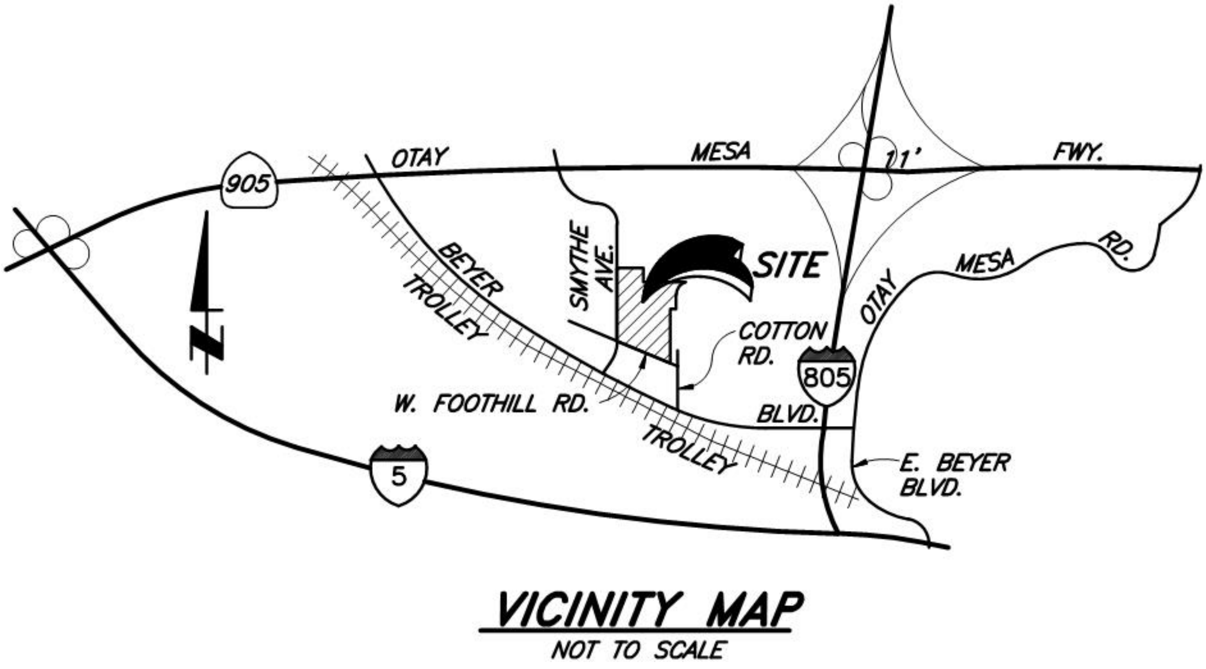
Project Name: **Pacifica Ridge**

PROJECT VICINITY MAP

Project Name: Pacifica Ridge
Permit Application Number: 393812



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City of San Diego
Development Services
1222 First Ave., MS-302
San Diego, CA 92101
(619) 446-5000

Storm Water Requirements Applicability Checklist

FORM
DS-560
OCTOBER 2016

Project Address: Smythe Avenue (Pacifica Ridge)

Project Number *(for City Use Only):* 393812

SECTION 1. Construction Storm Water BMP Requirements:

All construction sites are required to implement construction BMPs in accordance with the performance standards in the Storm Water Standards Manual. Some sites are additionally required to obtain coverage under the State Construction General Permit (CGP)[1] , which is administered by the State Water Resources Control Board.

For all projects complete PART A: If project is required to submit a SWPPP or WPCP, continue to PART B.

PART A: Determine Construction Phase Storm Water Requirements.

1. Is the project subject to California's statewide General NPDES permit for Storm Water Discharges Associated with Construction Activities, also known as the State Construction General Permit (CGP)? (Typically projects with land disturbance greater than or equal to 1 acre.)

   ☒ Yes; SWPPP required, skip questions 2-4 ☐ No; next question

2. Does the project propose construction or demolition activity, including but not limited to, clearing, grading, grubbing, excavation, or any other activity resulting in ground disturbance and contact with storm water runoff?

   ☐ Yes; WPCP required, skip 3-4 ☐ No; next question

3. Does the project propose routine maintenance to maintain original line and grade, hydraulic capacity, or original purpose of the facility? (Projects such as pipeline/utility replacement)

   ☐ Yes; WPCP required, skip 4 ☐ No; next question

4. Does the project only include the following Permit types listed below?

   - Electrical Permit, Fire Alarm Permit, Fire Sprinkler Permit, Plumbing Permit, Sign Permit, Mechanical Permit, Spa Permit.
   - Individual Right of Way Permits that exclusively include only ONE of the following activities: water service, sewer lateral, or utility service.
   - Right of Way Permits with a project footprint less than 150 linear feet that exclusively include only ONE of the following activities: curb ramp, sidewalk and driveway apron replacement, pot holing, curb and gutter replacement, and retaining wall encroachments.

   ☐ Yes; no document required

Check one of the boxes below, and continue to PART B:

☒ If you checked "Yes" for question 1,
a SWPPP is REQUIRED. Continue to PART B

☐ If you checked "No" for question 1, and checked "Yes" for question 2 or 3,
a WPCP is REQUIRED. If the project proposes less than 5,000 square feet of ground disturbance AND has less than a 5-foot elevation change over the entire project area, a Minor WPCP may be required instead. **Continue to PART B.**

☐ If you checked "No" for all questions 1-3, and checked "Yes" for question 4
PART B **does not apply and no document is required. Continue to Section 2.**

---

[1] More information on the City's construction BMP requirements as well as CGP requirements can be found at: www.sandiego.gov/stormwater/regulations/index.shtml

Clear Page 1

PART B: Determine Construction Site Priority

This prioritization must be completed within this form, noted on the plans, and included in the SWPPP or WPCP. The city reserves the right to adjust the priority of projects both before and after construction. Construction projects are assigned an inspection frequency based on if the project has a "high threat to water quality." The City has aligned the local definition of "high threat to water quality" to the risk determination approach of the State Construction General Permit (CGP). The CGP determines risk level based on project specific sediment risk and receiving water risk. Additional inspection is required for projects within the Areas of Special Biological Significance (ASBS) watershed. **NOTE:** The construction priority does **NOT** change construction BMP requirements that apply to projects; rather, it determines the frequency of inspections that will be conducted by city staff.

Complete PART B and continued to Section 2

1. ☐ **ASBS**

a. Projects located in the ASBS watershed.

2. ☐ **High Priority**

a. Projects 1 acre or more determined to be Risk Level 2 or Risk Level 3 per the Construction General Permit and not located in the ASBS watershed.

b. Projects 1 acre or more determined to be LUP Type 2 or LUP Type 3 per the Construction General Permit and not located in the ASBS watershed.

3. ☐ **Medium Priority**

a. Projects 1 acre or more but not subject to an ASBS or high priority designation.

b. Projects determined to be Risk Level 1 or LUP Type 1 per the Construction General Permit and not located in the ASBS watershed.

4. ☐ **Low Priority**

a. Projects requiring a Water Pollution Control Plan but not subject to ASBS, high, or medium priority designation.

SECTION 2. Permanent Storm Water BMP Requirements.

Additional information for determining the requirements is found in the Storm Water Standards Manual.

PART C: Determine if Not Subject to Permanent Storm Water Requirements.

Projects that are considered maintenance, or otherwise not categorized as "new development projects" or "redevelopment projects" according to the Storm Water Standards Manual are not subject to Permanent Storm Water BMPs.

If "yes" is checked for any number in Part C, proceed to Part F and check "Not Subject to Permanent Storm Water BMP Requirements".

If "no" is checked for all of the numbers in Part C continue to Part D.

1. Does the project only include interior remodels and/or is the project entirely within an existing enclosed structure and does not have the potential to contact storm water? ☐ Yes ☐ No
2. Does the project only include the construction of overhead or underground utilities without creating new impervious surfaces? ☐ Yes ☐ No
3. Does the project fall under routine maintenance? Examples include, but are not limited to: roof or exterior structure surface replacement, resurfacing or reconfiguring surface parking lots or existing roadways without expanding the impervious footprint, and routine replacement of damaged pavement (grinding, overlay, and pothole repair). ☐ Yes ☐ No

Clear Page 2

PART D: PDP Exempt Requirements.

PDP Exempt projects are required to implement site design and source control BMPs.

If "yes" was checked for any questions in Part D, continue to Part F and check the box labeled "PDP Exempt."

If "no" was checked for all questions in Part D, continue to Part E.

1. Does the project ONLY include new or retrofit sidewalks, bicycle lanes, or trails that:

- **Are designed and constructed to direct storm water runoff to adjacent vegetated areas, or other non-erodible permeable areas? Or;**
- **Are designed and constructed to be hydraulically disconnected from paved streets and roads? Or;**
- **Are designed and constructed with permeable pavements or surfaces in accordance with the Green Streets guidance in the City's Storm Water Standards manual?**

☐ Yes; PDP exempt requirements apply ☐ No; next question

2. Does the project ONLY include retrofitting or redeveloping existing paved alleys, streets or roads designed and constructed in accordance with the Green Streets guidance in the City's Storm Water Standards Manual?

☐ Yes; PDP exempt requirements apply ☐ No; project not exempt.

PART E: Determine if Project is a Priority Development Project (PDP).

Projects that match one of the definitions below are subject to additional requirements including preparation of a Storm Water Quality Management Plan (SWQMP).

If "yes" is checked for any number in PART E, continue to PART F and check the box labeled "Priority Development Project".

If "no" is checked for every number in PART E, continue to PART F and check the box labeled "Standard Development Project".

1. **New Development that creates 10,000 square feet or more of impervious surfaces collectively over the project site.** This includes commercial, industrial, residential, mixed-use, and public development projects on public or private land. ☒ Yes ☐ No

2. **Redevelopment project that creates and/or replaces 5,000 square feet or more of impervious surfaces 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 on public or private land. ☐ Yes ☐ No

3. **New development or redevelopment of a restaurant.** Facilities that sell prepared foods and drinks for consumption, including stationary lunch counters and refreshment stands selling prepared foods and drinks for immediate consumption (SIC 5812), and where the land development creates and/or replace 5,000 square feet or more of impervious surface. ☐ Yes ☐ No

4. **New development or redevelopment on a hillside.** The project creates and/or replaces 5,000 square feet or more of impervious surface (collectively over the project site) and where the development will grade on any natural slope that is twenty-five percent or greater. ☐ Yes ☐ No

5. **New development or redevelopment of a parking lot that creates and/or replaces 5,000 square feet or more of impervious surface (collectively over the project site).** ☐ Yes ☐ No

6. **New development or redevelopment of streets, roads, highways, freeways, and driveways.** The project creates and/or replaces 5,000 square feet or more of impervious surface (collectively over the project site). ☐ Yes ☐ No

Clear Page 3

7. **New development or redevelopment discharging directly to an Environmentally Sensitive Area.** The project creates and/or replaces 2,500 square feet of impervious surface (collectively over project site), and discharges directly to an Environmentally Sensitive Area (ESA). "Discharging 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). ☐ Yes ☐ No

8. **New development or redevelopment projects of a retail gasoline outlet (RGO) that create and/or replaces 5,000 square feet of impervious surface.** The development project meets the following criteria: (a) 5,000 square feet or more or (b) has a projected Average Daily Traffic (ADT) of 100 or more vehicles per day. ☐ Yes ☐ No

9. **New development or redevelopment projects of an automotive repair shops that creates and/or replaces 5,000 square feet or more of impervious surfaces.** Development projects categorized in any one of Standard Industrial Classification (SIC) codes 5013, 5014, 5541, 7532-7534, or 7536-7539. ☐ Yes ☐ No

10. **Other Pollutant Generating Project.** The project is not covered in the categories above, results in the disturbance of one or more acres of land and is expected to generate pollutants post construction, such as fertilizers and pesticides. This does not include projects creating less than 5,000 sf of impervious surface and where added landscaping does not require regular use of pesticides and fertilizers, such as slope stabilization using native plants. Calculation of the square footage of impervious surface need not include linear pathways that are for infrequent vehicle use, such as emergency maintenance access or bicycle pedestrian use, if they are built with pervious surfaces of if they sheet flow to surrounding pervious surfaces. ☐ Yes ☐ No

PART F: Select the appropriate category based on the outcomes of PART C through PART E.

1. The project is **NOT SUBJECT TO PERMANENT STORM WATER REQUIREMENTS**. ☐

2. The project is a **STANDARD DEVELOPMENT PROJECT**. Site design and source control BMP requirements apply. See the <u>Storm Water Standards Manual</u> for guidance. ☐

3. The project is **PDP EXEMPT**. Site design and source control BMP requirements apply. See the <u>Storm Water Standards Manual</u> for guidance. ☐

4. The project is a **PRIORITY DEVELOPMENT PROJECT**. Site design, source control, and structural pollutant control BMP requirements apply. See the <u>Storm Water Standards Manual</u> for guidance on determining if project requires a hydromodification plan management ☒

Allen L Butcher, PE
Name of Owner or Agent *(Please Print)*

Civil Engineer
Title

Signature

07/12/2017
Date

Applicability of Permanent, Post-Construction Storm Water BMP Requirements
(Storm Water Intake Form for all Development Permit Applications)

Form I-1

Project Identification

Project Name: Pacific Ridge

Permit Application Number: Project # 393812

Date: September 27, 2017

Determination of Requirements

The purpose of this form is to identify permanent, post-construction requirements that apply to the project. This form serves as a short summary of applicable requirements, in some cases referencing separate forms that will serve as the backup for the determination of requirements.

Answer each step below, starting with Step 1 and progressing through each step until reaching "Stop".
Refer to Part 1 of Storm Water Standards sections and/or separate forms referenced in each step below.

Step	Answer	Progression
Step 1: Is the project a "development project"? See Section 1.3 of the BMP Design Manual (Part 1 of Storm Water Standards) for guidance.	● Yes	Go to Step 2.
	○ No	Stop. Permanent BMP requirements do not apply. No SWQMP will be required. Provide discussion below.

Discussion / justification if the project is not a "development project" (e.g., the project includes only interior remodels within an existing building):
Click or tap here to enter text.

Step	Answer	Progression
Step 2: Is the project a Standard Project, Priority Development Project (PDP), or exception to PDP definitions? To answer this item, see Section 1.4 of the BMP Design Manual (Part 1 of Storm Water Standards) in its entirety for guidance, AND complete Storm Water Requirements Applicability Checklist.	○ Standard Project	Stop. Standard Project requirements apply.
	● PDP	PDP requirements apply, including PDP SWQMP. Go to Step 3.
	○ PDP Exempt	Stop. Standard Project requirements apply. Provide discussion and list any additional requirements below.

Discussion / justification, and additional requirements for exceptions to PDP definitions, if applicable:
Click or tap here to enter text.

Form I-1 Page 2

Step	Answer	Progression
Step 3. Is the project subject to earlier PDP requirements due to a prior lawful approval? See Section 1.10 of the BMP Design Manual (Part 1 of Storm Water Standards) for guidance.	○ Yes	Consult the City Engineer to determine requirements. Provide discussion and identify requirements below. Go to Step 4.
	● No	BMP Design Manual PDP requirements apply. Go to Step 4.
Discussion / justification of prior lawful approval, and identify requirements (<u>not required if prior lawful approval does not apply</u>): Click or tap here to enter text.		
Step 4. Do hydromodification control requirements apply? See Section 1.6 of the BMP Design Manual (Part 1 of Storm Water Standards) for guidance.	● Yes	PDP structural BMPs required for pollutant control (Chapter 5) and hydromodification control (Chapter 6). Go to Step 5.
	○ No	Stop. PDP structural BMPs required for pollutant control (Chapter 5) only. Provide brief discussion of exemption to hydromodification control below.
Discussion / justification if hydromodification control requirements do <u>not</u> apply: Click or tap here to enter text.		
Step 5. Does protection of critical coarse sediment yield areas apply? See Section 6.2 of the BMP Design Manual (Part 1 of Storm Water Standards) for guidance.	○ Yes	Management measures required for protection of critical coarse sediment yield areas (Chapter 6.2). Stop.
	● No	Management measures not required for protection of critical coarse sediment yield areas. Provide brief discussion below. Stop.
Discussion / justification if protection of critical coarse sediment yield areas does <u>not</u> apply: Project is not located within the limits of Critical Coarse Sediment Yield zones		

Site Information Checklist For PDPs	Form I-3B
Project Summary Information	
Project Name	Pacifica Ridge
Project Address	Smythe Avenue
Assessor's Parcel Number(s) (APN(s))	638-060-03,04, & 41
Permit Application Number	Project # 393812
Project Watershed	Select One: ○ San Dieguito River ○ Penasquitos ○ Mission Bay ○ San Diego River ○ San Diego Bay ● Tijuana River
Hydrologic subarea name with Numeric Identifier up to two decimal spaces (9XX.XX)	San Ysidro Hydrologic Sub-Area 911.11
Project Area (total area of Assessor's Parcel(s) associated with the project or total area of the right-of-	4.35 Acres ([SQFT] Square Feet)
Area to be disturbed by the project (Project Footprint)	4.68 Acres ([SQFT] Square Feet)
Project Proposed Impervious Area (subset of Project Footprint)	2.47 Acres ([SQFT] Square Feet)
Project Proposed Pervious Area (subset of Project Footprint)	1.88 Acres ([SQFT] Square Feet)
Note: Proposed Impervious Area + Proposed Pervious Area = Area to be Disturbed by the Project. This may be less than the Project Area.	
The proposed increase or decrease in impervious area in the proposed condition as compared to the pre-project condition.	>100 %

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Description of Existing Site Condition and Drainage Patterns

Current Status of the Site (select all that apply):
☐ Existing development
☐ Previously graded but not built out
☐ Agricultural or other non-impervious use
■ Vacant, undeveloped/natural

Description / Additional Information:

Portion of the site were previously graded as part of the Smythe Avenue construction resulting in a significant exposed cut slope along the project frontage

Existing Land Cover Includes (select all that apply):
■ Vegetative Cover
☐ Non-Vegetated Pervious Areas
■ Impervious Areas

Description / Additional Information:

Impervious Area includes paving along Smythe Avenue and drainage ditches.

Underlying Soil belongs to Hydrologic Soil Group (select all that apply):
☐ NRCS Type A
☐ NRCS Type B
☐ NRCS Type C
■ NRCS Type D

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:

Click or tap here to enter text.

Project Name: **Pacifica Ridge**

Form I-3B Page 3 of 11
Description of Existing Site Topography and Drainage:
How is storm water runoff conveyed from the site? At a minimum, this description should answer: 1. Whether existing drainage conveyance is natural or urban; 2. If runoff from offsite is conveyed through the site? If yes, quantification of 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 storm drains, concrete channels, swales, detention facilities, storm water treatment facilities, and natural and constructed channels; 4. Identify all discharge locations from the existing project along with a summary of the 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.
Description / Additional Information:

Project Name: Pacifica Ridge

The property is an undeveloped hillside, sloping generally southwest. Topography is generally steep (10% to 20%). A large steep cut slope (1.5:1 slope up to 45' in height) is located along the Smythe Avenue frontage. A concrete brow ditch was constructed at the top of the Smythe Avenue cut slope. Drainage from the majority of the site is intercepted by the ditch and routed to the southwest corner of the property. Runoff from the surface of the cut slope along Smythe Avenue flows down the slope and discharges directly to the Smythe gutter. The southern portion of the site flows overland southwesterly to the residential properties located along West Foothill Road. These flows eventually reach the Smythe gutter further downhill.

The northern end of the Smythe brow ditch is connected to an existing inlet near the north property line and is connected to the curb inlet at the northwest corner of the property.

Small drainage areas located at the eastern limits of the property drain toward the Camino De Progresso street and a drainage ditch located along the adjacent property.

Site run-on from adjacent properties is negligible.

Form I-3B Page 4 of 11

Description of Proposed Site Development and Drainage Patterns

Project Description / Proposed Land Use and/or Activities:

The project proposes 44 attached residential units (22-duplexes) on private driveways. The developed area is approximately 3.1 acres, with an impervious ratio for the developed portion of the site is estimated at 73% impervious, corresponding to High Density Residential

List/describe proposed impervious features of the project (e.g., buildings, roadways, parking lots, courtyards, athletic courts, other impervious features):

Impervious surfaces including public and private street paving, sidewalk, walks, driveways, parking spaces, building roofs, patio/porch

List/describe proposed pervious features of the project (e.g., landscape areas):

Landscaped cut and fill slopes, yard areas, and areas adjacent to walkways/sidewalks. A small portion of the site in the southwest corner will remain ungraded. The Smythe Avenue improvements will include a non-contiguous sidewalk.

Does the project include grading and changes to site topography?

☑ Yes

☐ No

Description / Additional Information:

Significant grading will be required for the Smythe widening and to provide private street access from Smythe Avenue entrance driveway to the upper portion of the site, resulting in significant cut /fill slopes and retaining walls.

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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 and 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.

Description / Additional Information:

Site grading and development will maintain the general east to west drainage pattern, with discharge to Smythe Avenue. The majority of the developed site runoff will be collected by the proposed storm water vault (HMP Control - cistern option) which is connected to the dry well infiltration facility located near the proposed project entrance driveway. Due to the nature of the dry well facility, only the higher intensity storm flows will discharge to Smythe Avenue. A= 3.1 ac

The manufactured slope area, just south of the entry 0.73 ac), will discharge to the Smythe gutter.

The most westerly limits of the site will become part of the Smythe Avenue widening. A=0.26 ac.

A small portion of the site located north of the entry will discharge to Smythe Avenue via curb outlet upstream on an existing curb inlet just north of the proposed entrance driveway. This portion of the site consists of a landscape slope above the retaining wall. A = 0.09 ac

The project will include an emergency connection at the northeast corner of the project. A small portion of the driveway connection will discharge to Camino De Progresso cul-de-sac. This De Minimis area is 200 square feet (A=0.004 ac)

See Project Drainage Study in Section 5 for detailed calculations

Project Name: **Pacifica Ridge**

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Identify whether any of the following features, activities, and/or pollutant source areas will be present (select all that apply):

■ On-site storm drain inlets
☐ Interior floor drains and elevator shaft sump pumps
☐ Interior parking garages
☐ Need for future indoor & structural pest control
■ Landscape/Outdoor Pesticide Use
☐ Pools, spas, ponds, decorative fountains, and other water features
☐ Food service
☐ Refuse areas
☐ Industrial processes
☐ Outdoor storage of equipment or materials
☐ Vehicle and Equipment Cleaning
☐ Vehicle/Equipment Repair and Maintenance
☐ Fuel Dispensing Areas
☐ Loading Docks
☐ Fire Sprinkler Test Water
☐ Miscellaneous Drain or Wash Water
■ Plazas, sidewalks, and parking lots
☐ Large Trash Generating Facilities
☐ Animal Facilities
☐ Plant Nurseries and Garden Centers
☐ Automotive-related Uses

Description / Additional Information:
Click or tap here to enter text.

Form I-3B Page 7 of 11

Identification and Narrative of Receiving Water

Narrative describing flow path from discharge location(s), through urban storm conveyance system, to receiving creeks, rivers, and lagoons and ultimate discharge location to Pacific Ocean (or bay, lagoon, lake or reservoir, as applicable)

The project runoff is directed southerly in the Smythe gutter toward Beyer Blvd, then easterly in the gutter. Storm water is then intercepted by a curb inlet located in a localized sump approximately 300' east of the intersection. The storm drain continues southerly under the trolley right-of-way (south of Beyer) and then approximately 1/2 mile to the Tijuana River, which continues westerly for approximately 6 miles to the Tijuana River Estuary and the Pacific Ocean.

Provide a summary of all beneficial uses of receiving waters downstream of the project discharge locations.

From the San Diego basin Plan the existing beneficial uses are REC2, BIOL, WARM, WILD & RARE.

Identify all ASBS (areas of special biological significance) receiving waters downstream of the project discharge locations.

None.

Provide distance from project outfall location to impaired or sensitive receiving waters.

Project discharge is approximately 1.5 miles from the Tijuana River.

Summarize information regarding the proximity of the permanent, post-construction storm water BMPs to the City's Multi-Habitat Planning Area and environmentally sensitive lands

Project is not near the City MHPA or ESLs.

Project Name: **Pacifica Ridge**

Form I-3B Page 8 of 11

Identification of Receiving Water Pollutants of Concern

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
Tijuana River	Ind Bacteria, Eutrophic, Low	Click or tap here to enter text.
	Dissolved Oxygen Pesticides,	Click or tap here to enter text.
	Phosphorous, Trace Elements	Click or tap here to enter text.
	Trash, Toxicity, Total N,	Click or tap here to enter text.
	Organics, Surfactants, Solids	Click or tap here to enter text.
	Selenium, Sediment/Silt	Sedimentation, Siltation
Tijuana River Estuary	Eutrophic …Turbidity	Turbidity
Pacific Ocean	Bacteria, Ent, Coliforms	N/A

Identification of Project Site Pollutants* - **Not Required**

*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 anticipated from the project site based on all proposed use(s) of the site (see BMP Design Manual (Part 1 of Storm Water Standards) Appendix B.6):

Pollutant	Not Applicable to the Project Site	Anticipated from the Project Site	Also a Receiving Water Pollutant of Concern
Sediment	○	○	●
Nutrients	○	○	●
Heavy Metals	○	○	●
Organic Compounds	○	○	●
Trash & Debris	○	○	●
Oxygen Demanding Substances	○	○	●
Oil & Grease	○	○	●
Bacteria & Viruses	○	○	●
Pesticides	○	○	●

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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):

Click or tap here to enter text.

Critical Coarse Sediment Yield Areas*

*This Section only required if hydromodification management requirements apply

Based on Section 6.2 and Appendix H does CCSYA exist on the project footprint or in the upstream area draining through the project footprint?

○ Yes

● No, No critical coarse sediment yield areas to be protected based on WMAA maps

Discussion / Additional Information:

The nearest CCSY area is approximately 1 mile to the east of the site. See Attachment 2B.

Project Name: **Pacifica Ridge**

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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.

POC 1 - Smythe gutter at the driveway
DMA 1 - Developed portion of site - discharges to Smythe gutter after HMP-1 and Infiltration Well.

Other Areas
DMA 2 – Self Treating slope to Smythe Curb north of project entry.
DMA 3 - Self Treating Slope to Smythe Curb south of project entry.
DMA 4 – Self Treating Slope to Smythe Curb at SW corner of project frontage.
DMA 5 - Smythe Avenue R/W– Green Streets Exemption - Street Trees (See Worksheet in Attachment 1E).
DMA 6 -SW corner of site - ungraded.
DMA 7 - De Minimis Area #1 at emergency connection (northeast corner of project). The finished grades of the exterior driveway, and the addition of an inlet near the driveway connection, has been provided to minimize runoff to the existing street.

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 the low flow threshold is 0.1Q2
○ Yes, the result is the low flow threshold is 0.3Q2
○ Yes, the result is the low flow threshold is 0.5Q2

If a geomorphic assessment has been performed, provide title, date, and preparer:
Click or tap here to enter text.

Discussion / Additional Information: (optional)
Click or tap here to enter text.

Project Name: **Pacifica Ridge**

Form I-3B Page 11 of 11
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. Primary constraints include Type "D" soils, lack of downstream storm drain at or near the discharge location, Smythe Avenue widening, steep site topography including the large existing cut slopes above Smythe Avenue. The combination of the steep frontage, street widening and steep entry drive will constrain the ability to intercept runoff near the entry, and at the downstream portion of Smythe Avenue.
Optional Additional Information or Continuation of Previous Sections As Needed
This space provided for additional information or continuation of information from previous sections as needed. Click or tap here to enter text.

Project Name: **Pacifica Ridge**

Source Control BMP Checklist for All Development Projects	Form I-4

Source Control BMPs

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 BMP Design Manual (Part 1 of the Storm Water Standards) 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 BMP Design 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
Discussion / justification if SC-1 not implemented: Click or tap here to enter text.			
SC-2 Storm Drain Stenciling or Signage	☒ Yes	☐ No	☐ N/A
Discussion / justification if SC-2 not implemented: Click or tap here to enter text.			
SC-3 Protect Outdoor Materials Storage Areas from Rainfall, Run-On, Runoff, and Wind Dispersal	☐ Yes	☐ No	☒ N/A
Discussion / justification if SC-3 not implemented: Click or tap here to enter text.			
SC-4 Protect Materials Stored in Outdoor Work Areas from Rainfall, Run-On, Runoff, and Wind Dispersal	☐ Yes	☐ No	☒ N/A
Discussion / justification if SC-4 not implemented: Click or tap here to enter text.			
SC-5 Protect Trash Storage Areas from Rainfall, Run-On, Runoff, and Wind Dispersal	☐ Yes	☒ No	☐ N/A
Discussion / justification if SC-5 not implemented: No common trash areas.			

Form I-4 Page 2 of 2

Source Control Requirement	Applied?
SC-6 Additional BMPs Based on Potential Sources of Runoff Pollutants (must answer for each source listed below)	
On-site storm drain inlets	☑ Yes ☐ No ☐ N/A
Interior floor drains and elevator shaft sump pumps	☐ Yes ☐ No ☑ N/A
Interior parking garages	☐ 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 areas	☐ Yes ☐ No ☑ N/A
Industrial processes	☐ Yes ☐ No ☑ N/A
Outdoor storage of equipment or materials	☐ 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
SC-6A: Large Trash Generating Facilities	☐ Yes ☐ No ☑ N/A
SC-6B: Animal Facilities	☐ Yes ☐ No ☑ N/A
SC-6C: Plant Nurseries and Garden Centers	☐ Yes ☐ No ☑ N/A
SC-6D: Automotive-related Uses	☐ Yes ☐ No ☑ N/A
Discussion / justification if SC-6 not implemented. Clearly identify which sources of runoff pollutants are discussed. Justification must be provided for <u>all</u> "No" answers shown above. Click or tap here to enter text.	

Project Name: **Pacifica Ridge**

Site Design BMP Checklist for All Development Projects	Form I-5

Site Design BMPs

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 BMP Design Manual (Part 1 of Storm Water Standards) 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 BMP Design 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.

A site map with implemented site design BMPs must be included at the end of this checklist.

Site Design Requirement	Applied?		
SD-1 Maintain Natural Drainage Pathways and Hydrologic Features	☐ Yes	☐ No	☒ N/A
Discussion / justification if SD-1 not implemented: No natural drainage pathways or significant hydrologic features. Due to the topography of the site, the onsite private driveway is sloped from east to west. The street trees are located on the uphill side of the street, which does not allow for interception and treatment.			
1-1 Are existing natural drainage pathways and hydrologic features mapped on the site map?	☐ Yes	☐ No	☒ N/A
1-2 Are street trees implemented? If yes, are they shown on the site map?	☐ Yes	☐ No	☒ N/A
1-3 Implemented street trees meet the design criteria in SD-1 Fact Sheet (e.g. soil volume, maximum credit, etc.)?	☐ Yes	☐ No	☒ N/A
1-4 Is street tree credit volume calculated using Appendix B.2.2.1 and SD-1 Fact Sheet in Appendix E?	☐ Yes	☐ No	☒ N/A
SD-2 Have natural areas, soils and vegetation been conserved?	☐ Yes	☒ No	☐ N/A
Discussion / justification if SD-2 not implemented: The existing site has limited "natural" areas of significance. The majority of the existing site has been disturbed by the past construction of Smythe Avenue, disposal of fill material, etc. The proposed widening of Smythe Avenue and the private driveway entry will impact the existing large cut slope, resulting in manufactured slopes along the west and southerly limits. The steep site topography constrains the development envelope, resulting in exterior slope conditions near the boundaries.			

Project Name: **Pacifica Ridge**

Form I-5 Page 2 of 4

Site Design Requirement	Applied?		
SD-3 Minimize Impervious Area	☒ Yes	☐ No	☐ N/A
Discussion / justification if SD-3 not implemented: The use of private streets, attached residential buildings with 2-story construction, one sided private street sidewalk reduces the amount of impervious area.			
SD-4 Minimize Soil Compaction	☐ Yes	☒ No	☐ N/A
Discussion / justification if SD-4 not implemented: The existing topography and development of the site results in significant manufactured slopes, which require soil maximum compaction. The density of the development and the extent of the retaining walls, private streets, driveways, guest parking spaces, sidewalks and utilities do not allow for areas of minimal soil compaction. The Type "D" hydrologic soils do not provide the opportunity for infiltration.			
SD-5 Impervious Area Dispersion	☐ Yes	☒ No	☐ N/A
Discussion / justification if SD-5 not implemented: The proposed landscaped yard areas are not large enough to provide dispersion of roof runoff.			
5-1 Is the pervious area receiving run-on from impervious area identified on the site map?	☐ Yes	☒ No	
5-2 Does the pervious area satisfy the design criteria in SD-5 Fact Sheet in Appendix E (e.g. maximum slope, minimum length, etc.)	☐ Yes	☒ No	
5-3 Is impervious area dispersion credit volume calculated using Appendix B.2.1.1 and SD-5 Fact Sheet in Appendix E?	☐ Yes	☒ No	

Form I-5 Page 3 of 4

Site Design Requirement	Applied?		
SD-6 Runoff Collection	☐ Yes	☐ No	☑ N/A
Discussion / justification if SD-6 not implemented: Click or tap here to enter text.			
6a-1 Are green roofs implemented in accordance with design criteria in SD-6A Fact Sheet? If yes, are they shown on the site map?	☐ Yes	☐ No	☑ N/A
6a-2 Is green roof credit volume calculated using Appendix B.2.1.2 and SD-6A Fact Sheet in Appendix E?	☐ Yes	☐ No	☑ N/A
6b-1 Are permeable pavements implemented in accordance with design criteria in SD-6B Fact Sheet? If yes, are they shown on the site map?	☐ Yes	☐ No	☑ N/A
6b-2 Is permeable pavement credit volume calculated using Appendix B.2.1.3 and SD-6B Fact Sheet in Appendix E?	☐ Yes	☐ No	☑ N/A
SD-7 Landscaping with Native or Drought Tolerant Species	☐ Yes	☐ No	☑ N/A
Discussion / justification if SD-7 not implemented: Permeable paving not selected. Landscape selection includes native and/or drought tolerant species. Street trees along Smythe Ave are part of a Green Street exemption .			
SD-8 Harvesting and Using Precipitation	☐ Yes	☐ No	☑ N/A
Discussion / justification if SD-8 not implemented: Rain barrels not implemented.			
8-1 Are rain barrels implemented in accordance with design criteria in SD-8 Fact Sheet? If yes, are they shown on the site map?	☐ Yes	☐ No	☑ N/A
8-2 Is rain barrel credit volume calculated using Appendix B.2.2.2 and SD-8 Fact Sheet in Appendix E?	☐ Yes	☐ No	☑ N/A

Form I-5 Page 4 of 4
Insert Site Map with all site design BMPs identified:
See Attachment 1A.

Summary of PDP Structural BMPs	Form I-6
PDP Structural BMPs	
All PDPs must implement structural BMPs for storm water pollutant control (see Chapter 5 of the BMP Design Manual, Part 1 of Storm Water Standards). 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 City at the completion of construction. This includes requiring the project owner or project owner's representative to certify construction of the structural BMPs (complete Form DS-563). PDP structural BMPs must be maintained into perpetuity (see Chapter 7 of the BMP Design Manual). Use this form 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).	

Project Name: Pacifica Ridge

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 Type "D" soil and steep topography indicate that surface infiltration BMPs are not feasible. Furthermore, the large slopes below the development envelope and the density of the development do not favor the use of partial infiltration.

The steep site topography and Smythe private street connection constrains the available flat space for surface basins. In order to meet the volume reduction goal, a "dry well" will be drilled to allow for partial infiltration below the surficial soils. In order to achieve the HMP requirements, the storage volume will be located upstream of the infiltration basin to constrain the flows entering the dry well. The Cistern will be located upstream of the dry well to allow for gravity flow. Surface runoff downstream of the cistern curb entry will be intercepted at the end of the entrance driveway by a curb inlet and trench drain at the Right-of-Way at Smythe Avenue. Only the allowed high intensity storm event flows will bypass these inlets and discharge to Smythe Avenue.

Due to the steepness of the existing street grade (8%), treatment options for the Smythe Avenue widening were limited to street trees, qualifying for the green streets exemption, as outlined in Appendix J of the City's BMP Design Manual.

(Continue on page 2 as necessary.)

Project Name: **Pacifica Ridge**

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Structural BMP Summary Information

Structural BMP ID No. BMP 1

Construction Plan Sheet No. N/A

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)

☐ 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

☐ 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 certify construction of this BMP? Provide name and contact information for the party responsible to sign BMP verification form DS-563	Engineer of Work
Who will be the final owner of this BMP?	Project HOA
Who will maintain this BMP into perpetuity?	Project HOA
What is the funding mechanism for maintenance?	HOA monthly association fees.

Project Name: **Pacifica Ridge**

Form I-6 Page 4 of 6
Structural BMP ID No. BMP-1
Construction Plan Sheet No. N/A
Discussion (as needed): Site Runoff: A dry well will be installed downstream of the HMP/Detention Storage facility to provide partial infiltration. Accepts runoff from HMP-1.

Project Name: **Pacifica Ridge**

Form I-6 Page 5 of 6

Structural BMP Summary Information

Structural BMP ID No. HMP-1

Construction Plan Sheet No. N/A

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)
- ☐ 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
- ☑ 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 certify construction of this BMP? Provide name and contact information for the party responsible to sign BMP verification form DS-563	Engineer of Work
Who will be the final owner of this BMP?	Project HOA
Who will maintain this BMP into perpetuity?	Project HOA
What is the funding mechanism for maintenance?	HOA monthly association fees.

Form I-6 Page 6 of 6
Structural BMP ID No. HMP-1
Construction Plan Sheet No. N/A
Discussion (as needed): Site runoff will be directed to the Underground storage facility. Outflow will provide both HMP controls and peak flow attenuation for larger storm events. Outflow will be directed to the part infiltration facility drywell (BMP-1). Depending upon the final infiltration testing and performance curve, the storage volume may be reduced. A continuous simulation model should be used in the final design to optimize the storage volume.

THE CITY OF SAN DIEGO

City of San Diego
Development Services
1222 First Ave., MD-302
San Diego, CA 92101
(619) 446-5000

Permanent BMP Construction

Self Certification Form

FORM
DS-563
January 2016

Date Prepared: Click here to enter text.

Project No.: Click here to enter text.

Project Applicant: Click here to enter text.

Phone: Click here to enter text.

Project Address: Click here to enter text.

Project Engineer: Click here to enter text.

Phone: Click here to enter text.

The purpose of this form is to verify that the site improvements for the project, identified above, have been constructed in conformance with the approved Storm Water Quality Management Plan (SWQMP) documents and drawings.

This form must be completed by the engineer and submitted prior to final inspection of the construction permit. Completion and submittal of this form is required for all new development and redevelopment projects in order to comply with the City's Storm Water ordinances and NDPES Permit Order No. R9-2013-0001 as amended by R9-2015-0001 and R9-2015-0100. Final inspection for occupancy and/or release of grading or public improvement bonds may be delayed if this form is not submitted and approved by the City of San Diego.

CERTIFICATION:

As the professional in responsible charge for the design of the above project, I certify that I have inspected all constructed Low Impact Development (LID) site design, source control and structural BMP's required per the approved SWQMP and Construction Permit No. Click here to enter text.; and that said BMP's have been constructed in compliance with the approved plans and all applicable specifications, permits, ordinances and Order No. R9-2013-0001 as amended by R9-2015-0001 and R9-2015-0100 of the San Diego Regional Water Quality Control Board.

I understand that this BMP certification statement does not constitute an operation and maintenance verification.

