



SAFE, CLEAN WATER PROGRAM

FEASIBILITY STUDY REPORT

Regional Program Projects Module

PROJECT NAME	Garvey Avenue Grade Separation Drainage Improvement Project
PROJECT LEAD(S)	City of El Monte
SCW WATERSHED AREA	Upper San Gabriel River
PRELIMINARY SCORE	61
TOTAL FUNDING REQUESTED	\$ 4,000,000.00
PROJECT CAPITAL COST	\$ 4,100,000.00

Created On: Friday, February 7, 2020

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OVERVIEW

The objective of the Regional Infrastructure Program under the Safe, Clean Water (SCW) Program is to plan, build, and maintain multi-benefit watershed-based projects that improve water quality and increase water supply and/or enhance communities. A Feasibility Study is required before a project can be submitted for consideration and scoring for funding through the Los Angeles Region Safe, Clean Water (SCW) Program's Regional Infrastructure Program. Each Feasibility Study should provide enough information about a potential project to allow the Watershed Area Steering Committee members to make an informed decision for as to which projects should move forward for consideration for funding. The Minimum Feasibility Study Requirements for the Scoring and Consideration of Regional Infrastructure Program Projects is available at: <https://portal.safecleanwaterla.org/projects-module/>.

This document is based upon an output from the web-based tool called the 'SCW Regional Projects Module' (<https://portal.safecleanwaterla.org/projects-module/>). This output summarizes the information and data provided to Regional Projects Module, and also provides an initial estimate of project scoring per the SCW Infrastructure Program Project Scoring Criteria.

IMPORTANT: ALL SCORING ESTIMATES GENERATED BY THE PROJECTS MODULE ARE PRELIMINARY AND SUBJECT TO REVIEW AND REVISION BY THE SCORING COMMITTEE.

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1 GENERAL INFORMATION

This section provides general information on the project including location and project description.

1.1 Overview

The following table provides an overview of the project and the Project Developer(s):

Project Name:	Garvey Avenue Grade Separation Drainage Improvement Project
Project Description:	The Garvey Avenue Grade Separation Project is located in the City of El Monte. During the last 85 years development has occurred in this area that increases the stormwater runoff and contributed to a flooding problem at the grade separation sump. The project proposes a new storm drain and infiltration system (galleries) to alleviate the flooding at this location. The proposed storm drain improvements are located south of the I-10 freeway and the general alignment is southeast along Maxson Place, then across Garvey avenue running through an easement on private property to the existing storm drain system at Durfee Avenue.
SCW Watershed Area:	Upper San Gabriel River
Call for Projects year:	FY20-21
Total Funding Requested:	\$ 4,000,000.00
Project Weather Type:	Wet
Project Lead(s):	City of El Monte
Additional Project Collaborators:	
Additional Project Collaborators:	N/A
Additional Project Collaborators:	N/A
Is this a non-municipal project?	No

1.2 Project Location

The following table summarizes the project location:

Latitude:	34.06345
Longitude:	-118.014
Street Address:	Garvey avenue and Maxson place
City:	El Monte
State:	CA
Zip Code:	91731

Please see the following attachment(s) for a project location map.

Attachments for this Section	
Attachment Name	Description
Vicinity Map.pdf	Garvey Avenue Grade Separation Drainage Improvement Vicinity Map
Vicinity Map.pdf	

Is the project located within or providing a benefit to a Disadvantaged Community (DAC)?

Yes

Provide a summary of how the project will benefit its DAC with a discussion of measures on displacement avoidance.

The project benefits the DAC by providing:

- Improved public access to public right-of-ways and to commercial businesses through mitigated flooding
- Community Investment Benefit by improving public health (less standing water)
- Water Quality Benefits - pollution removal/load reduction
- Water Supply Benefits - recharges water table

Measures on displacement avoidance will include:

Community engagement and participation by including residents and stakeholders on advisory councils; providing timelines to residents and stakeholders; scheduling public workshops/meetings; providing surveys/soliciting input and maintaining community awareness throughout project construction.

1.3 Project Description

Provide a detailed description and historical background of the project. Please also state which regional water management plan includes the proposed project (SWRP, E/WMP, IRWMP, or other [must identify and justify as equivalent per 18.07.B.1.c.3]):

The Garvey Avenue Grade Separation is located in the City of El Monte, California, within Los Angeles County. The City of El Monte (City) is the ninth largest city in the County and is located in the eastern part of the county approximately 12 miles east of downtown Los Angeles. The City lies between Alhambra to the west and Baldwin Park to the east. The Garvey Avenue underpass separates vehicular traffic on Garvey Avenue from the Southern Pacific railroad and Metrolink train traffic with railroad bridges and a roadway underpass. The original Southern Pacific Railroad bridge/roadway underpass was constructed in 1933. Railroad tracks that would be used by Metrolink trains were constructed more recently on the south side of the Southern Pacific Railroad right-of-way. Topography in this area generally slopes at 0.5% to the west-southwest and development in the area was rural residential/farming when the grade separation was constructed. During the last 85 years development has occurred in this area that increased the stormwater runoff and contributed to a flooding problem at the grade separation sump. This project proposes a new storm drain and infiltration system to alleviate the flooding at this location. The proposed storm drain improvements are located south of the I-10 Freeway and the general alignment is southeast along Maxson Place, then across Garvey Avenue running through an easement on private property to the existing storm drain system in Durfee Avenue. The scope of work includes identifying the drainage areas that contribute storm water flow to the Garvey Avenue underpass; designing upgrades to the existing network of storm water conveyance components, including piping, inlets, and catch basins; improvements to the pumping system at the Garvey Avenue underpass; and evaluating opportunities to retain/infiltrate collected storm water runoff to replenish the groundwater.

Proposed storm drain improvements are intended to meet current design standards for a 50-year storm and reduce the occurrence of flooding at the Garvey Avenue Grade Separation. The design objective is to reduce the potential flooding hazards to the general public from multiple times a year to approximately once every 50 years. An additional design objective is to improve the water quality of the San Gabriel River by capturing pollutants from low flows and stormwater from rain events less than or equal to the water quality storm event, defined as the 85th percentile 24-hour rainfall event.

Based on the design objective, the proposed improvements include the following key elements:

- Four proposed catch basins on Maxson Place will capture the additional flow from Caltrans' roadway runoff and the outflow from the triple 24-inch culvert crossing under the freeway, as well as runoff captured from the nearby mobile home park and two commercial lots. A proposed 4-foot by 2-foot RCB storm drain will convey the intercepted flow from these catch basins underground to the intersection of Maxson Place and Garvey Avenue.
- Two new catch basins on Garvey Avenue will capture flows from areas east of Maxson Place. This includes commercial properties on Garvey Avenue on both the north and south sides of the street, stretching east to Durfee Avenue. The catch basins will connect to the proposed Maxson Place Storm Drain via laterals.
- Two new underground infiltration basins (Infiltration Basin 1 and Infiltration Basin 2, discussed further in Section 6) will be constructed. The basins will be sized to be capable of capturing a combined 1.5 million gallons of stormwater from low-flows and flood flows. The stormwater will first pass through a sedimentation unit (pre-treatment) before being captured in the two infiltration basins which will

recharge the local aquifer.

- A low-flow diversion will be installed between the proposed Maxson Place Storm Drain and the proposed Infiltration Basin 1 to divert low flows and stormwater runoff from smaller storms up to and including the 85th percentile storm event. The diversion will be a two-foot-wide drop in the floor of the storm drain, spanning the width of the storm drain and sloped towards the diversion pipe. The depth of the drop will be 1.1 feet at the entrance to the diversion pipe. An 18-inch reinforced concrete pipe (RCP) will connect the low-flow diversion to the proposed Infiltration Basin 1.
- A hydrodynamic separator will be installed on the 18-inch RCP to provide pre-treatment for the storm water before it enters the proposed Infiltration Basin 1. The hydrodynamic separator will provide pretreatment for improved water quality, and it will be sized for the full 85th percentile, 24-hour storm event. It will screen, separate, and trap gross solids to remove floatables and neutrally buoyant materials.
- An overflow storm drain will be installed between the proposed Maxson Place Storm Drain and the proposed Infiltration Basin 1 to divert the peak flow from significant storm events.
- A weir box, tilted wedgewire screen, and storm drain will be constructed to convey overflow runoff from the existing Garvey Avenue Underpass storm drain system that is unable to be pumped out by the existing pump system or captured by the proposed Maxson Place Storm Drain. Flows greater than the pump's capacity will flow over the weir and through the tilted wedgewire screen to remove sediment, debris, and floating organic contaminants. A proposed 30-inch RCP will convey flows from the weir box to the proposed Infiltration Basin 2.
- A 12-inch pump discharge line will be installed conveying the storm water from the existing pump discharge sump to a new bottomless drop inlet located on the street gutter on Maxson Road south of the railroad tracks. A small amount of stormwater will be able to percolate under the drop inlet through a gravel layer and into the soil. During storm events, most of the stormwater entering the bottomless drop inlet will bubble up to the gutter of Maxson Road and flow southward in the existing street gutter to an existing catch basin. A 15-foot wide easement in the private property along the railroad right-of-way will be required for installation of the discharge line.

Two alignment alternatives were considered for the proposed Maxson Place Storm Drain. The alignment alternatives analysis includes discussion of traffic impacts, potential utilities conflicts, and cost comparison.

- Alternative #1: The proposed Maxson Place Storm Drain will convey runoff from the intersection of Maxson Place and Garvey Avenue eastward within the right-of-way of Garvey Avenue. The proposed storm drain will connect with the existing MTD 562 system at Durfee Avenue just south of Garvey Avenue.
- Alternative #2: The proposed Maxson Place Storm Drain will convey runoff from the intersection of Maxson Place and Garvey Avenue southward within a new storm drain easement located in an existing private alleyway. The proposed storm drain will connect with the existing MTD 562 system at the intersection of Durfee Avenue and Stoddard Way. Storm drain easements will be needed for two (2) parcels, and Temporary Construction Easements (TCEs) will be needed within these two (2) parcels for installation of the pipe.

2 DESIGN ELEMENTS

This section provides an overview of the project design details.

2.1 Configuration

The following table is a summary of the project configuration:

Project Configuration Summary	
BMP Type:	Infiltration Facility
Infiltration Footprint Area:	0.3 ac
Ponding Depth:	15 ft
Media Layer Depth:	0.5 ft
Media Layer Porosity:	0.34 ft
Underdrain Layer Depth:	0 ft
Underdrain Layer Porosity:	0 ft

Calculated Storage Volume	
Module-generated Storage Volume:	4.5510 ac-ft

Please upload a description and detailed schematic of the project layout including its anticipated footprint and key components such as, but not limited to: inlets, outlets, diversion point, recreational components, nature-based components, pumps, treatment facilities, underdrains, conveyance, above ground improvements, and other project components.

Attachments for this Section	
Attachment Name	Description
Schematic of Proposed Diversion Structure.pdf	Schematic of Proposed Diversion Structure
Schematic of BMP.pdf	Schematic of BMP

2.2 Capture Area

The size and land uses of the capture area upstream of a project plays an important role in its water quality and water supply benefits. The capture area information here is used by the Module for scoring:

Capture Area Summary	
Capture Area:	77.94 ac
Impervious Area:	61.07 ac
Pervious Area:	16.87 ac

The following table is a summary of the land use breakdown for the area that drains to the project:

Breakdown of Impervious Acreage in Capture Area		
Land Use Type	Percent Impervious	Acres
Multi Family Residential	34.19 %	20.88
Commercial	17.88 %	10.92
Institutional	9.71 %	5.93
Multi Family Residential	16.27 %	9.94
Industrial	1.89 %	1.15
Multi Family Residential	20.06 %	12.25

Attachments for this Section	
Attachment Name	Description
Land Use Capture Area.pdf	

2.3 Diversion

Diversion Structures generally apply to ‘off-line’ regional projects where stormwater is diverted from a major water conveyance (e.g., gravity main) and directed to the project at a predetermined maximum rate. Smaller distributed projects, like bioretention, do not normally utilize these devices.

Does the project have a diversion structure?

No

The following table provides details on the diversion type and maximum diversion rate:

Diversion Details	
Type of Diversion	Typical Max Diversion Rate (cfs)

Estimated Average Inflow Captured by Project:

N/A cfs

Description of Diversion:

N/A

2.4 Site Conditions & Constraints

Please provide an upload for each of the attachments below that describes the methods, outcomes and how the information will be incorporated into the project design.:

The Geotechnical Engineering Report prepared by Terracon provides information and geotechnical engineering recommendations relative to subsurface soil conditions, earthwork, pavement design and construction, groundwater conditions, infiltration systems, and excavation and shoring considerations.

The hydraulic analysis used project as built for the general geometry of the existing storm drain systems and computed the hydraulic grade line (HGL) and energy grade line (EGL) using the computer program F0515P, developed and accepted by the LACFCD and titled Water Surface Pressure Gradient (WSPG). The hydrology and hydraulics analysis relevant to the drainage areas were conducted. Hydrologic studies within Los Angeles County are required to use the modified rational method (MODRAT) developed by the LACFCD. The Los Angeles County Department of Public Works (LACDPW)

developed a Hydrology Manual (2006) which outlines the methodology used for conducting a hydrologic analysis.

Does the project involve LACFCD infrastructure, facilities, or right-of-way?

Yes

Please see the following attachments for additional details on geotechnical, hydrology, right-of-way and/or LACFCD, and utility conditions.

Attachments for this Section	
Attachment Name	Description
Geotechnical Report.pdf	Geotechnical Engineering Report

Attachments for this Section	
Attachment Name	Description
Hydrology Report.pdf	Hydraulic Calculation and Analysis

Attachments for this Section	
Attachment Name	Description
Garvey Conceptual Approval.pdf	

Attachments for this Section	
Attachment Name	Description
Existing Conditions.pdf	From the preliminary design report, here is a summary of existing conditions for the Project site.

2.5 Cost

The following tables provide details on the project’s capital and annualized costs:

Capital Cost Breakdown	
Construction Cost:	\$ 4,000,000.00
Planning and Design Cost*	\$ 100,000.00

*Includes early concept design, pre-project monitoring, feasibility study development, site investigations, formal project design, intermediate and project completion audits, CEQA and other environmental impact studies and permitting.

Annual Cost Breakdown	
Annual Maintenance Cost:	\$ 10,000.00
Annual Operation Cost:	\$ 4,000.00
Annual Monitoring Cost:	\$ 3,000.00
Project Life Span:	50 years

The following table provide details on calculated life-cycle costs for the project (either calculated the Module, or estimated by the Project Developer).

Note: these life-cycle costs are used in Section 4.3 of this output for Water Supply Benefit scoring.

Module-generated Life-Cycle Cost for Project*	\$ 4,507,896.31
Module-generated Annualized Cost for Project*	\$ 187,876.76
Use Project Developer estimate instead?	No
Custom Value specified by User:	N/A
Please provide a description of methods used to calculate Life Cycle costs, and attach supplemental information with details of the methodology, assumptions and calculations:	N/A
Supporting PDF	See attachment if applicable.

*Applies an annual discount rate as a static rate equal to 3.375%. The only costs not included in total life-cycle cost are the dismantling and replacement costs at the end of life.

2.6 Schedule

Provide a preliminary schedule required to design, permit, construct, operate, and maintain the

Project:

Schedule	
Milestone Name	Completion Date
Grant Application and Submittal	12/15/2019
Advertise for Construction	02/29/2020
Construction Assistance	06/30/2020
Completion of Construction	08/01/2020

2.7 Monitoring

This section provides an overview of monitoring data related to the project.

Has any monitoring data been compiled related to the project?

Yes

Please provide an overview of the monitoring performed to date:

Preliminary Design Study prepared by CWE.

Please upload a monitoring plan to measure the effectiveness of the proposed project once completed, including metrics specific to the identified benefits. Also attach supplemental information on monitoring conducted to date, if applicable.

Attachments for this Section	
Attachment Name	Description
Garvey Monitoring Plan.pdf	

2.8 O & M

Provide an overview of the plan for how operations and maintenance of the Project will be carried out. Identify the responsible party and describe any technical expertise required for O&M.

Maintenance personnel shall be trained for the tasks involved in maintaining the infiltration gallery and hydrodynamic separator. All maintenance personnel assigned to work inside of the infiltration gallery or hydrodynamic separator shall be OSHA certified in confined space entry. The responsible party for maintenance will be the City of El Monte Department of Public Works.

Attachments for this Section	
Attachment Name	Description
Operations-Maintenance-Plan.pdf	Operations and Maintenance Plan

3 WATER QUALITY BENEFITS

This section provides an overview of project elements related to water quality benefits, including calculations used for Section A (Water Quality Benefits) of SCW Project Scoring Criteria.

3.1 24-hour Storm Capacity

Please enter information below regarding key parameters of the project’s capacity. The Module will use those values to estimate the 24-hour capacity:

24-hour Storm Capacity Breakdown	
Effective Draw Down Rate:	3.5 in/hr
Stormwater Use During 24-hr Design Event:	0 gal

Calculated 24-hour Storm Capacity	
Module-generated 24-hr Capacity:	6.6510 ac-ft
Use Project Developer estimate instead?	No
Custom Value specified by User:	N/A
Please provide a description of methods used to calculate 24-hour capacity, and attach supplemental information with details of the methodology, assumptions and calculations.	N/A

3.2 Event-based Design Details

In this section, details regarding the project inlets and outlets are provided, along with estimates generated for the project design event. The event-based information is envisioned as basic estimates that would be generated during the project design, and will support review of the project details.

Estimated Total Inflow Volume during Design Event:

6.83 ac-ft

Describe the event used for project design. Describe the portion of the peak inflow that would be retained by the project through infiltration, capture, diversion, use, or other means. Tooltip for ‘Treatment Description’ under outlets:

50-year 24-hour storm event.

Describe whether and how the 85th percentile is being captured/diverted. If not, is there opportunity to do so? If feasible but not incorporated, explain why. If not feasible, explain why.

The 85th percentile is 75,289 cubic feet, or 1.73 acre-feet in volume. This amount will be captured because the designed capacities of Infiltration Basin 1 and Infiltration Basin 2 will be 563,000 gallons and 691,000 gallons respectively, which equates to the 50-year storm event capacity. The 85th percentile volume will be captured/diverted. The two infiltration basins will provide a storage capacity of roughly 1.5 million gallons.

The following tables detail inflow and outflow from the project during the design event:

Inlets	
Estimated Max Inflow Rate (cfs)	Total Inflow (ac-ft)
78.12 cfs	17.48 ac-ft
32.16 cfs	6.31 ac-ft
48.79 cfs	10.59 ac-ft
4.89 cfs	0.62 ac-ft
26 cfs	5.18 ac-ft
14.93 cfs	2.82 ac-ft
31.3 cfs	4.84 ac-ft

Outlets			
Estimated Max Outflow Rate (cfs)	Treated?	Treatment Description	Percent of Volume Treated (%)
0.09 cfs	Yes	Filtration soil group: Handford fine sandy loam with an infiltration rate ranging from 1 to 3 inches per hour. If the infiltration exceeds 2.4 inches per hour, the runoff will be fully treated prior to infiltration to protect water quality.	100 %

Describe the methods used to generate estimates:

Hydrology Calculations prepared for the project in the Preliminary Design Report. Used the modeled 50-year rainfall input and output results from the Peak Flow Hydrologic Analysis for 17247 Garvey GS.

Attachments for this Section	
Attachment Name	Description
Peak Flow Hydrolic Analysis.pdf	Peak Flow Hydrologic Analysis 50 year model

3.3 Long-term Performance

This section present details of the calculation of long term (10-year) water quality benefit for Section A.1.2 (Water Quality Benefit) of SCW Project Scoring Criteria. These estimates were either generated by the Module using a 10-year hourly simulation with the Watershed Management Modeling System (WMMS), or generated by the Project Developer.