Signature: ______________________________

Date of Signature: _ Insert Date __

Printed Name: _Click here to enter text._

Title: _Click here to enter text._

Phone No. _Click here to enter text._

Engineer's

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ATTACHMENT 1
BACKUP FOR PDP POLLUTANT CONTROL BMPS

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Project Name: **Pacifica Ridge**

Indicate which Items are Included:

Attachment Sequence	Contents	Checklist
Attachment 1a	DMA Exhibit (Required) See DMA Exhibit Checklist.	■ 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 and site design credit calculations	■ Included

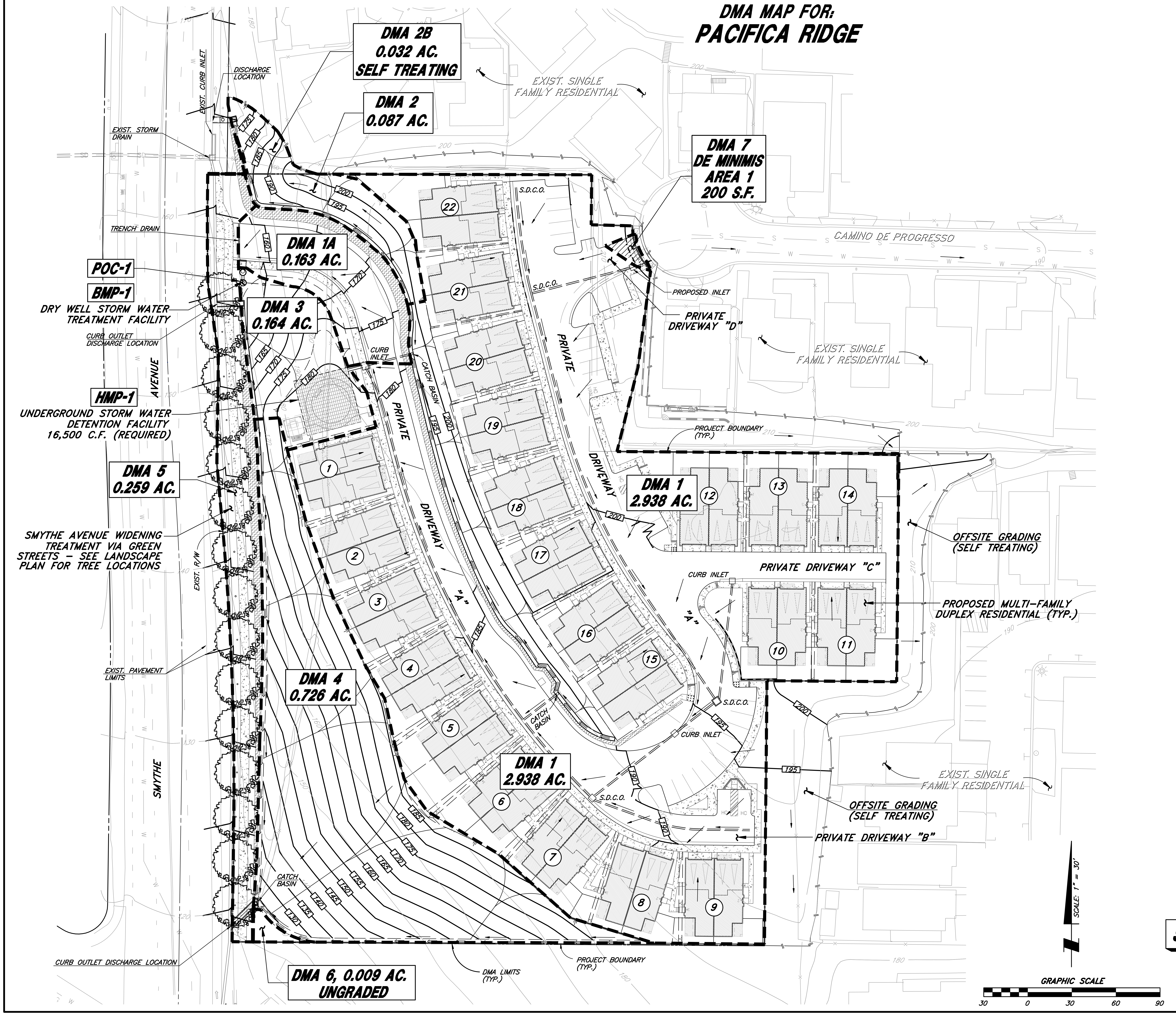
Project Name: **Pacifica Ridge**

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 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)

DMA MAP FOR:
PACIFICA RIDGE



LEGEND

PROJECT BOUNDARY	— - - —
DMA LIMITS	▬ ▬ ▬ ▬
BUILDING NUMBER	⑩
STORM DRAIN	═ ═ ═ ═□
DIRECTION OF DRAINAGE	→ →
BIOFILTRATION BMP AREA	⁘
ROOF AREA	▨

DMA SUMMARY

UNDERLYING HYDROLOGIC SOILS GROUP:	TYPE "D"
APPROXIMATE DEPTH TO GROUNDWATER:	GREATER THAN 15 FEET
EXISTING NATURAL HYDROLOGIC FEATURES:	NONE
POTENTIAL CRITICAL COARSE SEDIMENT YIELD AREAS:	NONE
EXISTING TOPOGRAPHY:	EXISTING CONTOURS SHOWN
EXISTING IMPERVIOUS AREAS:	SMYTHE PAVING
EXISTING DRAINAGE SYSTEM:	SMYTHE INLETS
PROPOSED DRAINAGE SYSTEM:	STORM DRAIN SHOWN
PROPOSED GRADING:	SHOWN
PROPOSED IMPERVIOUS SURFACES:	SEE LEGEND FOR SURFACE TYPES
DMA AREAS:	SEE DMA SUMMARY BELOW SWQMP ATTACHMENT 2B
POLLUTANT SOURCES:	PAVEMENT, ROOFS
STRUCTURAL SOURCE CONTROL:	SHOWN
INLET SIGNAGE:	YES
TRASH ENCLOSURE CONTROLS:	N/A
PET WASTE RECEPTACLE:	YES
TREATMENT BMP:	INFILTRATION DRY WELL
HYDROMODIFICATION CONTROL:	STORAGE VAULT

SITE DESIGN BMP

SD-3 MINIMIZE IMPERVIOUS AREAS
SD-7 LANDSCAPING WITH NATIVE OR DROUGHT TOLERANT SPECIES

SOURCE CONTROL BMP'S

SC-2 STORM DRAIN INLET STENCILING

DMA SUMMARY

DMA	AREA (AC.)	DESCRIPTION	TREATMENT
1	2.938	RESIDENTIAL	BMP-1/HMP-1
1A	0.163	RESIDENTIAL	
TOTAL	3.101	–	
2	0.087	LANDSCAPED SLOPED	SELF TREATING
3	0.164	LANDSCAPED SLOPED	SELF TREATING
4	0.726	LANDSCAPED SLOPED	SELF TREATING
5	0.259	STREET R/W	STREET TREES (GREEN STREETS)
6	0.009	UNGRADED SLOPE	SELF TREATING
7	0.004	DRIVEWAY ENTRANCE	DE MINIMIS (200 S.F.)
SITE	4.350		

SWQMP ATTACHMENT 1

SHEET 1 OF 1 SHEETS

DMA MAP FOR:
PACIFICA RIDGE

SB&O INC.
PLANNING ENGINEERING SURVEYING
3990 Ruffin Road, Suite 120
San Diego, Ca. 92123
858-560-1141
858-560-8157 Fax

FILE NAME: D:\71172 SMYTHE AVE\DWG\DX\71172DX01-REVISED DMA MAP.DWG, PLOTTED BY: TONY PORCIONCULA ON 9/28/2017 10:21 AM

~~6-23-17~~ 9-28-17

71172DX01-REVISED DMA MAP

71170.60

Project Name **Pacifica Ridge**

Attachment 1B
DMA Summary

West Portion of Site

DMA	Surface Type	Imper (%)	Imperv (sf)	Pervious (sf)	Total (sf)	Total (ac)
DMA-1 & 1A	Developed Site **To HMP-1 / BMP-1**	73%	98,459	36,621	135,080	3.101
DMA-2	Self Treating Slope	0%	-	3,790	3,790	0.087
DMA-3	Self Treating Slope	0%	-	7,144	7,144	0.164
DMA-4	Self Treating Slope	0%	-	31,625	31,625	0.726
DMA-5	Smythe Widening Green Streets Exemption	81%	9,138	2,144	11,282	0.259
DMA-6	Self Treating Slope	0%	-	392	392	0.009
DMA-7	DeMinimis 1 Exterior Driveway	100%	200	-	200	0.004
	Totals		107,797	81,715	189,512	4.350
			2.47	1.88	4.35	

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: **Residential @ 9.3 gallons per person**
☐ Landscape irrigation: **Plant Factor @ Upper Moderate= 0.7/Hydrazone Mod = 1,470 gals in 36 hrs**
☐ Other:_______ **Irrigation Demand Per B.3-2 2.7 x [(0.7 x 1,470)/0.9] x 0.015 =<u>46.3 cf/36-hrs/acre</u>**

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.

Pacifica Ridge = 44 Duplex x 3.5 people x 9.3 gals = 1,432 gals/day = 2,148 gals per 36 hrs
Toilet Flushing Demand: 287 cubic-feet / 36 hours
Total Pervious Area for site =2.08 acre x 46.3 cubic-feet/ac =
Landscape Irrigation: 96.3 cubic-feet / 36 hrs

3. Calculate the DCV using worksheet B-2.1.

DCV = <u>3,791</u>______ (cf) 25% = 948 cf

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 <u>infeasible</u>.**

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

Form I-8

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.		✓

Provide basis:

The project soils report indicates the formational soils at the site include highly cemented sandstones of the Linda Vista and San Diego Formation. Type “D” soils do not support infiltration rates > 0.5” / hr

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 the factors presented in Appendix C.2.		✓

Provide basis:

From the soils report - Infiltration of runoff could affect slope stability.

Summarize findings of studies; provide reference to studies, calculations, maps, data sources, etc. Provide narrative discussion of study/data source applicability.

Form I-8 Page 2 of 4			
Criteria	Screening Question	**Yes**	**No**
3	**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.	✓	
Provide basis: No evidence of contamination Summarize findings of studies; provide reference to studies, calculations, maps, data sources, etc. Provide narrative discussion of study/data source applicability.			
4	**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.	✓	
Provide basis: No evidence of downstream impacts. Summarize findings of studies; provide reference to studies, calculations, maps, data sources, etc. Provide narrative discussion of study/data source applicability.			
Part 1 Result *	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		**Full Infiltration** **Not feasible**

*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 Agency/Jurisdictions to substantiate findings

Form I-8 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:

The project soils report indicates the formational soils at the site include highly cemented sandstones of the Linda Vista and San Diego Formation. Minimal infiltration values expected (0.1 in/hr or less)

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.		✓

Provide basis:

From the soils report - Infiltration of runoff could affect slope stability.

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.

Form I-8 Page 4 of 4

Criteria	Screening Question	Yes	No
7	**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.	✓	

Provide basis:

No evidence of contamination

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.

8	**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.	✓	

Provide basis:

No evidence of downstream impacts.

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.

Part 2 Result*	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.**	**No Infiltration**

*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 Agency/Jurisdictions to substantiate findings

SWQMP Attachment 1E

Project Name **Pacifica Ridge** BMP ID **BMP-1 / HMP-1**

Design Capture Volume (DCV) Worksheet B-2.1 City SD BMP Manual 2016

	Surface	Area (sq-ft)	Area (acres)	Runoff Factor	C x A (acres)	
	Imperv (Roof/Paving)	98,459	2.260	0.9	2.034	
	Semi Pervious Area	-	0.000	0.2	0.000	
	Pervious Area	36,621	0.841	0.1	0.084	
1,2	Total Area	135,080	3.101	0.683	2.118	acre

3	Effective Impervious Area draining to the Storage Unit & Biofiltration BMP		92,275	sq-ft
	85th Percentile 24-Hour Storm		0.49	inches
	Design Capture Volume (Gross)	DCV =	3,768	cubic-ft
	Volume Reductions (Street Trees / Rain Barrels		0	cubic-ft

Attachment 1E

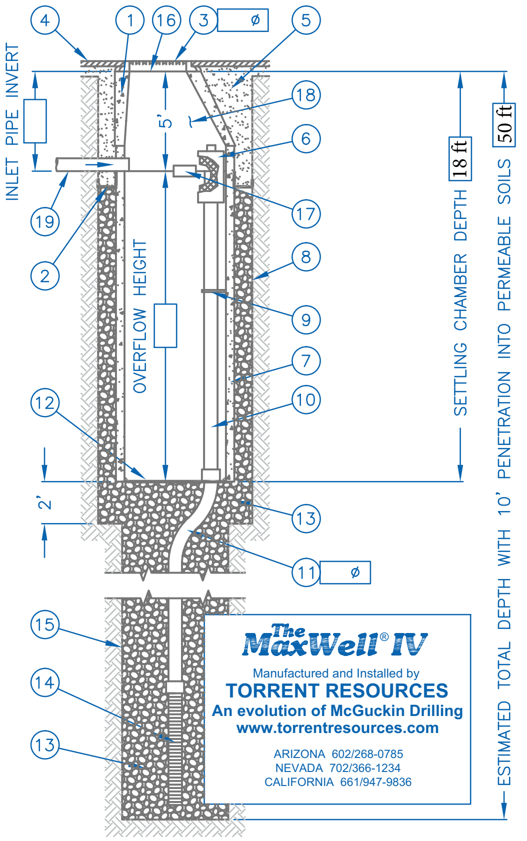
MAXWELL® IV DRAINAGE SYSTEM DETAIL AND SPECIFICATIONS

See Attachment #6 for Design Information

○ ITEM NUMBERS

1. **Manhole Cone** - Modified Flat Bottom.
2. **Moisture Membrane** - 6 Mil. Plastic. Applies only when native material is used for backfill. Place membrane securely against eccentric cone and hole sidewall.
3. **Bolted Ring & Grate** - Diameter as shown. Clean cast iron with wording **"Storm Water Only"** in raised letters. **Bolted in 2 locations** and secured to cone with mortar. Rim elevation ±0.02' of plans.
4. **Graded Basin or Paving** (by Others).
5. **Compacted Base Material** - 1-Sack Slurry except in landscaped installtions with no pipe connections.
6. **PureFlo® Debris Shield** - Rolled 16 ga. steel X 24" length with vented anti-siphon and Internal .265" Max. SWO flattened expanded steel screen X 12" length. **Fusion bonded epoxy coated.**
7. **Pre-cast Liner** - 4000 PSI concrete 48" ID. X 54" OD. **Center in hole** and align sections **to maximize bearing surface.**
8. **Min. 6' Ø Drilled Shaft.**
9. **Support Bracket** - Formed 12 Ga. steel. **Fusion bonded epoxy coated.**
10. **Overflow Pipe** - Sch. 40 PVC mated to drainage pipe at base seal.
11. **Drainage Pipe** - ADS highway grade with TRI-A coupler. **Suspend pipe** during backfill operations to prevent buckling or breakage. Diameter as noted.
12. **Base Seal** - Geotextile or concrete slurry.
13. **Rock** - Washed, sized between 3/8" and 1-1/2" to **best complement soil conditions.**
14. **FloFast® Drainage Screen** - Sch. 40 PVC 0.120" slotted well screen with 32 slots per row/ft.Diameter varies 120" overall length with TRI-B coupler.
15. **Min. 4' Ø Shaft** - Drilled to **maintain permeability** of drainage soils.
16. **Fabric Seal** - U.V. resistant geotextile - **to be removed by customer** at project completion.
17. **Absorbent** – Hydrophobic Petrochemical Sponge. Min. to 128 oz. capacity.
18. **Freeboard Depth** Varies with inlet pipe elevation. Increase settling chamber depth as needed to maintain all inlet pipe elevations above overflow pipe inlet.
19. **Optional Inlet Pipe** (Maximum 4", by Others). Extend moisture membrane and compacted base material or 1 sack slurry backfill below pipe invert.

The referenced drawing and specifications are available on CAD either through our office or web site. This detail is copyrighted (2004) but may be used as is in construction plans without further release. For information on product application, individual project specifications or site evaluation, contact our Design Staff for no-charge assistance in any phase of your planning.



AZ Lic. ROC070465 A, ROC047067 B-4, ADWR 363
CA Lic. 528080, C-42, HAZ.
NV Lic. 0035350 A - NM Lic. 90504 GF04

U.S. Patent No. 4,923,330 - TM Trademark 1974, 1990, 2004

CALCULATING MAXWELL IV REQUIREMENTS

The type of property, soil permeability, rainfall intensity and local drainage ordinances determine the number and design of MaxWell Systems. For general applications draining retained stormwater, use one standard **MaxWell IV** per the instructions below for up to 3 acres of landscaped contributory area, and up to 1 acre of paved surface. For larger paved surfaces, subdivision drainage, nuisance water drainage, connecting pipes larger than 4" Ø from catch basins or underground storage, or other demanding applications, refer to our **MaxWell® Plus** System. For industrial drainage, including gasoline service stations, our **Envibro® System** may be recommended. For additional considerations, please refer to **"Design Suggestions For Retention And Drainage Systems"** or consult our Design Staff.

COMPLETING THE MAXWELL IV DRAWING

To apply the **MaxWell IV** drawing to your specific project, simply fill in the blue boxes per instructions below. For assistance, please consult our Design Staff.

50 feet ESTIMATED TOTAL DEPTH

The Estimated Total Depth is the approximate depth required to achieve 10 continuous feet of penetration into permeable soils. Torrent utilizes specialized **"crowd"** equipped drill rigs to penetrate difficult, cemented soils and to reach permeable materials at depths up to **180 feet.** Our extensive database of drilling logs and soils information is available for use as a reference. Please contact our Design Staff for site-specific information on your project.

18 feet SETTLING CHAMBER DEPTH

On MaxWell IV Systems of over 30 feet overall depth and up to 0.25cfs design rate, the **standard** Settling Chamber Depth is **18 feet .** For systems exposed to greater contributory area than noted above, extreme service conditions, or that require higher design rates, chamber depths up to 25 feet are recommended.

' OVERFLOW HEIGHT

The Overflow Height and Settling Chamber Depth determine the effectiveness of the settling process. The higher the overflow pipe, the deeper the chamber, the greater the settling capacity. For normal drainage applications, an overflow height of **13 feet** is used with the standard settling chamber depth of **18 feet**. Sites with higher design rates than noted above, heavy debris loading or unusual service conditions require greater settling capacities

"Ø DRAINAGE PIPE

This dimension also applies to the **PureFlo®** Debris Shield, the **FloFast®** Drainage Screen, and fittings. The size selected is based upon system design rates, soil conditions, and the need for adequate venting. Choices are 6", 8", or 12" diameter. Refer to "Design Suggestions for Retention and Drainage Systems" for recommendations on which size best matches your application.

"Ø BOLTED RING & GRATE

Standard models are quality cast iron and available to fit 24" Ø or 30" Ø manhole openings. All units are bolted in two locations with wording "Storm Water Only" in raised letters. For other surface treatments, please refer to "Design Suggestions for Retention and Drainage Systems."

"Ø INLET PIPE INVERT

Pipes up to 4" in diameter from catch basins, underground storage, etc. may be connected into the settling chamber. Inverts deeper than 5 feet will require additional settling chamber depth to maintain effective overflow height.

TORRENT RESOURCES INCORPORATED

1509 East Elwood Street, Phoenix Arizona 85040~1391
phone 602~268~0785 fax 602~268~0820

Nevada 702~366~1234

AZ Lic. ROC070465 A, ROC047067 B-4; ADWR 363
CA Lic. 528080 A, C-42, HAZ ~ **NV Lic.** 0035350 A ~ **NM Lic.** 90504 GF04

1/12

TORRENT RESOURCES (CA) INCORPORATED

phone 661~947~9836

CA Lic. 886759 A, C-42

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An evolution of McGuckin Drilling

The watermark for drainage solutions.®

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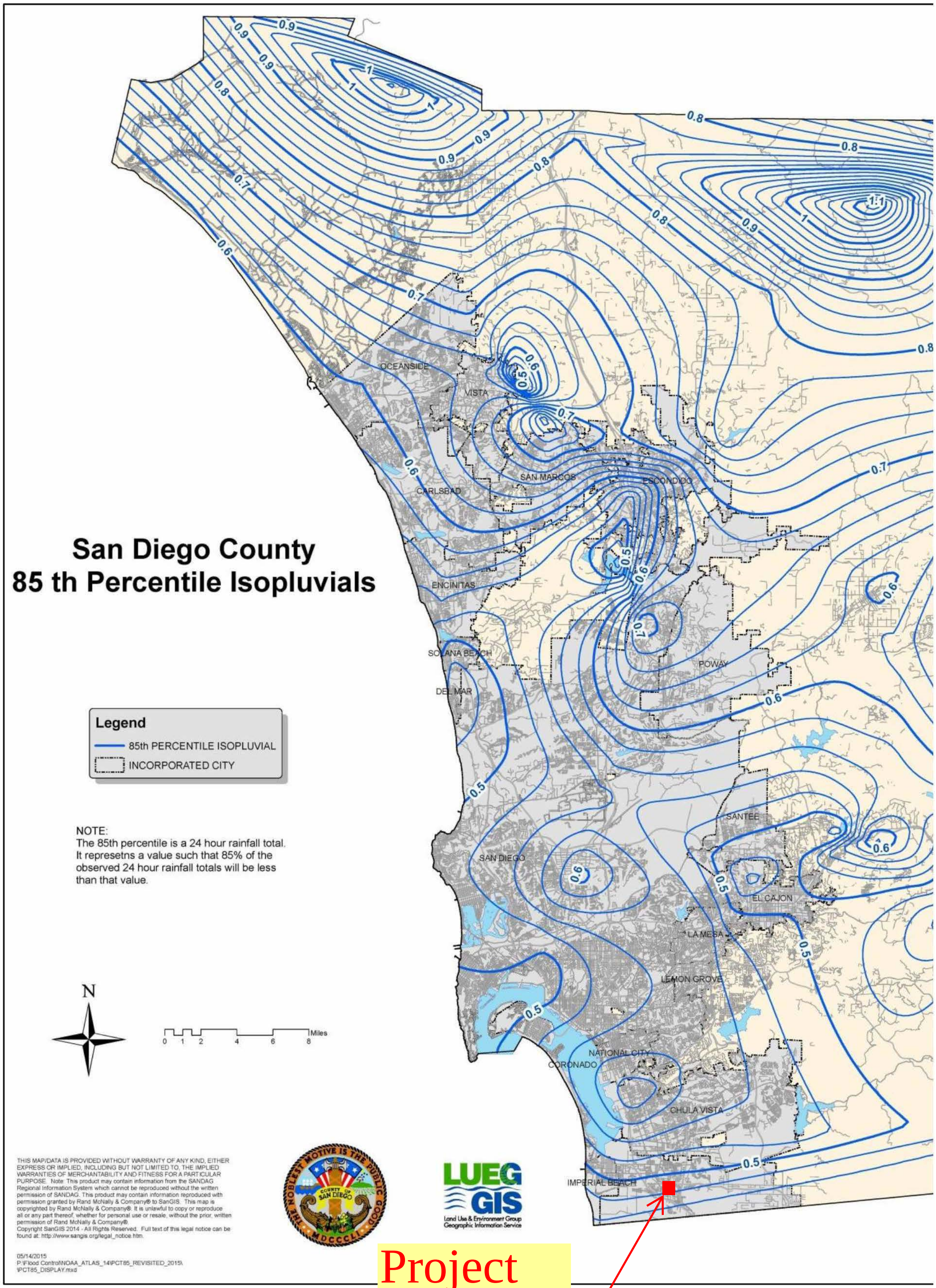

NOTE:
The 85th percentile is a 24 hour rainfall total. It represetns a value such that 85% of the observed 24 hour rainfall totals will be less than that value.

05/14/2015
P:\Flood Control\NOAA_ATLAS_14\PCT85_REVISITED_2015\
\PCT85_DISPLAY.mxd

Project Site

Figure B.1-1: 85th Percentile 2

BMP Applicability and Selection for Green Street Exemption

Form J-1

Project Identification

Project Name: PACIFICA RIDGE

Permit Application Number: PTS 393812

Date: 2-21-17

Project Characterization and Selection Synopsis

The purpose of this form is to guide the selection of BMPs, given project specific constraints to meet the Green Streets exemption as defined in Appendix J.2 of the BMP Design Manual. In order to qualify for a PDP exemption, the project must incorporate all applicable Green Street BMP elements described in Appendix J.2, based on the applicability guidance provided in Appendix J.2.

Complete the sections below providing detailed justification for each selection.

Step 1: Does this project include retrofitting or redevelopment of an existing alley, street, or roadway criteria? Exemptions do not apply for projects that construct new alleys, streets, or roadways. See Appendix J for additional guidance on distinguishing between redevelopment of a street and new development.

☑ Yes ☐ No (if No is selected, the Green Street exemption is not applicable)

Provide a brief overview of the project, key details, and site-specific opportunities and constraints:

DEVELOPMENT PROJECT REQUIRED TO WIDEN SMYTHE AVE. TO INCLUDE AN ADDITIONAL 13' N.B. LANE; 6' BIKE LANE, CURB & GUTTER. AREA OF ADDITIONAL IMPERVIOUS SURFACE IS 1807 SF

Step 2: Complete the BMP-specific applicability checklists on the following pages and attach them to this form. Complete forms for all BMPs, including those that were used and those that were not used.

Step 3: Summarize the BMP(s) that were selected through the guidance process (Select all that apply):

BMP Type	Applicable?	Used?	Summary of justification for Inclusion or Finding of Non-applicability
Vegetated Swales	☐	☐	SMYTHE AVE. TOO STEEP (7-8%) AVAILABLE WIDTH < 5.0'
Sidewalk Planters	☐	☐	SMYTHE AVE. TOO STEEP (7-8%)
Curb Extensions	☐	☐	SMYTHE AVE TOO STEEP (7-8%) CONFLICTS WITH BIKE LANE.
Permeable Surfaces	☐	☐	SMYTHE AVE. TOO STEEP (7-8%) HIGH TRAFFIC AREA
Green Gutters	☐	☐	SMYTHE AVE. TOO STEEP (7-8%)
Rain Gardens	☐	☐	SMYTHE AVE TOO STEEP (7-8%)
Trees	☒	☒	TREES INDEPENDENT OF STREET SLOPE. PARKWAY WIDTH AVAILABLE FOR SELECT
Other____________	☐	☐	SOIL FOR INFILTRATION

Form J-1 Page 2 of 8: Vegetated Swale

Brief Description: Vegetated Swales are shallow, open channels that are designed to remove storm water pollutants by physically straining/filtering runoff through vegetation in the channel.

Site Type (Check all that apply):	Street Type	Rating[12]	Present in Project?
	Residential Streets	◉	☐
	Commercial Street/ Business District	○	☐
	Collector Street	◉	☒
	Arterial and Boulevard	◉	☐
	Alleys	○	☐
	Parking Areas	◉	☐
Key Opportunities for Vegetated Swales (Check all that apply):	Parkway strips		☒
	Medians		☐
	Long, mostly continuous space		☒
	Other (must justify below)		☐
Site-Specific Factors (Check all that apply):	Favorable Conditions for Vegetated Swales		
	Slope > 1% and <3%		☐
	Conveying run-on to a site		☐
	Infiltration is partially feasible or not feasible		☐
	Long continuous segments available		☐
	More parkway width		☐
	Unfavorable Conditions for Vegetated Swales		
	Available width is < 8 feet		☐
	Frequent driveway interruption		☐
	ROW width too limited		☐

Summary of Findings:

Were Vegetated Swales determined to be applicable as part of the Green Streets BMP plan? ☐ Yes ☒ No	If yes, were they used? ☐ Yes ☒ No

Provide discussion/justifications for selections and decisions above:
SMYTHE AVE, STREET SLOPE IS 7-8% - TOO STEEP. AVAILABLE WIDTH < 5'.

---

12 ● High applicability within this category, however may still be limited by site-specific factors

◉ Generally applicable in this category; largely dependent on site-specific factors

○ Limited applicability within this category; may still be applicable in some cases; should be considered

Form J-1 Page 3 of 8: Sidewalk Planters

Brief Description: A planter imbedded in the sidewalk designed to manage storm water runoff from the adjacent roadway and sidewalk.

Site Type (Check all that apply):	Street Type	Rating	Present in Project?
	Residential Streets	◉	☐
	Commercial Street/ Business District	◉	☐
	Collector Street	●	☒
	Arterial and Boulevard	●	☐
	Alleys	○	☐
	Parking Areas	◉	☐
Key Opportunities for Sidewalk Planters (Check all that apply):	Parkway strips		☒
	Medians		☐
	Between driveways		☐
	Other (must justify below)		☐
Site-Specific Factors (Check all that apply):	Favorable Conditions for Sidewalk Planters		
	Slope <4%		☐
	Wide sidewalks		☐
	More parkway width		☒
	Unfavorable Conditions for Sidewalk Planters		
	Conflicts with car egress		☐
	ROW width too limited		☐

Summary of Findings:

Were Sidewalk Planters determined to be applicable as part of the Green Streets BMP plan? ☐ Yes ☒ No	If yes, were they used? ☐ Yes ☒ No

Provide discussion/justifications for selections and decisions above:

SMYTHE AVE TOO STEEP (7-8%)

Form J-1 Page 4 of 8: Curb Extensions

Brief Description: Curb extensions expand the edge of the sidewalk into the roadway or parking area and allow storm water runoff to collect and infiltrate through a detention area of porous media.			
Site Type (Check all that apply):	Street Type	Rating	Present in Project?
	Residential Streets	●	☐
	Commercial Street/ Business District	●	☐
	Collector Street	◉	☒
	Arterial and Boulevard	◉	☐
	Alleys	○	☐
	Parking Areas	◉	☐
Key Opportunities for Curb Extensions (Check all that apply):	Intersections		☐
	Parking area		☐
	Other (must justify below)		☐
Site-Specific Factors (Check all that apply):	Favorable Conditions for Curb Extensions		
	Slope <4%		☐
	Traffic calming needed		☐
	Unfavorable Conditions for Curb Extensions		
	Conflicts with bike lanes		☒
	Site distance issues at intersection		☐

Summary of Findings:

Were Curb Extensions determined to be applicable as part of the Green Streets BMP plan? ☐ Yes ☒ No	If yes, were they used? ☐ Yes ☒ No

Provide discussion/justifications for selections and decisions above:

SMYTHE AVE TOO STEEP (7-8%), CONFLICTS WITH BIKE LANE.

Form J-1 Page 5 of 8: Permeable Surfaces

<u>Brief Description</u>: Permeable surfaces are pavement that allows for percolation through void spaces into subsurface layers.

Site Type (Check all that apply):	Street Type	Rating	Present in Project?
	Residential Streets	●	☐
	Commercial Street/ Business District	●	☐
	Collector Street	◉	☒
	Arterial and Boulevard	◉	☐
	Alleys	●	☐
	Parking Areas	◉	☐
Key Opportunities for Permeable Surfaces (Check all that apply):	Sidewalks		☐
	Parking strips		☐
	Shoulders		☐
	Low traffic roadways		☐
	Other (must justify below)		☐
Site-Specific Factors (Check all that apply):	Favorable Conditions for Permeable Surfaces		
	Slope < 2-3%		☐
	Conveying limited run-on to a site		☐
	Low traffic area		☐
	Unfavorable Conditions for Permeable Surfaces		
	High traffic area		☒
	Run-on has high sediment load		☐

Summary of Findings:

Were Permeable Surfaces determined to be applicable as part of the Green Streets BMP plan?	If yes, were they used?
☐ Yes ☒ No	☐ Yes ☒ No

Provide discussion/justifications for selections and decisions above:

SMYTHE AVE TOO STEEP (7-8%), HIGH TRAFFIC AREA

Form J-1 Page 6 of 8: Green Gutters

Brief Description: Green Gutters are shallow and narrow strips of landscaping in a typical curb and gutter location with a lower elevation than the street gutter elevation to allow capture of storm water from the sidewalk and street.

Site Type (Check all that apply):	Street Type	Rating	Present in Project?
	Residential Streets	○	☐
	Commercial Street/ Business District	◉	☐
	Collector Street	●	☒
	Arterial and Boulevard	●	☐
	Alleys	◉	☐
	Parking Areas	○	☐
Key Opportunities for Green Gutters (Check all that apply):	Parkway strips		☑
	Medians		☐
	Long, mostly continuous space		☑
	Other (must justify below)		☐
Site-Specific Factors (Check all that apply):	Favorable Conditions for Green Gutters		
	Slope > 1% and <3%		☐
	Conveying run-on to a site		☐
	Infiltration is partially feasible or not feasible		☐
	Long continuous segments available		☑
	Narrower spaces (as little as 2 to 3 feet)		☑
	Unfavorable Conditions for Green Gutters		
	Frequent driveway interruption		☐
	ROW width too limited		☐

Summary of Findings:

Were Green Gutters determined to be applicable as part of the Green Streets BMP plan? ☐ Yes ☑ No	If yes, were they used? ☐ Yes ☑ No

Provide discussion/justifications for selections and decisions above:

SMYTHE AVE. TOO STEEP (7-8%)

Form J-1 Page 7 of 8: Rain Gardens

Brief Description: Rain Gardens are shallow detention basins with vegetation that temporarily store water to allow for infiltration of the stored volume.

Site Type (Check all that apply):	Street Type	Rating	Present in Project?
	Residential Streets	◉	☐
	Commercial Street/ Business District	◉	☐
	Collector Street	◉	☒
	Arterial and Boulevard	◉	☐
	Alleys	○	☐
	Parking Areas	●	☐
Key Opportunities for Rain Gardens (Check all that apply):	Irregularly shaped areas in ROW		☐
	Broad and flat areas		☐
	Other (must justify below)		☐
Site-Specific Factors (Check all that apply):	Favorable Conditions for Rain Gardens		
	Slope <2%		☐
	Infiltration is partially feasible or not feasible		☐
	Large area available		
	Unfavorable Conditions for Rain Gardens		
	Slope > 2%		☒
	ROW too limited		☐

Summary of Findings:

Were Rain Gardens determined to be applicable as part of the Green Streets BMP plan? ☐ Yes ☒ No	If yes, were they used? ☐ Yes ☒ No

Provide discussion/justifications for selections and decisions above:

SMYTHE AVE. TOO STEEP (7-8%.)

Form J-1 Page 8 of 8: Trees

Brief Description: Trees planted in the sidewalk right-of-way provide rainfall interception and infiltration benefits and typically supplements other storm water management tools.

Site Type (Check all that apply):	Street Type	Rating[1]	Present in Project?
	Residential Streets	●	☐
	Commercial Street/ Business District	◉	☐
	Collector Street	◉	☒
	Arterial and Boulevard	◉	☐
	Alleys	◉	☐
	Parking Areas	●	☐
Key Opportunities for Trees (Check all that apply):	Parkway strips		☒
	Medians		☐
	Irregularly shaped areas		☐
	Extra ROW on back side of sidewalk		☐
	Other (must justify below)		☐
Site-Specific Factors (Check all that apply):	Favorable Conditions for Trees		
	Located outside of clear zone		☒
	Infiltration is feasible		☒
	ROW not limiting		☒
	Unfavorable Conditions for Trees		
	Limited space for root growth		☐
	Clear zone issues		☐

Summary of Findings:

Were Trees determined to be applicable as part of the Green Streets BMP plan? ☒ Yes ☐ No	If yes, were they used? ☒ Yes ☐ No

Provide discussion/justifications for selections and decisions above:

DUE TO THE STEEP SLOPE OF SMYTHE AVE. TREES ARE THE ONLY VIABLE SOLUTION FOR INTERCEPTION OF RAINFALL. THE 15' PARKWAY GIVES PLANTER AREA ON BOTH SIDES OF THE NON-CONTIGUOUS SIDEWALK. THE SELECT MATERIAL SOIL VOLUME IS BASED ON THE MATURE TREE CANOPY SQUARE FOOTAGE.

ATTACHMENT 2
BACKUP FOR PDP HYDROMODIFICATION CONTROL MEASURES

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Project Name: **Pacifica Ridge**

Indicate which Items are Included:

Attachment Sequence	Contents	Checklist
Attachment 2a	Hydromodification Management Exhibit (Required)	☐ Included **See DMA Exhibit – Attachment 1A**
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 and Structural BMP Drawdown Calculations (Required) Overflow Design Summary for each structural BMP 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) **Not provided at Prelim Phase**	☐ Included ☑ Not required because BMPs will drain in less than 96 hours

Project Name: Pacifica Ridge

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 2B

Attachment 2D

BMP Sizing Spreadsheet V2.0

Project Name:	Pacifica Ridge
Project Applicant:	
Jurisdiction:	City SD
Parcel (APN):	
Hydrologic Unit:	Tijuana River
Rain Gauge:	Lindbergh
Total Project Area (sf):	135,080
Channel Susceptibility:	High

BMP Sizing Spreadsheet V2.0			
Project Name:	Pacifica Ridge	Hydrologic Unit:	Tijuana River
Project Applicant:		Rain Gauge:	Lindbergh
Jurisdiction:	City SD	Total Project Area:	135,080
Parcel (APN):		Low Flow Threshold:	0.1Q2
BMP Name:	HMP 1	BMP Type:	Cistern
BMP Native Soil Type:	D	BMP Infiltration Rate (in/hr):	0.024

Areas Draining to BMP						HMP Sizing Factors			Minimum BMP Size		
DMA Name	Area (sf)	Soil Type	Pre-project Slope	Post Project Surface Type	Runoff Factor (Table G.2-1)[1]	N/A	Cistern Volume	N/A	N/A	Cistern Volume (cf)	N/A
Street & Roofs	98,459	D	Steep	Impervious	1.0	N/A	0.16	N/A	N/A	15753	N/A
Landscape	36,621	D	Steep	Pervious	0.1	N/A	0.16	N/A	N/A	586	N/A
Total BMP Area	135,080										

Minimum BMP Size		16339	
Proposed BMP Size*		N/A	N/A
Minimum Cistern Depth		N/A	in
Maximum Cistern Depth		N/A	in
Selected Cistern Depth		66.00	in
Selected Cistern Volume		16500	cubic feet

Notes:

1. Runoff factors which are used for hydromodification management flow control (Table G.2-1) are different from the runoff factors used for pollutant control BMP sizing (Table B.1-1). Table references are taken from the San Diego Region Model BMP Design Manual, Febru

Describe the BMP's in sufficient detail in your PDP SWQMP to demonstrate the area, volume, and other criteria can be met within the constraints of the site.

BMP's must be adapted and applied to the conditions specific to the development project such as unstable slopes or the lack of available head.
Designated Staff have final review and approval authority over the project design.

This BMP Sizing Spreadsheet has been updated in conformance with the San Diego Region Model BMP Design Manual, February 2016. For questions or concerns please contact the jurisdiction in which your project is located.

BMP Sizing Spreadsheet V2.0			
Project Name:	Pacifica Ridge	Hydrologic Unit:	Tijuana River
Project Applicant:		Rain Gauge:	Lindbergh
Jurisdiction:	City SD	Total Project Area:	135,080
Parcel (APN):		Low Flow Threshold:	0.1Q2
BMP Name	HMP 1	BMP Type:	Cistern

DMA Name	Rain Gauge	Pre-developed Condition			Q_2 Sizing Factor	DMA Area (ac)	Orifice Flow - $\%Q_2$	Orifice Area
		Soil Type	Cover	Slope	(cfs/ac)		(cfs)	(in^2)
Street & Roofs	Lindbergh	D	Scrub	Moderate	0.104	2.260	0.024	**0.32**
Landscape	Lindbergh	D	Scrub	Moderate	0.104	0.841	0.009	**0.12**
			Scrub					
			Scrub					
			Scrub					
			Scrub					
			Scrub					
			Scrub					
			Scrub					
			Scrub					
			Scrub					
			Scrub					
			Scrub					
			Scrub					
			Scrub					

0.032	**0.44**	**0.75**
Tot. Allowable Orifice Flow (cfs)	**Tot. Allowable Orifice Area (in^2)**	**Max Orifice Diameter (in)**

0.035	**0.44**	**0.75**
Actual Orifice Flow (cfs)	Actual Orifice Area (in^2)	Selected Orifice Diameter (in)

Drawdown (Hrs)	provide hand calculation

ATTACHMENT 3
STRUCTURAL BMP MAINTENANCE INFORMATION

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Project Name: **Pacifica Ridge**

Indicate which Items are Included:

Attachment Sequence	Contents	Checklist
Attachment 3a	Structural BMP Maintenance Thresholds and Actions (Required)	☒ Included See Structural BMP Maintenance Information Checklist.
Attachment 3b	Maintenance Agreement (Form DS-3247) (when applicable)	○ Included ● Not Applicable

Project Name: Pacifica Ridge

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)
☐ When applicable, frequency of bioretention soil media replacement
☐ 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 must include a Storm Water Management and Discharge Control Maintenance Agreement (Form DS-3247). The following information must be included in the exhibits attached to the maintenance agreement:

☐ Vicinity map
☐ Site design BMPs for which DCV reduction is claimed for meeting the pollutant control obligations.
☐ BMP and HMP location and dimensions
☐ BMP and HMP specifications/cross section/model
☐ Maintenance recommendations and frequency
☐ LID features such as (permeable paver and LS location, dim, SF).

Attachment 3a

HMP Tank & Dry Well Screening Chamber

Table 7-4. Maintenance Indicators and Actions for Filtration BMPs

Typical Maintenance Indicator(s) for Filtration BMPs	Maintenance Actions
Accumulation of sediment, litter, or debris	Remove and properly dispose accumulated materials.
Obstructed inlet or outlet structure	Clear obstructions.
Clogged filter media	Remove and properly dispose filter media, and replace with fresh media.
Damage to components of the filtration system	Repair or replace as applicable.
Note: For proprietary media filters, refer to the manufacturer's maintenance guide.	

THE CITY OF SAN DIEGO

RECORDING REQUESTED BY:
THE CITY OF SAN DIEGO
AND WHEN RECORDED MAIL
Raintree Residential, LLC.
1855 Sorrento Valley Road, Ste.120
San Diego, CA 92121.

(THIS SPACE IS FOR THE RECORDER'S USE ONLY)

STORM WATER MANAGEMENT AND DISCHARGE CONTROL MAINTENANCE AGREEMENT

APPROVAL NUMBER:	ASSESSOR'S PARCEL NUMBER:	PROJECT NUMBER:
Click or tap here to enter text.	638-060-03, -04, -41	393812

This agreement is made by and between the City of San Diego, a municipal corporation [City] and
Raintree Residential, LLC

the owner or duly authorized representative of the owner [Property Owner] of property located at:
1879-2099 Smythe Avenue, San Diego, CA 92173
(PROPERTY ADDRESS)

and more particularly described as: All that portion of Parcels 1, 2 & 4 of the NW Quarter of the SW Quarter of Sec. 36, T-18-S, Range 2-W, San Bernardino Meridian, County of San Diego, State of California.
(LEGAL DESCRIPTION OF PROPERTY)

in the City of San Diego, County of San Diego, State of California.