The following tables present selected primary and secondary pollutants and calculated reductions for water quality benefit per Section A.1.2 (Water Quality Benefit) of SCW Project Scoring Criteria.

Note: these estimates are based on the hourly 10-year WMMS simulation performed by the Module, or as estimated by the Project Developer.

Primary Pollutant	
Primary Pollutant	Total Zinc
Reduction Method used for Scoring	Method 2 (% Load Reduction)
Justification for selecting Primary Pollutant	WMMS model output for WMP.
Calculated 10-year Pollutant Reduction	99.6
Use Project Developer estimate instead?	No
Own Value	N/A
Justification for using own value	N/A
Secondary Pollutant	
Secondary Pollutant	Bacteria
Reduction Method used for Scoring	Method 2 (% Load Reduction)
Justification for selecting Secondary Pollutant	WMMS model output for WMP.
Calculated 10-year Pollutant Reduction	85.9
Use Project Developer estimate instead?	No
Own Value	N/A
Justification for using own value	N/A

The following table presents calculated water quality benefit achieved by the project based on the hourly 10-year WMMS simulation performed by the Module, for all the simulated pollutants.

Note: this output includes all pollutants and methods, including those not selected as Primary or Secondary for scoring.

Pollutant Name	Method 1 (% Concentration Reduction)	Method 2 (% Load Reduction)	Method 3 (% Exceedance Reduction)
Total Zinc	96.9 %	99.9 %	N/A
Total Copper	94.4 %	99.8 %	N/A
Total Lead	96.1 %	99.8 %	N/A
Total Nitrogen	38.2 %	97.3 %	N/A
Total Phosphorous	38.5 %	97.3 %	N/A
<i>E.coli</i>	39.7 %	97.4 %	N/A
Toxics	N/A	N/A	N/A
Chloride	N/A	N/A	N/A
Trash	N/A	N/A	N/A
N/A = Modeling results not available from Projects Module, must be manually generated by user			

The following table presents inflow and outflow details for calculated water quality benefit achieved by the project based on the hourly 10-year WMMS simulation performed by the Module, for all the simulated pollutants.

Note: this output includes pollutants not selected as Primary or Secondary for scoring, and reduction methods not selected for scoring.

Metric	Runoff from Capture Area	Minimally Treated Outflow from Project	Inflow into Project Inlet	Outflow from Project Outlet	Reduction by Project	% Reduction by Project
Runoff Volume (ac-ft)	24.871	1.088	24.871	1.088	23.783	95.624 %
Total Zinc (ug/L)	410.850	12.720	410.850	12.720	398.130	96.904 %
Total Zinc (lbs)	27.788	0.038	27.788	0.038	27.750	99.865 %
Total Copper (ug/L)	94.410	5.300	94.410	5.300	89.110	94.386 %
Total Copper (lbs)	6.386	0.016	6.386	0.016	6.370	99.754 %
Total Lead (ug/L)	81.550	3.180	81.550	3.180	78.370	96.101 %
Total Lead (lbs)	5.515	0.009	5.515	0.009	5.506	99.829 %
Total Nitrogen (mg/L)	5.148	3.184	5.148	3.184	1.964	38.154 %
Total Nitrogen (lbs)	348.195	9.423	348.195	9.423	338.772	97.294 %
Total Phosphorous (mg/L)	0.809	0.498	0.809	0.498	0.311	38.460 %
Total Phosphorous (lbs)	54.709	1.473	54.709	1.473	53.236	97.307 %
E.coli (#/100mL)	1.746E+005	1.052E+005	1.746E+005	1.052E+005	6.938E+004	39.749 %
E.coli (#)	5.354E+013	1.412E+012	5.354E+013	1.412E+012	5.213E+013	97.364 %
Toxics	N/A	N/A	N/A	N/A	N/A	N/A
Chloride	N/A	N/A	N/A	N/A	N/A	N/A
Trash	N/A	N/A	N/A	N/A	N/A	N/A
N/A Modeling results not available from Projects Module, must be manually generated by user						

4 WATER SUPPLY BENEFITS

This section provides an overview of project elements related to water supply benefits, including calculations used for Section B (Significant Water Supply Benefits) of SCW Project Scoring Criteria.

4.1 Water Supply Nexus

Please describe and clearly justify the nexus between water supply and the stormwater and/or urban runoff that is captured/infiltrated/diverted by the Project:

The stormwater and urban runoff that is captured by the Project will be infiltrated into the groundwater supply through two infiltration basins. The Water Supply Benefit claimed will result from increasing water supply as 24.871 ac-ft of annual inflow will be infiltrated.

Does this project capture water for onsite irrigation use?

No

Description of onsite use by the project:

Does this project capture water used for water recycling by a wastewater treatment facility?

No

Description of water recycling by the project:

Is the project connected to a managed water supply aquifer?

Yes

If Yes, managed Aquifer Name:

Main San Gabriel Basin (aquifer)

If this project is augmenting groundwater supply, please provide confirmation that the agency managing the groundwater basin concurs with the added benefit.

Attachments for this Section	
Attachment Name	Description
Infiltration Basin Confirmation.pdf	Data on the infiltration basins and benefits

4.2 Benefit Magnitude

Project Scoring Criteria Section B is based upon estimates of annual average water supply benefit. Water supply benefit can include, but is not limited to, water diverted to a separate groundwater recharge facility, into a water treatment plant, to a sanitary sewer to be converted into recycled water, etc. This section provides documentation of estimates of annual average water supply benefit.

Average dry weather inflow to project:

0 cfs

Describe the methods used to estimate average dry weather inflow to the project:

The infiltration basins will be filled during a storm event. Dry weather flow, if any, would be diverted using the current infrastructure, a sump pump. Thus, inflow is expected to be 0.

The following tables present calculated annual inflow the project.

Note these estimates are based on an hourly 20-year hourly WMMS simulation performed by the Module, or as estimated by the Project Developer.

Module-generated annual average <u>inflow</u> to project:	24.871 ac-ft
Use Project Developer estimate instead?	No
Custom Value specified by User:	N/A
Please provide a description of methods used to calculate water supply inflow values	N/A
Supporting PDF	See attached PDF if applicable.

The following tables present calculated annual average capture by the project, which is used for the Section B2 scoring calculation (Benefit Magnitude of SCW Scoring Criteria).

Note these estimates are based on an hourly 20-year hourly WMMS simulation performed by the Module, or as estimated by the Project Developer.

Module-generated annual average <u>capture</u> for water supply:	23.783 ac-ft
Use Project Developer estimate instead?	No
Custom Value specified by User:	N/A

Please provide a description of methods used to calculate water supply benefit	N/A
Supporting PDF	See attached PDF if applicable.

4.3 Cost Effectiveness

Project Scoring Criteria Section B2 incorporates life-cycle costs. The cost-effectiveness for water supply benefit is calculated from other sections in the Module. The calculation for B2 scoring is based on a numerator of life-cycle cost (from Design Elements > Cost) and a denominator of annual average benefit magnitude (from Water Supply > Benefit Magnitude).

Module-generated water supply cost-effectiveness:	\$ 7,899.59 per ac-ft
Use Project Developer estimate instead?	No
Custom Value specified by User:	\$ N/A
Justification	N/A
Supporting PDF	See attached PDF if applicable.

5 COMMUNITY INVESTMENT BENEFITS

This section provides an overview of project elements related to community investment benefits, which are used in calculations for Section C (Community Investment Benefits) of SCW Project Scoring Criteria.

The following table details the project’s community investment benefits:

Community Investment		
Investment Type	Applicable?	Detailed Description
Does this project improve flood management, flood conveyance, or flood risk mitigation?	Yes	Each year during the rainy season, flooding occurs in the Garvey Avenue underpass due to changes in land use over time. The Project will mitigate the flooding and properly infiltrate the runoff to the groundwater aquifer.
Does this project create, enhance, or restore park space, habitat, or wetland space?	No	N/A
Does this project improve public access to waterways?	No	N/A
Does this project create or enhance new recreational opportunities?	No	N/A
Does this project create or enhance green spaces at school?	No	N/A
Does this project reduce heat local island effect and increase shade?	No	N/A
Does this project increase shade or the number of trees or other vegetation at the site location?	No	N/A

6 NATURE-BASED SOLUTIONS

This section provides an overview of project elements that leverage nature-based solutions, which are used in calculations for Section D (Nature-Based Solutions) of SCW Project Scoring Criteria.

Does this project implement natural processes?

Yes

Natural Processes Description:

The Project mimics natural processes to slow, detain, capture, and absorb/infiltrate water.

Does this project utilize natural materials?

No

Natural Materials Description:

The infiltration basins are underground, but they utilize sands and soils which are natural for filtration.

Description of how nature-based solutions are utilized to the maximum extent feasible. If nature-based solutions are not used, include a description of what options were considered and why they were not included.

Nature-based solutions are not used because this is an improvement project which aims to place infiltration basins underneath the existing roadway. There is not a possibility to install nature based solutions at this time. Additionally, as all of the design work has been completed it is not cost effective to make changes under this current project. There is a possibility to propose a second phase or additional project in the future to add landscaping to the median near the underpass.

The following table details the impermeable area removed by the project:

Removed Impermeable Area by Project	
Pre-Project Impervious Area:	Post-Project Impervious Area:
0 ac	0 ac

7 LEVERAGING FUNDS & LOCAL SUPPORT

This section provides an overview of the project’s funding and community support, which are used in calculations for Section E (Leverage Funds and Community Support) of SCW Project Scoring Criteria.

7.1 Cost Share

Is additional funding being provided as a Cost Share for this project?