Property Owner is required pursuant to the City of San Diego Municipal Code, Chapter 4, Article 3, Division 3, Chapter 14, Article 2, Division 2, and the Land Development Manual, Storm Water Standards to enter into a Storm Water Management and Discharge Control Maintenance Agreement [Maintenance Agreement] for the installation and maintenance of Permanent Storm Water Best Management Practices [Permanent Storm Water BMP's] prior to the issuance of construction permits. The Maintenance Agreement is intended to ensure the establishment and maintenance of Permanent Storm Water BMP's onsite, as described in the attached exhibit(s), the project's Storm Water Quality Management Plan [SWQMP] and Grading and/or Improvement Plan Drawing No(s), or Building Plan Project No(s): Click or tap here to enter text.

Property Owner wishes to obtain a building or engineering permit according to the Grading and/or Improvement Plan Drawing No(s) or Building Plan Project No(s): Click or tap here to enter text.

Continued on Page 2

NOW, THEREFORE, the parties agree as follows:

1. Property Owner shall have prepared, or if qualified, shall prepare an Operation and Maintenance Procedure [OMP] for Permanent Storm Water BMP's, satisfactory to the City, according to the attached exhibit(s), consistent with the Grading and/or Improvement Plan Drawing No(s), or Building Plan Project No(s):Click or tap here to enter text..
2. Property Owner shall install, maintain and repair or replace all Permanent Storm Water BMP's within their property, according to the OMP guidelines as described in the attached exhibit(s), the project's WQTR and Grading and/or Improvement Plan Drawing No(s), or Building Plan Project No(s)Click or tap here to enter text..
3. Property Owner shall maintain operation and maintenance records for at least five (5) years. These records shall be made available to the City for inspection upon request at any time.

This Maintenance Agreement shall commence upon execution of this document by all parties named hereon, and shall run with the land.

Executed by the City of San Diego and by Property Owner in San Diego, California.

See Attached Exhibits(s):Click or tap here to enter text.

(Owner Signature)

Click or tap here to enter text.
(Print Name and Title)

Click or tap here to enter text.
(Company/Organization Name)

Click or tap to enter a date.
(Date)

THE CITY OF SAN DIEGO

APPROVED:

(City Control engineer Signature

(Print Name)

(Date)

NOTE: ALL SIGNATURES MUST INCLUDE NOTARY ACKNOWLEDMENTS PER CIVIL CODE SEC. 1180 ET.SEQ

ATTACHMENT 4
COPY OF PLAN SHEETS SHOWING PERMANENT STORM WATER BMPS

See Attachment 1A

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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. Brochure photocopies are not allowed.

Plans Not Required for Preliminary Phase

See Attachment 1A & Attachment 2B

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ATTACHMENT 5
DRAINAGE REPORT

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September 24, 2017

PRELIMINARY DRAINAGE REPORT

FOR

PACIFICA RIDGE

City of San Diego
Project No. 393812
I.O. No. 2400523

PREPARED FOR:

PATHFINDER RAINTREE, LLC
11855 Sorrento Valley Road, Suite D
San Diego, CA 92121

SB&O INC.
PLANNING ENGINEERING SURVEYING

PREPARED BY:

3990 RUFFIN ROAD, SUITE 120

SAN DIEGO, CA 92123

858-560-1141

JOB NO. 71170.20

Allen L. Butcher, PE C 47107

REGISTERED PROFESSIONAL ENGINEER
ALLEN L. BUTCHER
No. 47107
CIVIL
STATE OF CALIFORNIA

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EXHIBITS

A. EXISTING CONDITION - RATIONAL METHOD CALCULATIONS
B. POST DEVELOPMENT RATIONAL METHOD CALCULATIONS
C. RATIONAL METHOD HYDROGRPAHS
D. BMP SIZING CALCULATIONS
E. DETENTION BASIN MODEL & DETENTION SUMMARY
F. INDIVIDUAL STORM ROUTING

DRAINAGE MAP – EXISTING....................MAP POCKET #1

DRAINAGE MAP – PROPOSED....................MAP POCKET #2

APPENDIX

SELECTED COUNTY OF SAN DIEGO HYDROLOGY MANUAL EXCERPTS
COUNTY OF SAN DIEGO – RATIONAL METHOD HYDROGRAPH PROCEDURE

SCOPE OF REPORT

The purpose of this preliminary drainage report is to document the site drainage conditions and provide estimates for the post development peak flow rates (100-year), and confirm that post development peak flow rates do not exceed predevelopment conditions. Detailed hydrology & hydraulic calculations, including curb inlet calculations, will be prepared as part of the final drainage study and private storm drain plans.

The project proposes a private storm drain system with curb inlets and area drains to provide drainage for the private driveways, residences, yards and landscaped areas. Runoff from the majority of the developed site will be intercepted and conveyed to the storm water treatment BMP and HMP management facilities near the Smythe Avenue project entry. The proposed HMP storage facility and control openings will also be used to provide attenuation of larger storm events.

Calculations related for treatment and HMP compliance are contained in a separate preliminary Storm Water Quality Management Plan (SWQMP) for the project.

The project is <u>not</u> required to obtain approvals form the RWQCB under the Federal Clean Water Act Section 401 or 401 permit.

Summary of Project Information

Item	Project Information			
Project Name	PACIFICA RIDGE RESIDENTIAL			
Application Number(s)	TBD			
Project Address	Smythe Avenue, San Diego CA 92173			
Assessor Parcel Number(s)	638-060-03,04 & 41			
Gross Project Area	4.35 ac			
Proposed Project Description and Land Use	Multi-Family Residential			
Project Disturbed Area	4.61			
Predevelopment Impervious Area	0.03			
Proposed Impervious Area	2.67			
Proposed Pervious Area	1.94			
Project Hydrologic Unit Watershed	Tijuana River Hydrologic Area (911.10)			
Project Hydrologic Soil Group	☐ A	☐ B	☐ C	☒ D
Number of Discharge Locations	4 existing		3 proposed	
Required to Implement HMP	☒ Yes		☐ No	
Applicant Contact	Allen L. Butcher, PE 858.560.1141 x102			

PROPOSED SITE DESCRIPTION

"Pacifica Ridge" is a residential development project in the San Ysidro community of the City of San Diego. The project is located east of Smythe Avenue, between West Foothill Road and Avenida De La Madrid. The site is located south of the SR-905 freeway, north of Beyer Blvd, between Interstate 5 & 805 freeways, approximately 1.5 miles north of the International Border Crossing. The project proposes 44 attached multifamily residential units (22-duplexes) on private driveways.

The project site is the hillside above Smythe Avenue cut slope. Due to the steep topography and the grade of street frontage (8%), access from Smythe will be near the northwest corner of the site to minimize the steepness of the entrance driveway and the grade differential from Smythe Avenue to the development envelope.

Site grading and development will maintain the general east to west drainage pattern, with discharge to Smythe Avenue. The development site runoff will be collected near the project entry by the storage vault (HMP & Detention Control), and then treated by a dry well infiltration facility.

The street widening of the Smythe frontage results in a large retaining wall with a manufactured slope up to the development envelope. A concrete brow ditch above the wall will intercept hillside runoff. This ditch flows southerly, and then discharges to the Smythe Avenue gutter at the southwest corner of the project via curb outlet.

A small portion of the site located north of the entry will discharge to Smythe Avenue via curb outlet upstream on an existing curb inlet, just north of the proposed entrance driveway. This portion of the site consists of a landscape slope above the retaining wall near the entrance driveway.

An emergency access will be provided by a connection to the Camino Del Progresso cul-de-sac, at the northeast corner of the project. A small portion of the driveway connection will drain to the gutter at the cul-de-sac. The remainder of the driveway runoff is directed back toward the site to the main detention facility.

Runoff from offsite properties to the site is negligible.

All of the project runoff eventually travels southerly to Beyer Blvd. Storm water is intercepted by a curb inlet located in the localized sump, approximately 300' east of the Smythe intersection. The storm drain system continues southerly under the trolley right-of-way (south of Beyer) toward the Tijuana River, approximately 1 ½ miles southwest of the site.

The development area is approximately 3.1 acres, corresponding to a High Density Residential (HDR per Table 3-1 "Runoff Coefficients for Urban Areas"). Based upon the calculations for the Water Quality Technical Report, the impervious ratio for the developed portion of the site is estimated at 70%, which is consistent with the density (65% to 80% range). The corresponding Runoff Coefficient is 0.75 (Approximately 73% imperviousness & Type "D" soil). See Runoff Coefficient for Urban Areas, Table 3-1 in the Appendix.

PROPOSED SITE DESCRIPTION

"Pacifica Ridge" is a residential development project in the San Ysidro community of the City of San Diego. The project is located east of Smythe Avenue, between West Foothill Road and Avenida De La Madrid. The site is located south of the SR-905 freeway, north of Beyer Blvd, between Interstate 5 & 805 freeways, approximately 1.5 miles north of the International Border Crossing. The project proposes 44 attached multifamily residential units (22-duplexes) on private driveways.

The project site is the hillside above Smythe Avenue cut slope. Due to the steep topography and the grade of street frontage (8%), access from Smythe will be near the northwest corner of the site to minimize the steepness of the entrance driveway and the grade differential from Smythe Avenue to the development envelope.

Site grading and development will maintain the general east to west drainage pattern, with discharge to Smythe Avenue. The development site runoff will be collected near the project entry by the storage vault (HMP & Detention Control), and then treated by a dry well infiltration facility.

The street widening of the Smythe frontage results in a large retaining wall with a manufactured slope up to the development envelope. A concrete brow ditch above the wall will intercept hillside runoff. This ditch flows southerly, and then discharges to the Smythe Avenue gutter at the southwest corner of the project via curb outlet.

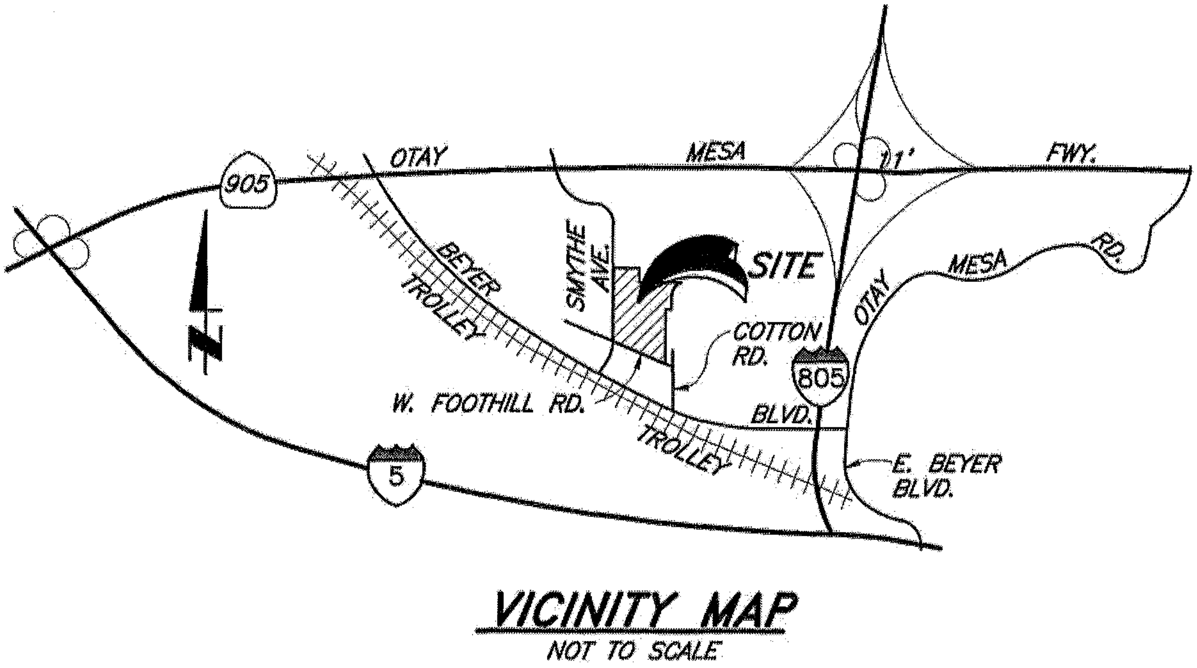
A small portion of the site located north of the entry will discharge to Smythe Avenue via curb outlet upstream on an existing curb inlet, just north of the proposed entrance driveway. This portion of the site consists of a landscape slope above the retaining wall near the entrance driveway.

An emergency access will be provided by a connection to the Camino Del Progresso cul-de-sac, at the northeast corner of the project. A small portion of the driveway connection will drain to the gutter at the cul-de-sac. The remainder of the driveway runoff is directed back toward the site to the main detention facility.

All of the project runoff eventually travels southerly to Beyer Blvd. Storm water is intercepted by a curb inlet located in the localized sump, approximately 300' east of the Smythe intersection. The storm drain system continues southerly under the trolley right-of-way (south of Beyer) toward the Tijuana River, approximately 1 ½ miles southwest of the site.

The development area is approximately 3.1 acres, corresponding to a High Density Residential (HDR per Table 3-1 "Runoff Coefficients for Urban Areas"). Based upon the calculations for the Water Quality Technical Report, the impervious ratio for the developed portion of the site is estimated at 70%, which is consistent with the density (65% to 80% range). The corresponding Runoff Coefficient is 0.75 (Approximately 73% imperviousness & Type "D" soil). See Runoff Coefficient for Urban Areas, Table 3-1 in the Appendix.

Vicinity Map



RATIONAL METHOD CALCULATIONS

As described in the pre-development narrative, portions of the existing site were previously graded, with concrete ditches installed above the large cut slopes. Overland flow lengths are generally short and intercepted by the concrete ditches. The site drainage is split among four (4) basins, with the majority of the runoff discharged to Smythe Avenue (Basin E-2).

Rainfall intensity of for a given return period storm (n-year) is calculated using the formula $I_{(n)} = 7.44\ P_6\ Tc^{-.645}$. Site specific rainfall totals are determined from the County 6-Hour and 24-Hour Isopluvial Maps, as follows:

Storm Event	6-Hour Rainfall (in)	24-Hour Rainfall (in)	Ratio P6/P24	Adjusted P6 (in)
2-Year	0.95	1.46	65%	0.95
5-Year	1.25	2.0	63%	1.25
10-Year	1.50	2.95	51%	1.50
25-Year	1.75	3.4	51%	1.75
50-Year	1.90	3.75	50%	1.90
100-Year	2.00	4.0	50%	2.00

Note: The ratio of P6/P24 must be greater than 0.45, and less than 0.65

In accordance with the County of San Diego Drainage Manual, the Rational Method was used to estimate peak flow rates for the current conditions using the following data;

Existing Condition Hydrology	
Basin E-2 (Smythe Ave Basin) (ac)	3.485
Overland Flow (ft.) (Limited by Table 3-1)	100
C factor	0.35
Slope (%)	9
Overland Flow Time To (min)	6.5*
Ditch Length (ft.)	433
Slope (%)	19
Velocity (fps)	16
Travel Time (min)	0.4
Time of Concentration (min)	6.9

* The maximum overland length and initial time of concentration are limited by Table 3-2.

In order to provide a fair comparison to post-development conditions, a drainage area equivalent to the development envelope to the detention tank (3.101 ac) was selected to compare pre vs post runoff. Consistent with the County of San Diego Rational Method Hydrograph procedure, the initial time of concentration for the existing condition was also rounded up to the nearest minute (7).

Existing Site – Peak Discharge for Comparison with Detention Outflows

Existing Site	Area (ac)	% Impervious	C Factor	Time of Concentration (min)	Rainfall Intensity (in/hr.)	Peak Flow (cfs)
Q2	3.101	1	.35	7	2.01	2.19
Q5	3.101	1	.35	7	2.65	2.88
Q10	3.101	1	.35	7	3.18	3.45
Q25	3.101	1	.35	7	3.71	4.03
Q50	3.101	1	.35	7	4.03	4.37
Q100	3.101	1	.35	7	4.24	4.60

Peak flow rates for the actual existing drainage areas are provided in Exhibit "A".

POST DEVELOPMENT DRAINAGE

As mentioned above, the existing site drainage is split among 4 basins with the majority directed toward the Smythe Avenue gutter.

The northwesterly portion of the existing site drains to the brow ditch located above the Smythe Ave cut slope. Runoff is collected by an inlet and conveyed to the curb inlet and storm drain system at the north property line on Smythe Avenue. The grading for the site entry includes a retaining wall along the northwest corner of the project. The drainage area above the wall will be collected and conveyed to a proposed curb outlet, upstream of the existing curb inlet.

NW Corner / Tributary to Existing Smythe Storm Drain		
Condition	(Area)	Hydrologic Condition
Existing Basin E-1	0.296	Moderate slope – minimal vegetation
Post Development Basin L1	0.087	2:1 slope wall backfill with vegetation
Change from Existing	-0.208	Transfer to Smythe Ave

The remainder of the Smythe frontage improvements and manufactured slope will be collected by the curb and gutter and conveyed southerly, similar to the existing condition.

Tributary to Smythe Gutter (Southwest)		
Condition	(Area)	Hydrologic Condition
Existing Basin E-2	3.485	Moderate Sloped w/ limited grasses + 1.5:1 cut slope without vegetation
Residential Development	3.101	Area to Detention Facility
Smythe Widening (M)	0.259	Paving & Parkway Landscaping
Smythe Slope (O, P	0.735	2:1 Slope w/vegetation
Post Development Total	4.059	
Change from Existing	+0.61	Shifted from Basin E-1, E-3 & E-4

Although the project will increase the drainage area tributary to the Smythe gutter by approx. 0.6 acres, peak flows will be mitigated by the detention basin and the HMP controls.

POST DEVELOPMENT HYDROLOGY

The post-development condition will route the majority of the development footprint to a curb inlet near the Smythe Avenue entry. A dry well with upstream storage (cistern) option will be used to address water quality treatment and hydromodification management impacts. The "cistern" will be an underground storage volume located behind the curb inlet (just upstream of the steep entrance driveway) which will restrict discharge to the dry well. Outflows from the cistern will be restricted by lower and upper orifice openings to limit flows between within the hydromodification range (10% of the 2-Year (Q2) up to the Q10). Larger storm events will be controlled by the remaining storage volume above the upper flow control orifice.

The time of concentration for the area tributary to the detention facility is the summation of overland flow, gutter flow, and pipe flow to the detention storage, detailed as follows.

Post Development Hydrology	
Tributary to Detention / Cistern (ac)	3.101
Overland Flow (ft.) (Limited by Table 3-2)	50
C factor	0.75
Slope (%)	2
Overland Flow Time To (min)	3.5
Gutter Length (ft.)	690
Gutter Slope (%)	2.5
Gutter Velocity (fps)	4.0
Gutter Travel Time Tg (min)	2.9
Pipe Length (ft.)	560
Pipe Slope (%)	10
Pipe Velocity (fps)	16.0
Travel Time Tp (min)	0.6
Time of Concentration (min)	7.0
100-year Intensity	4.24
Q100 (cfs)	10.39

Note: Includes flows from Basin "K" which will be pumped to the Detention facility.

RATIONAL METHOD HYDROGRAPHS

In order to model the effects of a cistern volume (detention), a runoff time series must be available. The County of San Diego Hydrology Manual includes a procedure to develop a time based runoff series. The methodology assumes a simple triangular hydrograph and uses the 6-hour rainfall total, and the Rational Method input variables. The methodology provides runoff values at time intervals equal to multiples of the time of concentration. Details related to the procedure to develop the hydrograph are provided in Chapter 6 of the County of San Diego Hydrology Manual (See Appendix).

Using a 7 minute time of concentration, the County methodology provides the following peak flow estimates;

Proposed Site – Tributary Area to Detention

Existing Site	Area (ac)	% Impervious	C Factor	Time of Concentration (min)	Rainfall Intensity (in/hr.)	Peak Flow (cfs)
Q2	3.101	70	.75	7	2.01	4.69
Q5	3.101	70	.75	7	2.65	6.17
Q10	3.101	70	.75	7	3.18	7.40
Q25	3.101	70	.75	7	3.71	8.63
Q50	3.101	70	.75	7	4.03	9.37
Q100	3.101	70	.75	7	4.24	9.86

The above drainage area data and peak flow rates are used to generate the time-series hydrograph for the individual storm return periods. Detailed Rational Method Hydrographs calculations and the individual time series are provided in Exhibit "C".

DETENTION MODEL

The proposed cistern is expected to be an underground modular plastic tanks system (Eco-Rain) with a level floor and vertical side and end walls. The storage volume and outlet controls were determined using the results from the BMP/HMP sizing spreadsheet (See Exhibit "D"). The proposed cistern will be 6.42 feet deep with a gross storage volume of 8,415 cubic feet. Low flow will be controlled by a 0.75" diameter opening at the bottom of the storage, with an upper flow weir (6" wide x 3" tall) located 3.5 feet above the floor.

An elevation-storage-discharge rating table was prepared using the incremental volume and control openings. Discharge values were estimated using standard weir and orifice flow equations. See Exhibit "E" for the Storage Indication Table.

Individual storm hydrographs were routed through the cistern model to verify post development discharge rates. A comparison of the range of storms is summarized as follows;

Site Cistern Detention Results – County Peak Flow Rates				
Frequency (year)	Pre-Development (cfs)	Post Development (cfs)	Cistern Outflow (cfs)	Max Depth (ft.)
2	2.19	4.69	0.03	2.9
5	2.88	6.17	0.14	3.7
10	3.45	7.40	0.44	4.0
25	4.03	8.63	0.65	4.5
50	4.37	9.37	0.75	4.8
100	4.60	9.86	0.81	5.0

A review of the peak flow rates indicates that the detention storage and control openings will attenuate the rational method hydrographs at or below pre-development levels for the entire range of design storm events.

The maximum storage depth is estimated at 5.0 feet, which is well below the top of storage at 6.42 feet. Since the cistern is an underground storage system, rather than an open pond, drain time calculation were not performed.

A summary of the Detention Routings along with the individual storm simulations are provided in Exhibit E.

CONCLUSION

Site discharge will substantially consistent with the existing conditions. Based upon the comparison of peak flow rates and storm level routing, the proposed on-site detention facilities are expected to mitigate increases in storm water peak flows to levels at or below existing conditions.

EXHIBIT A

EXISTING CONDITION
RATIONAL METHOD CALCULATIONS

Pacifica Ridge Preliminary Design 21-Sep-2017

Rational Method - County of San Diego 6 hr Storm

Existing **E-1**

A = 0.296 ac
Lo = 100 ft
C = 0.35 Table 3-1
S = 5 %
Ti = 7.9 min
Lg = 130 ft
Sg = 8%
Vg 10
Tg = 0.2 min
Lp = 60 ft
Sp = 0.2 %
Vp 17 fps
Tp = 0.1 min
Tc= 8.2 min
I100= 3.84 in/hr
Q100= 0.40 cfs

Existing **E-2**

A = 3.485 ac
Lo = 100 ft
C = 0.35 Table 3-1
S = 9 %
Ti = 6.5 min
Lg = 433 ft
Sg = 19%
Vg 16
Tg = 0.4 min
Lp = 0 ft
Sp = 0.0 %
Vp 0 fps
Tp = 0.0 min
Tc= 6.9 min
I100= 4.27 in/hr
Q100= 5.20 cfs

Existing **E-3**

A = 0.097 ac
Lo = 100 ft
C = 0.35 Table 3-1
S = 10 %
Ti = 6.3 min
Lg = 0 ft
Sg = 0.0 %
Vg 0
Tg = 0.0 min
Lp = 0.0 ft
Sp = 0.0 %
Vp 0 fps
Tp = 0.0 min
Tc= 6.3 min
I100= 4.56 in/hr
Q100= 0.15 cfs

Existing **E-4**

A = 0.471 ac
Lo = 100 ft
C = 0.35 Table 3-1
S = 5 %
Ti = 7.9 min
Lg = 0 ft
Sg = 0.0 %
Vg 0
Tg = 0.0 min
Lp = 0.0 ft
Sp = 0.0 %
Vp 0 fps
Tp = 0.0 min
Tc= 7.9 min
I100= 3.92 in/hr
Q100= 0.65 cfs

Composite Runoff - Existing Site Exist E-1

A= 4.35 ac
C= 0.35
I100= 3.84 in/hr
Q100= 5.85 cfs

Tc = 8.2 min

Pacifica Ridge

Preliminary Design

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Rational Method - County of San Diego

Adjusted E-2 for Detention

100 Year			**50** Year			25 Year		
P6=	2.00	in	P6=	1.90	in		1.75	in
P24=	4.00	in	P24=	3.75	in		3.40	in
P6/P24=	50%		P6/P24=	51%			51%	
P6 (Adj)	2.0	in	P6 (Adj)	1.9	in		1.8	in
Tc=	7.0	min	Tc=	7.0	min		7.0	min
I100 =	4.24	in/hr	I100 =	4.03	in/hr		3.71	in/hr
Area	3.101	ac	Area	3.101	ac		3.101	ac
C =	0.35	(Type D)	C =	0.35	(Type D)		0.35	(Type D)
Q100 =	4.60	cfs	Q50 =	4.37	cfs	Q25=	4.03	cfs

Rational Method - County of San Diego

6 hr Storm

10 Year			5 Year			2 Year		
	1.50	in		1.25	in		0.95	in
	2.95	in		2.00	in		1.46	in
	51%			63%			65%	
	1.5	in		1.25	in		0.95	in
	7.0	min		7.0	min		7.0	min
	3.18	in/hr		2.65	in/hr		2.01	in/hr
	3.101	ac		3.101	ac		3.101	ac
	0.35	(Type D)		0.35	(Type D)		0.35	(Type D)
Q10=	3.45	cfs	Q5 =	2.88	cfs	Q2 =	2.19	cfs

EXHIBIT B

POST DEVELOPMENT CONDITION
RATIONAL METHOD CALCULATIONS

Exhibit A

Pacifica Ridge Preliminary Design 24-Sep-2017

Rational Method - County of San Diego 6 hr Storm Site

	100 Year	10 Year	2 Year
P6=	2.00 in	1.50 in	0.95 in
P24=	4.00 in	2.95 in	1.46 in
P6/P24	50%	51%	65%
P6 (Adj	2.0 in	1.5 in	0.95 in
Tc=	7.0	7.0	7.0
I100 =	4.24	3.18	2.01
Area	3.101	3.101	3.101
C =	0.75	0.75	0.75

Q100 = 9.86 cfs Q10= 7.40 cfs Q2 = 4.69 cfs

Site **DMA 1 & 1A**

A = 3.101 ac
Lo = 50 ft
C = 0.75 Table 3-1 HDR
S = 2 %
Ti = 3.5 min
Lg = 690 ft
Sg = 2.5%
Vg 4.00
Tg = 2.9 min
Lp = 560 ft
Sp = 10% %
Vp 16 fps
Tp = 0.6 min
Tc= 7.0 min
I100= 4.24 in/hr
Q100= 9.86 cfs

EXHIBIT C

RATIONAL METHOD HYDROGRAPHS
Post Development 2-100 Year

Pacifica Ridge Preliminary Design 24-Sep-2017

Site

Area	3.10	ac	Type "D"	P6	0.95	in	P24	1.46
C	0.75		0%	Storm	2	year		
Tc=	7.0							
Tc=	7	minutes		I2=	2.01	in/hr	7.44 P6 Tc ^-0.645	
Q2 =	4.69	cfs		Vol	8,020			
					8,171			
N=	51	Precipitation Blocks			151		1.58	
					1.88%		3.18	

Qn = 60 C A Pn/Tc

Pt(n) = 0.124 P6 (n Tc)^0.355 240

Pn = Pt(n) - Pt(n-1)

Pacifica Ridge

Post Development Hydrographs - 6 Hour Rational Method

N	Pt(n)	Pn	Q(n)	Q(n)
1	0.24	0.24	4.69	4.69
2	0.30	0.07	1.31	1.31
3	0.35	0.05	0.93	0.93
4	0.38	0.04	0.74	0.74
5	0.42	0.03	0.63	0.63
6	0.44	0.03	0.55	0.55
7	0.47	0.02	0.50	0.50
8	0.49	0.02	0.45	0.45
9	0.51	0.02	0.42	0.42
10	0.53	0.02	0.39	0.39
11	0.55	0.02	0.37	0.37
12	0.57	0.02	0.34	0.34
13	0.58	0.02	0.33	0.33
14	0.60	0.02	0.31	0.31
15	0.61	0.01	0.30	0.30
16	0.63	0.01	0.28	0.28
17	0.64	0.01	0.27	0.27
18	0.66	0.01	0.26	0.26
19	0.67	0.01	0.25	0.25
20	0.68	0.01	0.24	0.24
21	0.69	0.01	0.24	0.24
22	0.70	0.01	0.23	0.23
23	0.72	0.01	0.22	0.22
24	0.73	0.01	0.22	0.22
25	0.74	0.01	0.21	0.21
26	0.75	0.01	0.21	0.21
27	0.76	0.01	0.20	0.20
28	0.77	0.01	0.20	0.20
29	0.78	0.01	0.19	0.19
30	0.79	0.01	0.19	0.19
31	0.80	0.01	0.18	0.18
32	0.80	0.01	0.18	0.18
33	0.81	0.01	0.18	0.18
34	0.82	0.01	0.17	0.17
35	0.83	0.01	0.17	0.17
36	0.84	0.01	0.17	0.17
37	0.85	0.01	0.16	0.16
38	0.86	0.01	0.16	0.16
39	0.86	0.01	0.16	0.16
40	0.87	0.01	0.16	0.16
41	0.88	0.01	0.15	0.15
42	0.89	0.01	0.15	0.15
43	0.89	0.01	0.15	0.15
44	0.90	0.01	0.15	0.15
45	0.91	0.01	0.14	0.14
46	0.92	0.01	0.14	0.14
47	0.92	0.01	0.14	0.14
48	0.93	0.01	0.14	0.14
49	0.94	0.01	0.14	0.14
50	0.94	0.01	0.13	0.13
51	0.95	0.01	0.13	0.13
52	0.96	0.01	0.13	0.00

N	Time (min)	Time (hrs)	Qn (cfs)
1	247	4.12	4.69
2	240	4.00	1.31
3	233	3.88	0.93
5	226	3.77	0.63
6	219	3.65	0.55
8	212	3.53	0.45
9	205	3.42	0.42
11	198	3.30	0.37
12	191	3.18	0.34
14	184	3.07	0.31
15	177	2.95	0.30
17	170	2.83	0.27
18	163	2.72	0.26
20	156	2.60	0.24
21	149	2.48	0.24
23	142	2.37	0.22
24	135	2.25	0.22
26	128	2.13	0.21
27	121	2.02	0.20
29	114	1.90	0.19
30	107	1.78	0.19
32	100	1.67	0.18
33	93	1.55	0.18
35	86	1.43	0.17
36	79	1.32	0.17
38	72	1.20	0.16
39	65	1.08	0.16
41	58	0.97	0.15
42	51	0.85	0.15
44	44	0.73	0.15
45	37	0.62	0.14
47	30	0.50	0.14
48	23	0.38	0.14
50	16	0.27	0.13
51	9	0.15	0.13
4	254	4.23	0.74
7	261	4.35	0.50
10	268	4.47	0.39
13	275	4.58	0.33
16	282	4.70	0.28
19	289	4.82	0.25
22	296	4.93	0.23
25	303	5.05	0.21
28	310	5.17	0.20
31	317	5.28	0.18
34	324	5.40	0.17
37	331	5.52	0.16
40	338	5.63	0.16
43	345	5.75	0.15
46	352	5.87	0.14
49	359	5.98	0.14
52	366	6.10	0.00

Pacifica Ridge

Preliminary Design

24-Sep-2017

Post Development Hydrographs - 6 Hour Rational Method

							Intensity	2.01	2.65	3.18	3.71	4.03	4.24
							Ratio X/2		1.32	1.58	1.84	2.00	2.11
							P6	0.95	1.25	1.50	1.75	1.90	2.00
					4.69		Pre-Deve	2.19	2.88	3.45	4.03	4.37	4.60
							Peak	4.69	6.17	7.40	8.63	9.37	9.86
					2 Year		Return /Year	**2**	**5**	**10**	**25**	**50**	**100**
N	Time (hrs)	Qn (cfs)	Time (min)	Time (hrs)	Qn (cfs)	Vol (cf)	Time (hrs)	Q(n)	Q(n)	Q(n)	Q(n)	Q(n)	Q(n)
51	7	0.133	0	0.00	0.000	0	0.00						
50	14	0.134	7	0.12	0.133	14	0.12	0.13	0.17	0.21	0.24	0.27	0.28
48	21	0.138	14	0.23	0.134	56	0.23	0.13	0.18	0.21	0.25	0.27	0.28
47	28	0.140	21	0.35	0.138	57	0.35	0.14	0.18	0.22	0.25	0.28	0.29
45	35	0.144	28	0.47	0.140	58	0.47	0.14	0.18	0.22	0.26	0.28	0.29
44	42	0.146	35	0.58	0.144	60	0.58	0.14	0.19	0.23	0.26	0.29	0.30
42	49	0.150	42	0.70	0.146	61	0.70	0.15	0.19	0.23	0.27	0.29	0.31
41	56	0.153	49	0.82	0.150	62	0.82	0.15	0.20	0.24	0.28	0.30	0.32
39	63	0.158	56	0.93	0.153	64	0.93	0.15	0.20	0.24	0.28	0.31	0.32
38	70	0.161	63	1.05	0.158	65	1.05	0.16	0.21	0.25	0.29	0.32	0.33
36	77	0.166	70	1.17	0.161	67	1.17	0.16	0.21	0.25	0.30	0.32	0.34
35	84	0.169	77	1.28	0.166	69	1.28	0.17	0.22	0.26	0.31	0.33	0.35
33	91	0.176	84	1.40	0.169	71	1.40	0.17	0.22	0.27	0.31	0.34	0.36
32	98	0.180	91	1.52	0.176	73	1.52	0.18	0.23	0.28	0.32	0.35	0.37
30	105	0.187	98	1.63	0.180	75	1.63	0.18	0.24	0.28	0.33	0.36	0.38
29	112	0.192	105	1.75	0.187	77	1.75	0.19	0.25	0.30	0.35	0.37	0.39
27	119	0.201	112	1.87	0.192	80	1.87	0.19	0.25	0.30	0.35	0.38	0.40
26	126	0.206	119	1.98	0.201	82	1.98	0.20	0.26	0.32	0.37	0.40	0.42
24	133	0.217	126	2.10	0.206	85	2.10	0.21	0.27	0.33	0.38	0.41	0.43
23	140	0.223	133	2.22	0.217	89	2.22	0.22	0.29	0.34	0.40	0.43	0.46
21	147	0.237	140	2.33	0.223	92	2.33	0.22	0.29	0.35	0.41	0.45	0.47
20	154	0.245	147	2.45	0.237	97	2.45	0.24	0.31	0.37	0.44	0.47	0.50
18	161	0.263	154	2.57	0.245	101	2.57	0.24	0.32	0.39	0.45	0.49	0.52
17	168	0.273	161	2.68	0.263	107	2.68	0.26	0.35	0.41	0.48	0.53	0.55
15	175	0.296	168	2.80	0.273	112	2.80	0.27	0.36	0.43	0.50	0.55	0.57
14	182	0.310	175	2.92	0.296	120	2.92	0.30	0.39	0.47	0.55	0.59	0.62
12	189	0.344	182	3.03	0.310	127	3.03	0.31	0.41	0.49	0.57	0.62	0.65
11	196	0.365	189	3.15	0.344	138	3.15	0.34	0.45	0.54	0.63	0.69	0.72
9	203	0.419	196	3.27	0.365	149	3.27	0.37	0.48	0.58	0.67	0.73	0.77
8	210	0.454	203	3.38	0.419	165	3.38	0.42	0.55	0.66	0.77	0.84	0.88
6	217	0.555	210	3.50	0.454	183	3.50	0.45	0.60	0.72	0.84	0.91	0.96
5	224	0.632	217	3.62	0.555	212	3.62	0.55	0.73	0.88	1.02	1.11	1.17
3	231	0.928	224	3.73	0.632	249	3.73	0.63	0.83	1.00	1.16	1.26	1.33
2	238	1.307	231	3.85	0.928	328	3.85	0.93	1.22	1.46	1.71	1.86	1.95
1	245	4.686	238	3.97	1.307	469	3.97	1.31	1.72	2.06	2.41	2.61	2.75
4	252	0.744	245	4.08	**4.686**	1,259	**4.08**	**4.69**	**6.17**	**7.40**	**8.63**	**9.37**	**9.86**
7	259	0.498	252	4.20	0.744	1,140	4.20	0.74	0.98	1.17	1.37	1.49	1.57
10	266	0.390	259	4.32	0.498	261	4.32	0.50	0.66	0.79	0.92	1.00	1.05
13	273	0.326	266	4.43	0.390	186	4.43	0.39	0.51	0.62	0.72	0.78	0.82
16	280	0.284	273	4.55	0.326	150	4.55	0.33	0.43	0.52	0.60	0.65	0.69
19	287	0.253	280	4.67	0.284	128	4.67	0.28	0.37	0.45	0.52	0.57	0.60
22	294	0.230	287	4.78	0.253	113	4.78	0.25	0.33	0.40	0.47	0.51	0.53
25	301	0.211	294	4.90	0.230	101	4.90	0.23	0.30	0.36	0.42	0.46	0.48
28	308	0.196	301	5.02	0.211	93	5.02	0.21	0.28	0.33	0.39	0.42	0.44
31	315	0.184	308	5.13	0.196	86	5.13	0.20	0.26	0.31	0.36	0.39	0.41
34	322	0.173	315	5.25	0.184	40	5.25	0.18	0.24	0.29	0.34	0.37	0.39
37	329	0.163	322	5.37	0.173	37	5.37	0.17	0.23	0.27	0.32	0.35	0.36
40	336	0.155	329	5.48	0.163	71	5.48	0.16	0.22	0.26	0.30	0.33	0.34
43	343	0.148	336	5.60	0.155	67	5.60	0.16	0.20	0.25	0.29	0.31	0.33
46	350	0.142	343	5.72	0.148	64	5.72	0.15	0.19	0.23	0.27	0.30	0.31
49	357	0.136	350	5.83	0.142	61	5.83	0.14	0.19	0.22	0.26	0.28	0.30
52	364	0.000	357	5.95	0.136	58	5.95	0.14	0.18	0.21	0.25	0.27	0.29
55	371	0.000	364	6.07	0.000	29	6.07	0.00	0.00	0.00	0.00	0.00	0.00

Pacifica Ridge
100 Year ~ 6 Hr Hydrograph - Rational Method

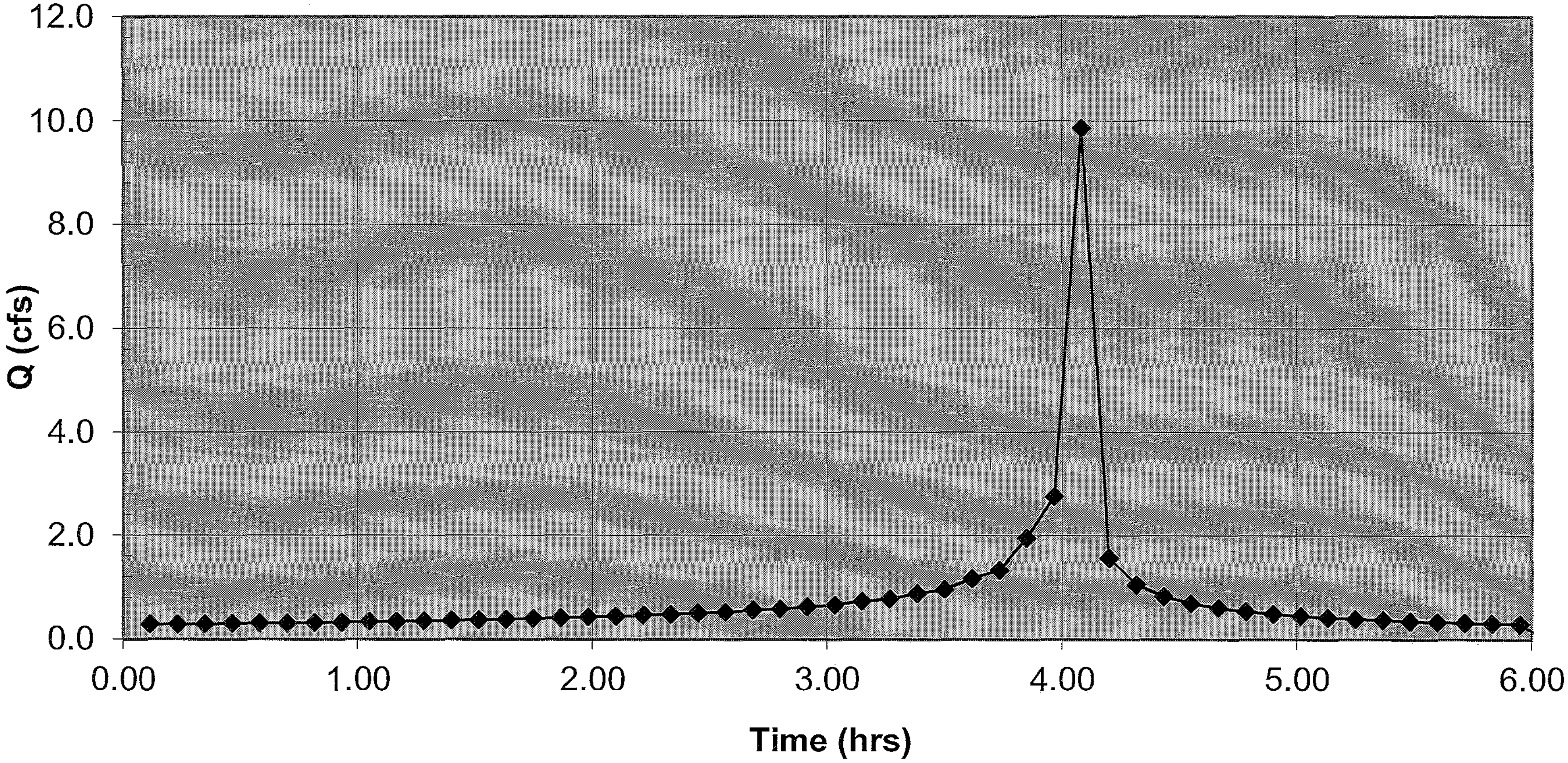


EXHIBIT D

BMP SIZING CALCULATIONS
Sizing Spreadsheet from SWQMP

Attachment 2D

BMP Sizing Spreadsheet V2.0

Project Name:	Pacifica Ridge
Project Applicant:	
Jurisdiction:	City SD
Parcel (APN):	
Hydrologic Unit:	Tijuana River
Rain Gauge:	Lindbergh
Total Project Area (sf):	135,080
Channel Susceptibility:	High

BMP Sizing Spreadsheet V2.0			
Project Name:	Pacifica Ridge	Hydrologic Unit:	Tijuana River
Project Applicant:		Rain Gauge:	Lindbergh
Jurisdiction:	City SD	Total Project Area:	135,080
Parcel (APN):		Low Flow Threshold:	0.1Q2
BMP Name:	HMP 1	BMP Type:	Cistern
BMP Native Soil Type:	D	BMP Infiltration Rate (in/hr):	0.024

Areas Draining to BMP						HMP Sizing Factors			Minimum BMP Size		
DMA Name	Area (sf)	Soil Type	Pre-project Slope	Post Project Surface Type	Runoff Factor (Table G.2-1)[1]	N/A	Cistern Volume	N/A	N/A	Cistern Volume (cf)	N/A
Street & Roofs	98,459	D	Steep	Impervious	1.0	N/A	0.16	N/A	N/A	15753	N/A
Landscape	36,621	D	Steep	Pervious	0.1	N/A	0.16	N/A	N/A	586	N/A
Total BMP Area	135,080										

Minimum BMP Size		16339	
Proposed BMP Size*		N/A	N/A

Minimum Cistern Depth	N/A	in
Maximum Cistern Depth	N/A	in
Selected Cistern Depth	66.00	in
Selected Cistern Volume	16500	cubic feet

Notes:

1. Runoff factors which are used for hydromodification management flow control (Table G.2-1) are different from the runoff factors used for pollutant control BMP sizing (Table B.1-1). Table references are taken from the San Diego Region Model BMP Design Manual, Febru

Describe the BMP's in sufficient detail in your PDP SWQMP to demonstrate the area, volume, and other criteria can be met within the constraints of the site.

BMP's must be adapted and applied to the conditions specific to the development project such as unstable slopes or the lack of available head.
Designated Staff have final review and approval authority over the project design.

This BMP Sizing Spreadsheet has been updated in conformance with the San Diego Region Model BMP Design Manual, February 2016. For questions or concerns please contact the jurisdiction in which your project is located.

BMP Sizing Spreadsheet V2.0			
Project Name:	Pacifica Ridge	Hydrologic Unit:	Tijuana River
Project Applicant:		Rain Gauge:	Lindbergh
Jurisdiction:	City SD	Total Project Area:	135,080
Parcel (APN):		Low Flow Threshold:	0.1Q2
BMP Name	HMP 1	BMP Type:	Cistern

DMA Name	Rain Gauge	Pre-developed Condition			Q_2 Sizing Factor	DMA Area (ac)	Orifice Flow - $\%Q_2$	Orifice Area
		Soil Type	Cover	Slope	(cfs/ac)		(cfs)	(in^2)
Street & Roofs	Lindbergh	D	Scrub	Moderate	0.104	2.260	0.024	**0.32**
Landscape	Lindbergh	D	Scrub	Moderate	0.104	0.841	0.009	**0.12**
			Scrub					
			Scrub					
			Scrub					
			Scrub					
			Scrub					
			Scrub					
			Scrub					
			Scrub					
			Scrub					
			Scrub					
			Scrub					
			Scrub					
			Scrub					

0.032	**0.44**	**0.75**
Tot. Allowable Orifice Flow (cfs)	**Tot. Allowable Orifice Area (in^2)**	**Max Orifice Diameter (in)**

0.035	**0.44**	**0.75**
Actual Orifice Flow (cfs)	Actual Orifice Area (in^2)	Selected Orifice Diameter (in)

Drawdown (Hrs)	[illegible]

EXHIBIT E

SITE DETENTION MODEL
SUMMARY OF DETENTION ROUTING

Pacifica Ridge

	0.00	0	cf		Lower	Upper	Overflow	
Top	6.50	16,577	cf	Width	Round	3	9	in
Storage @ Overflow	3.50	8,738	cf	Height	0.75	6	48	in
Basin Storage Volumes - Cistern	189.71%	dT=	7	Depth	0.00	3.50	6.00	ft

DEPTH (FT)	ELEVATION	AREA (SF)	Raw Storage (CF)	Water Quality (CF)	STORAGE (CF)	2S/dT (CFS)	2S/dT + O (CFS)	OUTFLOW (CFS)	#1 (CFS)	#2 (CFS)	#3 (CFS)	(CFS)
0.00	0.00	**2,570**	0	0	0	0.00	0.00	0.000	0.000			
0.10	0.10	2,570	257	0	257	1.22	1.23	0.007	0.007			
0.20	0.20	2,570	514	0	514	2.45	2.45	0.007	0.007			
0.30	0.30	2,570	771	0	771	3.67	3.68	0.008	0.008			
0.40	0.40	2,570	1,028	0	1,028	4.90	4.91	0.010	0.010			
0.50	0.50	2,570	1,285	0	1,285	6.12	6.13	0.011	0.011			
0.60	0.60	2,570	1,542	0	1,542	7.34	7.36	0.012	0.012			
0.70	0.70	2,570	1,799	0	1,799	8.57	8.58	0.013	0.013			
0.80	0.80	2,570	2,056	0	2,056	9.79	9.81	0.014	0.014			
0.90	0.90	2,570	2,313	0	2,313	11.01	11.03	0.015	0.015			
1.00	1.00	2,570	2,570	0	2,570	12.24	12.25	0.016	0.016			
1.10	1.10	2,570	2,827	0	2,827	13.46	13.48	0.017	0.017			
1.20	1.20	2,570	3,084	0	3,084	14.69	14.70	0.018	0.018			
1.30	1.30	2,570	3,341	0	3,341	15.91	15.93	0.018	0.018			
1.40	1.40	2,570	3,598	0	3,598	17.13	17.15	0.019	0.019			
1.50	1.50	2,570	3,855	0	3,855	18.36	18.38	0.020	0.020			
1.60	1.60	2,570	4,112	0	4,112	19.58	19.60	0.020	0.020			
1.70	1.70	2,570	4,369	0	4,369	20.81	20.83	0.021	0.021			
1.80	1.80	2,570	4,626	0	4,626	22.03	22.05	0.022	0.022			
1.90	1.90	2,570	4,883	0	4,883	23.25	23.28	0.022	0.022			
2.00	2.00	2,570	5,140	0	5,140	24.48	24.50	0.023	0.023			
2.10	2.10	2,570	5,397	0	5,397	25.70	25.72	0.023	0.023			
2.20	2.20	2,570	5,654	0	5,654	26.92	26.95	0.024	0.024			
2.30	2.30	2,570	5,911	0	5,911	28.15	28.17	0.024	0.024			
2.40	2.40	2,570	6,168	0	6,168	29.37	29.40	0.025	0.025			
2.50	2.50	2,570	6,425	0	6,425	30.60	30.62	0.026	0.026			
2.60	2.60	2,570	6,682	0	6,682	31.82	31.85	0.026	0.026			
2.70	2.70	2,570	6,939	0	6,939	33.04	33.07	0.027	0.027			
2.80	2.80	2,570	7,196	0	7,196	34.27	34.29	0.027	0.027			
2.90	2.90	2,570	7,453	0	7,453	35.49	35.52	0.028	0.028			
3.00	3.00	2,570	7,710	0	7,710	36.72	36.74	0.028	0.028			
3.10	3.10	2,570	7,967	0	7,967	37.94	37.97	0.028	0.028			
3.20	3.20	2,570	8,224	0	8,224	39.16	39.19	0.029	0.029			
3.30	3.30	2,570	8,481	0	8,481	40.39	40.42	0.029	0.029			
3.40	3.40	2,570	8,738	0	8,738	41.61	41.64	0.030	0.030			
3.50	**3.50**	**2,570**	**8,995**	**0**	**8,995**	**42.83**	**42.87**	**0.030**	**0.030**	0.00		
3.60	3.60	2,570	9,252	0	9,252	44.06	44.13	0.068	0.031	0.04		
3.70	3.70	2,570	9,509	0	9,509	45.28	45.42	0.136	0.031	0.11		
3.80	3.80	2,570	9,766	0	9,766	46.51	46.73	0.225	0.032	0.19		
3.90	3.90	2,570	10,023	0	10,023	47.73	48.06	0.330	0.032	0.30		
4.00	4.00	2,570	10,280	0	10,280	48.95	49.39	0.438	0.032	0.41		
4.10	4.10	2,570	10,537	0	10,537	50.18	50.67	0.489	0.033	0.46		
4.20	4.20	2,570	10,794	0	10,794	51.40	51.94	0.535	0.033	0.50		
4.30	4.30	2,570	11,051	0	11,051	52.63	53.20	0.577	0.034	0.54		
4.40	4.40	2,570	11,308	0	11,308	53.85	54.47	0.617	0.034	0.58		
4.50	4.50	2,570	11,565	0	11,565	55.07	55.73	0.653	0.034	0.62		
4.60	4.60	2,570	11,822	0	11,822	56.30	56.99	0.688	0.035	0.65		
4.70	4.70	2,570	12,079	0	12,079	57.52	58.24	0.721	0.035	0.69		
4.80	4.80	2,570	12,336	0	12,336	58.74	59.50	0.753	0.035	0.72		
4.90	4.90	2,570	12,593	0	12,593	59.97	60.75	0.783	0.036	0.75		
5.00	5.00	2,570	12,850	0	12,850	61.19	62.00	0.812	0.036	0.78		
5.10	5.10	2,570	13,107	0	13,107	62.42	63.26	0.840	0.037	0.80		
5.20	5.20	2,570	13,364	0	13,364	63.64	64.51	0.867	0.037	0.83		
5.30	5.30	2,570	13,621	0	13,621	64.86	65.76	0.894	0.037	0.86		
5.40	5.40	2,570	13,879	0	13,879	66.09	67.01	0.919	0.038	0.88		
5.50	5.50	2,570	14,136	0	14,136	67.31	68.26	0.944	0.038	0.91		
5.60	5.60	2,570	14,393	0	14,393	68.54	69.50	0.968	0.038	0.93		
5.70	5.70	2,570	14,650	0	14,650	69.76	70.75	0.992	0.039	0.95		
5.80	5.80	2,570	14,907	0	14,907	70.98	72.00	1.015	0.039	0.98		
5.90	5.90	2,570	15,164	0	15,164	72.21	73.24	1.037	0.039	1.00		
6.00	6.00	2,570	15,421	0	15,421	73.43	74.49	1.060	0.040	1.02	0.00	
6.10	6.10	2,570	15,678	0	15,678	74.66	76.03	1.379	0.040	1.04	0.30	
6.20	6.20	2,570	15,935	0	15,935	75.88	77.82	1.945	0.040	1.06	0.84	
6.30	6.30	2,570	16,192	0	16,192	77.10	79.77	2.672	0.041	1.08	1.55	
6.40	6.40	2,570	16,449	0	16,449	78.33	81.85	3.528	0.041	1.10	2.38	

Pacifica Ridge

Prelim Design 27-Sep-17

6-Hour Rational Method Hydrograph

Site	3.101 ac
	0
	0
Total Area	3.101 ac

		Elev	Storage (cf)	Storage (ac-ft)
Bottom of Storage - Cistern		0.00	0	0.00
Overflow	3.50	3.50	8,738	0.20
Top Of Tanks	6.50	6.50	16,577	0.38

Storm Frequency	Qexist (cfs)	Qin (cfs)	Qout (cfs)	Tank Depth	WSEL (ft)
2 YEAR	2.19	4.69	0.028	2.90	2.90
5 YEAR	2.88	6.17	0.136	3.70	3.70
10 YEAR	3.45	7.40	0.438	4.00	4.00
25 YEAR	4.03	8.63	0.653	4.50	4.50
50 YEAR	4.37	9.37	0.753	4.80	4.80
100 YEAR	4.60	9.86	0.812	5.00	5.00

	Low Flow	Upper Flow	Overflow
Opening	#1	#2	#3
Elevation	0.00	3.50	6.00
Width (in)	0.75	6	48
Height (in)	0.75	3	9

EXHIBIT F

DETENTION ROUTING
INDIVIDUAL STORMS

DETENTION BASIN ROUTING

2.19

4.69

0.03

2 YEAR EVENT ~ 6 Hour STORM

7	Minutes					2.90
Interval	T (HRS)	Q IN (CFS)	2S/dT+O	2S/dT-O (CFS)	O (CFS)	Basin WSEL
1	0.12	0.133	0.00	0.00	0.00	0.00
2	0.23	0.134	0.27	0.27	0.00	0.00
3	0.35	0.138	0.54	0.54	0.00	0.00
4	0.47	0.140	0.82	0.82	0.00	0.00
5	0.58	0.144	1.10	1.10	0.00	0.00
6	0.70	0.146	1.39	1.38	0.01	0.10
7	0.82	0.150	1.67	1.66	0.01	0.10
8	0.93	0.153	1.96	1.95	0.01	0.10
9	1.05	0.158	2.26	2.25	0.01	0.10
10	1.17	0.161	2.56	2.55	0.01	0.20
11	1.28	0.166	2.88	2.86	0.01	0.20
12	1.40	0.169	3.20	3.19	0.01	0.20
13	1.52	0.176	3.53	3.52	0.01	0.20
14	1.63	0.180	3.87	3.86	0.01	0.30
15	1.75	0.187	4.22	4.21	0.01	0.30
16	1.87	0.192	4.59	4.57	0.01	0.30
17	1.98	0.201	4.96	4.94	0.01	0.40
18	2.10	0.206	5.35	5.33	0.01	0.40
19	2.22	0.217	5.75	5.73	0.01	0.40
20	2.33	0.223	6.17	6.15	0.01	0.50
21	2.45	0.237	6.61	6.59	0.01	0.50
22	2.57	0.245	7.07	7.05	0.01	0.50
23	2.68	0.263	7.56	7.53	0.01	0.60
24	2.80	0.273	8.07	8.04	0.01	0.60
25	2.92	0.296	8.61	8.59	0.01	0.70
26	3.03	0.310	9.19	9.17	0.01	0.70
27	3.15	0.344	9.82	9.79	0.01	0.80
28	3.27	0.365	10.50	10.47	0.01	0.80
29	3.38	0.419	11.26	11.23	0.02	0.90
30	3.50	0.454	12.10	12.07	0.02	0.90
31	3.62	0.555	13.08	13.05	0.02	1.00
32	3.73	0.632	14.23	14.20	0.02	1.10
33	3.85	0.928	15.76	15.72	0.02	1.20
34	3.97	1.307	17.96	17.92	0.02	1.40
35	4.08	4.686	23.91	23.87	0.02	1.90
36	4.20	0.744	29.30	29.25	0.02	2.30
37	4.32	0.498	30.49	30.44	0.02	2.40
38	4.43	0.390	31.33	31.28	0.03	2.50
39	4.55	0.326	31.99	31.94	0.03	2.60
40	4.67	0.284	32.55	32.50	0.03	2.60
41	4.78	0.253	33.04	32.99	0.03	2.60
42	4.90	0.230	33.47	33.42	0.03	2.70
43	5.02	0.211	33.86	33.80	0.03	2.70
44	5.13	0.196	34.21	34.16	0.03	2.70
45	5.25	0.184	34.54	34.48	0.03	2.80
46	5.37	0.173	34.84	34.79	0.03	2.80
47	5.48	0.163	35.12	35.07	0.03	2.80
48	5.60	0.155	35.39	35.33	0.03	2.80
49	5.72	0.148	35.64	35.58	0.03	2.90
50	5.83	0.142	35.87	35.82	0.03	2.90
51	5.95	0.136	36.10	36.04	0.03	2.90
52	6.07	0.000	36.18	36.12	0.03	2.90

DETENTION BASIN ROUTING

2.88

6.17

0.14

5 YEAR EVENT ~ 6 Hour STORM

7	Minutes					3.70
Interval	T (HRS)	Q IN (CFS)	2S/dT+O	2S/dT-O (CFS)	O (CFS)	Basin WSEL
1	0.12	0.174	0.00	0.00	0.00	0.00
2	0.23	0.177	0.35	0.35	0.00	0.00
3	0.35	0.181	0.71	0.71	0.00	0.00
4	0.47	0.184	1.07	1.07	0.00	0.00
5	0.58	0.189	1.45	1.43	0.01	0.10
6	0.70	0.192	1.82	1.80	0.01	0.10
7	0.82	0.198	2.19	2.18	0.01	0.10
8	0.93	0.201	2.58	2.56	0.01	0.20
9	1.05	0.208	2.97	2.96	0.01	0.20
10	1.17	0.211	3.38	3.36	0.01	0.20
11	1.28	0.219	3.79	3.78	0.01	0.30
12	1.40	0.223	4.22	4.20	0.01	0.30
13	1.52	0.232	4.66	4.64	0.01	0.30
14	1.63	0.236	5.11	5.09	0.01	0.40
15	1.75	0.247	5.57	5.55	0.01	0.40
16	1.87	0.252	6.05	6.03	0.01	0.40
17	1.98	0.264	6.55	6.53	0.01	0.50
18	2.10	0.271	7.06	7.04	0.01	0.50
19	2.22	0.286	7.60	7.57	0.01	0.60
20	2.33	0.294	8.15	8.13	0.01	0.60
21	2.45	0.312	8.73	8.71	0.01	0.70
22	2.57	0.322	9.34	9.31	0.01	0.70
23	2.68	0.346	9.98	9.95	0.01	0.80
24	2.80	0.359	10.66	10.63	0.01	0.80
25	2.92	0.390	11.38	11.35	0.02	0.90
26	3.03	0.409	12.15	12.12	0.02	0.90
27	3.15	0.453	12.98	12.95	0.02	1.00
28	3.27	0.480	13.88	13.85	0.02	1.10
29	3.38	0.551	14.88	14.84	0.02	1.20
30	3.50	0.597	15.99	15.95	0.02	1.30
31	3.62	0.730	17.28	17.24	0.02	1.40
32	3.73	0.831	18.80	18.76	0.02	1.50
33	3.85	1.221	20.82	20.78	0.02	1.60
34	3.97	1.720	23.72	23.67	0.02	1.90
35	4.08	6.165	31.56	31.51	0.03	2.50
36	4.20	0.979	38.65	38.59	0.03	3.10
37	4.32	0.655	40.23	40.17	0.03	3.20
38	4.43	0.513	41.34	41.28	0.03	3.30
39	4.55	0.429	42.22	42.16	0.03	3.40
40	4.67	0.374	42.96	42.90	0.03	3.50
41	4.78	0.333	43.61	43.55	0.03	3.50
42	4.90	0.303	44.19	44.05	0.07	3.60
43	5.02	0.278	44.63	44.50	0.07	3.60
44	5.13	0.258	45.03	44.90	0.07	3.60
45	5.25	0.241	45.40	45.26	0.07	3.60
46	5.37	0.227	45.73	45.46	0.14	3.70
47	5.48	0.215	45.90	45.62	0.14	3.70
48	5.60	0.204	46.04	45.77	0.14	3.70
49	5.72	0.195	46.17	45.90	0.14	3.70
50	5.83	0.187	46.28	46.01	0.14	3.70
51	5.95	0.179	46.37	46.10	0.14	3.70
52	6.07	0.000	46.28	46.00	0.14	3.70

DETENTION BASIN ROUTING

3.45

Qin 7.40

0.44

10 YEAR EVENT ~ 6 Hour STORM

7 Minutes

4.00

Interval	T (HRS)	Q IN (CFS)	2S/dT+O	2S/dT-O (CFS)	O (CFS)	Basin WSEL
1	0.12	0.209	0.00	0.00	0.000	0.00
2	0.23	0.212	0.42	0.42	0.000	0.00
3	0.35	0.218	0.85	0.85	0.000	0.00
4	0.47	0.221	1.29	1.28	0.007	0.10
5	0.58	0.227	1.72	1.71	0.007	0.10
6	0.70	0.230	2.17	2.15	0.007	0.10
7	0.82	0.238	2.62	2.61	0.007	0.20
8	0.93	0.241	3.09	3.07	0.007	0.20
9	1.05	0.249	3.56	3.55	0.007	0.20
10	1.17	0.254	4.05	4.04	0.008	0.30
11	1.28	0.263	4.55	4.54	0.008	0.30
12	1.40	0.268	5.07	5.05	0.010	0.40
13	1.52	0.278	5.59	5.57	0.010	0.40
14	1.63	0.284	6.13	6.11	0.011	0.50
15	1.75	0.296	6.69	6.67	0.011	0.50
16	1.87	0.303	7.27	7.25	0.011	0.50
17	1.98	0.317	7.87	7.84	0.012	0.60
18	2.10	0.325	8.48	8.46	0.012	0.60
19	2.22	0.343	9.13	9.10	0.013	0.70
20	2.33	0.353	9.80	9.77	0.013	0.70
21	2.45	0.374	10.50	10.47	0.014	0.80
22	2.57	0.387	11.23	11.20	0.015	0.90
23	2.68	0.415	12.00	11.97	0.015	0.90
24	2.80	0.431	12.82	12.78	0.016	1.00
25	2.92	0.468	13.68	13.65	0.017	1.10
26	3.03	0.490	14.61	14.57	0.017	1.10
27	3.15	0.544	15.61	15.57	0.018	1.20
28	3.27	0.577	16.69	16.66	0.018	1.30
29	3.38	0.661	17.89	17.86	0.019	1.40
30	3.50	0.717	19.23	19.19	0.020	1.50
31	3.62	0.876	20.79	20.75	0.020	1.60
32	3.73	0.998	22.62	22.58	0.022	1.80
33	3.85	1.465	25.04	24.99	0.023	2.00
34	3.97	2.064	28.52	28.47	0.024	2.30
35	4.08	7.398	37.94	37.88	0.028	3.00
36	4.20	1.175	46.45	46.18	0.136	3.70
37	4.32	0.786	48.14	47.48	0.330	3.90
38	4.43	0.615	48.88	48.22	0.330	3.90
39	4.55	0.515	49.35	48.69	0.330	3.90
40	4.67	0.448	49.66	48.78	0.438	4.00
41	4.78	0.400	49.63	48.75	0.438	4.00
42	4.90	0.363	49.52	48.64	0.438	4.00
43	5.02	0.334	49.34	48.68	0.330	3.90
44	5.13	0.310	49.32	48.66	0.330	3.90
45	5.25	0.290	49.26	48.60	0.330	3.90
46	5.37	0.273	49.17	48.51	0.330	3.90
47	5.48	0.258	49.04	48.38	0.330	3.90
48	5.60	0.245	48.88	48.22	0.330	3.90
49	5.72	0.234	48.70	48.04	0.330	3.90
50	5.83	0.224	48.50	47.84	0.330	3.90
51	5.95	0.215	48.28	47.62	0.330	3.90
52	6.07	0.000	47.83	47.38	0.225	3.80

DETENTION BASIN ROUTING

4.03

8.63

0.65

25 YEAR EVENT ~ 6 Hour STORM

7 Min

4.50

Interval	T (HRS)	Q IN (CFS)	2S/dT+O	2S/dT-O (CFS)	O (CFS)	Basin WSEL
1	0.12	0.244	0.00	0.00	0.00	0.00
2	0.23	0.247	0.49	0.49	0.00	0.00
3	0.35	0.254	0.99	0.99	0.00	0.00
4	0.47	0.258	1.50	1.49	0.01	0.10
5	0.58	0.265	2.01	2.00	0.01	0.10
6	0.70	0.269	2.53	2.52	0.01	0.20
7	0.82	0.277	3.07	3.05	0.01	0.20
8	0.93	0.282	3.61	3.60	0.01	0.20
9	1.05	0.291	4.17	4.15	0.01	0.30
10	1.17	0.296	4.74	4.72	0.01	0.30
11	1.28	0.307	5.33	5.31	0.01	0.40
12	1.40	0.312	5.92	5.90	0.01	0.40
13	1.52	0.324	6.54	6.52	0.01	0.50
14	1.63	0.331	7.17	7.15	0.01	0.50
15	1.75	0.345	7.83	7.80	0.01	0.60
16	1.87	0.353	8.50	8.48	0.01	0.60
17	1.98	0.370	9.20	9.18	0.01	0.70
18	2.10	0.379	9.92	9.90	0.01	0.80
19	2.22	0.400	10.68	10.65	0.01	0.80
20	2.33	0.411	11.46	11.43	0.02	0.90
21	2.45	0.437	12.28	12.24	0.02	1.00
22	2.57	0.451	13.13	13.10	0.02	1.00
23	2.68	0.484	14.03	14.00	0.02	1.10
24	2.80	0.502	14.99	14.95	0.02	1.20
25	2.92	0.546	16.00	15.96	0.02	1.30
26	3.03	0.572	17.08	17.05	0.02	1.30
27	3.15	0.634	18.25	18.21	0.02	1.40
28	3.27	0.673	19.52	19.48	0.02	1.50
29	3.38	0.771	20.93	20.88	0.02	1.70
30	3.50	0.836	22.49	22.45	0.02	1.80
31	3.62	1.022	24.31	24.26	0.02	1.90
32	3.73	1.164	26.45	26.40	0.02	2.10
33	3.85	1.709	29.27	29.22	0.02	2.30
34	3.97	2.408	33.34	33.29	0.03	2.70
35	4.08	8.631	44.33	44.19	0.07	3.60
36	4.20	1.371	54.19	53.04	0.58	4.30
37	4.32	0.917	55.33	54.10	0.62	4.40
38	4.43	0.718	55.73	54.42	0.65	4.50
39	4.55	0.601	55.74	54.44	0.65	4.50
40	4.67	0.523	55.56	54.33	0.62	4.40
41	4.78	0.467	55.32	54.08	0.62	4.40
42	4.90	0.424	54.97	53.74	0.62	4.40
43	5.02	0.389	54.55	53.32	0.62	4.40
44	5.13	0.361	54.07	52.92	0.58	4.30
45	5.25	0.338	53.62	52.46	0.58	4.30
46	5.37	0.318	53.12	52.05	0.53	4.20
47	5.48	0.301	52.67	51.60	0.53	4.20
48	5.60	0.286	52.18	51.11	0.53	4.20
49	5.72	0.273	51.67	50.70	0.49	4.10
50	5.83	0.261	51.23	50.25	0.49	4.10
51	5.95	0.251	50.76	49.79	0.49	4.10
52	6.07	0.000	50.04	49.16	0.44	4.00

DETENTION BASIN ROUTING

4.37

9.37

0.75

50 YEAR EVENT ~ 6 Hour STORM

7 Minutes

4.80

Interval	T (HRS)	Q IN (CFS)	2S/dT+O	2S/dT-O (CFS)	O (CFS)
1	0.12	0.000	0.00	0.00	0.00
2	0.23	0.265	0.27	0.27	0.00
3	0.35	0.269	0.80	0.80	0.00
4	0.47	0.276	1.34	1.33	0.01
5	0.58	0.280	1.88	1.87	0.01
6	0.70	0.288	2.44	2.42	0.01
7	0.82	0.292	3.00	2.99	0.01
8	0.93	0.301	3.58	3.57	0.01
9	1.05	0.306	4.18	4.16	0.01
10	1.17	0.316	4.78	4.76	0.01
11	1.28	0.321	5.40	5.38	0.01
12	1.40	0.333	6.04	6.02	0.01
13	1.52	0.339	6.69	6.67	0.01
14	1.63	0.352	7.36	7.33	0.01
15	1.75	0.359	8.04	8.02	0.01
16	1.87	0.375	8.75	8.73	0.01
17	1.98	0.383	9.49	9.46	0.01
18	2.10	0.402	10.24	10.22	0.01
19	2.22	0.412	11.03	11.00	0.01
20	2.33	0.434	11.85	11.82	0.02
21	2.45	0.447	12.70	12.67	0.02
22	2.57	0.474	13.59	13.55	0.02
23	2.68	0.490	14.52	14.48	0.02
24	2.80	0.525	15.50	15.46	0.02
25	2.92	0.546	16.53	16.50	0.02
26	3.03	0.593	17.64	17.60	0.02
27	3.15	0.621	18.81	18.77	0.02
28	3.27	0.689	20.08	20.04	0.02
29	3.38	0.730	21.46	21.42	0.02
30	3.50	0.837	22.99	22.94	0.02
31	3.62	0.908	24.69	24.64	0.02
32	3.73	1.110	26.66	26.61	0.02
33	3.85	1.264	28.99	28.94	0.02
34	3.97	1.856	32.06	32.00	0.03
35	4.08	2.614	36.47	36.42	0.03
36	4.20	9.371	48.41	47.75	0.33
37	4.32	1.488	58.60	57.16	0.72
38	4.43	0.996	59.65	58.14	0.75
39	4.55	0.779	59.92	58.41	0.75
40	4.67	0.653	59.84	58.34	0.75
41	4.78	0.568	59.56	58.05	0.75
42	4.90	0.507	59.13	57.68	0.72
43	5.02	0.460	58.65	57.21	0.72
44	5.13	0.423	58.09	56.71	0.69
45	5.25	0.392	57.53	56.15	0.69
46	5.37	0.367	56.91	55.61	0.65
47	5.48	0.345	56.32	55.01	0.65
48	5.60	0.327	55.68	54.45	0.62
49	5.72	0.311	55.09	53.86	0.62
50	5.83	0.296	54.46	53.31	0.58
51	5.95	0.284	53.89	52.73	0.58
52	6.07	0.272	53.29	52.13	0.58

DETENTION BASIN ROUTING

4.60

9.86

0.81

100 YEAR EVENT ~ 6 Hour STORM

7 Min

5.00

Interval	T (HRS)	Q IN (CFS)	2S/dT+O	2S/dT-O (CFS)	O (CFS)	Basin WSEL
1	0.12	0.279	0.00	0.00	0.00	0.00
2	0.23	0.283	0.56	0.56	0.00	0.00
3	0.35	0.290	1.13	1.13	0.00	0.00
4	0.47	0.294	1.72	1.71	0.01	0.10
5	0.58	0.303	2.30	2.29	0.01	0.10
6	0.70	0.307	2.90	2.89	0.01	0.20
7	0.82	0.317	3.51	3.50	0.01	0.20
8	0.93	0.322	4.13	4.12	0.01	0.30
9	1.05	0.332	4.77	4.75	0.01	0.30
10	1.17	0.338	5.43	5.41	0.01	0.40
11	1.28	0.350	6.09	6.07	0.01	0.40
12	1.40	0.357	6.78	6.76	0.01	0.50
13	1.52	0.371	7.49	7.46	0.01	0.60
14	1.63	0.378	8.21	8.19	0.01	0.60
15	1.75	0.395	8.96	8.93	0.01	0.70
16	1.87	0.404	9.73	9.71	0.01	0.70
17	1.98	0.423	10.53	10.50	0.01	0.80
18	2.10	0.434	11.36	11.33	0.02	0.90
19	2.22	0.457	12.22	12.19	0.02	0.90
20	2.33	0.470	13.12	13.09	0.02	1.00
21	2.45	0.499	14.05	14.02	0.02	1.10
22	2.57	0.516	15.04	15.00	0.02	1.20
23	2.68	0.553	16.07	16.03	0.02	1.30
24	2.80	0.574	17.16	17.12	0.02	1.40
25	2.92	0.624	18.32	18.28	0.02	1.40
26	3.03	0.654	19.56	19.52	0.02	1.50
27	3.15	0.725	20.90	20.86	0.02	1.70
28	3.27	0.769	22.35	22.31	0.02	1.80
29	3.38	0.881	23.96	23.91	0.02	1.90
30	3.50	0.956	25.75	25.70	0.02	2.10
31	3.62	1.168	27.83	27.78	0.02	2.20
32	3.73	1.330	30.28	30.23	0.02	2.40
33	3.85	1.953	33.51	33.46	0.03	2.70
34	3.97	2.752	38.16	38.11	0.03	3.10
35	4.08	9.865	50.72	49.75	0.49	4.10
36	4.20	1.567	61.18	59.61	0.78	4.90
37	4.32	1.048	62.22	60.60	0.81	5.00
38	4.43	0.820	62.47	60.84	0.81	5.00
39	4.55	0.687	62.35	60.73	0.81	5.00
40	4.67	0.598	62.01	60.39	0.81	5.00
41	4.78	0.533	61.52	59.95	0.78	4.90
42	4.90	0.484	60.97	59.40	0.78	4.90
43	5.02	0.445	60.33	58.83	0.75	4.80
44	5.13	0.413	59.69	58.18	0.75	4.80
45	5.25	0.386	58.98	57.54	0.72	4.70
46	5.37	0.364	58.29	56.84	0.72	4.70
47	5.48	0.344	57.55	56.18	0.69	4.60
48	5.60	0.327	56.85	55.54	0.65	4.50
49	5.72	0.312	56.18	54.87	0.65	4.50
50	5.83	0.298	55.48	54.25	0.62	4.40
51	5.95	0.286	54.83	53.60	0.62	4.40
52	6.07	0.000	53.89	52.73	0.58	4.30

D:\71172 Smythe Ave\Reports\Drainage\Detention Tank 2017 0711 XL

100x6

APPENDIX

SELECTED HYDROLOGY MANUAL EXCERPTS

COUNTY OF SAN DIEGO RATIONAL METHOD
CHAPTER 6 RATIONAL METHOD HYDROGRAPHS

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

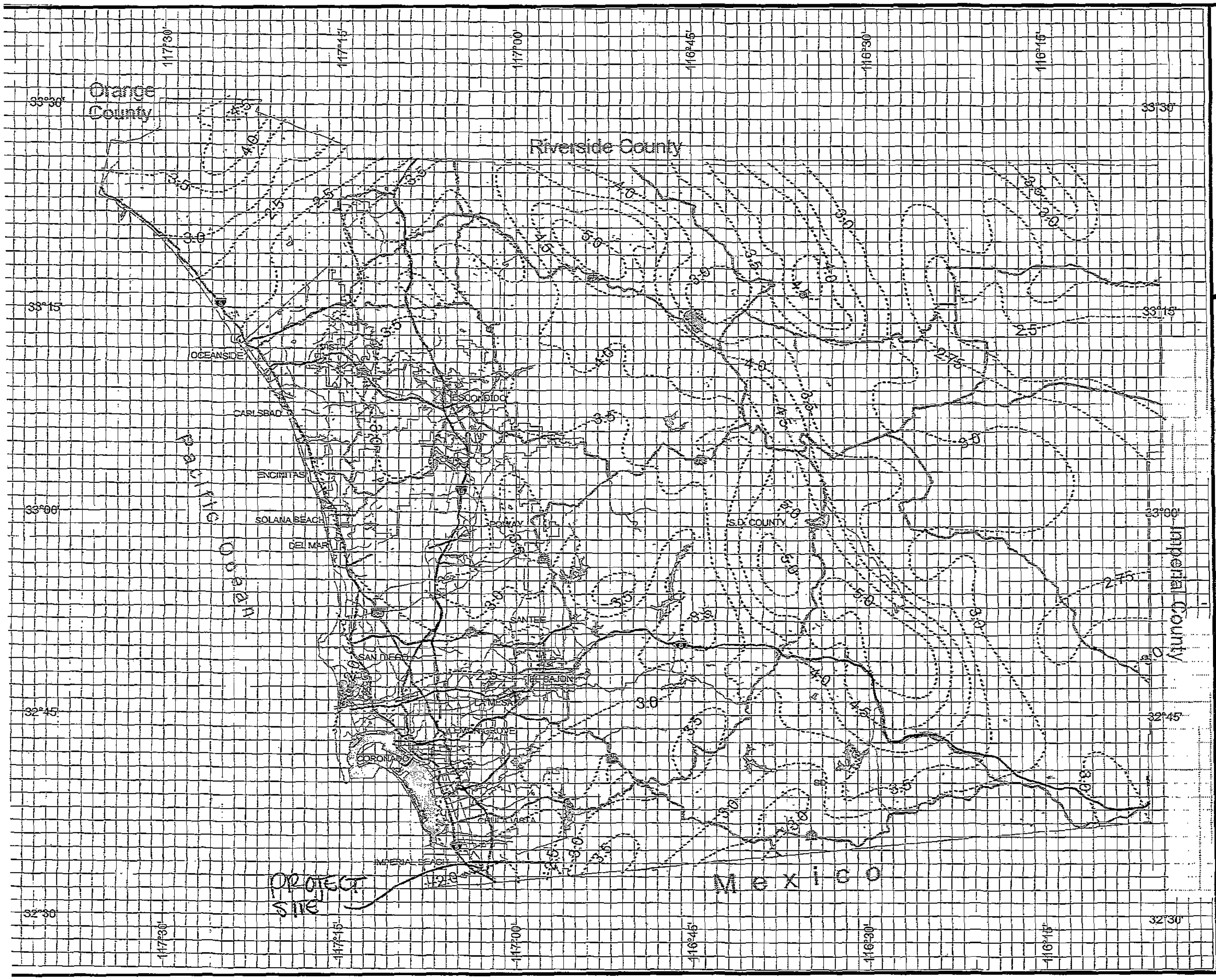
USE FOR SLOPES TOO

0.75 Used

*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



County of San Diego Hydrology Manual

Rainfall Isopluvials

100 Year Rainfall Event - 6 Hours

------- Isopluvial (inches)

$P_6 = 2.0$

15.5

DPW GIS

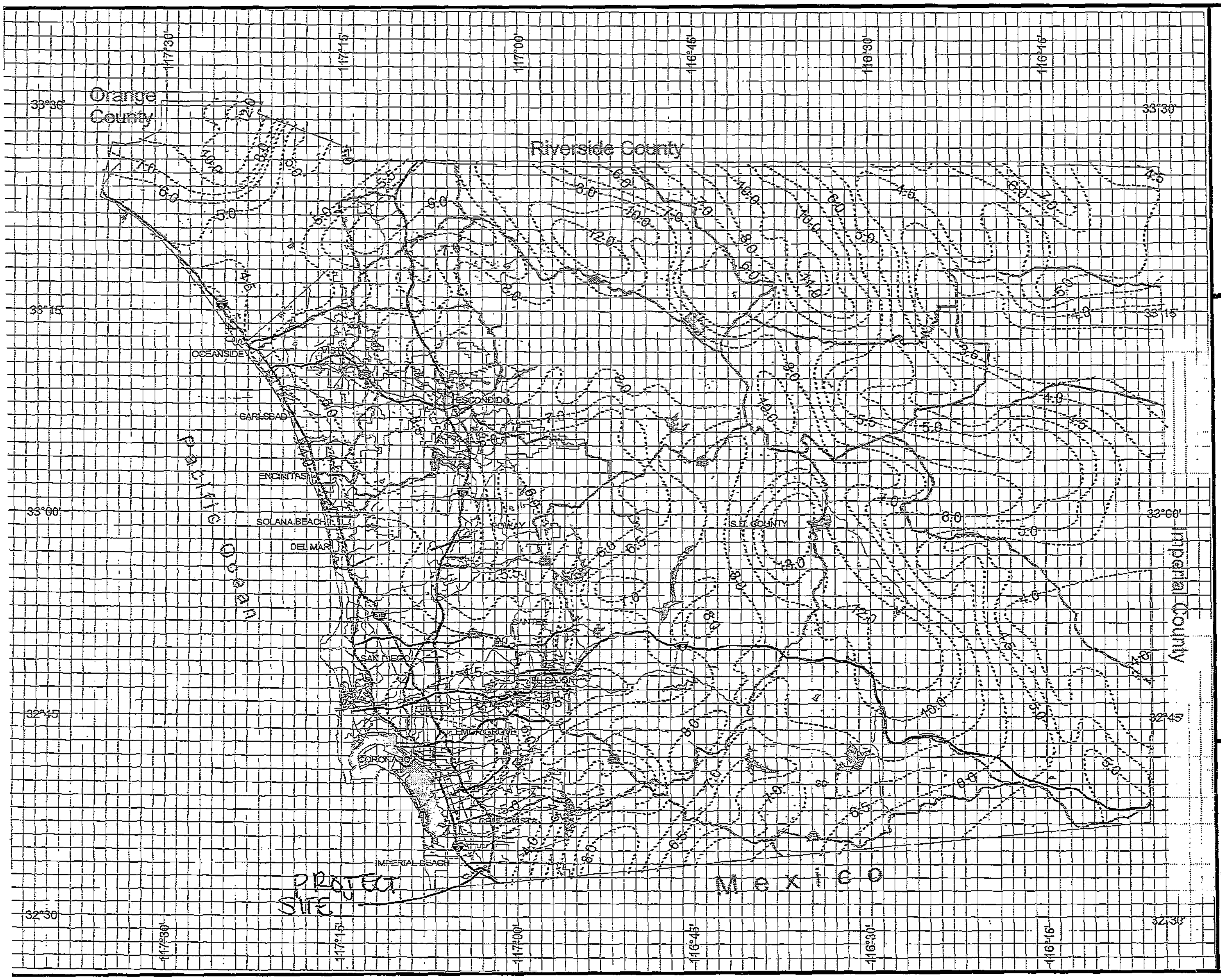
SanGIS

We Have San Diego Covered

N S W E

3 0 3 Miles

71170-60



County of San Diego
Hydrology Manual

Rainfall Isopluvials

100 Year Rainfall Event - 24 Hours

------- Isopluvial (inches)

P_{24} = 4.0

DPW GIS

SanGIS

We Have San Diego Covered

N
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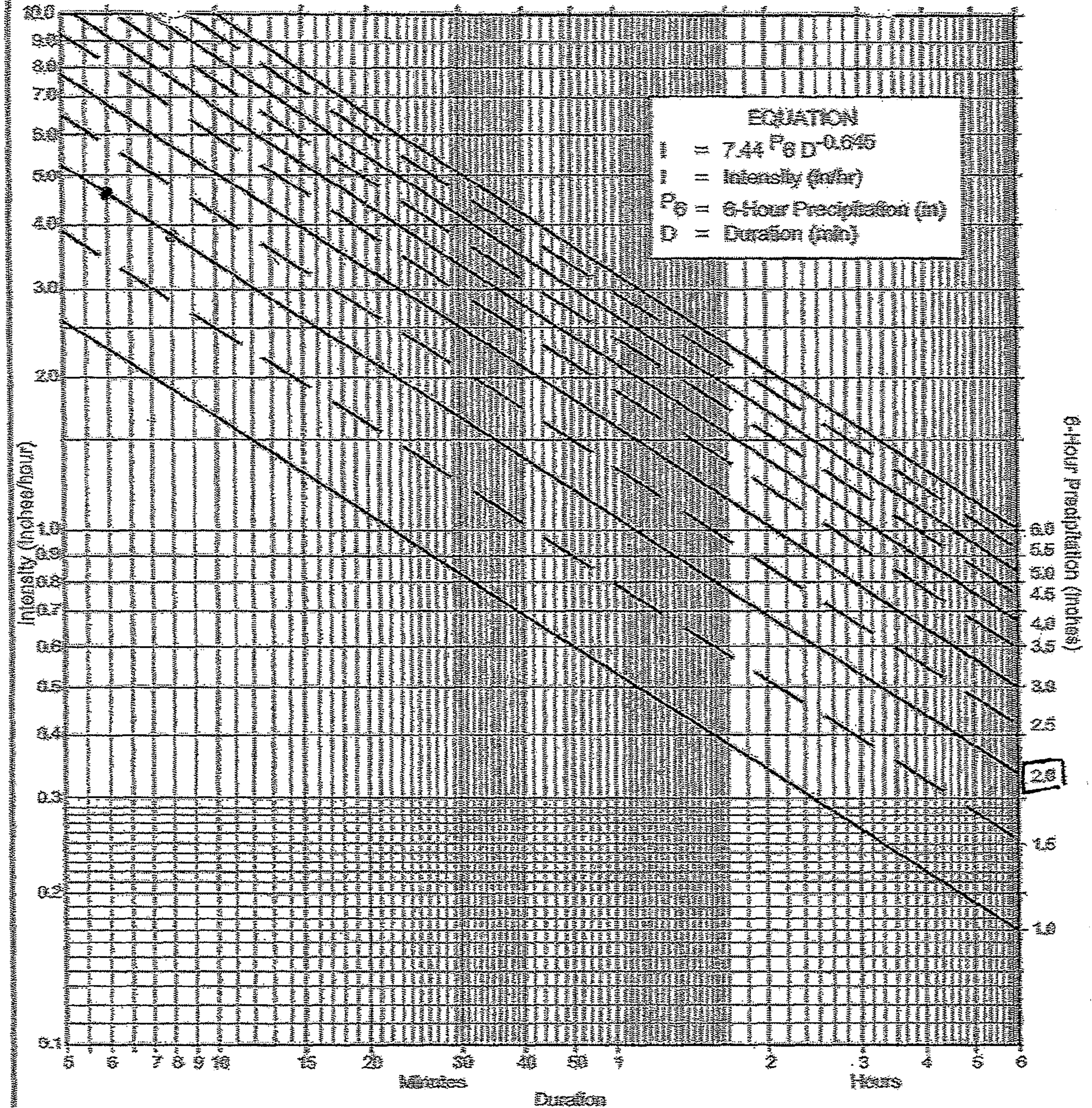


Directions for Application:

(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 applicaple 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 100 year

(b) P_6 = 2.0 in., P_{24} = 4.0, $\frac{P_6}{P_{24}}$ = 50 %(2)

(c) Adjusted P_6(2) = 2.0 in.