No

The following is a summary of what other sources of funding were explored and/or why funding could not be secured through these other sources:

The Project was awarded funds from the EPA and the OES Grant, however, due to the time frame that has elapsed, funds are no longer available for the Project. The City of El Monte is prepared to allocate \$500,000 toward this Project, however, this funding is not proposed as a Cost Share.

The following table details the additional funding attained for the project:

Additional Funding			
Funding Type	Description	Funding Amount	PDF
None provided	N/A	N/A	N/A

7.2 Local Support

Please describe the Outreach Plan conducted for this project:

The City implemented an emergency response team with staff from the Water and Wastewater Service Department to shut down the underpass during heavy rain events to mitigate flood hazards. The road closure on Garvey Avenue underpass between Valley Boulevard and Durfee Avenue impacts the nearby residents, businesses, schools, and commuters from surrounding cities that use this route for I-10 Freeway access. The local businesses that rely on the underpass for access have been impacted by the yearly underpass flooding.

The frequent flooding causes the AC road pavement to deteriorate faster than its expected useful life. Frequent maintenance is required to clean up the debris accumulated in the pump sump and on the roadway after a heavy storm, patch the broken AC pavement, and increased routine pump maintenance to ensure proper operation of the Garvey Avenue underpass system.

The goal of the outreach is to build community support for the project and to avoid potential detractors. The stakeholder events will be used to articulate the technical and policy aspects of the installation. The community-wide public education and outreach events will be developed, promoted, and hosted near the Project site. The goal of the proposed outreach is also to increase the perception that this Project is proceeding well and to manage expectations around what the project will really take. During outreach, feedback and comments will be solicited. The method for addressing their feedback will be discussed so that everyone understands the process.

The audience targeted during outreach includes the following:

- Local mobile home park residents and property managers;
- Local residents within a 500-foot radius of the project;
- Faculty, students, and parents of Madrid Middle School;
- Local business owners within a 500-foot radius of the project; and
- Surrounding communities and commuters.

To communicate effectively, mostly the logistics of the project (the “how”) will be outlined and less focus will be given on the objectives (the “what”). The tone used will be helpful, accessible (avoid jargon), transparent, and progressive. Two primary user experiences have been identified and will be used to communicate with the target audience. These two primary user experiences are as follows:

The main message to be conveyed through the outreach is that this project will help with flooding remediation and more sustainable groundwater recharge. The project will be summed up as a project that involves conveying stormwater to the existing storm drain system and a stormwater infiltration area.

The outreach program will provide the logistics of the project, including design and construction schedule and dates. Frequently asked questions regarding the logistics will be addressed related to the duration of the road closure, impacts of the road closure for the businesses and residents nearby, concerns about dust, noise, safety, etc.

Does this demonstrate strong local, community-based support?

Yes

The following table details the support by local, community-based organizations for the project (also see attachments):

Local Support		
Organization Name	Description	PDF
Madrid Middle School, Mountain View School District	Faculty, students, and parents of Madrid Middle School advocate for the Project to improve street conditions during the rainy season, ultimately resulting in safer road conditions and fewer traffic disturbances.	Madrid Letter of Support for Drainage Improvement Project.pdf
Community Members	Letter demonstrating support from various community stakeholders, such as nearby businesses and residents, who were canvassed within a 0.5-mile radius of the project location for the Garvey Avenue project.	Local Support signatures and addresses - Garvey - El Monte.pdf
Amigos de los Rios	Letter of support from Amigos de los Rios, Emerald Necklace, 908 E. Altadena Dr., Altadena, California.	Amigos De Los Rios Letter of Support.pdf

8 ADDITIONAL FEASIBILITY INFORMATION

This section presents additional information regarding project feasibility and technical details gathered during project design and feasibility assessment.

8.1 Environmental Documents and Permits

Discuss what potential environmental documentations (e.g. CEQA, NEPA, etc.) will be required or has been completed for the Project. Describe potential permitting challenges and associated time requirements and costs.

The City of El Monte prepared an Initial Study Draft culminating in a Mitigated Negative Declaration for the Project in February of 2018. The US Environmental Protection Agency prepare an Environmental Assessment for the Project in 2016. As the Project is owned by the City, no potential permitting challenges are foreseen at this time.

Attachments for this Section	
Attachment Name	Description
18-02-21 IS MND FINAL.pdf	Initial Study/Mitigated Negative Declaration

8.2 Vector Minimization

This following provides details on vector minimization strategies.

Does the project have vector minimization plan?

Yes

Please see an attachment with proposed vector minimization plan.

Attachments for this Section	
Attachment Name	Description
ChecklistforVectorPreventioninBMPs.pdf	

8.3 Alternatives Studied

Describe alternatives that were considered and evaluated as part of the Project development:

No-action: Under the no-action alternative, the Garvey Avenue underpass pump station would not be replaced, and new stormwater drain lines would not be constructed. The stormwater pump and drainage facilities would remain inadequate and unable to sufficiently convey stormwater from the underpass. Flooding in the underpass during the rainy season would continue, and city personnel would have to close the road when it floods and tow motor vehicles that become trapped in the flood waters.

Optimum Utilization of Existing Facility: Use of the existing system with no structural change cannot be optimized to improve the current situation.

New Construction Alternatives: Only one construction alternative, as detailed in Section A, has been proposed by the City of El Monte. No other construction alternative will meet the scope of the project.

8.4 Effectiveness

Describe the effectiveness of similar types of projects already constructed if applicable:

The LA County District of Public Works has facilitated and planned many multi-benefit stormwater quality projects such as that proposed at Garvey Avenue. One example is the proposed East Los Angeles Sustainable Median Stormwater Capture Project (Project) located in the unincorporated area of East Los Angeles (East LA), in Landscape Maintenance District Zone 35, which will improve water quality, increase water supply and enhance recreation and the community. This Project will capture and infiltrate approximately 21 acre-feet of urban and stormwater runoff from a 3,000-acre tributary area of mostly residential and commercial land areas. Underground infiltration galleries are effective in diverting stormwater, mitigating flood hazards and risk, and recharging the local aquifer.

8.5 Legal Requirements and Obligations

Describe any legal requirements or obligations that may arise as a result of constructing the Project and how these requirements will be satisfied:

This is a street improvement project. No obligations expected at this time.

8.6 Technical Reports

Please upload additional technical reports related to this project not provided above.

Attachments for this Section	
Attachment Name	Description
Appendix A - EJ SCREEN.pdf	
Appendix B - Letters to Agencies and Tribes part 1.pdf	
Appendix B - Letters to Agencies and Tribes part 2.pdf	
Appendix C - USFWS Materials.pdf	
Appendix D - Air Quality.pdf	
Approved-El monte signed FoNSI-12-23-16.pdf	

8.7 Other

Provide any additional information related to the Project as necessary:

N/A

9 SCORING

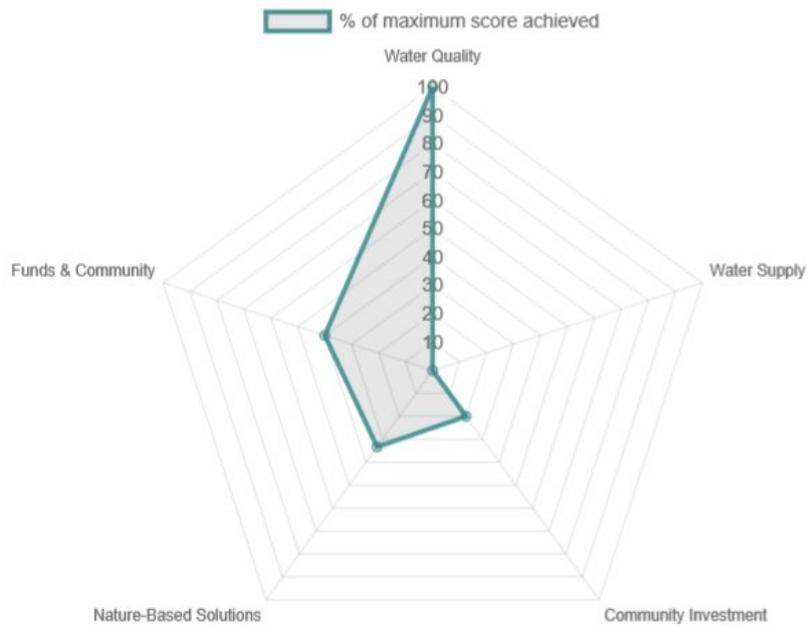
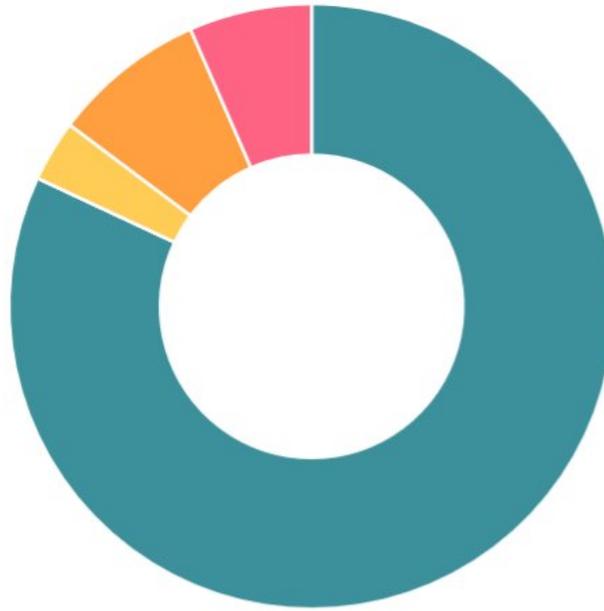
This section summarizes scoring calculations generated by the Module. All Regional Program Projects must meet the Threshold Score of 60 points or more using the following Project Scoring Criteria to be eligible for consideration.

Note: all scoring estimates are considered preliminary and subject to review and revision by the Scoring Committee.



The following graphics summarize the project scoring. The first graphic shows the components of the project score, based on the different scoring sections. The second graphic shows the percent of maximum score achieved by the project within each scoring section.