(d) t_x = 8.0 min.

(e) I = 3.89 in./hr.

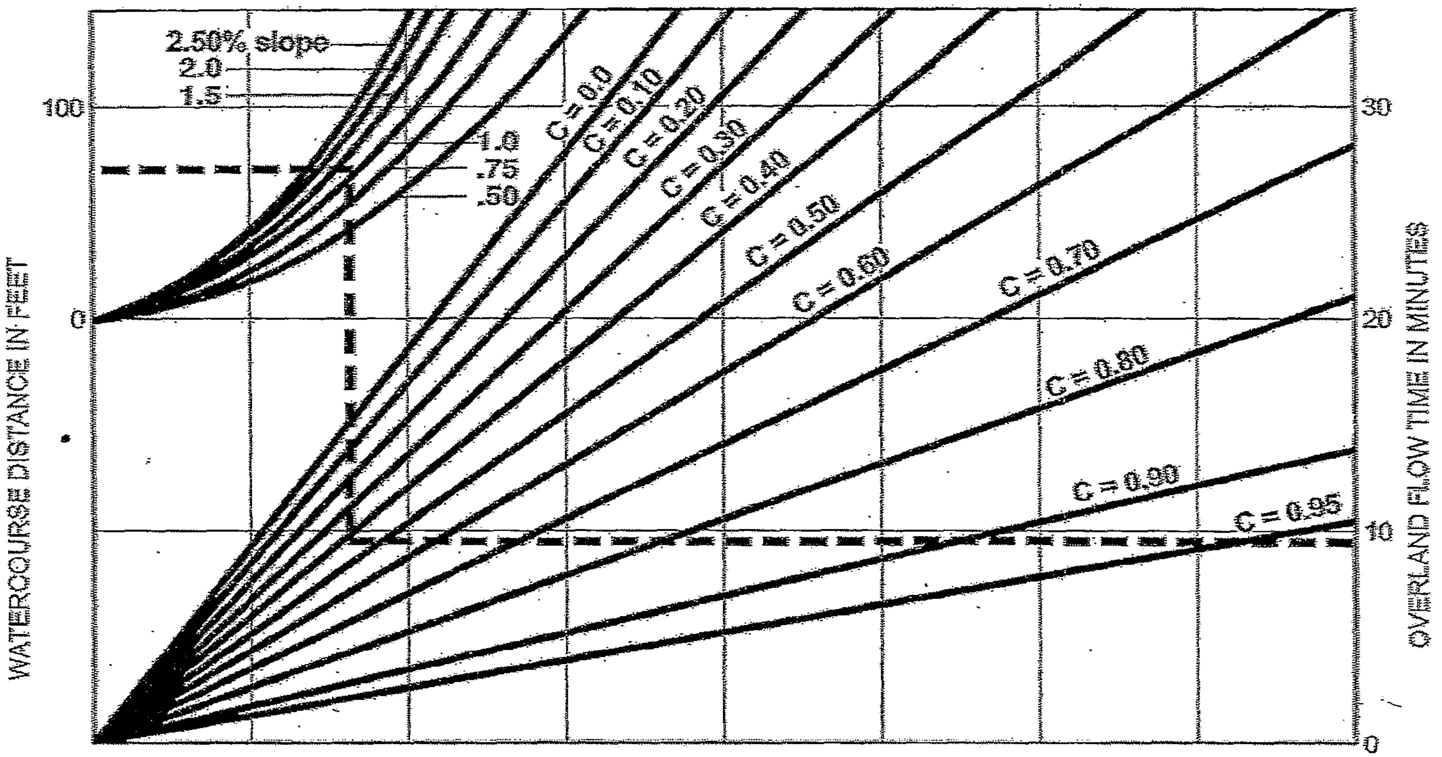
Note: This chart replaces the Intensity-Duration-Frequency curves used since 1965.

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



EXAMPLE:

Given: Watercourse Distance (D) = 70 Feet
Slope (s) = 1.3%
Runoff Coefficient (C) = 0.41
Overland Flow Time (T) = 9.5 Minutes

$$T = \frac{1.8\,(1.1-C)\sqrt{D}}{\sqrt[3]{s}}$$

SOURCE: Airport Drainage, Federal Aviation Administration, 1965

Rational Formula - Overland Time of Flow Nomograph

FIGURE

3-3

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

SECTION 6
RATIONAL METHOD HYDROGRAPH PROCEDURE

6.1 INTRODUCTION

The procedures in this section are for the development of hydrographs from RM study results for study areas up to approximately 1 square mile in size. The RM, discussed in Section 3, is a mathematical formula used to determine the maximum runoff rate from a given rainfall. It has particular application in urban storm drainage, where it is used to estimate peak runoff rates from small urban and rural watersheds for the design of storm drains and small drainage structures. However, in some instances such as for design of detention basins, the peak runoff rate is insufficient information for the design, and a hydrograph is needed. Unlike the NRCS hydrologic method (discussed in Section 4), the RM itself does not create hydrographs. The procedures for detention basin design based on RM study results were first developed as part of the East Otay Mesa Drainage Study. Rick Engineering Company performed this study under the direction of County Flood Control. The procedures in this section may be used for the development of hydrographs from RM study results for study areas up to approximately 1 square mile in size.

6.2 HYDROGRAPH DEVELOPMENT

The concept of this hydrograph procedure is based on the RM formula:

$$Q = C\ I\ A$$

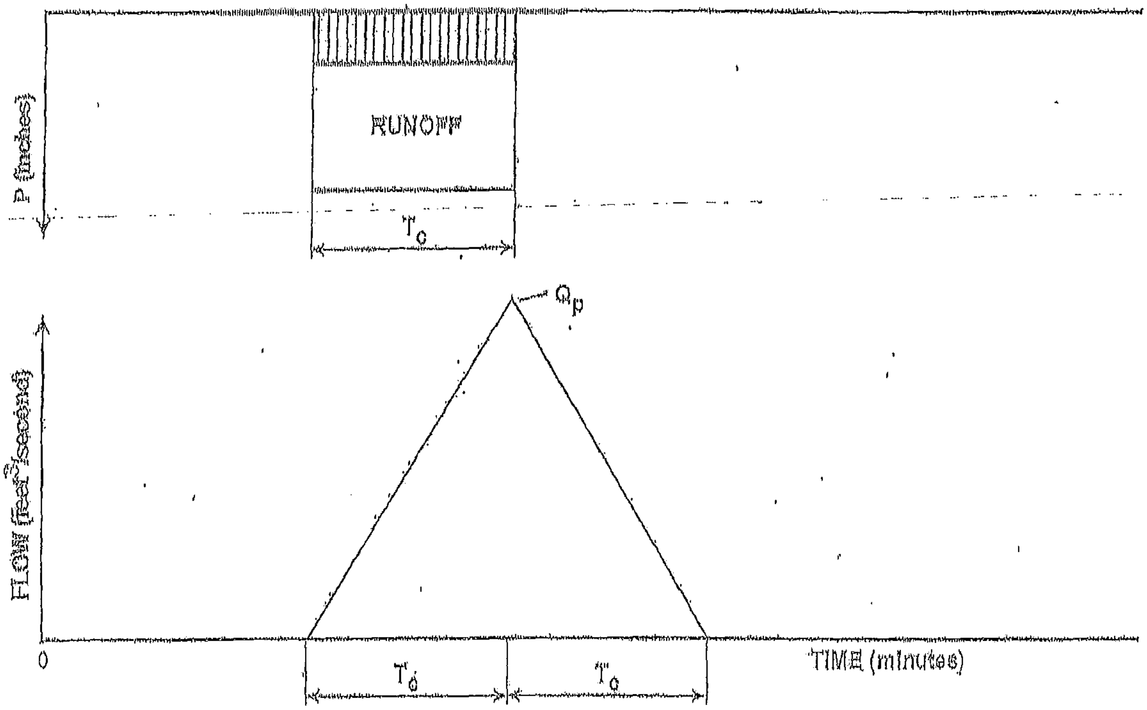
Where:
Q = peak discharge, in cubic feet per second (cfs)
C = runoff coefficient, proportion of the rainfall that runs off the surface (no units)
I = average rainfall intensity for a duration equal to the T_c for the area, in inches per hour
A = drainage area contributing to the design location, in acres

The RM formula is discussed in more detail in Section 3.

An assumption of the RM is that discharge increases linearly over the T_c for the drainage area until reaching the peak discharge as defined by the RM formula, and then decreases linearly. A linear hydrograph can be developed for the peak flow occurring over the T_c as shown in Figure 6-1. However, for designs that are dependent on the total storm volume, it is not sufficient to consider a single hydrograph for peak flow occurring over the T_c at the beginning of a 6-hour storm event because the hydrograph does not account for the entire volume of runoff from the storm event. The volume under the hydrograph shown in Figure 6-1 is equal to the rainfall intensity multiplied by the duration for which that intensity occurs (T_c), the drainage area (A) contributing to the design location, and the runoff coefficient (C) for the drainage area. For designs that are dependent on the total storm volume, a hydrograph must be generated to account for the entire volume of runoff from the 6-hour storm event. The hydrograph for the entire 6-hour storm event is generated by creating a rainfall distribution consisting of blocks of rain, creating an incremental hydrograph for each block of rain, and adding the hydrographs from each block of rain. This process creates a hydrograph that contains runoff from all the blocks of rain and accounts for the entire volume of runoff from the 6-hour storm event. The total volume under the resulting hydrograph is equal to the following equation:

$$VOL = CP_6A \qquad \text{(Eq. 6-1)}$$

Where: VOL = volume of runoff (acre-inches)
P_6 = 6-hour rainfall (inches)
C = runoff coefficient
A = area of the watershed (acres)



Triangular Hydrograph

FIGURE

6-1

6.2.1 Rainfall Distribution

Figure 6-2 shows a 6-hour rainfall distribution consisting of blocks of rain over increments of time equal to T_o. The number of blocks is determined by rounding T_o to the nearest whole number of minutes, dividing 360 minutes (6 hours) by T_o, and rounding again to the nearest whole number. The blocks are distributed using a (2/3, 1/3) distribution in which the peak rainfall block is placed at the 4-hour time within the 6-hour rainfall duration. The additional blocks are distributed in a sequence alternating two blocks to the left and one block to the right of the 4-hour time (see Figure 6-2). The total amount of rainfall ($P_{T(N)}$) for any given block (N) is determined as follows:

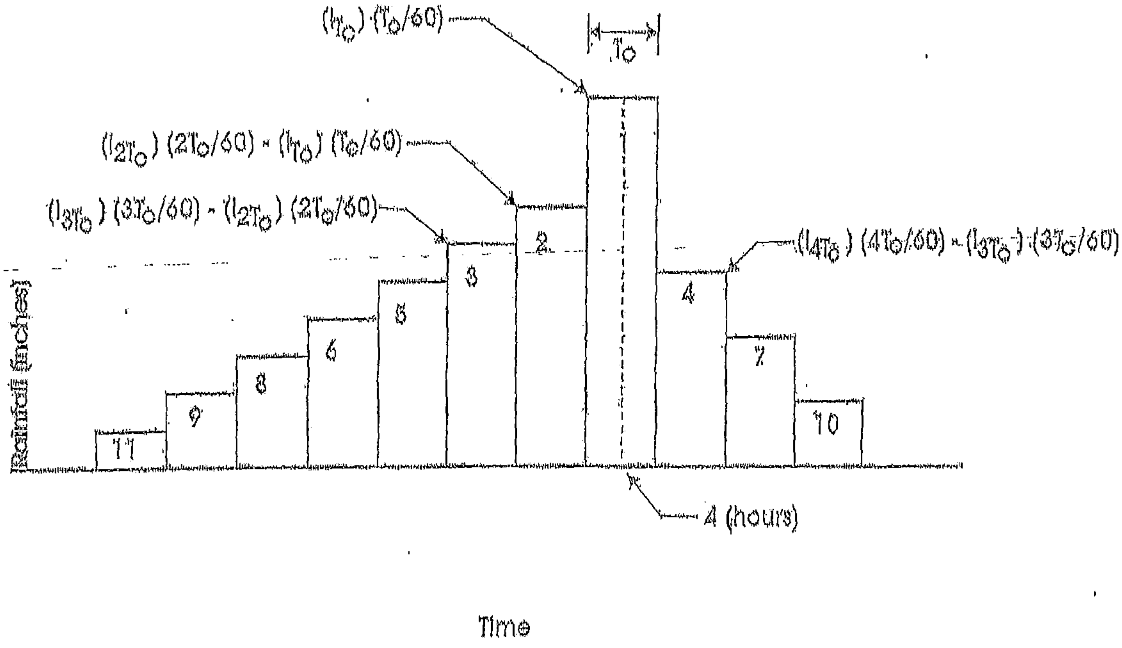
$$P_{T(N)} = (I_{T(N)}\, T_{T(N)}) / 60$$

Where: $P_{T(N)}$ = total amount of rainfall for any given block (N)
$I_{T(N)}$ = average rainfall intensity for a duration equal to $T_{T(N)}$ in inches per hour
$T_{T(N)}$ = NT_o in minutes (N is an integer representing the given block number of rainfall)

Intensity is calculated using the following equation (described in detail in Section 3):

$$I = 7.44\, P_6\, D^{-0.645}$$

Where: I = average rainfall intensity for a duration equal to D in inches per hour
P_6 = adjusted 6-hour storm rainfall
D = duration in minutes



Rainfall Distribution

FIGURE

6-2

Substituting the equation for I in the equation above for $P_{T(N)}$ and setting the duration (D) equal to $T_{T(N)}$ yields:

$$P_{T(N)} = [(7.44\ P_6/T_{T(N)}{}^{0.645})(T_{T(N)})] / 60$$
$$P_{T(N)} = 0.124\ P_6 T_{T(N)}{}^{0.355}$$

Substituting NT_o for T_T (where N equals the block number of rainfall) in the equation above yields:

$$P_{T(N)} = 0.124\ P_6\ (NT_o)^{0.355} \qquad \text{(Eq. 6-2)}$$

Equation 6-2 represents the total rainfall amount for a rainfall block with a time base equal to $T_{T(N)}$ (NT_o). The actual time base of each rainfall block in the rainfall distribution is T_o, as shown in Figure 6-2. The actual rainfall amount (P_N) for each block of rain is equal to P_T at N $(P_{T(N)})$ minus the previous P_T at N–1 $(P_{T(N-1)})$ at any given multiple of T_o (any NT_o). For example, the rainfall for block 2 is equal to $P_{T(N)}$ at $T_{T(N)} = 2T_o$ minus the $P_{T(N)}$ at $T_{T(N)} = 1T_o$, and the rainfall for block 3 equals $P_{T(N)}$ at $T_{T(N)} = 3T_o$ minus the $P_{T(N)}$ at $T_{T(N)} = 2T_o$, or P_N can be represented by the following equation:

$$P_N = P_{T(N)} - P_{T(N-1)} \qquad \text{(Eq. 6-3)}$$

For the rainfall distribution, the rainfall at block N = 1, $(1T_o)$, is centered at 4 hours, the rainfall at block N = 2, $(2T_o)$, is centered at 4 hours – $1T_o$, the rainfall at block N = 3, $(3T_o)$, is centered at 4 hours – $2T_o$, and the rainfall at at block N = 4, $(4T_o)$, is centered at 4 hours + $1T_o$. The sequence continues alternating two blocks to the left and one block to the right (see Figure 6-2).

6.2.2 Construction of Incremental Hydrographs

Figure 6-1 shows the relationship of a single block of rain to a single hydrograph. Figure 6-3 shows the relationship of the rainfall distribution to the overall hydrograph for the storm event. The peak flow amount from each block of rain is determined by the RM formula, $Q = CIA$, where I equals I_N (the actual rainfall intensity for the rainfall block). I_N is determined by dividing P_N by the actual time base of the block, T_c. The following equation shows this relationship:

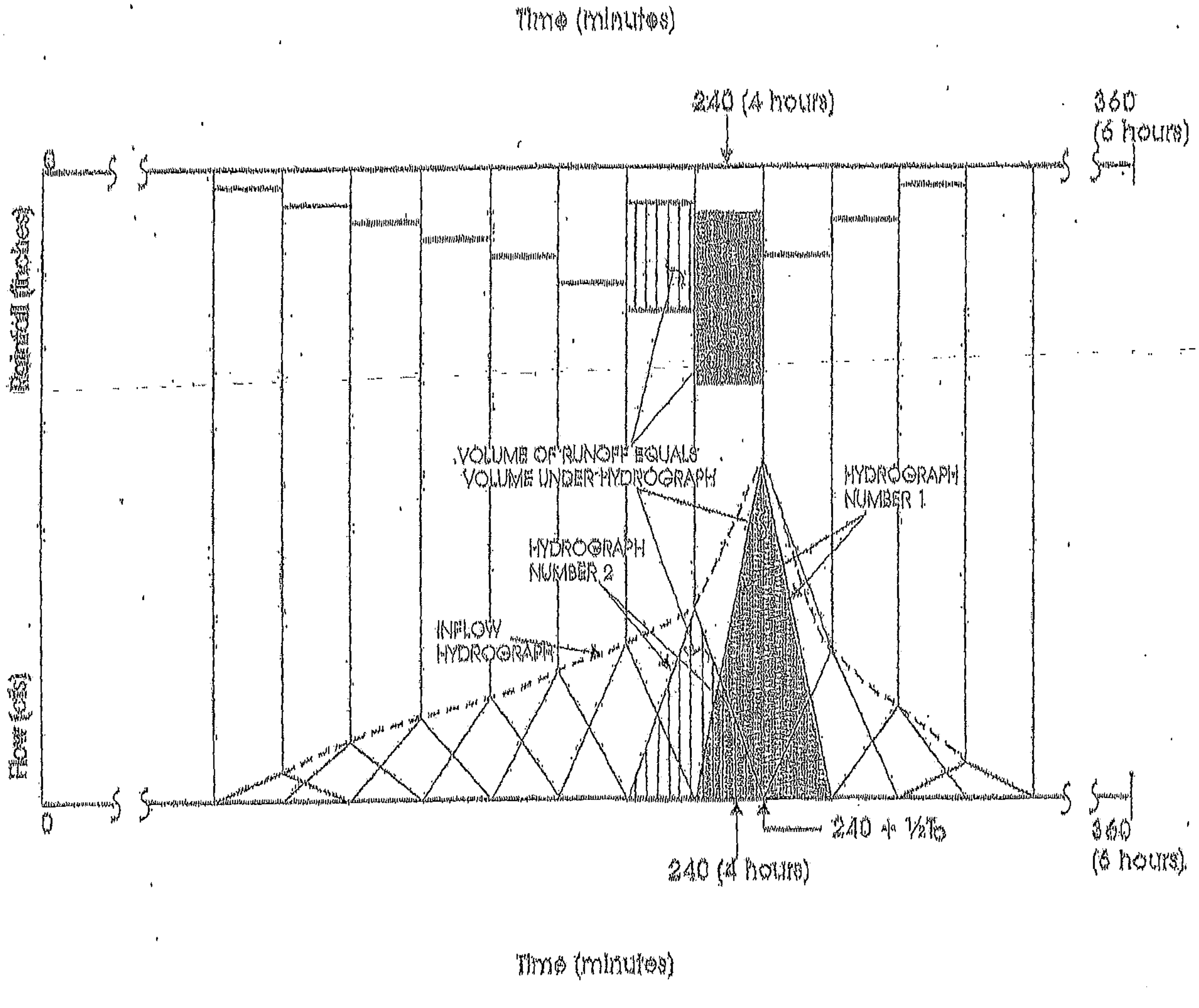
$$I_N = 60\,P_N/T_c \qquad \text{(Eq. 6-4)}$$

Where: I_N = average rainfall intensity for a duration equal to T_c in inches per hour
P_N = rainfall amount for the block in inches
T_c = time of concentration in minutes

By substituting equation 6-4 into the rational equation, the following relationship is obtained:

$$Q_N = 60\,CAP_N/T_c \text{ (cfs)} \qquad \text{(Eq. 6-5)}$$

Finally, the overall hydrograph for the storm event is determined by adding all the hydrographs from each block of rain. Since the peak flow amount for each incremental hydrograph corresponds to a zero flow amount from the previous and proceeding hydrographs, as shown in Figure 6-3, the inflow hydrograph can be plotted by connecting the peak flow amounts (see the dashed line in Figure 6-3).



6-Hour Rational Method Hydrograph

FIGURE

6-3

6.3 GENERATING A HYDROGRAPH USING RATHYDRO

The rainfall distribution and related hydrographs can be developed using the RATHYDRO computer program provided to the County by Rick Engineering Company. A copy of this program is available at no cost from the County. The output from this computer program may be used with HEC-1 or other software for routing purposes.

The design storm pattern used by the RATHYDRO program is based on the (2/3, 1/3) distribution described in Sections 4.1.1 and 6.2.1. The ordinates on the hydrograph are calculated based on the County of San Diego Intensity-Duration Design Chart (Figure 3-1), which uses the intensity equation described in Sections 3.1.3 and 6.2.1 to relate the intensity (I) of the storm to T_o, $I = 7.44\ P_6 D^{-0.645}$. The computer program uses equations 6-2 and 6-3 described above and calculates I_N directly. The intensity at any given multiple of T_o is calculated by the following equation:

$$I_N = [(I_{T(N)})\ (T_{T(N)}) - (I_{T(N-1)})\ (T_{T(N-1)})]\ /\ T_o \qquad \text{(Eq. 6-6)}$$

Where: N = number of rainfall blocks

$T_{T(N)}$ = time of concentration at rainfall block N in minutes (equal to NT_o)

I_N = actual rainfall intensity at rainfall block N in inches per hour

$I_{T(N)}$ = rainfall intensity at time of concentration $T_{T(N)}$ in inches per hour

Figure 6-2 shows the rainfall distribution used in the RM hydrograph, computed at multiples of T_o. The rainfall at block N = 1, ($1T_o$), is centered at 4 hours, the rainfall at block N = 2, ($2T_o$), is centered at 4 hours – $1T_o$, the rainfall at block N = 3, ($3T_o$), is centered at 4 hours – $2T_o$, and the rainfall at at block N = 4, ($4T_o$), is centered at 4 hours + $1T_o$. The sequence continues alternating two blocks to the left and one block to the right (see Figure 6-2).

As described in Section 6.2.2, the peak discharge (Q_N) of the hydrograph for any given rainfall block (N) is determined by the RM formula Q = CIA, where $I = I_N$ = the actual rainfall intensity for the rainfall block. The RATHYDRO program substitutes equation 6-6 into the RM formula to determine Q_N yielding the following equation:

$$Q_N = [(I_{T(N)})\ (T_{T(N)}) - (I_{T(N-1)})\ (T_{T(N-1)})]\ CA\ /\ T_o \qquad \text{(Eq. 6-7)}$$

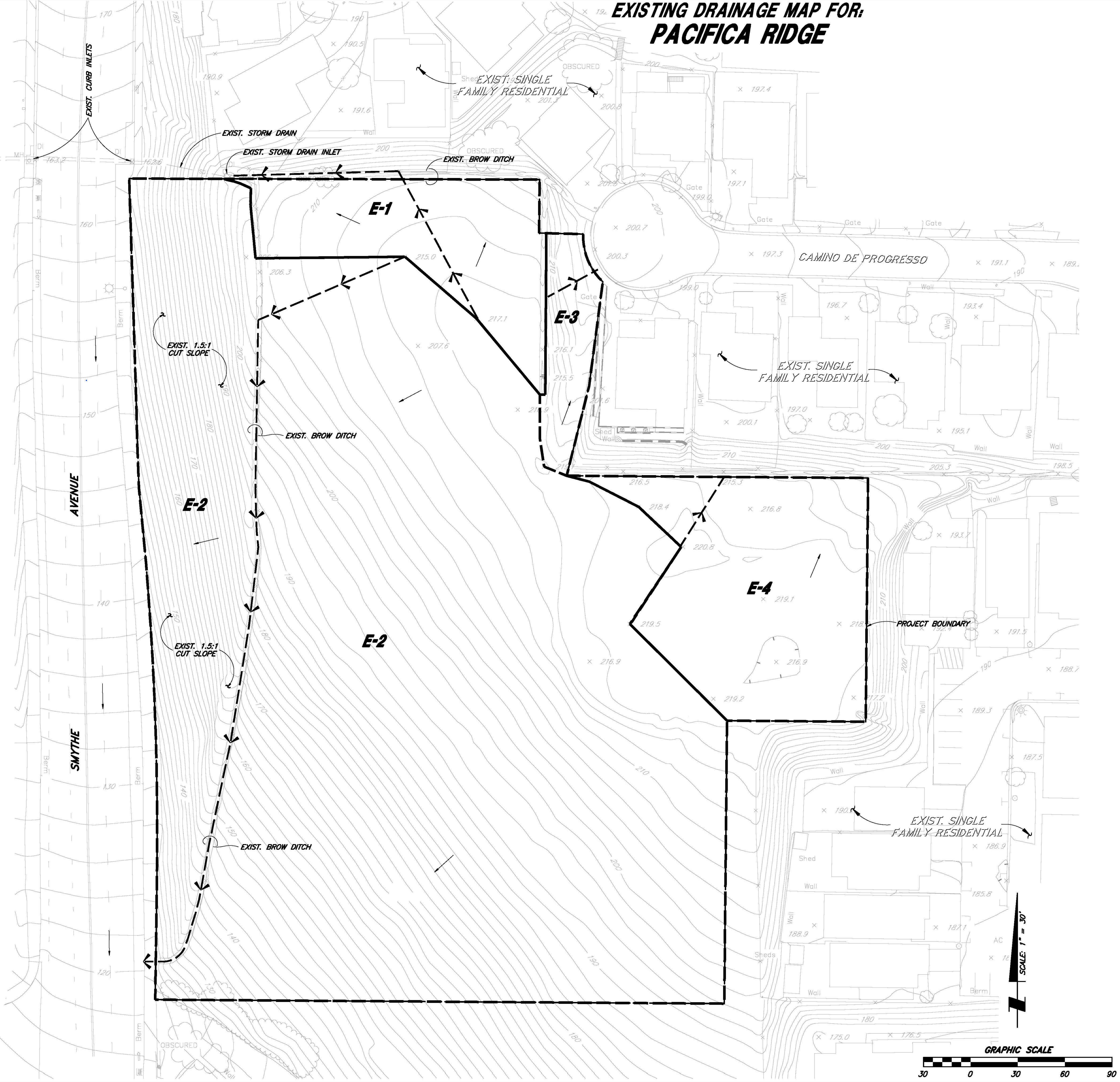
Where: Q_N = peak discharge for rainfall block N in cubic feet per second (cfs)
N = number of rainfall blocks
$T_{T(N)}$ = time of concentration at rainfall block N in minutes (equal to NT_o)
$I_{T(N)}$ = rainfall intensity at time of concentration $T_{T(N)}$ in inches per hour
C = RM runoff coefficient
A = area of the watershed (acres)

To develop the hydrograph for the 6-hour design storm, a series of triangular hydrographs with ordinates at multiples of the given T_o are created and added to create the hydrograph. This hydrograph has its peak at 4 hours plus ½ of the T_o. The total volume under the hydrograph is equal to the following equation (equation 6-1):

$$VOL = CP_6A$$

Where: VOL = volume of runoff (acre-inches)
P_6 = 6-hour rainfall (inches)
C = runoff coefficient
A = area of the watershed (acres)

EXISTING DRAINAGE MAP FOR:
PACIFICA RIDGE



LEGEND

PROJECT BOUNDARY	——— – – ———
DIRECTION OF DRAINAGE	→ →
INDICATES EXIST. BASIN LIMITS	▬ ▬ ▬ ▬ ▬
INDICATES DRAINAGE FLOW PATH	▬ ▬ > ▬ ▬ ▬

DRAINAGE AREA

I.D.	AREA (AC.)	DESCRIPTION
E-1	0.296	NORTH LIMITS
E-2	3.485	WEST/SMYTHE AVENUE
E-3	0.097	NORTHEAST/CAMINO DE PROGRESSO
E-4	0.471	EAST
TOTAL:	4.349	EXIST. BOUNDARY

SHEET 1 OF 1 SHEETS

EXISTING DRAINAGE MAP FOR:
PACIFICA RIDGE

SB&O INC.
PLANNING ENGINEERING SURVEYING
3990 Ruffin Road, Suite 120
San Diego, Ca. 92123
858-560-1141
858-560-8157 Fax

FILE NAME: D:\71172 SMYTHE AVE\DWG\DX\71172DX03-EXIST DRAINAGE.DWG, PLOTTED BY: TONY PORCIONCULA ON 9/28/2017 10:26 AM

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71172DX03- EXISTING DRAINAGE MAP

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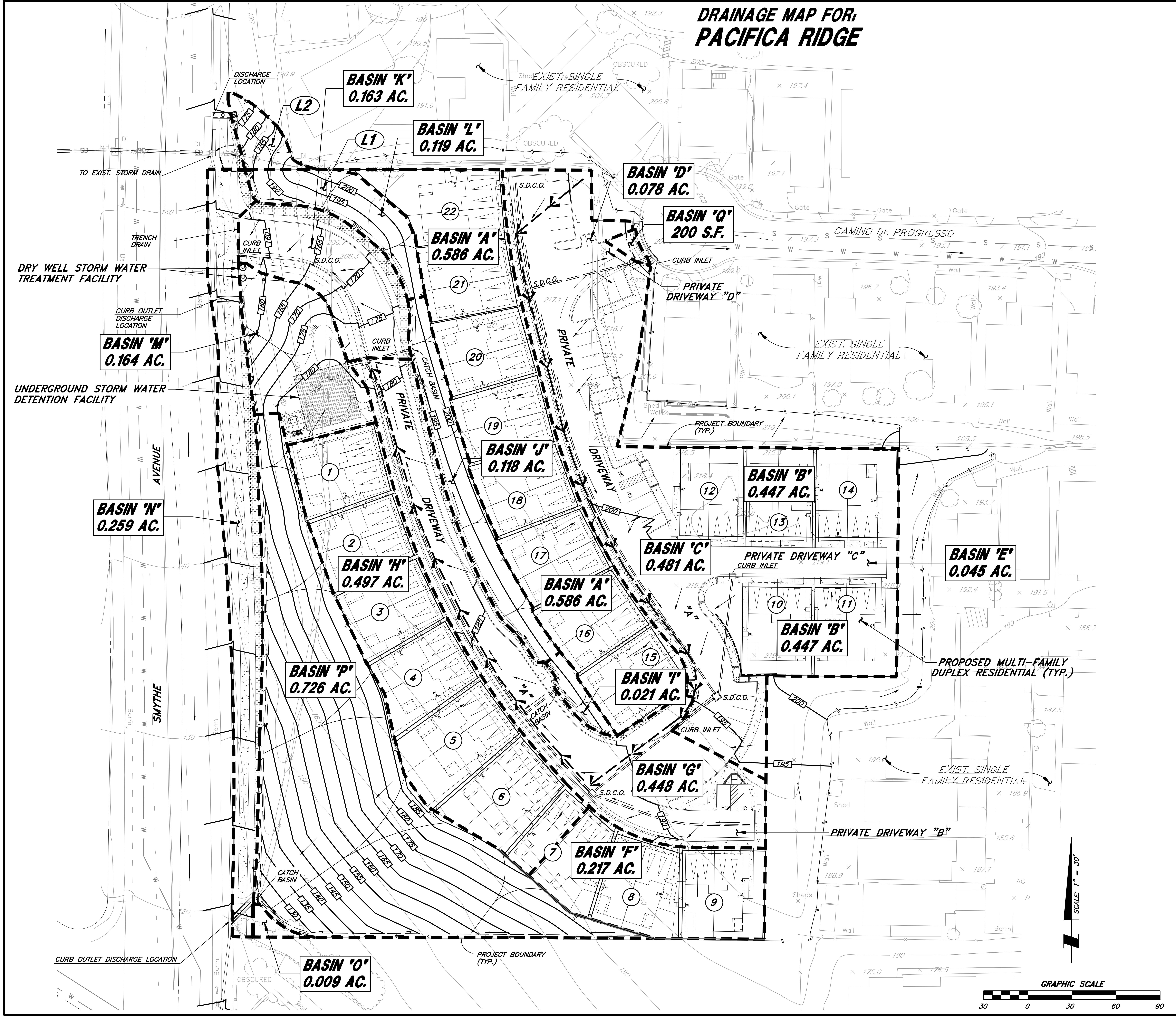
DRAINAGE MAP FOR:
PACIFICA RIDGE



LEGEND

PROJECT BOUNDARY
BUILDING NUMBER ⑩
PRIVATE STORM DRAIN
DIRECTION OF DRAINAGE
INDICATES BASIN LIMITS
INDICATES DRAINAGE FLOW PATH

DRAINAGE AREAS

BASIN I.D.	AREA (AC.)	DESCRIPTION
A	0.586	RESIDENTIAL
B	0.447	DRIVEWAY/PARKING
C	0.481	DRIVEWAY
D	0.078	DRIVEWAY/PARKING
E	0.045	DRIVEWAY/PARKING
F	0.217	DRIVEWAY/PARKING
G	0.448	DRIVEWAY/PARKING
H	0.497	RESIDENTIAL
I	0.021	SLOPE
J	0.118	SLOPE
K	0.163	DRIVEWAY
SUBTOTAL	3.101	DETENTION
L1	0.087	SLOPE
L2	0.032	SLOPE
L	0.119	SLOPE
M	0.164	SLOPE
N	0.259	SMYTHE WIDENING
O	0.009	SLOPE (UNGRADED)
P	0.726	SLOPE
Q	0.004	NORTHEAST ENTRY
TOTAL	4.382	
L2	−0.032	DEDUCT OFFSITE SLOPE
SITE	4.350	

SHEET 1 OF 1 SHEETS

DRAINAGE MAP FOR:
PACIFICA RIDGE

SB&O INC.
PLANNING ENGINEERING SURVEYING
3990 Ruffin Road, Suite 120
San Diego, Ca. 92123
858-560-1141
858-560-8157 Fax

FILE NAME: D:\71172 SMYTHE AVE\DWG\DX\71172DX02–PROPOSED DRAINAGE.DWG, PLOTTED BY: TONY PORCIONCULA ON 9/28/2017 8:28 AM

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71172DX02–DRAINAGE MAP

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ATTACHMENT 6
GEOTECHNICAL AND GROUNDWATER INVESTIGATION REPORT

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ALBUS-KEEFE & ASSOCIATES, INC
GEOTECHNICAL CONSULTANTS

September 25, 2017
J.N.: 2612.00

Michael Kootchick
Raintree Residential LLC
11855 Sorrento Valley Rd. 523
San Diego, Ca 92121

Subject: **Preliminary Evaluation for Proposed Water Quality Improvements, Proposed 32-unit Condominium Development, Pacific Ridge, West end of Camino Del Progresso, San Ysidro Area, San Diego, California**

Dear Mr. Kootchick,

Pursuant to your request, ***Albus-Keefe & Associates, Inc***. has completed an initial estimate of infiltration rates for the subject site. The purpose of our work was to evaluate the data contained in the referenced geotechnical report and develop a preliminary dry well design parameters for use as a BMP in storm water infiltration. Pertinent data used from the Allied Earth Technology report is provided in Appendix A. The scope of our work consisted of the following:

- Perform a detailed review of the referenced geotechnical report by Allied Earth Technology
- Perform engineering analyses to develop estimated permeability characteristics of site materials and evaluate flow from a model dry well
- Preparation of this report

We understand the dry well would likely be located at the project entry point at the north end of the site. The treatment volume would be captured upstream in a retention pipe that directs flow to the dry well.

ANALYSIS OF DATA

Subsurface Conditions

Descriptions of the earth materials encountered during Allied Earth Technology (Allied Earth) investigation are presented in detail on the Trench Logs presented in Appendix A. From geologic formations identified in these logs, a general lithology profile was developed for well flow modeling. The model consists of one zone which is comprised of the fine sandstone with a cobble conglomerate. This material is typically for the San Diego Formation identified at depth in the Allied Earth trench logs.

Ground Water

Groundwater was not encountered during Allied Earth's subsurface exploration to a maximum depth of 10 feet below the existing ground surface. We reviewed reports from 4 sites located about 2,600 feet to 9,000 feet away from the site that provided relatively recent data on depths to groundwater.

A summary of this data is provided in Table 1. Based on this data, we anticipate that groundwater at the site is located near an elevation of 35 feet MSL.

TABLE 1
Summary of Groundwater Data

Reference	**Location**	**GW Elevation (ft. MSL)**
Albus-Keefe (2017)	2,600‘ SW of site	30
Ninyo & Moore (2011)	3,100’ S of site	34
Delta (2008)	9,000’ NW of site	35-38
AECOM (2015)	4,000’ SE of site	35

<u>Design of Dry Well</u>

Infiltration in a dry well was modeled using the software Seep/W, version 2007, by Geo-Slope International. The program allows for modeling of both partially-saturated and saturated porous medium using a finite element approach to solve Darcy’s Law. The program can evaluate both steady-state and transient flow in planer and axisymmetric cases. Regions within the model can be set to represent a finite area or to extend in a direction infinitely. Boundaries of the model can be identified with various conditions including fix total head, fix pressure head, fix flow rate, and head as a function of flow. Soil conductivity properties can be modeled with either Fredlund et al. (1994), Green and Corey (1971), Van Genuchten (1980), or Saxton et al. (1986). The parameters were estimated from descriptions of site materials provided in the Allied Earth report as well as results of percolation testing provided in the referenced report by Albus- Keefe (2017). From this data, we estimated the saturated conductivity of the San Diego Formation is approximately 0.3 in/hr.

A Seep/W model was setup for a well configuration with the bottom of the dry wells at a depth of 50 feet below ground surface. Based on the anticipated well location, the bottom of the well would be near an elevation of 110’ MSL or about 75 feet above anticipated groundwater level. The top 20 feet of the dry well was assumed to have a shaft that is 6 feet in diameter and contains a settling chamber having an inside diameter of 4 feet and outside diameter of 4.5 feet. Below 20 feet, the shaft is assumed to be 4 feet in diameter. The annular space around the chamber and below the chamber is assumed to consist of gravel.

The model consisted of a single material type to represent the general soil profile. The infiltration zone (Material # 1) represents the fine sandstone with a cobble conglomerate typically encountered within the San Diego formation. A summary of the well model parameters is provided in Table 2.

TABLE 2
Summary of Characteristic Curve Parameters

Material No.	Material Type	Depth (ft)	Ks (in/hr)	Van Genuchten Parameters				
				a (1/cm)	n	m	Sat. Water Content	Residual Water Content
1	Fine Sandstone (T_{SDSS})	0-100	0.3	0.058	1.19	0.16	0.42	0.01

Steady state analyses were performed to estimate the maximum inflow that the well can accommodate. Using a well that had a depth of 50 feet, we obtain a static total flow of 0.02 ft³/sec. A plot depicting the resulting pressure head contours and flow vectors for the model is provided on Plate B-1.

To evaluate the time required to empty the well once no more water is introduced, the model was reanalyzed with a variable head condition that was dependent upon the volume of water leaving the well. As water infiltrates into the surrounding soil, both the volume of water remaining in the well and the total head in the well drop. A graph of the well head versus exit volume for a depth of 50 feet is provided in Figure 1. The function assumes a void ratio of 0.4 within the zones occupied by gravel. If some other well configuration is used, the analyses will require updating.

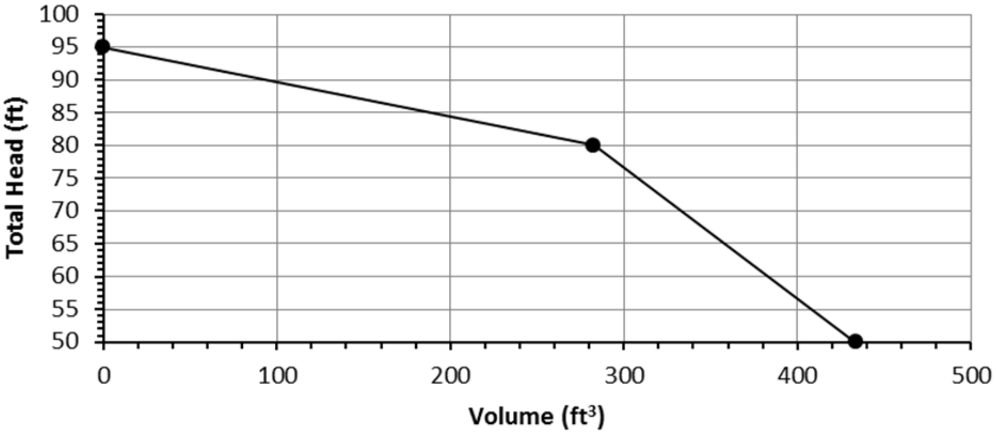


Figure 1 35-foot-deep, 4-foot-diameter Well Head Function

The analysis was performed as a transient case over a maximum time of approximately 36 hours. A more detailed configuration of the dry well design can be found on Plate 2. The condition in the model was evaluated in various increments of time over the total duration. From our analysis, the water is completely evacuated from the well in 36 hours. The water is evacuated from the chamber portion of the well in 5.5 hours, assuming the wells utilize a chamber 18 feet in depth. Plots depicting the resulting pressure head contours and flow vectors at selected times are provided in

Appendix B on Plates B-2 through B-5. Plots depicting the height of water in the well over time is provided on Figure 2.

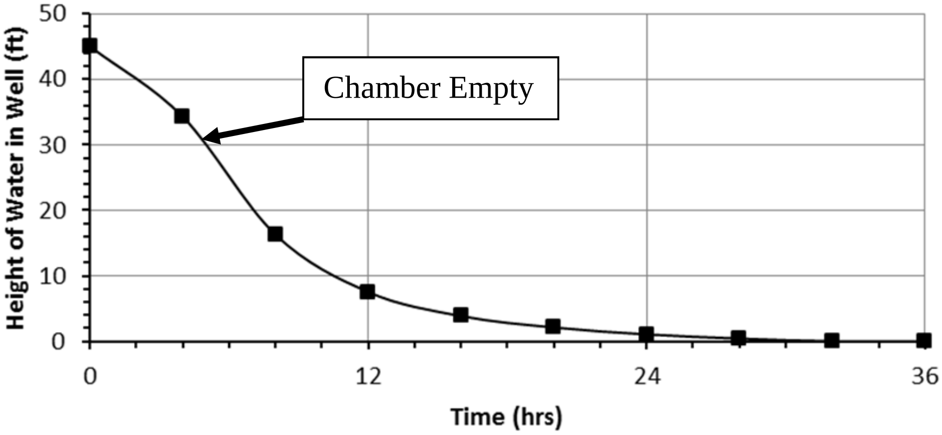


Figure 2 - Height of Water in 50 foot deep, 4 foot diameter Dry Well

CONCLUSIONS AND RECOMMENDATIONS

Results of our work indicate a storm water disposal system consisting of a dry well is feasible at the site. The use of a dry well is not anticipated to result in worsening any adverse conditions or hazards that may be present for the proposed site development or adjacent properties including subsidence, landsliding, or liquefaction provided the well is located in the general location indicated on Plate 1. As discussed above, the groundwater is anticipated to be near an elevation of 35 feet MSL. At this depth, the bottom of a dry well 50 feet in depth would be located 75 feet above the groundwater.

Our estimated permeability rate is 0.3 inches/hr. Applying a factor of safety to this value yields a design infiltration rate of 0.15 inches/hr. Based on this value and the criteria established by the city of San Diego, the site's feasibility screening category is Partial Infiltration.

Based on the results of our analyses, the preliminary estimated percolation rate for the well configuration as depicted on Plate 2 has an unfactored peak flow rate of 0.02 ft^3/sec. An appropriate factor of safety should be applied to the flow value as required by the appropriate governmental authority to obtain a design rate.

Should you require multiple dry wells, the wells should be spaced at least 70 feet, center to center, to avoid cross influence. The wells should be located at least 10 feet horizontally from any habitable structure or property line.

The actual flow capacity of the dry well could be more or less than the estimated value. As such, provisions should be made to accommodate excess flow quantities in the event the dry well does not infiltrate the anticipated amount. The design also assumes that sediments will be removed from the inflowing water. Sediments that are allowed to enter the dry well will tend to degrade the flow capacity by plugging up the infiltration surfaces.

In general, the dry well may consist of a concrete inner chamber surrounded by ½-inch open graded gravel. The concrete chamber should have perforations to allow the well to drain. The holes should be sized to prevent piping of the gravel into the chamber. A general diagram of the dry well is provided on Plate 2.

In general, the dry well shaft is anticipated to be adequately stable under temporary construction conditions for uncased drilling. However, occasional layers or lenses of granular materials may occur and may be prone to sloughing and caving. Workers should not enter the shaft unless the excavation is laid back or shored in accordance with OSHA requirements. The placement and compaction of backfill materials, including the gravel, should be observed by the project geotechnical consultant.

Our analysis was limited to the soils encountered during the field investigation conducted by Allied Earth to a maximum depth of 10 feet below the ground surface and visual examination of the cut slope along Smythe Avenue. Our work did not include site-specific exploration or percolation testing. As such, final design of a dry well system should be based on exploration and percolation testing in proximity to the proposed dry well location.

LIMITATIONS

This report is based on the geotechnical data as described herein. The materials encountered in Allied Earths's trenching excavations are believed representative of the project area, and the conclusions and recommendations contained in this report are presented on that basis. However, soil and bedrock materials can vary in characteristics between points of exploration, both laterally and vertically, and those variations could affect the conclusions and recommendations contained herein. As such, observations by a geotechnical consultant during the construction phase of the storm water infiltration systems are essential to confirming the basis of this report.

This report has been prepared consistent with that level of care being provided by other professionals providing similar services at the same locale and time period. The contents of this report are professional opinions and as such, are not to be considered a guaranty or warranty.

This report should be reviewed and updated after a period of one year or if the site ownership or project concept changes from that described herein.

This report has been prepared for the exclusive use of **Raintree Residential LLC** to assist the project consultants in the design of the proposed development. This report has not been prepared for use by parties or projects other than those named or described herein. This report may not contain sufficient information for other parties or other purposes.

This report is subject to review by the controlling governmental agency.

We appreciate this opportunity to be of service to you. If you should have any questions regarding the contents of this report, please do not hesitate to call.

Sincerely,

ALBUS-KEEFE & ASSOCIATES, INC.

Andrew J. Atry
Project Engineer
P.E. C84728

C 84728

Reviewed by:

David E. Albus
Principal Engineer
G.E. 2455

No. 2455
Exp. 12/31/18

Enclosures: Worksheet C.4-1: Categorization of Infiltration Feasibility Condition
Plate 1– Preliminary Dry Well Location Map
Plate 2 -Diagram of Dry Well
Appendix A – Previous Data by Allied Earth Technology
Appendix B - Percolation Analyses

REFERENCES

Publications

Department of Geological Sciences San Diego University, Guide to San Diego Area Stratigraphy, December 10, 1977

Saxton, K.E., W.J. Rawls, J.S. Romberger, and R.I. Papendick. 1986. Estimating generalized soil-water characteristics from texture. Soil Sci. Soc. Am. J. 50(4):1031-103

Reports

Geotechnical Investigation proposed 32-unit condominium site, West End of Camino Del Progresso, San Ysidro Area, in the City of San Diego, California, prepared by Allied Earth Technology, dated October 15, 20214 (P.N. 14-1350G3).

Geotechnical Investigation for Proposed Water Quality Improvements, Proposed Residential Development, 517 W. San Ysidro Boulevard, in the City of San Diego, California, prepared by Albus-Keefe & Associates Inc., dated March 6, 2017 (P.N. 2550.00).

First Semiannual 2015 Groundwater Monitoring Report, 104, 108, 120, and 121 West San Ysidro Blvd, prepared by AECOM, dated July 6, 2015 (P.N. 60422604)

Updated Site Conceptual Model and Site Assessment Report, former Texaco Branded Service Station, 3302 Palm Drive, San Diego, prepared by Delta, dated April 14, 2008 (P.N. SCA3302P1

Groundwater Monitoring Report, First Quarter 2011, Former Fire Station No. 29, 179 West San Ysidro Boulevard, San Diego, California, Unauthorized Release No. H21346-001, Geotracker Global ID: T0607300251, prepared by Ninyo & Moore, dated May 5, 2011 (P.N. 106912006)

Worksheet C.4-1: Categorization of Infiltration Feasibility Condition

<table>
<tr><th colspan="3">Categorization of Infiltration Feasibility Condition</th><th colspan="2">Worksheet C.4-1</th></tr>
<tr><td colspan="5">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?</td></tr>
<tr><td>Criteria</td><td colspan="2">Screening Question</td><td>Yes</td><td>No</td></tr>
<tr><td>1</td><td colspan="2">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.</td><td></td><td>44 condominium</td></tr>
<tr><td colspan="5">Provide basis:
Based on the results of our analyses, we estimated the infiltration rate of the site soils to be approximately 0.3 in/hr. This infiltration rate falls below the required 0.5 in/hr that is needed for full infiltration.
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>2</td><td colspan="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 the factors presented in Appendix C.2.</td><td>X</td><td></td></tr>
<tr><td colspan="5">Provide basis:
Provided the proposed drywell systems are designed in accordance with the conclusions and recommendations presented in our Preliminary Evaluation for Proposed Water Quality Improvements report dated June 20, 2017, we do not anticipate adverse effects from infiltration, including site instability, liquefaction, subsidence, groundwater mounding or seepage.
Summarize findings of studies; provide reference to studies, calculations, maps, data sources, etc. Provide narrative discussion of study/data source applicability.</td></tr>
</table>

<table>
<tr><th colspan="4">Worksheet C.4-1 Page 2 of 4</th></tr>
<tr><td>Criteria</td><td>Screening Question</td><td>Yes</td><td>No</td></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:
The BMPs will consist of drywells by Torrent Resources. The devices include a chamber to capture water and allow for sediment removal before continuing on to the infiltration section. The chamber also includes a pillow that absorbs oils and hydrocarbon products out of the water prior to entering the infiltration section. The site materials exhibit a relatively low permeability that will cause a slow infiltration rate that allows for significant bio-degradation by bacteria before reaching the groundwater system.
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:
The site is greater than 3,000 feet from the Tijuana River located. Based on the results of our analyses, the infiltrating water should be dissipated within the subsurface soils.
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></td></tr>
</table>

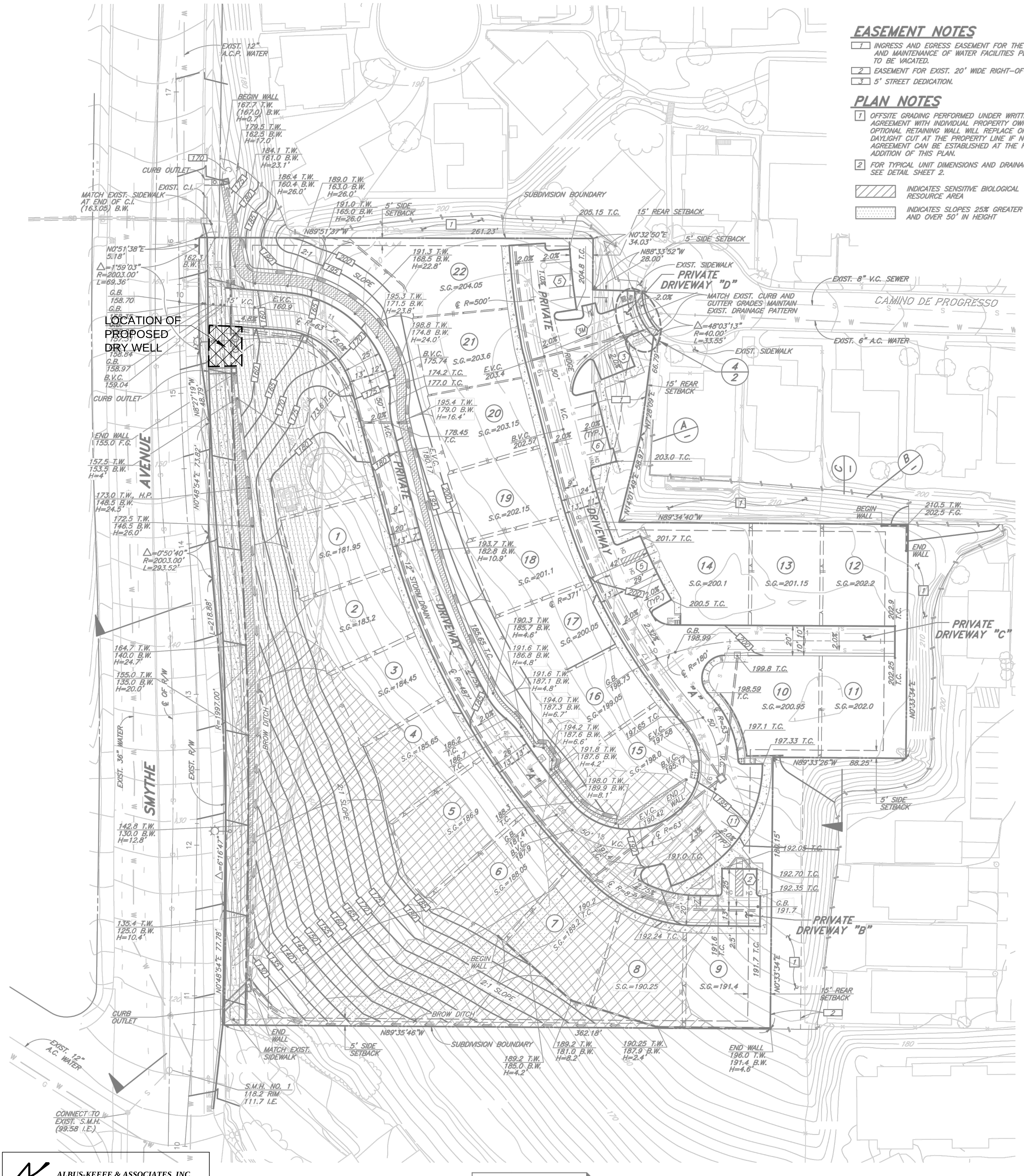
*To be completed using gathered site information and best professional judgment considering the definition of MEP in the MS4 Permit. Additional testing and/or studies may be required by City Engineer to substantiate findings.

<table>
<tr><th colspan="4">Worksheet C.4-1 Page 3 of 4</th></tr>
<tr><td colspan="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?</td></tr>
<tr><td>Criteria</td><td>Screening Question</td><td>Yes</td><td>No</td></tr>
<tr><td>5</td><td>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.</td><td>X</td><td></td></tr>
<tr><td colspan="4">Provide basis:
Based on the results of our analyses, we estimated the infiltration rate of the site soils to be approximately 0.3 in/hr. This infiltration rate falls between 0.5 in/hr and 0.1 in/hr that is needed for partial infiltration.
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>6</td><td>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.</td><td>X</td><td></td></tr>
<tr><td colspan="4">Provide basis:
Provided the proposed drywell systems are designed in accordance with the conclusions and recommendations presented in our Preliminary Evaluation for Proposed Water Quality Improvements report dated June 20, 2017, we do not anticipate adverse effects from infiltration, including site instability, liquefaction, subsidence, groundwater mounding or seepage.
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>
</table>

<table>
<tr><th colspan="4">Worksheet C.4-1 Page 4 of 4</th></tr>
<tr><td>Criteria</td><td>Screening Question</td><td>Yes</td><td>No</td></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:
The BMPs will consist of drywells by Torrent Resources. The devices include a chamber to capture water and allow for sediment removal before continuing on to the infiltration section. The chamber also includes a pillow that absorbs oils and hydrocarbon products out of the water prior to entering the infiltration section. The site materials exhibit a relatively low permeability that will cause a slow infiltration rate that allows for significant bio-degradation by bacteria before reaching the groundwater system.
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:
The site is greater than 3,000 feet from the Tijuana River located. Based on the results of our analyses, the infiltrating water should be dissipated within the subsurface soils.
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>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 colspan="2"></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 City Engineer to substantiate findings

PRELIMINARY GRADING PLAN FOR:
PACIFICA RIDGE



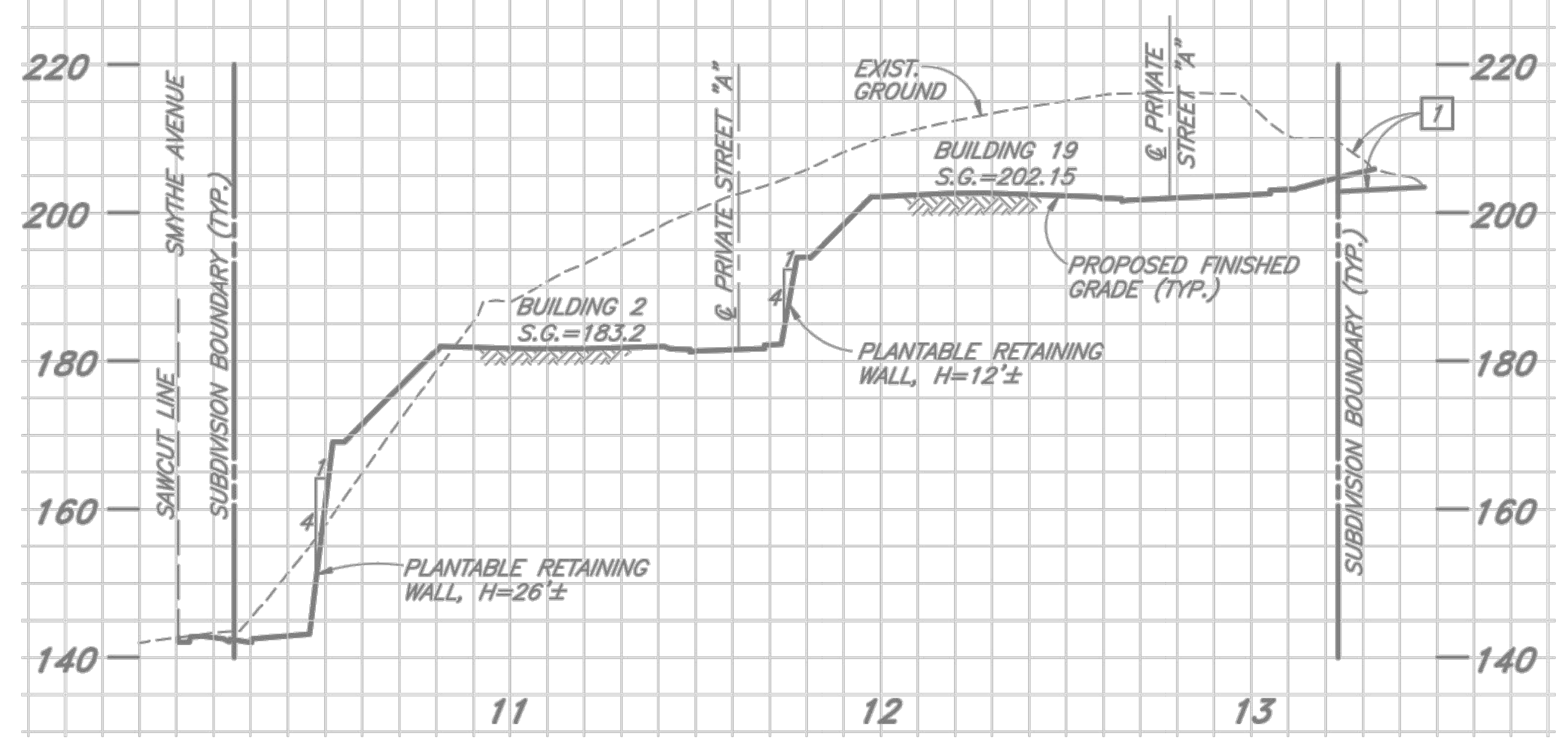
EASEMENT NOTES

1. INGRESS AND EGRESS EASEMENT FOR THE CONSTRUCTION AND MAINTENANCE OF WATER FACILITIES PER MAP NO. 7842, TO BE VACATED.
2. EASEMENT FOR EXIST. 20' WIDE RIGHT-OF-WAY FOR CONDUIT.
3. 5' STREET DEDICATION.

PLAN NOTES

1. OFFSITE GRADING PERFORMED UNDER WRITTEN AGREEMENT WITH INDIVIDUAL PROPERTY OWNERS. OPTIONAL RETAINING WALL WILL REPLACE OFFSITE DAYLIGHT CUT AT THE PROPERTY LINE IF NO AGREEMENT CAN BE ESTABLISHED AT THE FINAL ADDITION OF THIS PLAN.
2. FOR TYPICAL UNIT DIMENSIONS AND DRAINAGE. SEE DETAIL SHEET 2.

▨	INDICATES SENSITIVE BIOLOGICAL RESOURCE AREA
░	INDICATES SLOPES 25% GREATER AND OVER 50' IN HEIGHT



A SITE SECTION
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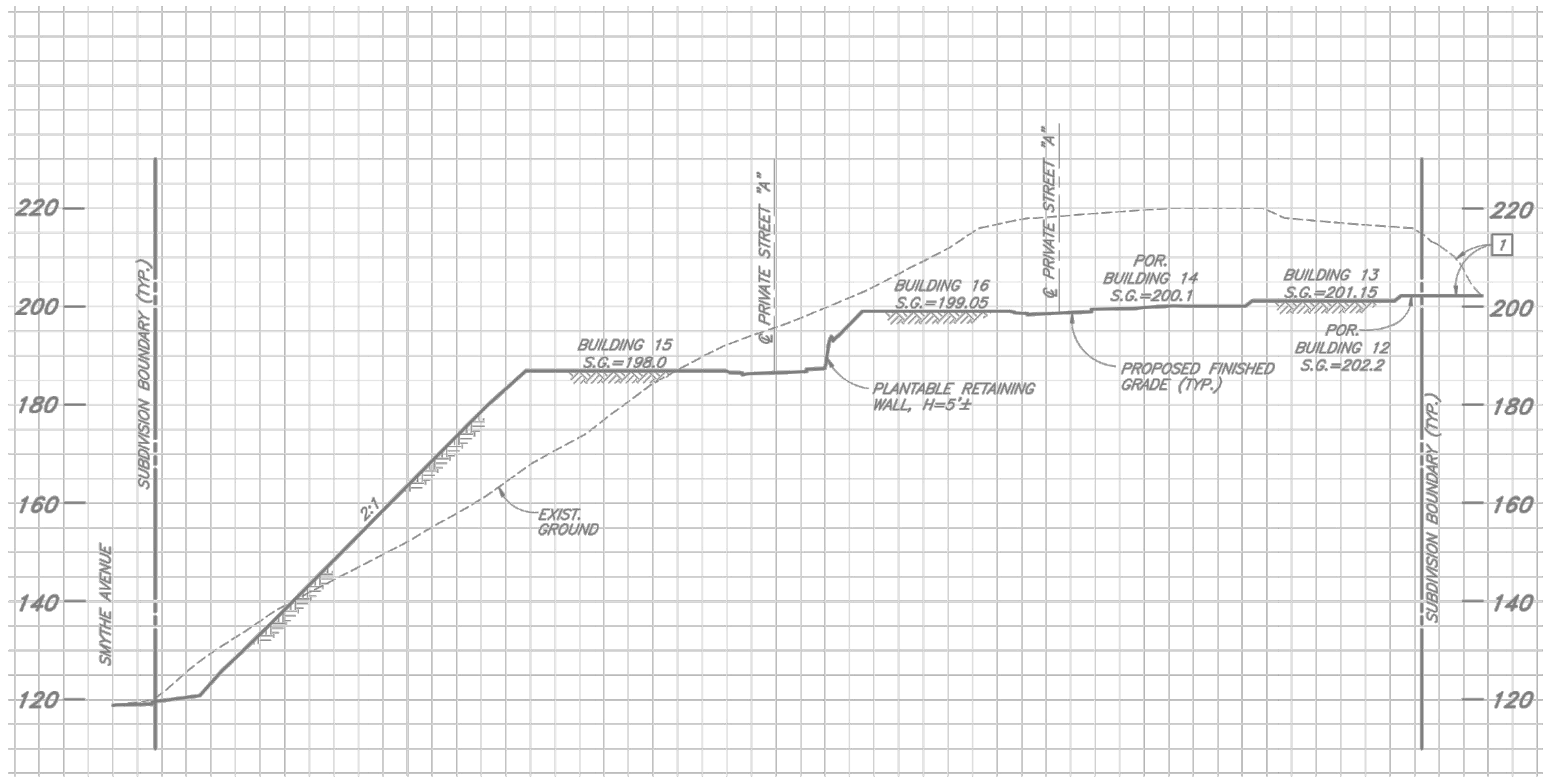

B SITE SECTION
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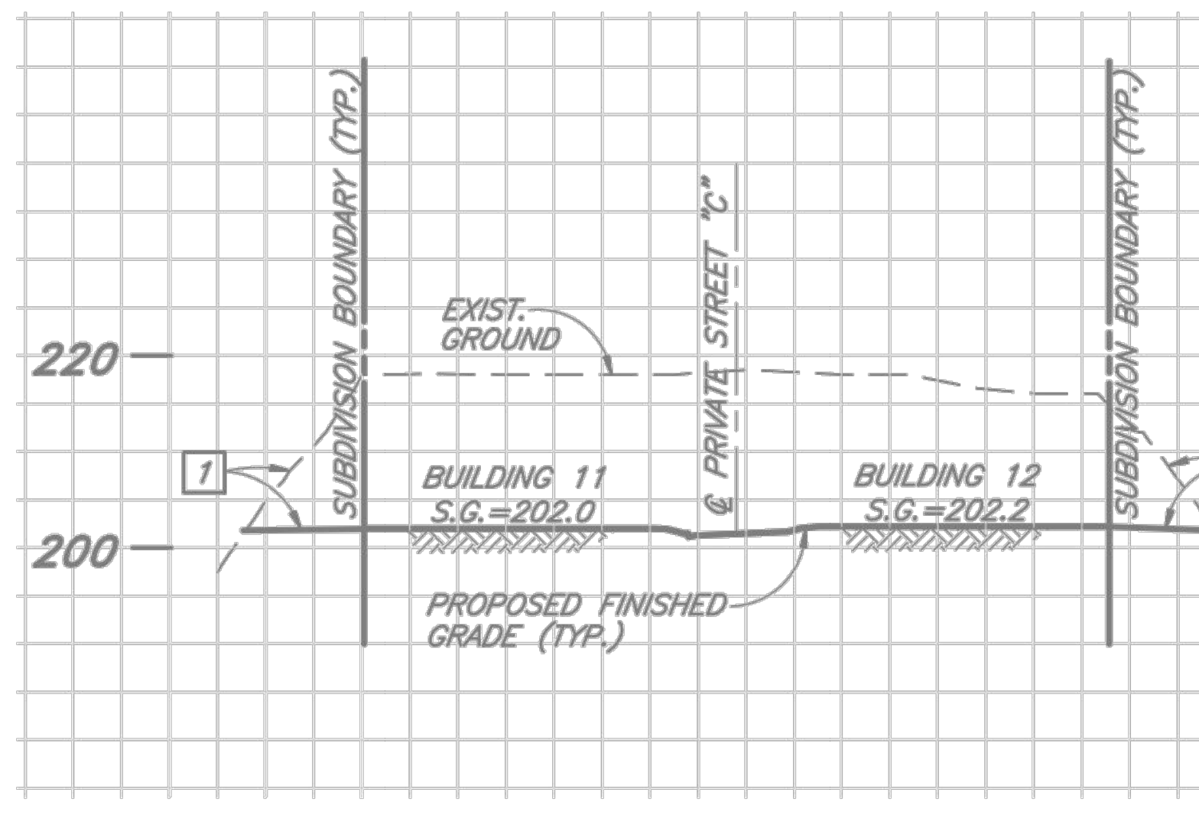


C SITE SECTION
SCALE: 1" = 40'(H), 1" = 20'(V)

I.D. = 24005223
P.T.S. NO. = 393812
CCS83 COORDS = 144-1753
L.C. COORDS = 1784-6313

Prepared By:
Name: SB&O INC.
Address: 3990 RUFFIN ROAD, SUITE 120
SAN DIEGO, CALIFORNIA 92123
Phone #: (858) 560-1141
Project Address:
–
–

Project Name:
PACIFICA RIDGE

Sheet Title:
TITLE SHEET, TENTATIVE MAP, PRELIMINARY GRADING, SITE DEVELOPMENT PLAN, A.D.A. PATHWAY AND SLOPE ANALYSIS

Original Date: 10-16-14
Sheet 3 of 19
DEP NO.:

SCALE: 1" = 30'

GRAPHIC SCALE
30 0 30 60 90

REGISTERED PROFESSIONAL ENGINEER
STEPHEN C. OTT
No. C70666
Exp. 6/30/17
CIVIL
STATE OF CALIFORNIA

SB&O INC.
PLANNING ENGINEERING SURVEYING
3990 Ruffin Road, Suite 120
San Diego, Ca. 92123
858-560-1141
858-560-8157 Fax

PRELIMINARY
NOT FOR CONSTRUCTION

STEPHEN C. OTT P.E. C70666 DATE

FOR IMPROVEMENT NOTES SEE TENTATIVE MAP SHEET.

ALBUS-KEEFE & ASSOCIATES, INC.
GEOTECHNICAL CONSULTANTS

PRELIMINARY DRY WELL LOCATION MAP

Job No.: 2612.00 Date: 06/20/17 Plate: 1

71172TM03-RG

T.M. APPROVAL NO.: 1381777

71170.20

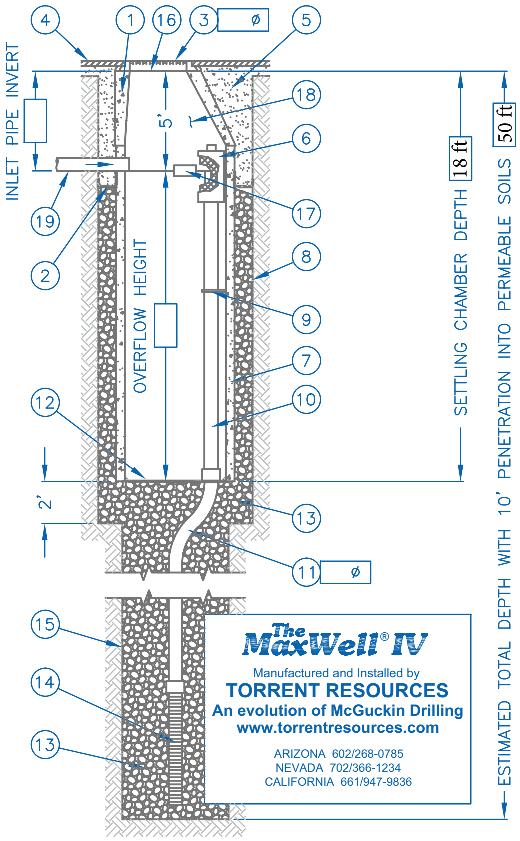
FILE NAME: D:\71172 SMYTHE AVE\DWG\TM\71172TM03-RG.DWG, PLOTTED BY: STEPHEN OTT ON 4/26/2017 11:44 AM

MAXWELL® IV DRAINAGE SYSTEM DETAIL AND SPECIFICATIONS

◯ ITEM NUMBERS

1. **Manhole Cone** - Modified Flat Bottom.
2. **Moisture Membrane** - 6 Mil. Plastic. Applies only when native material is used for backfill. Place membrane securely against eccentric cone and hole sidewall.
3. **Bolted Ring & Grate** - Diameter as shown. Clean cast iron with wording **"Storm Water Only"** in raised letters. **Bolted in 2 locations** and secured to cone with mortar. Rim elevation ±0.02' of plans.
4. **Graded Basin or Paving** (by Others).
5. **Compacted Base Material** - 1-Sack Slurry except in landscaped installtions with no pipe connections.
6. **PureFlo® Debris Shield** - Rolled 16 ga. steel X 24" length with vented anti-siphon and Internal .265" Max. SWO flattened expanded steel screen X 12" length. **Fusion bonded epoxy coated.**
7. **Pre-cast Liner** - 4000 PSI concrete 48" ID. X 54" OD. **Center in hole** and align sections **to maximize bearing surface.**
8. **Min. 6' Ø Drilled Shaft.**
9. **Support Bracket** - Formed 12 Ga. steel. **Fusion bonded epoxy coated.**
10. **Overflow Pipe** - Sch. 40 PVC mated to drainage pipe at base seal.
11. **Drainage Pipe** - ADS highway grade with TRI-A coupler. **Suspend pipe** during backfill operations to prevent buckling or breakage. Diameter as noted.
12. **Base Seal** - Geotextile or concrete slurry.
13. **Rock** - Washed, sized between 3/8" and 1-1/2" to **best complement soil conditions.**
14. **FloFast® Drainage Screen** - Sch. 40 PVC 0.120" slotted well screen with 32 slots per row/ft.Diameter varies 120" overall length with TRI-B coupler.
15. **Min. 4' Ø Shaft** - Drilled to **maintain permeability** of drainage soils.
16. **Fabric Seal** - U.V. resistant geotextile - **to be removed by customer** at project completion.
17. **Absorbent** – Hydrophobic Petrochemical Sponge. Min. to 128 oz. capacity.
18. **Freeboard Depth** Varies with inlet pipe elevation. Increase settling chamber depth as needed to maintain all inlet pipe elevations above overflow pipe inlet.
19. **Optional Inlet Pipe** (Maximum 4", by Others). Extend moisture membrane and compacted base material or 1 sack slurry backfill below pipe invert.

The referenced drawing and specifications are available on CAD either through our office or web site. This detail is copyrighted (2004) but may be used as is in construction plans without further release. For information on product application, individual project specifications or site evaluation, contact our Design Staff for no-charge assistance in any phase of your planning.



AZ Lic. ROC070465 A, ROC047067 B-4, ADWR 363
CA Lic. 528080, C-42, HAZ.
NV Lic. 0035350 A - NM Lic. 90504 GF04

U.S. Patent No. 4,923,330 - TM Trademark 1974, 1990, 2004

CALCULATING MAXWELL IV REQUIREMENTS

The type of property, soil permeability, rainfall intensity and local drainage ordinances determine the number and design of MaxWell Systems. For general applications draining retained stormwater, use one standard **MaxWell IV** per the instructions below for up to 3 acres of landscaped contributory area, and up to 1 acre of paved surface. For larger paved surfaces, subdivision drainage, nuisance water drainage, connecting pipes larger than 4" Ø from catch basins or underground storage, or other demanding applications, refer to our **MaxWell® Plus** System. For industrial drainage, including gasoline service stations, our **Envibro® System** may be recommended. For additional considerations, please refer to **"Design Suggestions For Retention And Drainage Systems"** or consult our Design Staff.

COMPLETING THE MAXWELL IV DRAWING

To apply the **MaxWell IV** drawing to your specific project, simply fill in the blue boxes per instructions below. For assistance, please consult our Design Staff.

50 feet ESTIMATED TOTAL DEPTH

The Estimated Total Depth is the approximate depth required to achieve 10 continuous feet of penetration into permeable soils. Torrent utilizes specialized **"crowd"** equipped drill rigs to penetrate difficult, cemented soils and to reach permeable materials at depths up to **180 feet.** Our extensive database of drilling logs and soils information is available for use as a reference. Please contact our Design Staff for site-specific information on your project.

18 feet SETTLING CHAMBER DEPTH

On MaxWell IV Systems of over 30 feet overall depth and up to 0.25cfs design rate, the **standard** Settling Chamber Depth is **18 feet .** For systems exposed to greater contributory area than noted above, extreme service conditions, or that require higher design rates, chamber depths up to 25 feet are recommended.

' OVERFLOW HEIGHT

The Overflow Height and Settling Chamber Depth determine the effectiveness of the settling process. The higher the overflow pipe, the deeper the chamber, the greater the settling capacity. For normal drainage applications, an overflow height of **13 feet** is used with the standard settling chamber depth of **18 feet**. Sites with higher design rates than noted above, heavy debris loading or unusual service conditions require greater settling capacities

"Ø DRAINAGE PIPE

This dimension also applies to the **PureFlo®** Debris Shield, the **FloFast®** Drainage Screen, and fittings. The size selected is based upon system design rates, soil conditions, and the need for adequate venting. Choices are 6", 8", or 12" diameter. Refer to "Design Suggestions for Retention and Drainage Systems" for recommendations on which size best matches your application.

"Ø BOLTED RING & GRATE

Standard models are quality cast iron and available to fit 24" Ø or 30" Ø manhole openings. All units are bolted in two locations with wording "Storm Water Only" in raised letters. For other surface treatments, please refer to "Design Suggestions for Retention and Drainage Systems."

"Ø INLET PIPE INVERT

Pipes up to 4" in diameter from catch basins, underground storage, etc. may be connected into the settling chamber. Inverts deeper than 5 feet will require additional settling chamber depth to maintain effective overflow height.