■ Water Quality
 ■ Water Supply
 ■ Community Investment
 ■ Nature-Based Solutions
 ■ Funds & Community



The following table details the scoring calculated for the project, along with the scoring thresholds from the SCW Project Scoring Criteria:

Scoring Section	Project Score	Max Score	Scoring Criteria Thresholds
Water Quality Wet + Dry Weather Part 1	20	20	Cost Effectiveness = (24-hour BMP Capacity) / (Construction Cost in \$Millions) <ul style="list-style-type: none"> • <0.4 = 0 points • 0.4-0.6 = 7 points • 0.6-0.8) = 11 points • 0.8-1.0 = 14 points • >1.0 = 20 points
Water Quality Wet + Dry Weather Part 2	30	30	Primary Pollutant Reduction: <ul style="list-style-type: none"> • >50% = 15 points • >80% = 20 points Secondary Pollutant Reduction: <ul style="list-style-type: none"> • >50% = 5 points • >80% = 10 points
Water Supply Part 1	0	13	<ul style="list-style-type: none"> • >\$2500/ac-ft = 0 points • \$2,000–2,500/ac-ft = 3 points • \$1500-2,000/ac-ft = 6 points • \$1000–1500/ac-ft = 10 points • <\$1000/ac-ft = 13 points
Water Supply Part 2	0	12	<ul style="list-style-type: none"> • <25 ac-ft/year = 0 points • 25 - 100 ac-ft/year = 2 points • 100 - 200 ac-ft/year = 5 points • 200 - 300 ac-ft/year = 9 points • >300 ac-ft/year = 12 points
Community Investment	2	10	<ul style="list-style-type: none"> • One Benefit = 2 points • Three Benefits = 5 points • Six Benefits = 10 points
Nature Based Solutions	5	15	<ul style="list-style-type: none"> • Implements natural processes or mimics natural processes to slow, detain, capture, and absorb/infiltrate water in a manner that protects, enhances and/or restores habitat, green space and/or usable open space = 5 points • Utilizes natural materials such as soils and vegetation with a preference for native vegetation = 5 points • Removes Impermeable Area from Project (1 point per 20% paved area removed) = 5 points
Leveraging Funds Part 1	N/A	6	<ul style="list-style-type: none"> • >25% Funding Matched = 3 points • >50% Funding Matched = 6 points

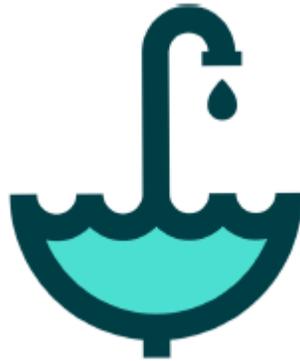
Leveraging Funds Part 2	4	4	The Project demonstrates strong local, community-based support and/or has been developed as part of a partnership with local NGOs/CBOs.
Total	61	110	

10 ATTACHMENTS

Attachments are bundled and organized in the following pages, with cover pages between each subsection.

Please note – at a minimum, a feasibility study must attach the following:

- A Location Map
- A Schematic with Proposed Footprint and Key Components
- A Map of the Capture Area (Tributary Map)
- Technical Reports (e.g. soil report, hydrology report, hydraulic study, utility search, survey, PEIR, EIR, monitoring data, etc.)



ATTACHMENTS FOR SECTION 1.1:

OVERVIEW



ATTACHMENTS FOR SECTION 1.2:

PROJECT LOCATION

CITY OF EL MONTE

GARVEY AVENUE GRADE SEPARATION DRAINAGE IMPROVEMENT PROJECT

CIP NO. 884

GENERAL NOTES

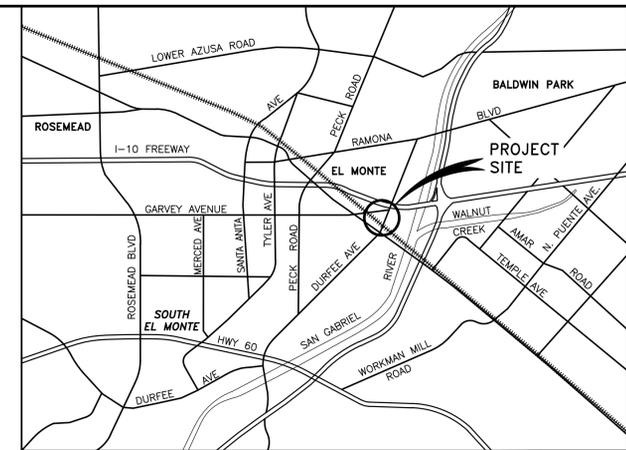
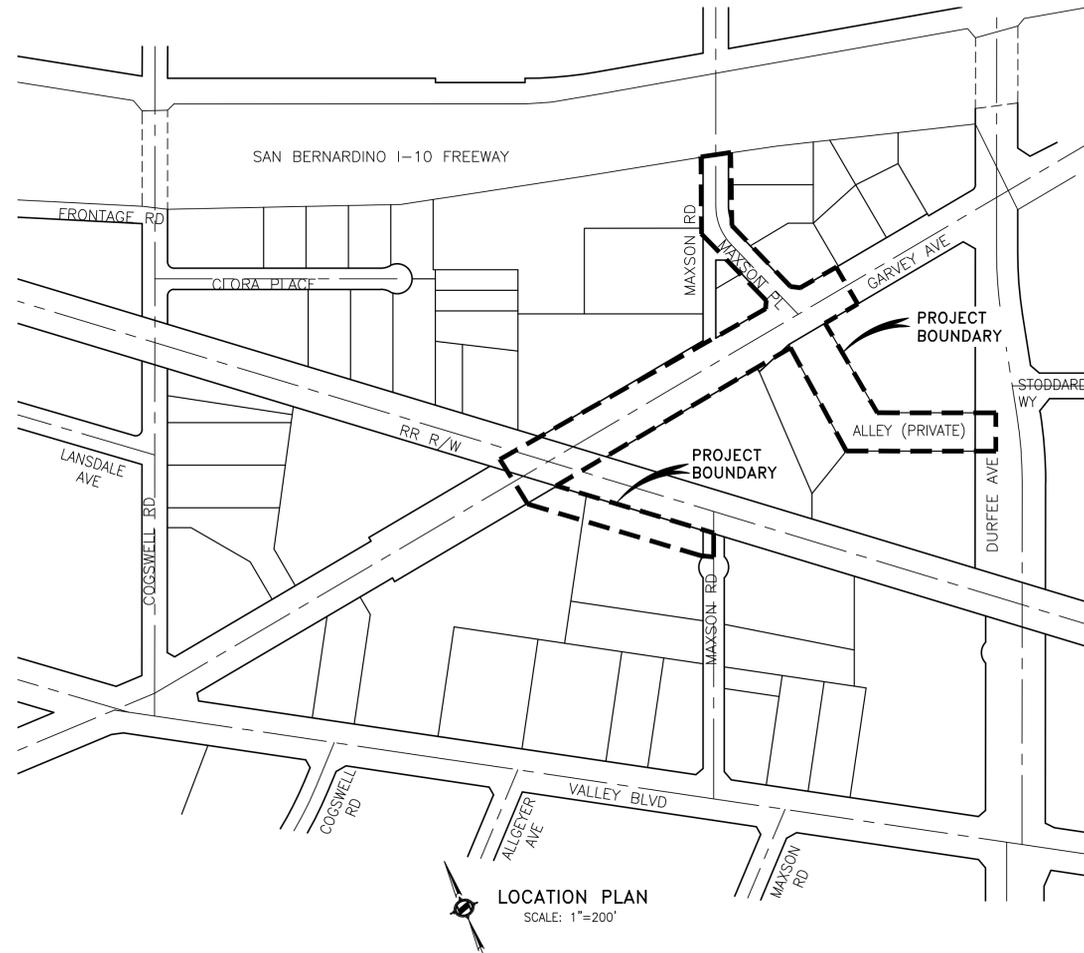
1. SPECIFICATIONS: ALL WORK SHALL CONFORM TO THE LATEST EDITION AND SUPPLEMENTS OF "THE STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION"(GREENBOOK).
2. THIS IMPROVEMENT CONSISTS OF WORK CALLED FOR ONLY ON THIS PLAN.
3. INSPECTION: ALL WORK AND MATERIALS SHALL BE INSPECTED BY THE CITY OF EL MONTE INSPECTOR OF PUBLIC WORKS DURING CONSTRUCTION PURSUANT TO LATEST EDITION OF STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION (GREENBOOK) AND THE COUNTY OF LOS ANGELES STANDARD PLANS FOR PUBLIC WORKS CONSTRUCTION AS APPLICABLE. CALL (626) 580-2058 BEFORE NOON OF THE WORKING DAY BEFORE THE FIRST SCHEDULED DAY OF CONSTRUCTION.
4. PRIOR TO THE START OF ANY CONSTRUCTION, DEMOLITION, REMOVALS, SAWCUTTING, OR INSTALLATION OF TRAFFIC CONTROL THE CONTRACTOR SHALL MEET WITH THE INSPECTOR TO DISCUSS SAFETY, TRAFFIC CONTROL REQUIREMENTS, PUBLIC ACCESS, CONSTRUCTION IMPACT MITIGATION, REMOVAL LIMITS, AND CONTRACTOR'S PLANNED SEQUENCING OF OPERATIONS. PRIOR TO OR AT THE PROJECT PRECONSTRUCTION MEETING THE PERMITTEE OR ITS CONTRACTOR SHALL PROVIDE THE INSPECTOR TWO SETS OF FULL-SIZE PLANS AND MAINTAIN ONE SET OF FULL-SIZE PLANS AT THE SITE DURING CONSTRUCTION.
5. THE CONTRACTOR, IN CONFORMANCE WITH LOS ANGELES COUNTY STANDARDS SHALL POTHOLE EXISTING SUBSURFACE INSTALLATIONS CARRYING UNSTABLE SUBSTANCES TO DETERMINE THEIR LOCATIONS AND ELEVATIONS BEFORE COMMENCING EXCAVATION.
6. UNDERGROUND SERVICE ALERT: BEFORE COMMENCING ANY EXCAVATION, THE CONTRACTOR SHALL OBTAIN AN UNDERGROUND SERVICE ALERT (USA) INQUIRY I.D. NUMBER BY CALLING (800) 227-2600. TWO WORKING DAYS SHALL BE ALLOWED AFTER THE I.D. NUMBER IS OBTAINED AND BEFORE THE CONTRACTOR STARTS THE EXCAVATION WORK SO THAT UTILITY OWNERS CAN BE NOTIFIED. IF THE UTILITY OWNER IS THE CITY OF EL MONTE, A CONFIRMATION NUMBER INDICATING THE CITY HAS BEEN NOTIFIED SHALL BE OBTAINED BY USA AND/OR THE CONTRACTOR FROM THE APPROPRIATE CITY DEPARTMENT. THE I.D. NUMBER TOGETHER WITH THE DATE ACQUIRED SHALL BE REPORTED TO THE BUREAU OF CONTRACT ADMINISTRATION WHEN CALLING FOR INSPECTION. I.D. NUMBERS WILL NOT BE GIVEN MORE THAN 10 DAYS BEFORE STARTING EXCAVATION WORK.
7. AT LEAST THIRTY (30) DAYS BEFORE THE START OF CONSTRUCTION THE CONTRACTOR/ENGINEER SHALL CONTACT THE CITY OF EL MONTE PUBLIC WORKS DEPARTMENT TO VERIFY THAT THERE IS NO PROPOSED PROJECT IN THIS AREA.
8. NOTIFICATION: AT LEAST TEN (10) DAYS BEFORE THE START OF CONSTRUCTION, THE CONTRACTOR SHALL NOTIFY, IN WRITING, ABUTTING PROPERTY OCCUPANTS OF THE PROPOSED CONSTRUCTION START DATE. A COPY OF SAID WRITTEN NOTIFICATION SHALL BE PROVIDED TO THE PUBLIC WORKS INSPECTOR FOR APPROVAL BEFORE THEY ARE DISTRIBUTED TO THE OCCUPANTS OF THE ABUTTING PROPERTY.
9. ADVANCE CONSTRUCTION NOTICE SIGNS: IN ADDITION TO SIGNS REQUIRED BY THE PROVISIONS OF THE "WORK AREA TRAFFIC CONTROL HANDBOOK" (WATCH), LATEST EDITION, FURNISH AND PLACE SIGNS FOR GIVING ADVANCE NOTICE TO MOTORISTS OF TRAFFIC DISRUPTION AS PART OF THIS PROJECT.
10. TRAFFIC CONTROL SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE "WORK AREA TRAFFIC CONTROL HANDBOOK" (WATCH).
11. CONSTRUCTION STAKES FOR CURB AND LONGITUDINAL GUTTER, WITH GRADE LESS THAN 0.50%, SHALL BE SET AT 12.5 FEET ON CENTER.
12. IN ADDITION TO THE CONSTRUCTION OF PAVEMENT SHOWN HEREON, WORK REQUIRED UNDER THIS PLAN WILL ALSO INCLUDE THE CONSTRUCTION OF PERMANENT TRENCH RESURFACING IN ALL AREAS WHERE UTILITY LINES HAVE BEEN INSTALLED TO SERVE THIS DEVELOPMENT. CONDITIONS OF TRENCH BACKFILL AND RESURFACING SHALL BE AS SPECIFIED ON THE EXCAVATION PERMIT. PAVING OF ROADWAY AREAS SHALL BE WITHHELD UNTIL CONTEMPLATED UTILITY CHANGES OR INSTALLATIONS HAVE BEEN MADE UNDER CITY PERMIT.
13. REPAIR AND/OR REPLACE ANY EXISTING BROKEN OR OFF-GRADE PAVEMENT, CONCRETE CURB, GUTTER OR SIDEWALK IMMEDIATELY ADJACENT TO OR WITHIN THE AREA OF THIS IMPROVEMENT SATISFACTORY TO THE CITY ENGINEER.
14. SURVEY MONUMENT PRESERVATION IS REQUIRED AND SHALL INCLUDE SUBMITTAL OF PRE AND POST CONSTRUCTION SURVEY MONUMENT TIES TO BOTH HORIZONTAL AND VERTICAL CONTROL POINTS PUBLISHED IN THE LOS ANGELES CITY ENGINEER FIELD BOOKS AND PRECISE BENCHMARK BOOKS. THIS DOES NOT RELIEVE THE CONTRACTOR OF FULFILLING ANY ADDITIONAL REQUIREMENTS SET FORTH BY SECTIONS 2-9.1 AND 2-9.3 OF THE LATEST EDITION OF THE STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION (GREENBOOK AND BROWN BOOK).