TORRENT RESOURCES INCORPORATED

1509 East Elwood Street, Phoenix Arizona 85040~1391
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APPENDIX A

PREVIOUS DATA BY ALLIED EARTH TECHNOLOGY

TRENCH LOG SHEET

TRENCH NO. 1
ELEV. 216' msl

FT.	DESCRIPTION	SOIL TYPE
0	Brown, dry, loose to slightly dense (Topsoils)	SILTY SANDS (SM)
1		
2	Reddish brown, moist, dense (Lindavista Formation)	SILTY SANDS (SM)
3		
4	30% cobbles to 4" dia.	
5	⬡1	8.1*116.6*92.5%*
6		
7		
8		
9		
10	Very dense	

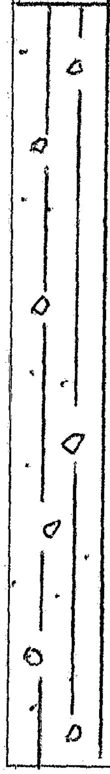
Bottom of Trench (No Refusal)

LEGEND

⬡ - Indicates representative sample
* - Indicates in-situ density test

TRENCH LOG SHEET

TRENCH NO. 2
ELEV. 216' msl

	FT.	DESCRIPTION	SOIL TYPE
	0	Dark brown, dry, loose to Slightly dene (Topsoils)	CLAYEY SANDS (SC)
	1		
	2		
	3	Orange brown, moist,dense 45% cobbles to 6" dia. (Lindavista Formation)	SILTY SANDS (SM)
	4		
	5	⟨1⟩	
	6		
	7		
	8		
	9	Very dense, cemented	
	10		
	11		
	12		

Bottom of Trench (Refusal in dense formational soil)

Project No. 14-1350G3

Figure No. 4

TRENCH LOG SHEET

TRENCH NO. 3
ELEV. 220' msl

FT.	DESCRIPTION	SOIL TYPE
0	Brown/gray, moist, loose (Undocumented fill soils)	SILTY SANDS/CLAYEY SANDS (SM/SC)
1		
2	①	
3		
4	Orange brown, moist, dense (Lindavista Formation)	SILTY SANDS (SM)
5		9.1*118.7*94.2%*
6	②	
7		
8		
9	Very dense, cemented	
10		

Bottom of Trench (Refusal in cemented formational soil)

TRENCH LOG SHEET

TRENCH NO. 4
ELEV. 198' msl

	FT.	DESCRIPTION	SOIL TYPE
▥	0	Brown, damp, loose (Topsoils)	SILTY FINE SAND (SM)
	1		
	2		
▨	3	Brown, moist, medium dense (San Diego Formation)	CLAYEY SANDS (SC)
	4	⟨1⟩	10.1*114.1*93.5%*
	5		
	6		
	7	Dense	
	8		
	9	Occasional cobbles to 3" dia.	
	10		

Bottom of Trench (No Refusal)

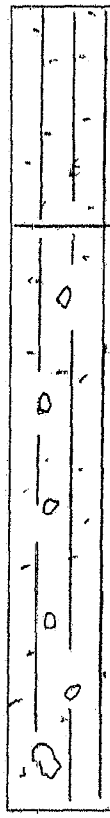
TRENCH LOG SHEET

TRENCH NO. 4
ELEV. 198' msl

	FT.	DESCRIPTION	SOIL TYPE
	0	Brown, damp, loose (Topsoils)	SILTY FINE SAND (SM)
	1		
	2		
	3	Brown, moist, medium dense (San Diego Formation)	CLAYEY SANDS (SC)
	4	1	10.1*114.1*93.5%*
	5		
	6		
	7	Dense	
	8		
	9	Occasional cobbles to 3" dia.	
	10		

Bottom of Trench (No Refusal)

TRENCH NO. 5
ELEV. 180' msl



FT.	DESCRIPTION	SOIL TYPE
0	Brown, dry, loose to slightly dense (Topsoils)	SILTY SANDS (SM)
1		
2		
3	Brown, moist, medium dense (San Diego Formation)	SILTY SANDS
4	50% to 60% cobbles	
5		
6		
7		
8		
9	Very dense	
10		

Bottom of Trench (Refusal in dense formational soil)

Project No.14-1350F3

Figure No. 7

APPENDIX II

LABORATORY TEST RESULTS

1. The maximum dry densities and optimum moisture contents of the fill soils encountered were determined in accordance with A.S.T.M. D1557, Method A. The results of the tests are presented as follows :

	Soil Description	Maximum Dry Density (lbs./cu.ft.)	Optimum Moisture Content (% Dry Wt.)
Trench #1 Sample #1 Depth 5.0’	Reddish brown silty sand (SM)	126.0	9.0
Trench #4 Sample #1 Depth 4.0’	Brown clayey sand (SC)	122.0	12.5

2. The Expansion Index of the most clayey soils was determined in accordance with A.S.T.M. D4929-08. The results of the test are presented as follows :

	Soil Description	Expansion Index
Trench #4 Sample #1 Depth 4.0’	Brown clayey sand (SC)	83*

*Considered to possess MEDIUM expansion potential

APPENDIX II

LABORATORY TEST RESULTS (Cont'nd)

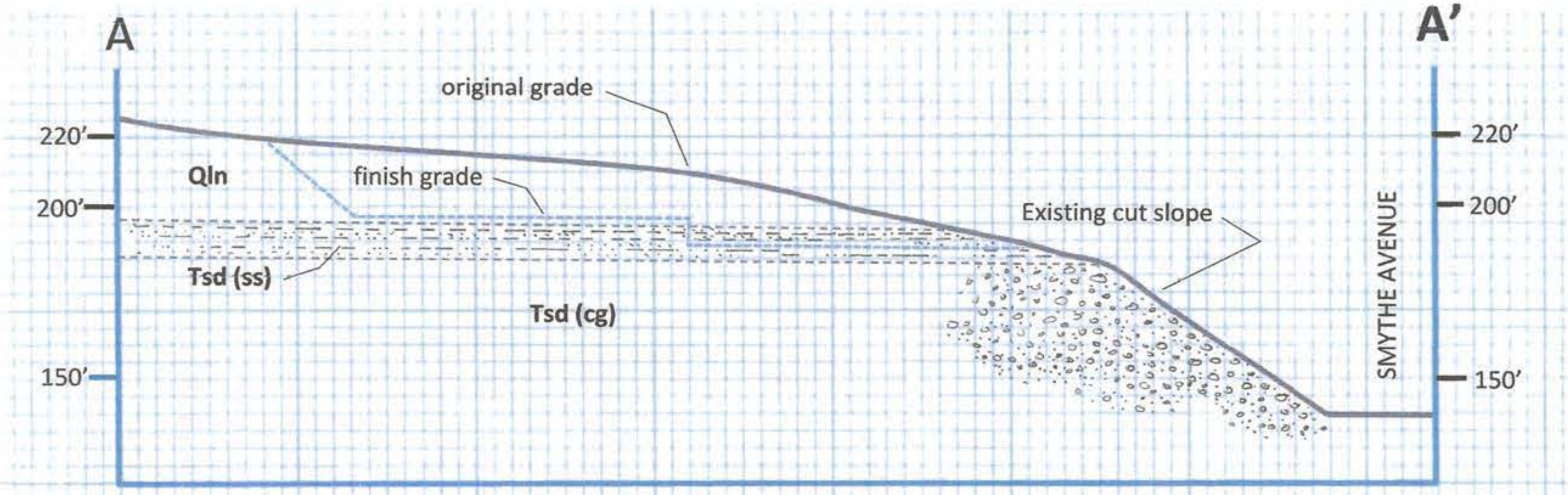
3. The sulfate contentS of the soils were determined in accordance with A.S.T.M. D516. The results are presented below :

	Soil Description	Sulfate Content (ppm)	
Trench #1 Sample #1 Depth 5.0'	Reddish brown silty fine sand (SM)	51	Negligible
Trench #4 Sample #1 Depth 4.0'	Brown clayey sand (SC)	78	Negligible

4. Samples of the least competent soils were saturated and drained, and tested in direct shear. The results of the tests are presented as follows :

	Soil Description	Apparent Cohesion (lbs./sq.ft.)	Angle of Internal Friction (Degree)
Trench #1 Sample #1 Depth 5.0'	Reddish brown silty fine sand* (SM)	380	34

* Sample remolded to 90 percent of maximum dry density



GEOLOGIC SECTION A – A'
SMYTHE AVENUE TOWNHOMES

Legend

Qln: Lindavista Formation

Tsd (ss): San Diego Formation: clayey to very fine sandy siltstone

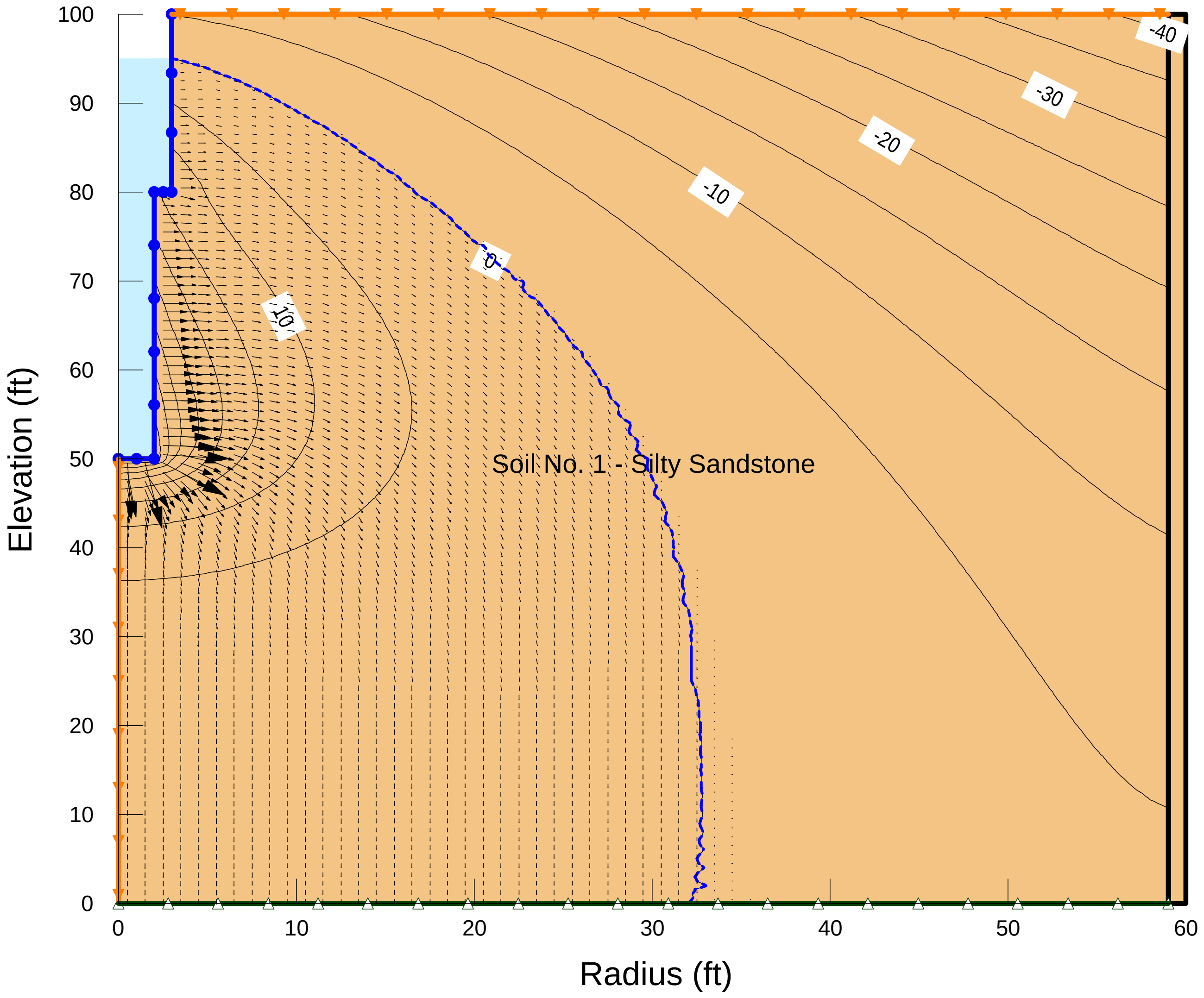
Tsd (cg): San Diego Formation: cobble to boulder conglomerate

Figure 3

APPENDIX B

PERCOLATION ANALYSES

STEADY STATE
FLOW ANALYSIS OF 50 ft DEEP, 4 ft DIAMETER DRY WELL



Arrows indicate direction of flow and relative magnitude of velocity.
Contours are Pressure Head in Feet.

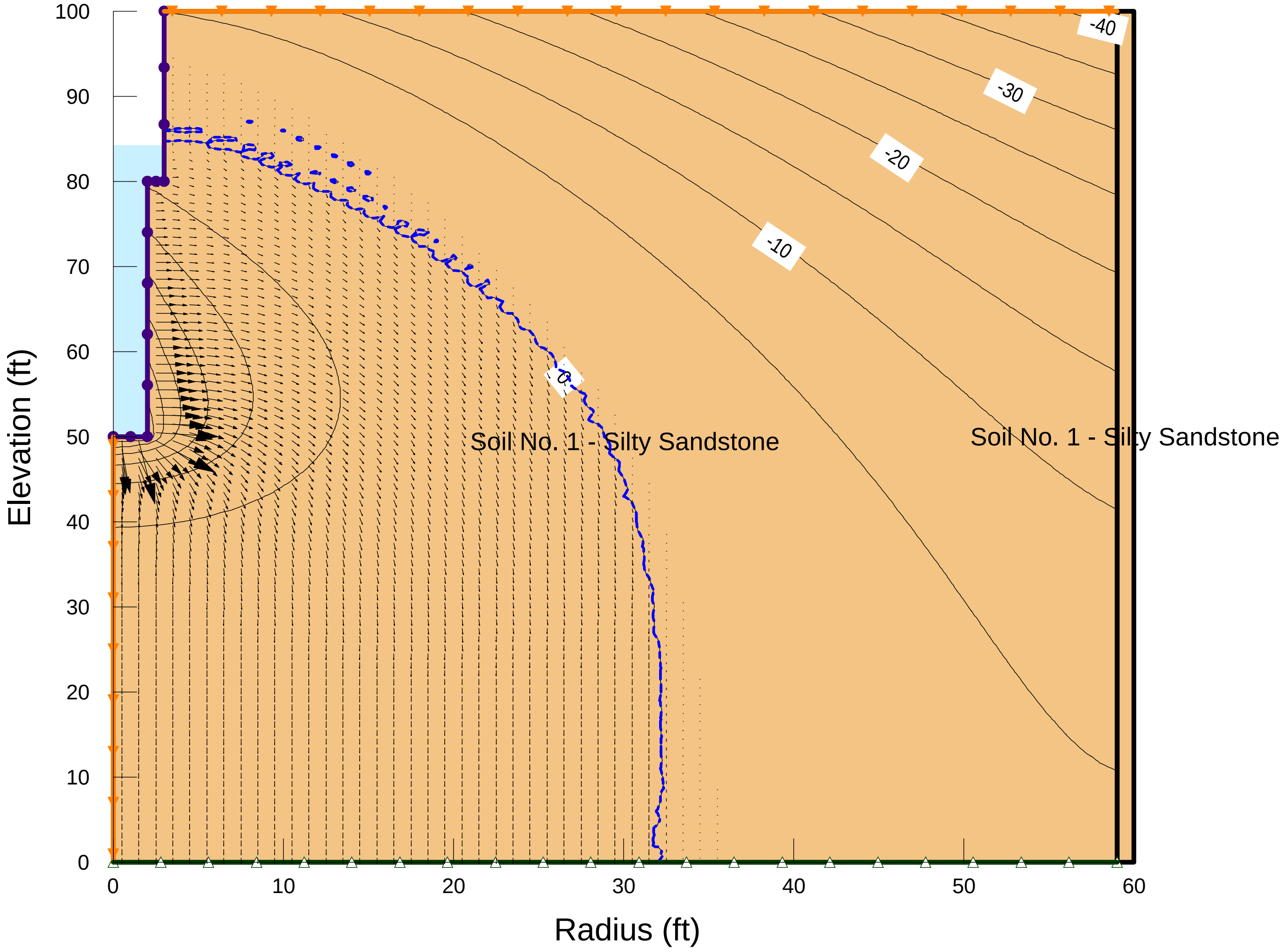
LEGEND

▼ Zero Flux

◁ Potential Seepage Face

● Fixed Total Head = 95 ft.

TRANSIENT @ 4 hours
FLOW ANALYSIS OF 50 ft DEEP, 4 ft DIAMETER DRY WELL



Arrows indicate direction of flow and relative magnitude of velocity.
Contours are Pressure Head in Feet.

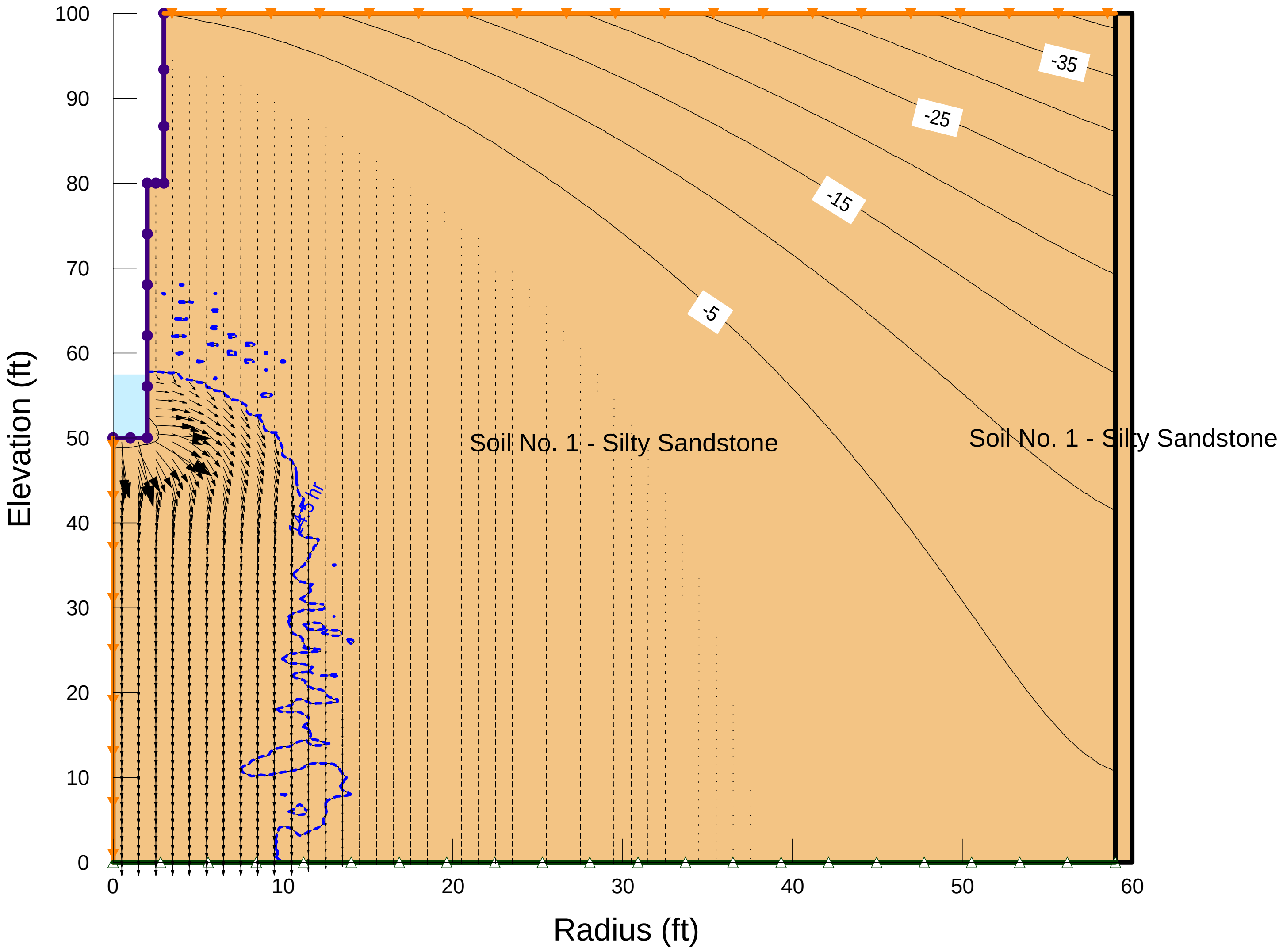
LEGEND

▼ Zero Flux

◁ Potential Seepage Face

● Well Head Function

TRANSIENT @ 12 hours
FLOW ANALYSIS OF 50 ft DEEP, 4 ft DIAMETER DRY WELL



Arrows indicate direction of flow and relative magnitude of velocity.
Contours are Pressure Head in Feet.

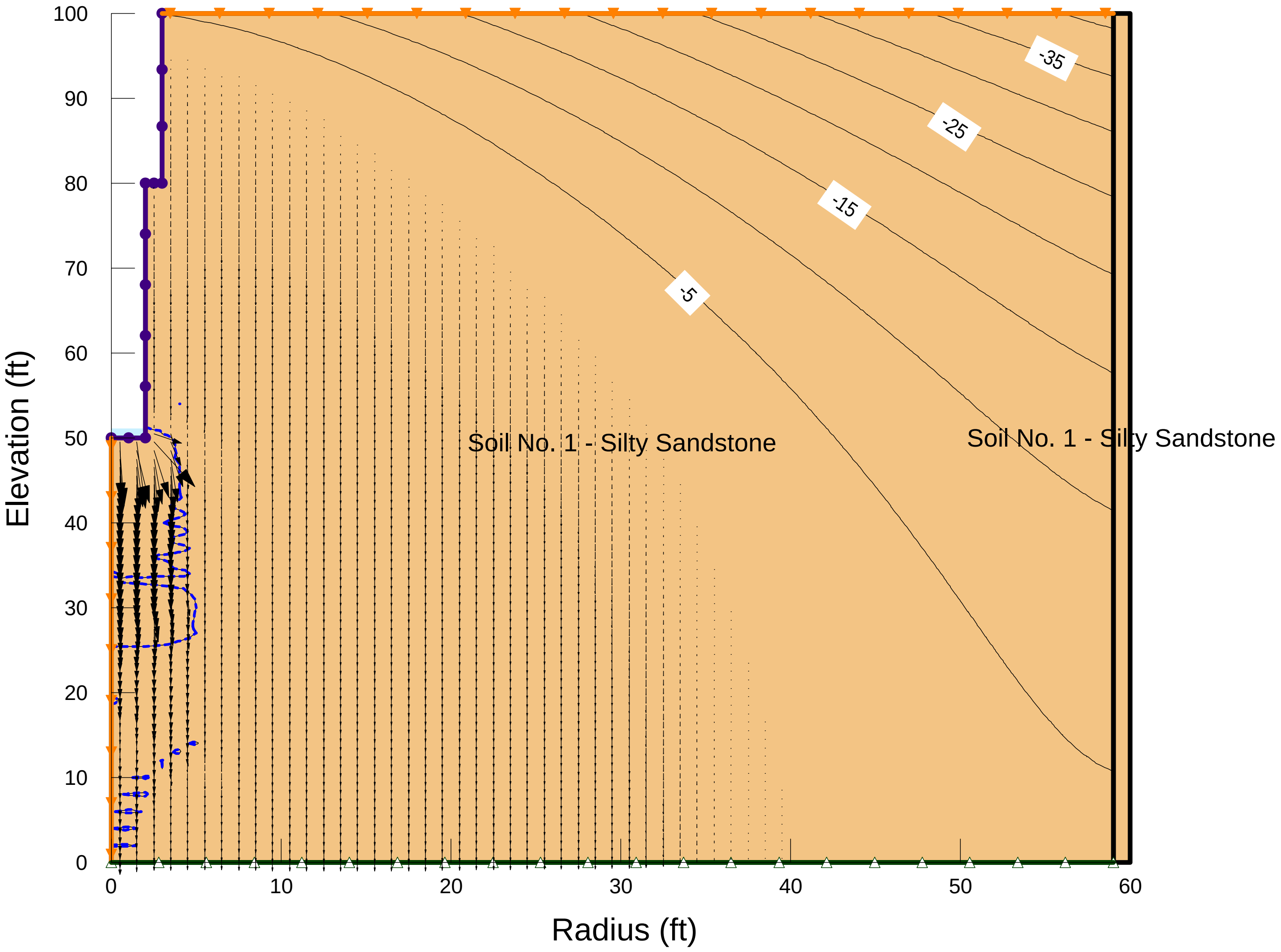
LEGEND

Zero Flux

Potential Seepage Face

Well Head Function

TRANSIENT @ 24 hours
FLOW ANALYSIS OF 50 ft DEEP, 4 ft DIAMETER DRY WELL



Arrows indicate direction of flow and relative magnitude of velocity.
Contours are Pressure Head in Feet.

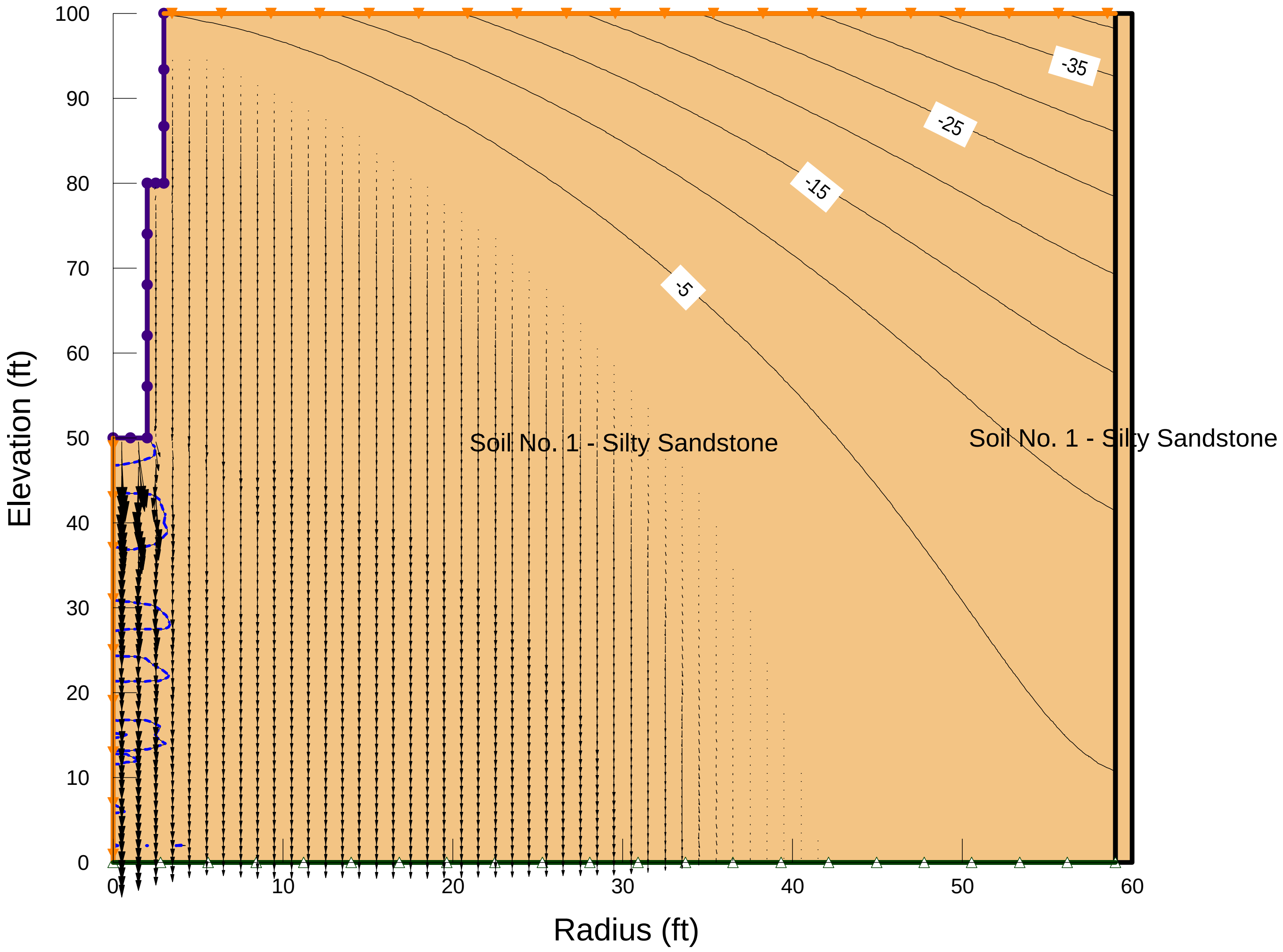
LEGEND

▼ Zero Flux

◁ Potential Seepage Face

● Well Head Function

TRANSIENT @ 32 hours
FLOW ANALYSIS OF 50 ft DEEP, 4 ft DIAMETER DRY WELL



Arrows indicate direction of flow and relative magnitude of velocity.
Contours are Pressure Head in Feet.

LEGEND

▼ Zero Flux

◁ Potential Seepage Face

● Well Head Function

WASTE MANAGEMENT PLAN
PACIFICA RIDGE PROJECT
Tentative Map (TM) No. 1381777

PREPARED FOR:

Raintree Residential, LLC
11855 Sorrento Valley Rd. #523
San Diego, CA 92121

PREPARED BY:

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May 29, 2015
Revised October 27, 2015

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B 2015 Certified Construction & Demolition Recycling Facility Directory
C Waste Management Form – Part I
D City of San Diego C&D Debris Conversion Rate Table
E City of San Diego Waste Generation Factors – Occupancy Phase
F Recycling Collection Service Providers Businesses and Multi-family Complexes

1.0 PURPOSE

The City's *California Environmental Quality Act (CEQA) Significance Determination Thresholds* for solid waste identify a threshold of 1,500 tons of waste or more during construction and demolition (C&D) for direct solid waste impacts, and 60 tons of waste or more during C&D for potentially significant cumulative solid waste impacts. The purpose of this Waste Management Plan (WMP) is to identify the quantity of solid waste that would be generated by the Pacifica Ridge Project (project) throughout its construction and operational phases, and to identify measures to reduce the project's impacts from solid waste in accordance with the City of San Diego's (City's) waste reduction ordinances and the waste diversion goals.

This WMP has been prepared consistent with applicable federal, state, and local laws, regulations and standards relevant to the Pacific Ridge project. Its goal is to implement an approach for managing waste that conserves landfill space, preserves environmental quality, conserves natural resources, and reduces disposal costs. Solid waste disposal in the project area is provided by the combined services of the City's Environmental Services Department (ESD) and private collectors. The City provides refuse collection for single-family residences on dedicated public streets and private hauling companies service multi-family residences, commercial and office uses. Refuse from the surrounding area is generally taken to the Miramar Landfill which is operated by the ESD.
This WMP must be conceptually approved by the City's ESD and discussed in the project's environmental document pursuant to the *CEQA Significance Determination Thresholds*.

1.1 REGULATIONS

The Assembly Bill (AB) 939: Integrated Waste Management Act, passed in 1989, requires a 50 percent reduction in solid waste generation from all jurisdictions in California by 2000. In 2011, AB 341 by the State legislature increased the requirement to 75 percent by the year 2020. The City satisfied the original goal and is currently working to achieve the new, higher goal.

The following regulations apply to projects being issued discretionary permits within the City to assure solid waste is being diverted from landfills in accordance with state-mandated diversion goals. Proper separation and diversion of recyclable waste materials is required by the City in order to divert each material type to a recycling/reuse facility with the highest possible diversion rate. In order to comply with City's waste reduction ordinances and the waste diversion goals established in AB 341, the project must achieve a 75 percent diversion rate during demolition and construction.

In 1997, the City of San Diego adopted Section 142.0801 of the San Diego Municipal Code (SDMC), *Refuse and Recyclable Materials Storage Regulations*. The ordinance requires minimum storage areas to facilitate the diversion of recyclable materials from landfill disposal. Specifically, Section 142.0801 provides for permanent, adequate, and convenient space for the storage and collection of refuse and recyclable material to encourage recycling of solid waste.

In 2007, the City adopted a *Recycling Ordinance* contained in SDMC Section 66.0701 et seq. The ordinance requires recycling of plastic and glass bottles and jars, paper, newspaper, metal containers and cardboard at all single-family residences, commercial facilities, multi-family residences with service for 4 cubic yards or more and at certain special events requiring a City permit. The Recycling Ordinance requires not only the provision of recycling service but also the education of tenants on waste reduction and recycling methods.

As of 2008, the City adopted a *Construction and Demolition (C&D) Debris Diversion Deposit Ordinance*. The ordinance, contained in SDMC Section 66.0601, requires that the majority of construction, demolition, and remodeling projects requiring building, combination, and demolition permits apply for a demolition or construction permit to estimate the volume of waste they will generate and post a refundable C&D Debris Recycling deposit. The deposit is held until receipts are shown that demonstrate the project diverted from disposal at least 50 percent of their debris by recycling, reusing or donating usable materials. The ordinance is designed to keep construction and demolition materials out of local landfills and ensure they get recycled.

The ordinance further stipulates that when mixed debris facilities with a permitted daily tonnage capacity of at least 1,000 tons maintain a 75 percent diversion rate for three consecutive calendar year quarters, projects would be required to divert 75 percent of their wastes. Greater than 75 percent diversion also may be required for a project if a higher goal is specified during discretionary permitting. Mixed debris recyclers in San Diego County currently achieve between 65 and 89 percent diversion rates at their facilities (refer to Appendix B). For a project that would dispose of mixed debris at one of the facilities that achieve a 65 percent diversion rate, virtually all clean C&D waste from a project must be source separated and sent to a material-specific recycling facility, such as aggregate and metal recyclers, in order to achieve a 75 percent diversion rate. Higher diversion rates can also be accomplished by salvage and/or on-site reuse of C&D materials.

In accordance with the ordinance, a properly completed Waste Management Form - Part I must be filed with the Building Permit or Demolition/Removal Permit application (see Appendix C)

1.2 CEQA SIGNIFICANCE DETERMINATION THRESHOLDS

As stated in the City *CEQA Guidelines for a Waste Management Plan* (City 2013), implementation of the City regulations and ordinances alone would not achieve the 75 percent diversion goal targeted by the State (i.e., AB 341). The City's ESD estimates that compliance with existing City ordinances and regulations alone achieves only an approximate 40 percent diversion rate. Therefore, discretionary projects must undertake additional measures to comply with existing regulations.

Direct Impacts

Discretionary projects that include the construction, demolition, or renovation of 1,000,000 square feet (SF) or more of building space may generate approximately 1,500 tons of waste or more during construction and demolition, and are considered to have direct impacts on solid waste services.

- Direct impacts result from the generation of large amounts of waste, which brings facilities closer to daily throughput limits, shortens facility lifespans, requires increased numbers of trucks and other equipment, and makes it difficult for the City to achieve required waste reduction levels. Waste management planning is based on a steady rate of waste generation and does not assume increased waste generation due to growth.

- While all projects are required to comply with the City's waste management ordinances, direct impacts are mitigated by the implementation of project-specific WMPs, which may reduce solid waste impacts to below a level of significance.

- For projects over 1,000,000 square feet, a significant direct and cumulative solid waste impact would result if the compliance with the City's ordinances and the WMP fail to reduce the impacts of such projects to below a level of significance and/or if a WMP for the project is not prepared and conceptually approved by the ESD prior to distribution of the draft environmental document for public review.

Cumulative Impacts

Discretionary projects that include the construction, demolition, and/or renovation of 40,000 SF or more of building space may generate approximately 60 tons of waste or more, and are considered to have cumulative impacts on solid waste services.

- While all projects are required to comply with the City's waste management ordinances, cumulative impacts are typically mitigated by the implementation of a project-specific WMP that reduces solid waste impacts to below a level of significance.

Potential Project Impacts

The Pacifica Ridge project would construct approximately 63,500 SF of multi-family housing structures and would not include construction, demolition, or renovation of 1,000,000 SF or more of building space; therefore, the project would not generate more than 1,500 tons of solid waste materials during demolition and construction and direct impacts are not expected. However, the project proposes construction of more than 40,000 SF of building area, thereby exceeding the City's threshold for cumulative solid waste impacts without implementation of solid waste diversion measures. Because implementation of the project without waste diversion measures would exceed the cumulative solid waste threshold, preparation of this WMP is required to ensure that the project's contribution to the overall waste produced within the City will be reduced sufficiently to allow the City to comply with the 75 percent waste reduction goal established by the State.

2.0 PROJECT DESCRIPTION

The 4.23-acre Pacifica Ridge project site is located north of Beyer Boulevard and east of Smythe Avenue in San Ysidro, a community of the City (see Figure 1, *Project Aerial Map*). The undeveloped site with frontage along Smythe Avenue is situated adjacent to existing single-family and multi-family residential development. In addition to nearby residential uses, Smythe Avenue Elementary School is situated northwest of the property, while La Mirada Elementary School occurs northeast of the site. The property consists of three parcels, assessor parcel numbers (APNs) 638-060-03, 638-060-04, 638-060-041, and public right-of-way associated with Smythe Avenue. The property is zoned as RM-1-1 (Multi-family Residential) and designated for Medium density residential use within the Draft San Ysidro Community Plan update. As an undeveloped property with no structures or uses, no waste is currently generated from the site.

The project site features a west-facing cut slope along Smythe Avenue and the undisturbed portion of the site occurs atop that slope generally rising from west to east. Approximately 2.7 acres of the site is less than 25 percent slope, the balance features a gradient steeper than 25 percent. Elevations range from approximately 210 feet above mean sea level (AMSL) in the northeastern portion of the site to approximately 120 feet AMSL in the southwestern corner. The site is primarily dominated by disturbed habitat (2.82 ac), with native vegetation and ornamental landscaping (1.35 ac) covering the balance of the site.

The Applicant is requesting approval of a Tentative Map (TM) No. 1381777 to consolidate the existing lots into one parcel and a Site Development Permit (SDP) to develop on Environmentally Sensitive Lands (ESL), consisting of sensitive biological resources and steep hillsides. Site development would include 44, two-story, detached-condominium units; surface parking lots; and associated landscaped open space areas (i.e., private and public) and infrastructure (as shown in Appendix A). The three- to four-bedrooms condominiums would feature two-car garages. Primary site access would be via a private drive constructed to intersect with Smythe Avenue at the northwest corner of the property; secondary access would connect the eastern portion of the site via a private drive to the existing cul-de-sac at Camino Del Progresso. Smythe Avenue would be widened and improved along the project site frontage. Surface parking and drives would be constructed internally throughout the site. Plantable retaining walls would be installed and landscaped along Smythe Avenue and adjacent to an internal private drive. A bioretention/storm water basin is proposed in the northwestern portion of the site near the site entrance; an underground storage vault would be installed adjacent to the basin. Refuse and recycling storage would be provided within the garage of each unit.

In preparing the site for construction, the project would require removal of the existing vegetation, concrete brow ditches around the perimeter of the site, and asphalt/concrete along the edge of Smythe Avenue. Grading is anticipated to require 67,890 cubic yards (CY) of cut at a maximum depth of 40 feet; 10,040 CY would be used as fill material. The remaining 57,950 CY of fill material would be exported off site to other construction sites nearby. The project is anticipated to be constructed over a period of 12 months. Grading would take approximately 3 months and building construction would occur over a 9-month period. During project operation, the site would be served by private waste haulers who would bring waste to a City waste disposal facility.

3.0 PRE-CONSTRUCTION WASTE GENERATION AND DIVERSION

The City *2015 Certified Construction & Demolition Recycling Facility Directory* (Appendix B) provides guidance on identifying recycling/reuse facility locations, accepted materials, recycling/reuse rates, and associated disposal fees and/or the value of the materials accepted for recycling/reuse. The California Department of Resources Recycling and Recovery's (CalRecycle) online *Recycled-Content Product Manufacturers* (http://www.calrecycle.ca.gov/RCPM/) provides the name of product manufacturers offering source materials made with recycled materials.

All C&D-generated waste would be subject to compliance with the source separation and diversion requirements contained in this WMP to divert, recycle, and/or re-use these materials to the maximum degree possible. "Mixed C&D Debris" recyclers attain at most an 85 percent diversion rate, whereas as identified in the City's *2015 Certified Construction & Demolition Recycling Facility Directory* (Appendix B), "source separated" material recyclers can attain nearly 100 percent diversion rates. As a result, in order to achieve the highest level of waste diversion from landfills, and highest dollar value for the quality of materials, the project would source separate (segregate) clean recyclable materials on the site by material type and divert them for recycling or reuse at City-certified facilities specializing in each material type.

Responsibility for ensuring ongoing WMP compliance would be under the direction of the Project Solid Waste Management Coordinator (SWMC), as assigned by Raintree Residential, LLC (Applicant). The SWMC will have the authority to provide guidelines and procedures for contractor(s) and staff to implement waste reduction and recycling efforts. These responsibilities will be, but not limited to, the following:

- Review and understand the WMP, including responsibilities of the SWMC.
- Communicate waste reduction and recycling goals to all contractors and subcontractors, and ensure material separation and coordinate proper disposal and diversion of waste generated.
- Work with contractor(s) to estimate quantities of each type of material that will be salvaged, recycled, or disposed of as waste, then assist contractor(s) with documentation.
- Review and update procedures as needed for material separation and verify availability of containers and bins needed to avoid delays.
- Review and update procedures for periodic solid waste collection and transportation to recycling and disposal facilities.
- Review and update solid waste management requirements for each trade.
- Possess the authority to issue stop work orders if proper procedures are not being followed.

3.1 CLEARING AND GRUBBING

Site preparation would require the clearing/grubbing of existing vegetation and the removal of concrete brow ditches and asphalt present within the on-site portion of Symthe Avenue right-of-way. Other waste materials associated with the clearing and grubbing are anticipated to include negligible amounts of waste generated by contractors working on the site during the grading process.

The project is anticipated to require net export of approximately 1,438.5 tons of removed vegetation (clearing and grubbing) during site preparation process. This estimate is based on the City's *C&D Debris Conversion Rate Table*, which identifies a weight of 0.15 tons/CY of vegetation (Appendix D). According to the Biological Assessment Report prepared for the Pacifica Ridge project, the site development would result in direct permanent impacts to 4.15 acres, or 180,774 SF, of vegetated area, including disturbed habitat, maritime succulent scrub and ornamental vegetation (LSA Associates 2013).