NOTICE TO CONTRACTOR

CONTRACTOR AGREES THAT HE SHALL ASSUME SOLE AND COMPLETE RESPONSIBILITY FOR JOB SITE CONDITIONS DURING THE COURSE OF CONSTRUCTION OF THIS PROJECT, INCLUDING SAFETY OF ALL PERSONS AND PROPERTY; THAT THIS REQUIREMENT SHALL APPLY CONTINUOUSLY AND NOT BE LIMITED TO NORMAL WORKING HOURS; AND THAT THE CONTRACTOR SHALL DEFEND, INDEMNIFY AND HOLD THE OWNER AND THE ENGINEER HARMLESS FROM ANY AND ALL LIABILITY, REAL OR ALLEGED, IN CONNECTION WITH THE PERFORMANCE OF WORK ON THIS PROJECT, EXCEPTING FOR LIABILITY ARISING FROM THE SOLE NEGLIGENCE OF THE OWNER OR THE ENGINEER.

THE EXISTENCE AND LOCATION OF ANY UNDERGROUND UTILITIES OR STRUCTURES SHOWN ON THESE PLANS ARE OBTAINED BY A SEARCH OF AVAILABLE RECORDS. TO THE BEST OF OUR KNOWLEDGE, THERE ARE NO EXISTING UTILITIES EXCEPT THOSE SHOWN ON THESE PLANS. THE CONTRACTOR IS REQUIRED TO TAKE ALL PRECAUTIONARY MEASURES TO PROTECT THE UTILITIES SHOWN, AND ANY OTHER LINES OR STRUCTURES NOT SHOWN ON THESE PLANS AND IS RESPONSIBLE FOR THE PROTECTION OF OR ANY DAMAGE TO THESE LINES OR STRUCTURES. CONTRACTOR SHALL POT-HOLE AND FIELD VERIFY ACTUAL LOCATIONS AND ELEVATIONS OF POTENTIAL UTILITY CROSSINGS.

CONTRACTOR SHALL VERIFY ALL CONDITIONS AND DIMENSIONS AND SHALL REPORT ALL DISCREPANCIES TO THE ENGINEER PRIOR TO COMMENCEMENT OF WORK.



VICINITY MAP
NOT TO SCALE

SHEET NO.	TITLE
1	TITLE SHEET
2	GENERAL NOTES
3	STORM DRAIN PLAN AND PROFILE 2'H X 4'W RCB AND 48" RCP
4	STORM DRAIN LATERALS PLAN AND PROFILE LATERALS A, B, C, D, AND E
5	OVERFLOW LINE, HYDRODYNAMIC SEPARATOR UNIT AND INFILTRATION GALLERY LATERALS PLAN AND PROFILE
6	12" DISCHARGE PIPE GARVEY AVE (PUMP HOUSE) TO MAXSON RD
7, 8	DETAILS
9	HORIZONTAL CONTROL
10, 11, 12	INFILTRATION BASIN DETAILS

BENCH MARK

BM 4G4053 ELEVATION = (291.026) FEET
NAVD 88, COVINA QUAD, 2005 QUAD YEAR

CSBM MON IN W END C.B. 3.3FT E/O BCR 44FT N/O C/L GARVEY
AVE & 98FT E/O C/L VALLEY BLVD MKD (BM 12-5A 1971 RE 7078)

STANDARD PLANS FOR PUBLIC CONSTRUCTION (SPPWC)

(2012 EDITION & REVISIONS)

- 200-3
- 225-2
- 300-3
- 308-2
- 313-3
- 321-2
- 322-2
- 333-2
- 341-2
- 342-2

COORDINATE DATUM

COORDINATES ARE BASED UPON N.A.D. 83, STATE
PLANE COORDINATE SYSTEM, ZONE 5.