Approximately 2.82 acres of the site feature disturbed habitat containing such weedy species as fennel, mustard, bromes, castor bean and other non-native plant species. Assuming a 122,839 SF area at an average vegetation height of 1 foot, the disturbed habitat would produce 122,839 cubic feet (or 4,550 CY) of material. The maritime succulent scrub is dominated by such as species as coastal cholla (*Cylindropuntia prolifera*), California sagebrush (*Artemisia californica*), California buckwheat (*Eriogonum fasciculatum*), and jojoba (*Simmondsia chinensis*). Several San Diego barrel cactus (*Ferocactus viridescens*) individuals and one golden-spined cereus (*Bergerocactus emoryi*) are also present at the southern portion of the study area (LSA 2013). For material estimating purposes it was assumed that the 1.23 acre (53,579 SF) maritime succulent scrub area averages two feet in height, equating to 107,158 cubic feet or 3,968 CY of vegetation. The ornamental vegetation consists of hottentot-fig (*Carpobrotus edulis*) which is less than six inches in height. The ornamental vegetation estimates were determined based on the existing approximately 57,935 SF of vegetated area and an average vegetation height of 6 inches, which would equate to approximately 28,968 cubic ft or 1,072 CY. A total of 258,965 cubic feet or 9,590 CY of waste vegetation would be produced during site preparation. Vegetation would be processed and recycled at a target rate of 100 percent diversion of vegetation waste at Miramar Greenery, a City-certified green waste recycling facility (Appendix B).

Approximately 28.5 CY or 20 tons of concrete brow ditches and 90 CY or 63 tons of asphalt/concrete would be removed from the Symthe Avenue frontage along the project site during the site preparation process. This estimate is based the City's *C&D Debris Conversion Rate Table*, which identifies a weight of 0.70 ton/CY of asphalt construction debris (Appendix D). Asphalt and concrete would be recycled at the Otay Valley Rock site in Chula Vista, resulting in a 100 percent diversion rate.

3.2 GRADING

According to the preliminary grading shown on the project plans, the project would generate 67,890 CY (88,356 tons) of soil material during the grading process (Appendix A). Approximately 10,040 CY (13,052 tons) of soil material would be backfilled or reused on site, resulting in estimated 57,950 CY (74,756 tons) that would be exported off site. Estimates were based the City's *C&D Debris Conversion Rate Table,* which identifies an excavated soil weight of 1.30 tons/CY (Appendix D). Excavated soil is anticipated to be diverted at a rate of 100 percent, based upon the City's *2015 Certified Construction & Demolition Recycling Facility Directory* (Appendix B). Excavated soils not proposed for fill on site are anticipated to be diverted to construction sites in San Diego (i.e., 307

Sycamore Ave, San Ysidro, and/or 790 Ada St, Chula Vista). Other waste materials associated with grading are anticipated to include negligible amounts of waste generated by contractors working on site during the site preparation process.

During the project's pre-construction phase, an overall 100 percent diversion rate is targeted for materials generated during pre-construction activities, as shown in Table 1. From preconstruction to occupancy of the Pacifica Ridge project, the WMP will provide contractors and homeowners' guidelines to ensure the proper reduction, segregation, recycling, and disposal of demolition, construction, and on-going operational waste. Proper segregation of recyclable materials is required based on type of materials generated and the availability of recycling facilities able to accept those materials. This responsibility will be under the direction of the assigned SWMC.

The project SWMC will coordinate with ESD and/or Mitigation Monitoring staff, including regular communication and invitations to the work site. An invitation will be extended to an ESD representative at least 7 days prior to attend each pre-construction meeting of each phase of the development.

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Table 1
PRE-CONSTRUCTION SOLID WASTE GENERATION AND DIVERSION

Phase	Material	Volume[1]	Unit	Tons/Unit Conversion Factor	Tons	Diversion Rate (Percent)[2]	Recycling Facility/ Destination[3]	Tons Diverted	Tons Disposed
Clearing/ Grubbing	Vegetation Debris	9,590	CY	0.15	1,438.5	100	A	1,438.5	0
Clearing/ Grubbing	Construction Debris	118.5	CY	0.70	83.0	100	B	83.0	0
Grading	Soil	57,950	CY	1.3	74,756.0	100	C	74,756.0	0
				TOTAL	**76,277.5**	**100**	**--**	**76,277.5**	**0**

*Facility/Destination Key***:**

A. Miramar Greenery, 5180 Convoy Street, San Diego, CA 92111
B. Otay Valley Rock, 2041 Heritage Road, Chula Vista, CA 91913
C. Construction sites at 307 Sycamore Ave, San Ysidro, 92173 and/or 790 Ada St, Chula Vista, 91913

Sources: SB&O (2015); City's *2015 Certified Construction & Demolition Recycling Facility Directory* (Appendix C); City C&D Debris Conversion Rate Table (Appendix D)

[1] Table information subject to field verification during pre-construction.

[2] Total diversion rate based on the percentage of total tons of waste diverted over the total tons of waste generated.

[3] If for any reason listed facilities are not available, the Applicant would contract with another source separating recycling facility listed in the City's *2015 Certified Construction & Demolition Recycling Facility Directory* with an equal or greater diversion rate to ensure diversion rates meet those estimated in this table.

CF = cubic feet; CY = cubic yards

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4.0 CONSTRUCTION WASTE GENERATION AND DIVERSION

As previously described, the Pacific Ridge project proposes construction of 44, two-story, detached condominium units (equating to 63,492 SF of new residential building area) with associated landscaped open space, private drives, parking and utility infrastructure. The project also includes improvements to Smythe Avenue that would widen the existing road to provide for additional travel lanes, a bike lane, sidewalks and a parkway along the project frontage.

No specific construction materials or quantities are available at this preliminary planning level. The residential buildings would be erected with wood frame construction (Type VB). Floor coverings are anticipated to consist of carpeting and ceramic tiling. Based on the type of residential structures proposed, the following building materials are likely to generate waste during construction in decreasing order of typical debris generation rates (Contra Costa County 2015). These estimates assume compliance with the 2013 California Green Building Standards Code (CalGreen):

- Wood (42.4%)
- Drywall (27.3%)
- Concrete (12.0%)
- Brick and Other Mixed Debris (7.3%)
- Cardboard (5.4%)
- Metals (1.8%)
- Asphalt (1.4%)
- Plastics and Foam (1.4%)
- Other Packaging (0.6%)
- Textiles, Carpet, and Carpet Padding (0.4%)

In addition, a negligible amount of trash would be generated by contractors working onsite during the grading process. Trash generated onsite would be collected by a commercial trash collection company and taken to the Miramar Landfill.

4.1 CONSTRUCTION WASTE GENERATION AND DIVERSION

In a 2006 study for the State of California Integrated Waste Management Board of new residential construction waste, about 76 percent of this type of waste was estimated to be recoverable (Cascadia Consulting Group 2006). Based on construction industry information, it was estimated that new residential construction would generate 4.38 lbs/SF of waste materials during construction (4.38 lbs = 0.002 tons) (Contra Costa County 2015). Based on the total SF of the project (i.e., 63,492 SF) and the industry standard construction waste generation rate, the project would produce 278,095 lbs or 556 tons of construction waste. Taking into consideration the typical composition of the residential development waste using the percentages noted above, the project would produce a range of materials during its construction phase (as shown in Table 2).

Table 2
CONSTRUCTION SOLID WASTE GENERATION

Material	Generation Rate (Percent)	Tons Generated[1]
Wood	42.4	235.7
Drywall	27.3	152.0
Concrete	12.0	66.7
Brick and Other Mixed Debris	7.3	40.6
Cardboard	5.4	30.0
Metals	1.8	10.0
Asphalt	1.4	7.8
Plastics and Foam	1.4	7.8
Other Packaging	0.6	3.3
Textiles, Carpet, and Carpet Padding	0.4	2.2
TOTALS	**100.0**	**556.0**

Source: Contra Costa County 2015; http://www.cccounty.us/4746/CalGreen-Construction-Demolition-Debris-

[1] Total tons of construction waste based on quantities calculated above.

Diversion and disposal of these construction materials is estimated below for the project in Table 3 based on the project's diversion rate goals.

Table 3
CONSTRUCTION SOLID WASTE DIVERSION

Material	Diversion Goals (Percent)	Destination	Tons Diverted	Tons Disposed
Wood	100	A	235.7	0.0
Drywall	75	B	114.0	38.0
Concrete	100	C	66.7	0.0
Brick and Other Mixed Debris	75	D	30.5	10.1
Cardboard	100	E	30.0	0.0
Metals	75	F	7.5	2.4
Asphalt	100	C	7.8	0
Plastics and Foam	75	E	5.9	1.9
Other Packaging	75	E	2.5	0.8
Textiles, Carpet, and Carpet Padding	75	G	1.7	0.5
TOTALS	**90**	**-**	**502.3**	**53.7**

Facility/Destination Key:
A. Miramar Greenery, 5180 Convoy Street, San Diego, CA 92111
B. EDCO Recovery and Transfer, 3660 Dalbergia St., San Diego, CA 92113
C. Otay Valley Rock, 2041 Heritage Road Chula Vista, CA 91913
D. Otay C&D Inert Debris Processing Facility, 1700 Maxwell Rd, Chula Vista, CA 91913
E. Cactus Recycling, 8710 Avenida de la Fuente, San Diego, CA 92154
F. Pacific Steel, 1700 Cleveland Avenue, National City, CA 91913
G. DFS Flooring, 10178 Willow Creek Road, San Diego, CA 92131

4.2 POST-CONSUMER CONTENT CONSTRUCTION MATERIALS

In order to further minimize waste, the project would utilize recycled content construction materials, where possible. The contractor may identify products with recycled content by consulting the state's database (http://www.calrecycle.ca.gov/RCPM/) or product representatives. Given the preliminary nature of the project plans, an overall target of five percent of the total value of materials purchased for project construction activities would be either post-consumer recycled or pre-consumer recycled materials. Receipts demonstrating post-consumer content would be provided to ESD staff at or prior to the pre-construction meeting(s).

5.0 OCCUPANCY WASTE GENERATION AND DIVERSION

The project would be managed under the Applicant or its designee(s). The City's Storage Ordinance (Municipal Code Section 142.0801 et. seq.) requires the provision of separate bins for recyclable waste products to be separated from non-recyclable solid waste. Recycling facilities would be provided within the garages for each residential unit in compliance with the Storage Ordinance, meeting or exceeding the minimums.

The Applicant or its designee(s), would educate the residences regarding the appropriate waste diversion program to ensure the proper handling of waste. Each resident would be educated on the principles of proper waste handling and diversion to meet the Applicant's goal to reduce/reuse/recycle. According to the City's ESD multi-family residential waste generation rate of 1.2 tons / year / unit (see Appendix E), the expected waste generation and diversion for 44 new residential units are as shown in Table 4. The ten most prevalent disposed materials found in residential waste are food (18 percent), leaves and grass (9 percent) and compostable/soiled paper (6 percent) (Cascadia Consulting Group 2014).

Table 4
ESTIMATED ANNUAL SOLID WASTE GENERATION AND DIVERSION DURING OCCUPANCY

Land Use	Units	Waste Conversion Rate (per unit/year)	Tons Generated (per year)	Expected Percent Diverted from Source-Separated Recycling[1,2]	Tons Diverted (per year)	Tons Disposed (per year)
Residential	44	1.2 tons	52.8	40	21.1	31.7

Source: City 2012 (Appendix E)

[1] Reflects compliance with existing City Storage Ordinance and City Recycling Ordinance.

[2] The Applicant would contract with City-approved recycling haulers and disposal facilities.

In order to get closer to meeting the 75 percent diversion target for residential uses, common area landscaping would be maintained by professional landscape contractors who would be required to divert all landscape greenery directly to a greenery recycling yard, such as and diverted to Miramar Greenery, for a diversion rate of 100 percent. Thus, the actual diversion levels would be higher than 21.1 tons per year.

6.0 CONCLUSION

As discussed above, a project may result in a significant direct impact under City CEQA Significance Thresholds if it generates more than 1,500 tons of solid waste materials during construction and demolition. Projects that include the construction, demolition, and/or renovation of 40,000 SF or more of building space or generate approximately 60 tons of waste or more, are considered to have potentially significant cumulative impacts on solid waste services. Further, AB 341 requires the diversion of 75 percent of solid waste, and mandatory provision of recycling collection service during occupancy. The Pacifica Ridge project proposes construction of more than 40,000 SF of building area, thereby exceeding the City's threshold for cumulative solid waste impacts without implementation of solid waste diversion measures.

6.1 WASTE GENERATION AND DIVERSION SUMMARY

During pre-construction clearing/grubbing and grading, the project would produce 76,277.5 tons of soil material, asphalt, concrete and green waste, and divert 76,277.5 tons of these materials from the landfill, as identified in Table 1. Approximately 0 tons of solid waste material generated during pre-construction are anticipated to be disposed of as non-recyclable/non-reusable waste at Miramar Landfill, for an overall pre-construction diversion rate of 100 percent.

During construction, the project would produce 556 tons of solid waste (wood, concrete, asphalt, drywall, carpet, mixed debris, metals, trash, etc.), and divert 502.3 tons of solid waste materials from the landfill. The diverted material would consist of clean, source-separated (segregated) recyclable and/or reusable material, as well as mixed debris, to be deposited at the recycling/reuse facilities identified in Table 3. Approximately 53.7 tons of solid waste material generated during construction is anticipated to be disposed of as non-recyclable/non-reusable waste at Miramar Landfill, for an overall diversion rate during construction of approximately 90 percent.

During occupancy, it has been estimated that the project would generate 52.8 tons of waste per year, and would divert 21.1 tons per year to recycling/reuse facilities, resulting in an estimated 40 percent diversion of waste from the landfill (Table 4). These materials would consist of clean, recyclable materials, gathered in on-site recycling bins and collected by City-approved recycling collection providers (Appendix F). Approximately 31.7 tons per year, or 60 percent of occupancy material generated, are estimated to be disposed of as non-recyclable/non-reusable waste at Miramar Landfill. This amount would be reduced further by the use of professional landscape contractors who would be required to divert all landscape greenery directly to a greenery recycling yard.

6.2 COMPLIANCE WITH REGULATIONS

Based on the quantified waste generation and diversion rates discussed above, the Pacifica Ridge project would exceed the 75 percent solid waste diversion rate for waste produced during the construction phases. The project would, however, fail to meet the 75 percent waste reduction target annually once the residences are occupied. Nonetheless, the project would result in a less than significant direct impact to solid waste facilities as follows:

- The project would fall below the City's *CEQA Significance Determination Threshold* (generation of more than 1,500 tons of solid waste materials) for direct impacts to solid waste facilities during construction (i.e., 53.7 tons of C&D materials to Miramar Landfill).

- The project would exceed the 75 percent solid waste diversion rate for waste produced during pre-construction and construction by achieving 100 percent and 90 percent diversion rates, respectively.

Regarding cumulative impacts, the project would achieve an average 40 percent diversion of waste via source-separated recycling and would dispose of approximately 31.7 tons of waste per year once the buildings are occupied. This would not exceed the City's *CEQA Significance Determination Threshold* (of 60 tons or more of waste) for cumulative impacts to solid waste services. These operational diversion rates would be assured when the project provides trash and recycling storage space per the City Storage Ordinance and complies with the City Recycling Ordinance by providing adequate space, bins, and educational materials for recycling during unit occupancy. Therefore, the project's contribution to cumulative solid waste generation would be less than considerable.

7.0 REFERENCES

California Department of Resources Recycling and Recovery (CalRecycle)

2013 CalRecycle Recycled Content Products Directory Website: http://www.calrecycle.ca.gov/RCP/Search.asp.

Cascadia Consulting Group

2014 *City of San Diego Waste Characterization Study (2012-2013)*.

City of San Diego (City)

2015a *2015 Certified Construction & Demolition Recycling Facility Directory*. Environmental Services Department. January 1.

2015b *New Construction & Demolition (C&D) Deposit Schedule*. January 1.

2012 *City of San Diego Waste Generation Factors – Occupancy Phase*. October 1.

2011a *California Environmental Quality Act Significance Determination Thresholds*. Development Services Department. Available at: http://www.sandiego.gov/development-services/pdf/news/sdtceqa.pdf. January, as amended.

2011b CEQA Waste Management Plan Information Bulletin

2008a *Construction and Demolition Debris Deposit Ordinance* (Municipal Code Chapter 6, Article 6, Division 6). January 1.

2008b *City of San Diego Construction & Demolition C&D Debris Conversion Rate Table*. May 21.

2007 *Recycling Ordinance* (Municipal Code Chapter 6, Article 6, Division 7). November.

1997 *Refuse and Recyclable Materials Storage Regulations* (Municipal Code Chapter 14, Article 2 Division 8). December 9.

Contra Costa County

2015 Average Amount of Construction and Demolition Debris Generated by Project Type and Typical Debris Generated by New Residential Construction under the 2013 California Green Building Standards Code (CalGreen). Available at: http://www.cccounty.us/4746/CalGreen-Construction-Demolition-Debris-

SB&O

2015 Personal communication between Steve Ott and Kim Baranek of Baranek Consulting Group, Inc. May 15.

State of California (State)

1989 *California Integrated Waste Management Act of 1989*. State of California Assembly Bill 939.

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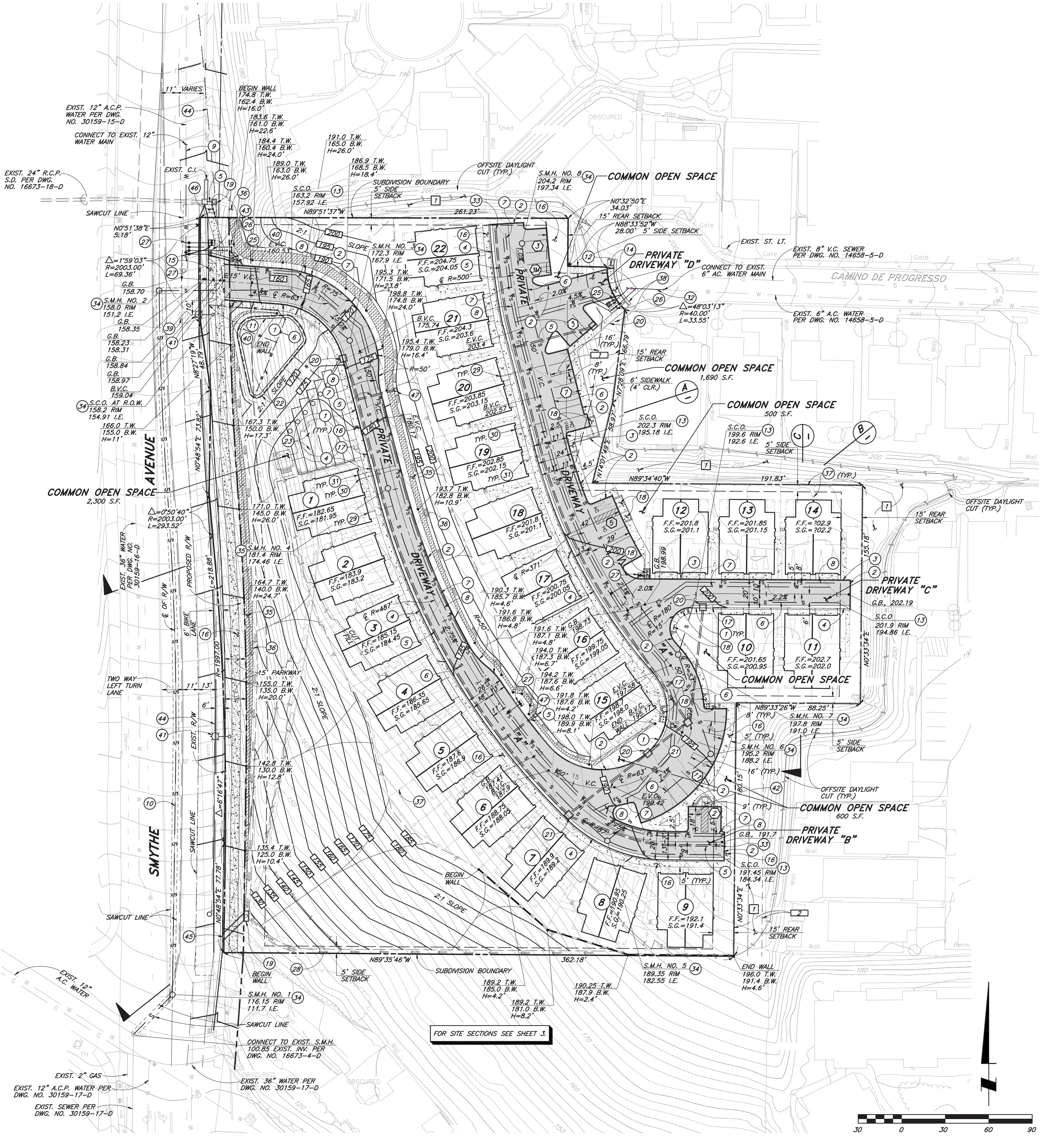
Appendix A

Pacifica Ridge Site Plan



Source: SB&O Inc. 2015

Appendix A

Site Plan

WASTE MANAGEMENT PLAN PACIFICA RIDGE PROJECT

BARANEK
Consulting Group

Appendix B

2015 Certified Construction & Demolition Recycling Facility Directory

THE CITY OF SAN DIEGO

ENVIRONMENTAL SERVICES DEPARTMENT

2015 Certified Construction & Demolition Recycling Facility Directory

These facilities are certified by the City of San Diego to accept materials listed in each category. Hazardous materials are not accepted. The diversion rate for these materials shall be considered 100%, except mixed C&D debris which updates quarterly. The City is not responsible for changes in facility information. Please call ahead to confirm details such as accepted materials, days and hours of operation, limitations on vehicle types, and cost. For more information visit: www.recyclingworks.com.

Please note: In order to receive recycling credit, Mixed C&D Facility and transfer station receipts must: *-be coded as construction & demolition (C&D) debris* *-have project address or permit number on receipt* **Make sure to notify weighmaster that your load is subject to the City of San Diego C&D Ordinance.* ***Note about landfills: Miramar Landfill and other landfills do not recycle mixed C&D debris.***	**Mixed C&D Debris**	**Asphalt /Concrete**	**Brick/Block/Rock**	**Building Materials for Reuse**	**Cardboard**	**Carpet**	**Carpet Padding**	**Ceiling Tile**	**Ceramic Tile / Porcelain**	**Clean Fill Dirt**	**Clean Wood / Green Waste**	**Drywall**	**Industrial Plastics**	**Lamps / Light Fixtures**	**Metal**	**Mixed Inerts**	**Styrofoam Blocks**
EDCO Recovery & Transfer 3660 Dalbergia St, San Diego, CA 92113 619-234-7774 | www.edcodisposal.com/public-disposal	65%											●					
EDCO Station Transfer Station & Buy Back Center 8184 Commercial St, La Mesa, CA 91942 619-466-3355 | www.edcodisposal.com/public-disposal	65%				●							●			●		
EDCO CDI Recycling & Buy Back Center 224 S. Las Posas Rd, San Marcos, CA 92078 760-744-2700 | www.edcodisposal.com/public-disposal	89%				●										●		
Escondido Resource Recovery 1044 W. Washington Ave, Escondido 760-745-3203 | www.edcodisposal.com/public-disposal	65%																
Fallbrook Transfer Station & Buy Back Center 550 W. Aviation Rd, Fallbrook, CA 92028 760-728-6114 | www.edcodisposal.com/public-disposal	65%				●										●		
Otay C&D/Inert Debris Processing Facility 1700 Maxwell Rd, Chula Vista, CA 91913 619-421-3773 | www.sd.disposal.com	66%																
Ramona Transfer Station & Buy Back Center 324 Maple St, Ramona, CA 92065 760-789-0516 | www.edcodisposal.com/public-disposal	65%				●										●		
SANCO Resource Recovery & Buy Back Center 6750 Federal Blvd, Lemon Grove, CA 91945 619-287-5696 | www.edcodisposal.com/public-disposal	65%				●										●		
All American Recycling 10805 Kenney St, Santee, CA 92071 619-508-1155 (Must call for appointment)						●											
Allan Company 6733 Consolidated Wy, San Diego, CA 92121 858-578-9300 | www.allancompany.com/facilities.htm					●										●		
Allan Company Miramar Recycling 5165 Convoy St, San Diego, CA 92111 858-268-8971 | www.allancompany.com/facilities.htm					●										●		
Allan Company 8514 Mast Blvd, Santee, CA 92701 619-448-4295 | www.allancompany.com/facilities.htm					●										●		
AMS 4674 Cardin St, San Diego, CA 92111 858-541-1977 | www.a-m-s.com								●									
AMS 1120 West Mission Ave, Escondido, CA 92025 858-541-1977 | www.a-m-s.com								●									
Armstrong World Industries, Inc. 300 S. Myrida St, Pensacola, FL 32505 877-276-7876 (Press 1, Then 8) www.armstrong.com/commceilingsna								●									
Cactus Recycling 8710 Avenida De La Fuente, San Diego, CA 92154 619-661-1283 | www.cactusrecycling.com					●								●		●		●

	Mixed C&D Debris	Asphalt /Concrete	Brick/Block/Rock	Building Materials for Reuse	Cardboard	Carpet	Carpet Padding	Ceiling Tile	Ceramic Tile / Porcelain	Clean Fill Dirt	Clean Wood / Green Waste	Drywall	Industrial Plastics	Lamps / Light Fixtures	Metal	Mixed Inerts	Styrofoam Blocks
DFS Flooring 10178 Willow Creek Road, San Diego, CA 92131 858-630-5200 | www.dfsflooring.com						●	●										
Enniss Incorporated 12421 Vigilante Rd, Lakeside, CA 92040 619-443-9024 | www.enniss.net		●	●						●	●							
Escondido Sand and Gravel 500 N. Tulip St, Escondido, CA 92025 760-432-4690 | www.weirasphalt.com/esg		●															
Habitat for Humanity ReStore 10222 San Diego Mission Rd, San Diego, CA 92108 619-516-5267 | www.sdhfh.org/restore.php				●													
Hanson Aggregates West – Lakeside Plant 12560 Highway 67, Lakeside, CA 92040 858-547-2141		●															
Hanson Aggregates West – Miramar 9229 Harris Plant Rd, San Diego, CA 92126 858-974-3849		●								●							
Hidden Valley Steel & Scrap, Inc. 1342 Simpson Wy, Escondido, CA 92029 760-747-6330															●		
HVAC Exchange 2675 Faivre St, Chula Vista, CA 91911 619-423-1855 | www.thehvacexchange.com															●		
IMS Recycling Services 2740 Boston Ave, San Diego, CA 92113 619-231-2521 | www.imsrecyclingservices.com					●								●				
IMS Recycling Services 2697 Main St, San Diego, CA 92113 619-231-2521 | www.imsrecyclingservices.com													●		●		
Inland Pacific Resource Recovery 12650 Slaughterhouse Canyon Rd, Lakeside, CA 92040 619-390-1418											●						
Lakeside Land Co., Inc. 10101 Riverford Rd, Lakeside, CA 92040 619-449-9083 | www.lakesideland.com		●														●	
Lamp Disposal Solutions 8248 Ronson Ct, San Diego, CA 92111 858-569-1807 | www.lampdisposalsolutions.com														●			
Lights Out Disposal 1097 Palm Ave, Ste 100, El Cajon, CA 92020 619-438-1093 | www.lightsoutdisposal.com														●			
Los Angeles Fiber Company 4920 S. Boyle Ave, Vernon, CA 90058 323-589-5637 | www.lafiber.com						●	●										
Miramar Greenery, City of San Diego 5180 Convoy St, San Diego, CA 92111 858-694-7000 | www.sandiego.gov/environmental-services/miramar/greenery.shtml											●						
Moody's 3210 Oceanside Blvd., Oceanside, CA 92056 760-433-3316		●								●						●	
Otay Valley Rock, LLC 2041 Heritage Rd, Chula Vista, CA 91913 619-591-4717 | www.otayrock.com		●															
Pacific Steel, Inc. 1700 Cleveland Ave, National City, CA 91950 619-474-7081															●		
Reclaimed Aggregates Chula Vista 855 Energy Wy, Chula Vista, CA 91913 619-656-1836		●														●	

	Mixed C&D Debris	Asphalt /Concrete	Brick/Block/Rock	Building Materials for Reuse	Cardboard	Carpet	Carpet Padding	Ceiling Tile	Ceramic Tile / Porcelain	Clean Fill Dirt	Clean Wood / Green Waste	Drywall	Industrial Plastics	Lamps / Light Fixtures	Metal	Mixed Inerts	Styrofoam Blocks
Reconstruction Warehouse 3341 Hancock St., San Diego, CA 92110 619-795-7326 | www.recowarehouse.com				●													
Robertson's Ready Mix 2094 Willow Glen Dr, El Cajon, CA 92019 619-593-1856		●								●						●	
Romero General Construction Corp. 8354 Nelson Wy, Escondido, CA 92026 760-749-9312 | www.romerogc.com/crushing/nelsonway.htm		●															
SA Recycling 3055 Commercial St., San Diego, CA 92113 619-238-6740 | www.sarecycling.com															●		
SA Recycling 1211 S. 32nd St., San Diego, CA 92113 619-234-6691 | www.sarecycling.com															●		
Vulcan Carol Canyon Landfill and Recycle Site 10051 Black Mountain Rd, San Diego, CA 92126 858-530-9465 | www.vulcanmaterials.com/carrollcanyon		●	●							●						●	

Appendix C

Waste Management Form – Part I

The City of San Diego

Waste Management Form - Part I

Construction & Demolition (C&D) Debris Deposit Program

Required for projects described in Municipal Code §66.0601-66.0610.

Environmental Services Department

Deposit will be fully refunded if at least 50%* of ALL debris generated from the project is recycled.
If the minimum required recycling rate is not met, the deposit refund will be prorated. **Deposit refund requests must be accompanied by weigh tickets for ALL debris generated, including all trash, salvage, reuse and recycling, and be submitted within 180 days from final inspection.** Refer to **Information Bulletin 119** for details on acceptable documentation.

Complete Part I before obtaining a building, combination or demolition permit.
Submit this form and your deposit to the Development Services Department staff at permit issuance.

Refundable Party Contact Information:

Name ____________________ Title ____________________ Company ____________________
Address ____________________ City ____________________ State ____ Zip ____________
Phone ____________________ Email ____________________

Project Information:

Approval/Permit No. ____________________ Project Title ____________________
Project Address Smythe Avenue (Pacifica Ridge) Zip ____________
Project Type: ☐ *New Construction* ☐ *Addition/Alteration* ☐ *Demolition*
Building Type: ☐ *Commercial* ☐ *Residential*
Estimated Square Feet ____________________
Estimated Start Date ________/________/________
Estimated Completion Date ________/________/________

TO BE FILLED OUT BY DSD STAFF
"C&D Deposit" Paid $____________________
Invoice # ____________ Date Paid ____________

Fill out the table with *estimated* quantities in tons for each material that will be generated by your project. Note: A + B = C
Please use the ***City Construction and Demolition Debris Conversion Table*** if converting from volume to tonnage.

Material Type	**A** Estimated Salvage, Reuse or Recycle	**B** Estimated Disposal (Trash)	**C** Estimated Total Debris Quantity	**Hauler**	**Certified Recycling Facility or Disposal Destination**
Asphalt & Concrete					
Brick / Masonry / Tile					
Cabinets, Doors, Fixtures, Windows (circle all that apply)					
Cardboard					
Carpet, Padding / Foam					
Ceiling Tile (acoustic)					
Dirt					
Drywall					
Landscape Debris					
Mixed C&D Debris					
Mixed Inerts					
Roofing Materials					
Scrap Metal					
Stucco					
Unpainted Wood & Pallets					
Garbage / Trash	▨				
Other:					
TOTAL				▨	▨

To estimate Recycling Rate: (Total A/Total C) x 100 = Recycling %
MINIMUM RECYCLING RATE FOR ALL DEBRIS FROM YOUR PROJECT IS CURRENTLY 50%*
** Recycling rate is subject to change; check **Information Bulletin 119** for current rate.*

C&D debris may contain paint, asbestos, mercury switches, light bulbs, ballasts or other hazardous wastes that require removal prior to disposal. The Miramar Landfill cannot accept hazardous waste. For information on waste acceptance at the Miramar Landfill, call (858) 694-7000.

Appendix D

City of San Diego C&D Debris Conversion Rate Table

CITY OF SAN DIEGO
CONSTRUCTION & DEMOLITION (C&D) DEBRIS CONVERSION RATE TABLE

This worksheet lists materials typically generated from a construction or demolition project and provides formulas for converting common units (i.e., cubic yards, square feet, and board feet) to tons. It should be used for preparing your Waste Management Form, which requires that quantities be provided in tons.

Step 1
Enter the estimated quantity for each applicable material in Column I, based on units of cubic yards (cy), square feet (sq ft), or board feet (bd ft).

Step 2
Multiply by Tons/Unit figure listed in Column II. Enter the result for each material in Column III. If using Excel version, column III will automatically calculate tons.

Step 3
Enter quantities for each separated material from Column III on this worksheet into the corresponding section of your Waste Management Form.

For your final calculations, use the actual quantities, based on weight tags, gate receipts, or other documents.

		Column I			Column II		Column III
Category	Material	Volume	Unit		Tons/Unit		Tons
Asphalt/Concrete	Asphalt (broken)		cy	x	0.70	=	
	Concrete (broken)		cy	x	1.20	=	
	Concrete (solid slab)		cy	x	1.30	=	
Brick/Masonry/Tile	Brick (broken)		cy	x	0.70	=	
	Brick (whole, palletized)		cy	x	1.51	=	
	Masonry Brick (broken)		cy	x	0.60	=	
	Tile		sq ft	x	0.00175	=	
Building Materials (doors, windows, cabinets, etc.)			cy	x	0.15	=	
Cardboard (flat)			cy	x	0.05	=	
Carpet	By square foot		sq ft	x	0.0005	=	
	By cubic yard		cy	x	0.30	=	
Carpet Padding/Foam			sq ft	x	0.000125	=	
Ceiling Tiles	Whole (palletized)		sq ft	x	0.0003	=	
	Loose		cy	x	0.09	=	
Drywall (new or used)	1/2" (by square foot)		sq ft	x	0.0008	=	
	5/8" (by square foot)		sq ft	x	0.00105	=	
	Demo/used (by cubic yd)		cy	x	0.25	=	
Earth	Loose/Dry		cy	x	1.20	=	
	Excavated/Wet		cy	x	1.30	=	
	Sand (loose)		cy	x	1.20	=	
Landscape Debris (brush, trees, etc)			cy	x	0.15	=	
Mixed Debris	Construction		cy	x	0.18	=	
	Demolition		cy	x	1.19	=	
Scrap metal			cy	x	0.51	=	
Shingles, asphalt			cy	x	0.22	=	
Stone (crushed)			cy	x	2.35	=	
Unpainted Wood & Pallets	By board foot		bd ft	x	0.001375	=	
	By cubic yard		cy	x	0.15	=	
Garbage/Trash			cy	x	0.18	=	
Other (estimated weight)			cy	x	estimate	=	
			cy	x	estimate	=	
			cy	x	estimate	=	
			cy	x	estimate	=	

Total All ______________

5/21/08

Appendix E

City of San Diego Waste Generation Factors – Occupancy Phase

THE CITY OF SAN DIEGO

Waste Generation Factors – Occupancy Phase

The following factors are used by the City of San Diego Environmental Services Department to estimate the expected waste generation in a new residential or commercial development.

Residential Uses

Residential Unit = 1.6 tons/year/unit
Multi-family Unit = 1.2 tons/year/unit

Example: To calculate the amount of waste that will be generated from a project with 100 new homes, multiply the number of homes by the generation factor.

100 single family homes x 1.6 = 160 tons/year
100 multi-family units x 1.2 = 120 tons/year

Commercial/Industrial Uses

General Retail	0.0028
Restaurants & Bars	0.0122
Hotels/Motels	0.0045
Food Stores	0.0073
Auto/Service/Repair	0.0051
Medical Offices	0.0033
Hospitals	0.0055
Office	0.0017
Transp/Utilities	0.0085
Manufacturing	0.0059
Education	0.0013
Unclassified Services	0.0042

Example: To calculate the amount of waste that could be generated from a new building with 10,000 square feet for offices and 10,000 square feet for manufacturing, multiply the square footage for each use by the generation factor.

10,000 square feet x 0.0017 = 17 tons/year
10,000 square feet x 0.0059 = 59 tons per year

Total estimated waste generation for building = 76 tons/year

10/1/12

Appendix F

Recycling Collection Service Providers Businesses and Multi-family Complexes

THE CITY OF SAN DIEGO

Recycling Collection Service Providers for Businesses and Multi-Family Complexes

CERTIFIED RECYCLERS and FRANCHISE WASTE HAULERS

Companies listed below are **City-certified recyclers** or **franchise waste haulers** that will report your recycling service to the City on your behalf to document your compliance with the City Recycling Ordinance pursuant to § 66.0711 of the San Diego Municipal Code (SDMC). Visit recyclingworks.com to find out more about the City Recycling Ordinance.

COMPANY	**PHONE**	paper	cardboard	steel & tin cans	CRV aluminum	CRV glass	non - CRV glass containers	CRV (PET) plastic	non-CRV plastic containers	mixed rigid plastic	Industrial plastic	film plastic *	Styrofoam^{TM} *	wood pallets	green waste	multi-family service
Allan Company	(858) 578-9300	●	●	●	●	●	●	●	●	●						●
Allied Waste Services	(800) 421-9401	●	●	●	●	●		●	●	●		●	●		●	●
Cal Pac Recycling	(760) 768-3236	●	●			●	●									
Coast Waste Management	(760) 439-2824	●	●	●	●	●	●	●	●	●					●	●
Daily Disposal	(619) 702-3300	●	●	●	●	●	●	●	●	●		●		●	●	●
Debris Box	(619) 284-9245	●	●	●				●	●	●				●	●	●
Dependable Disposal	(619) 460-3551	●	●	●	●	●	●	●	●	●				●	●	●
EDCO Waste & Recycling	(619) 287-5612	●	●	●	●	●	●	●	●	●		●	●	●	●	●
Express Waste & Recycling	(858) 677-0881	●	●	●	●	●	●	●	●	●				●	●	●
IMS Recycling Services	(619) 231-2521	●	●	●	●	●		●	●	●	●		●			
Ingenium	(760) 745-8780	●	●				●		●	●	●	●	●	●		
Recon Recycling	(619) 955-8158	●	●	●	●	●	●	●	●		●					●
Sani-Tainer	(619) 287-7555	●	●	●	●	●	●	●	●			●		●	●	●
Tayman Industries	(858) 453-8878	●	●	●	●	●	●	●	●	●		●			●	●
Trash2cash	(858) 722-0034				●	●	●	●	●							
Urban Corps of San Diego	(619) 235-6884	●	●	●	●	●	●	●	●	●	●					●
Ware Disposal	(714) 664-0677	●	●	●	●	●	●	●	●	●		●	●	●	●	
Waste Management	(800) 596-7444	●	●	●	●	●	●	●	●	●					●	●
Webco	(619) 287-7555	●	●	●	●	●	●	●	●	●		●	●	●	●	●

* Film plastic and Styrofoam^{TM} must be bagged or separated - contact your hauler/recycler for details.

Some companies require a minimum quantity of material and/or may charge for collection. This guide is for information purposes only – the City of San Diego does not endorse these companies, make any guarantees, or assume any liability for the services they perform.

(SEE REVERSE SIDE FOR **NON-CERTIFIED RECYCLERS**)

For more information on City recycling and waste reduction programs, please call the Environmental Services Department at (858) 694-7000 or visit recyclingworks.com.

THE CITY OF SAN DIEGO

Recycling Collection Service Providers for Businesses and Multi-Family Complexes

NON-CERTIFIED RECYCLERS

Companies listed below are not City-certified, which means they may not have the City's minimum insurance requirements for franchise haulers and certified recyclers ($1 million worker compensation and general commercial / auto liability) and they are not required to report your recycling services to the City. You are free to use these recyclers, however, if you are subject to the City Recycling Ordinance (SDMC §§ 66.0701 – 66.0718) AND you use a non-certified recycler for some or all of your recycling service, you must **submit a Recycling Reporting Form by August 15th** each year to demonstrate compliance with the ordinance pursuant to SDMC § 66.0715. If you are not subject to the ordinance and use a non-certified recycler, you do not need to submit a Recycling Reporting Form. Visit recyclingworks.com to find out more about the City Recycling Ordinance and to download a Recycling Reporting Form.

COMPANY	PHONE	paper	cardboard	steel & tin cans	CRV aluminum	CRV glass	non - CRV glass containers	CRV (PET) plastic	non-CRV plastic containers	mixed rigid plastic	Industrial plastic	film plastic *	styrofoam^{TM} *	wood pallets	green waste	multi-family service
Arrow Metal Recycling	(619) 710-2666		●		●				●	●	●	●				
California Metals	(800) 286-JUNK			●	●	●	●	●	●							
Fibre Resources Unlimited	(619) 462-0098	●	●													
One Earth Recycling	(619) 456-0080				●	●	●	●	●							
MGS Enterprises Recyclers	(858) 395-9900	●	●	●	●	●	●	●	●	●	●			●		●
Quiroz Recycling	(619) 851-7835	●	●	●	●	●	●	●	●	●	●			●		●
Resource Mgmt Group	(619) 702-9121	●	●	●						●	●	●		●		
San Diego Fibres Corp	(619) 262-8090	●	●		●	●	●	●	●	●	●			●	●	
Jaimex Pallet Recovery	(619) 690-1108													●		

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(SEE REVERSE SIDE FOR **CERTIFIED RECYCLERS** AND **FRANCHISE HAULERS**)

ENVIRONMENTAL SERVICES DEPARTMENT

For more information on City recycling and waste reduction programs, please call the Environmental Services Department at (858) 694-7000 or visit recyclingworks.com.

SAN DIEGO RECYCLING WORKS