UTILITY PROVIDERS

AT&T CALIFORNIA
271 NORTH CARMELS AVENUE
PASADENA, CA 91107-3641
CONTACT: ARMAND DABUET
EMAIL: AD1767@ATT.COM
PHONE: 626.578.3690

CHARTER COMMUNICATION
1500 AUTO CENTER DRIVE
ONTARIO, CA 91761
CONTACT: DAVE DOLNEY
EMAIL: DAVE.DOLNEY@CHARTER.COM
PHONE: XXX.XXX.XXXX

LEVEL 3 COMMUNICATION
100 SOUTH CINCINNATI AVENUE
TULSA, OK 74103
CONTACT: CALEB KING
EMAIL: caleb.king@level3.com
PHONE: 918.547.0007

SAN GABRIEL VALLEY WATER DISTRICT
11142 E. GARVEY AVENUE
EL MONTE, CA 91733
CONTACT: ALAN FROST
EMAIL: owfrost@sgwater.com
PHONE: 909.201.7375

SPRINT (FIBER OPTICS FACILITIES)
2592 DUPONT DRIVE
IRVINE, CA 92612
CONTACT: JACK FRY
EMAIL: jack.r.fry@sprint.com
MOBILE PHONE: 951.662.6262

MWD OF SOUTHERN CALIFORNIA
BOX 54153,
LOS ANGELES, CA 90054-0153
CONTACT: MANNU SHINGH
EMAIL: Msingh@mwdh20.com
PHONE: 213.217.6961

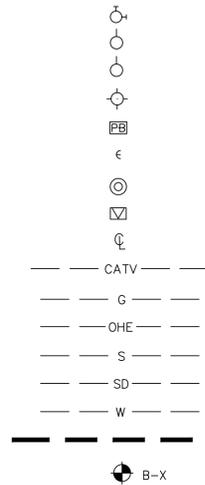
SCE
BLDG D
SANTA ANA, CA 92711-198
CONTACT: MAP REQUEST
EMAIL: maprequest@sce.com
PHONE: 714.796.9999

SOUTHERN CALIFORNIA GAS COMPANY
1919 S. STATE COLLEGE BLVD
ANAHEIM, CA 92806
CONTACT: RYAN LOPEZ
EMAIL: rlopez2@semproutilities.com
PHONE: 714.634.5067

SOUTHERN CALIFORNIA GAS COMPANY
TRANSMISSION
9400 OAKDALE AVENUE
CHATSWORTH, CA 91311
CONTACT:
EMAIL:
PHONE: 818.701.4546

CITY OF EL MONTE
(SEWER AND STORM LINES)
CITY HALL WEST
11333 VALLEY BLVD
EL MONTE, CA 91731
CONTACT: ELAINE JENG
PHONE: EJENG@ELMONTECA.GOV

LEGEND



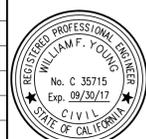
ABBREVIATIONS

AVE	AVENUE
BLVD	BOULEVARD
CL OR CL	CENTER LINE
EX.	EXISTING
FS	FINISHED SURFACE
HWY	HIGHWAY
INV	INVERT
LF	LINEAR FEET
MH	MANHOLE
PL OR PL	PROPERTY LINE
PP	POWER POLE
PR.	PROPOSED
RD	ROAD
STA	STATION
TC	TOP OF CURB
WM	WATER METER
WV	WATER VALVE

ALL OTHER ABBREVIATIONS PER STANDARD
PLANS FOR PUBLIC WORKS CONSTRUCTION
(SPPWC)

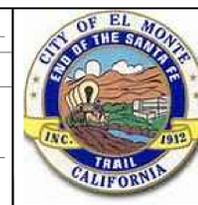


NO.	DATE	REVISIONS	APPROVED	DATE
7				
6				
5				
4				
3				
2				
1				



PREPARED BY:	1561 E. ORANGETHORPE AVE. SUITE 240 FULLERTON, CA 92831 TEL (714) 526-7500 www.cwecorp.com
DRAWN BY:	T.T. DATE: JULY-2018
DESIGNED BY:	S.B. DATE: JULY-2018
CHECKED BY:	W.Y. DATE: JULY-2018

SUBMITTED BY:	DATE:
CITY OF EL MONTE DEPARTMENT OF PUBLIC WORKS	
APPROVED BY:	DATE:
JONATHAN WU INTERIM CITY ENGINEER R.C.E. #54747 EXP 12/31/2019	



CITY OF EL MONTE DEPARTMENT OF PUBLIC WORKS	
GARVEY AVENUE GRADE SEPARATION DRAINAGE IMPROVEMENTS	
TITLE SHEET	
PROJECT NO.	884CIPAA4
SHEET	1
OF	12

90% DESIGN SUBMITTAL
NOT FOR CONSTRUCTION

DRAWN BY: T.T. DATE: JULY-2018. DESIGNED BY: S.B. DATE: JULY-2018. CHECKED BY: W.Y. DATE: JULY-2018. APPROVED BY: JONATHAN WU. DATE: 12/31/2019. CITY OF EL MONTE, CA. PROJECT NO. 884CIPAA4. SHEET 1 OF 12.

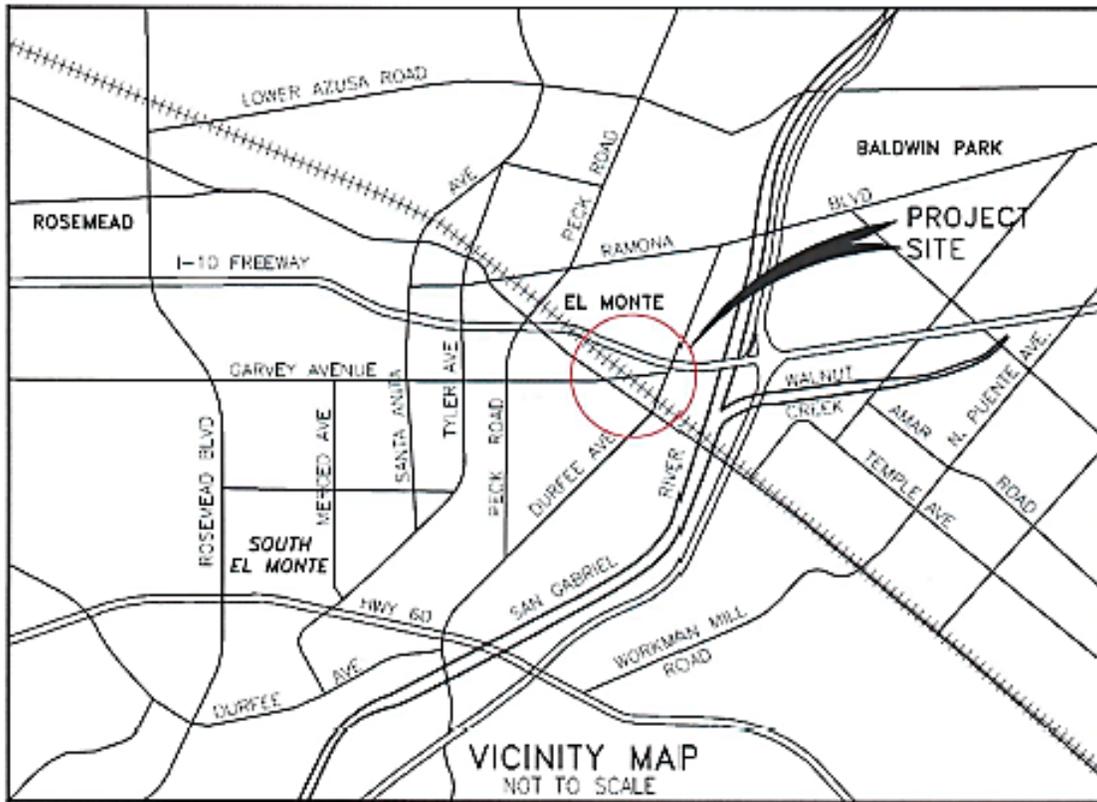


Figure 1-1 Location Map



ATTACHMENTS FOR SECTION 2.1:

CONFIGURATION

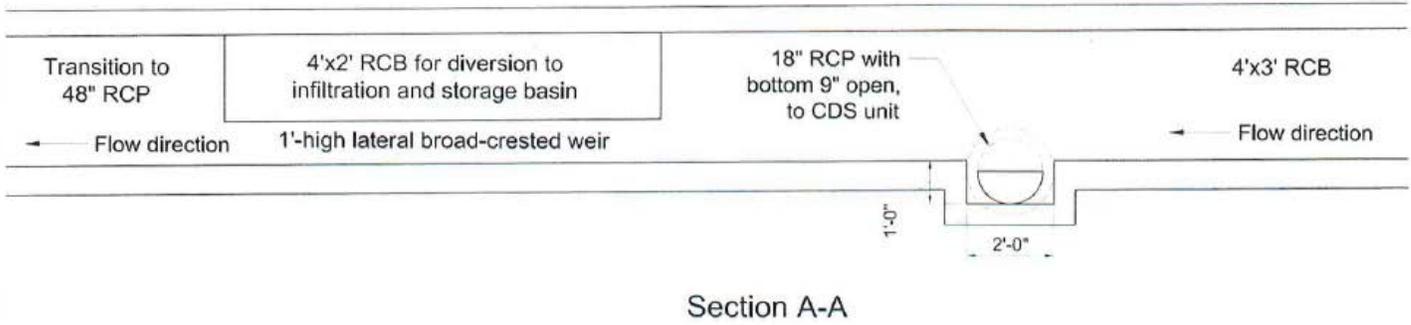
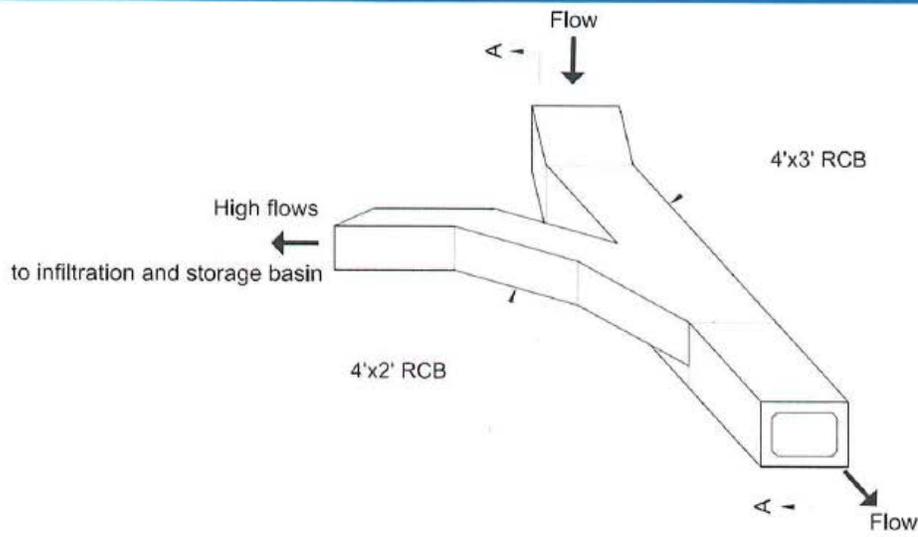


Figure 3-9 Schematic of Proposed Diversion Structure

1. Proposed Infiltration Basins

The proposed underground infiltration basins will capture the peak flows from the 50-year events and store up to 1.5 million gallons of stormwater. **Figure 6-1** presents a layout of the two underground infiltration basins.

The infiltration basins will be composed of underground modular concrete boxes. The basins will have an interior height of 15 feet and a width that stretches almost from curb to curb below Garvey Avenue. Each box will either be bottomless or have a hole in the bottom to allow for infiltration to occur. The basins will rest on a bed of gravel to facilitate the spread of stormwater to maximize the infiltration area.

6.1 Infiltration Basin 1

Infiltration Basin 1 will receive stormwater from the proposed Maxson Place Storm Drain in two locations. The first is through an 18-inch RCP receiving flows from the low-flow diversion and hydrodynamic separator. The second is through a 36-inch RCP receiving flows from the lateral weir structure in the Maxson Place Storm Drain. Both flows will first enter a sedimentation basin, a 2-foot-deep trough with a solid concrete base, accessible for maintenance through two manholes. The sedimentation basin will allow heavy particles to settle out of the stormwater, particularly in stormwater from the overflow lateral weir which will have no other pretreatment. The runoff will flow over the sedimentation basin weir, set at the same elevation as the inverts of the two entering pipes, and into the main part of the infiltration basin.

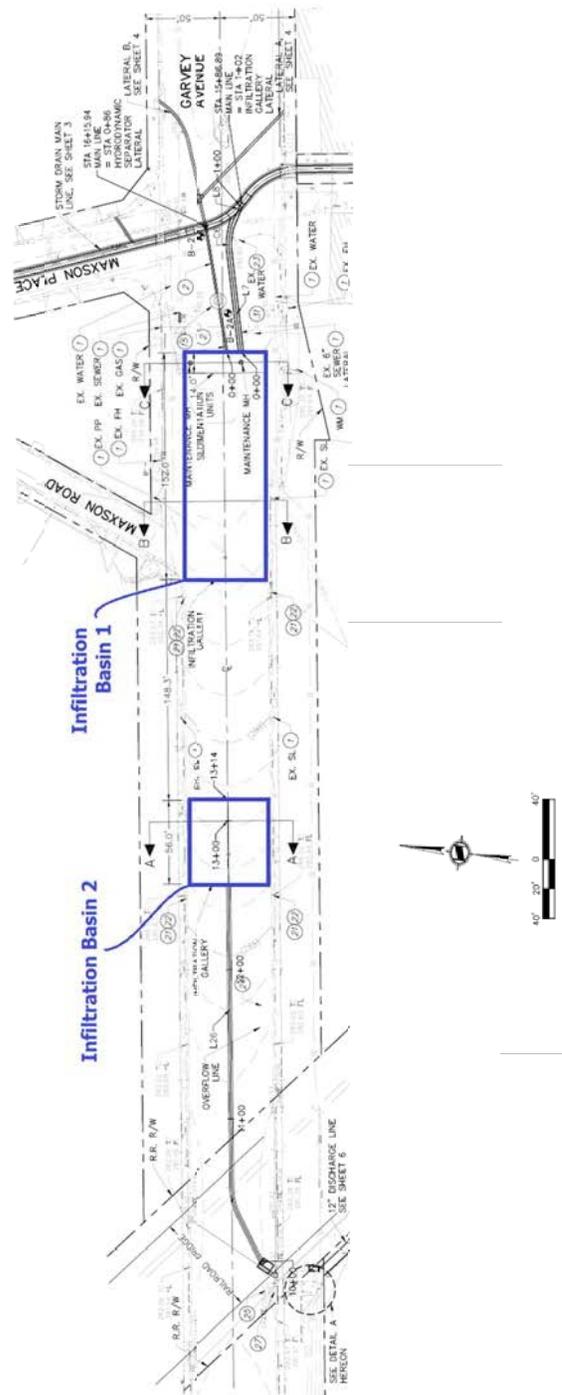


Figure 6-1 Proposed Infiltration Basin Layout

Infiltration Basin 1 was designed to have enough capacity to fully capture water quality storm event, as well as to fully capture the 50-year storm in excess of the capacity of the MTD 562 system. The total volume of the water quality storm event, defined as the 24-hour 85th percentile storm event, that will be taken by the low-flow diversion is assumed to be the volume of the entire 85th percentile hydrograph assigned to Subarea Outlet 19C (see **Figure 3-1**). The 24-hour volume of this hydrograph is 75,289 cubic feet, or around 563,000 gallons.

The volume of the 50-year storm inflow is a less simple calculation. The inflow to the storm drain at any given point in time is determined by the water surface elevation in the Maxson Place Storm Drain. However, the water surface elevation in the Maxson Place Storm Drain is dependent not only on the amount of flow in the Maxson Place Storm Drain, but also the water surface elevation of the downstream MTD 562 system, which itself is dependent on the amount of flow conveyed by Maxson Place Storm Drain. The iterative process was solved for the peak flow conditions (Q_{10} , Q_{25} , and Q_{50}). The iterative process was also solved for key time steps during the 50-year hydrograph to determine the volume of stormwater that would surge into Infiltration Basin 1 during the 50-year 24-hour storm.

The full 50-year 24-hour hydrograph of Maxson Place Storm Drain at Subarea Outlet 19C is shown in **Figure 6-2**. This is the hydrograph that could be expected before any diversions occur.

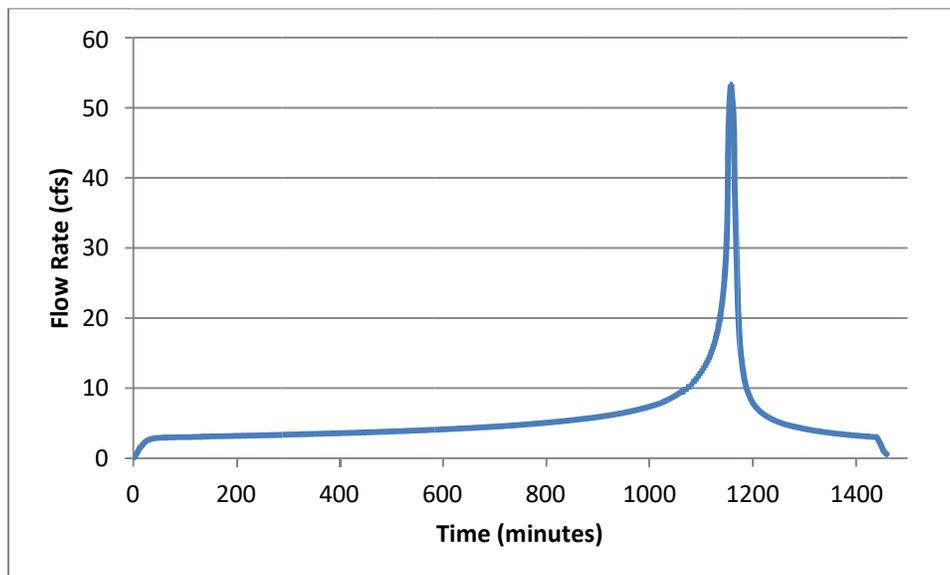


Figure 6-2 50-Year 24-Hour Hydrograph at Maxson Place Storm Drain

The hydrograph shape conforms to the design storm according to the LACDPW Hydrology Manual, with a low intensity runoff rate for most of the simulated storm time, but an intense peak beginning at the 80% time, Minute 1152. The peak flow at this location before any diversions occur is 53.3 cfs, during Minute 1158.

The geometry of the diversions and the variability of the water surface elevation at different locations mean that a variable flow rate of overflow enters Infiltration Basin 1. **Figure 6-3** shows how the hydrograph is partitioned at different times.

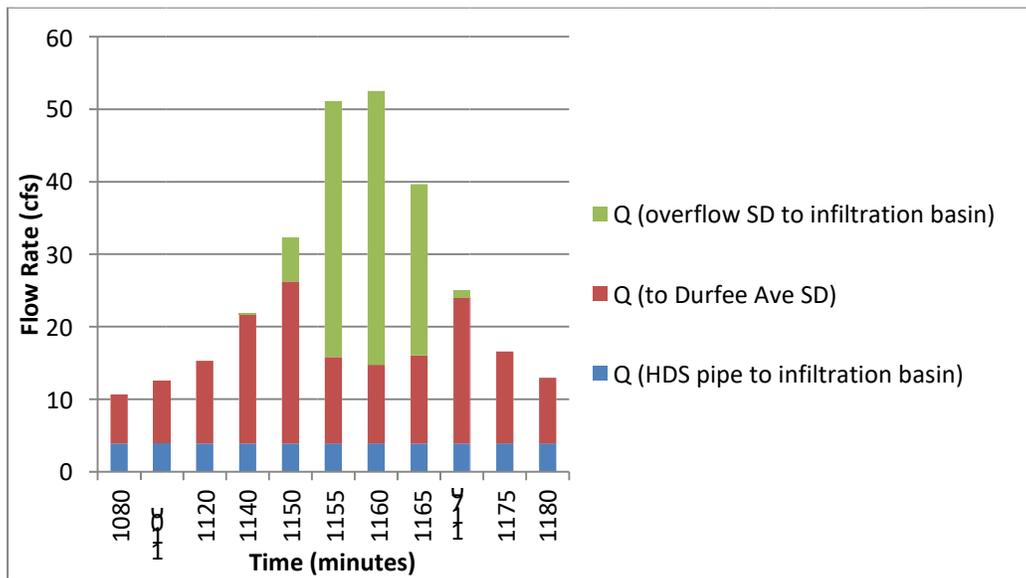


Figure 6-3 Partition of the 50-Year Hydrograph

To understand the way the diversion works, it helps to understand the progression of the hydrograph at Subarea Outlet 19C during the 50-year storm event. As the storm starts, stormwater runoff first enters the low-flow diversion, leaving the downstream portion dry. When the flow rate rises above 3.90 cfs, stormwater starts to rise above the low-flow diversion and continues downstream in the Maxson Place Storm Drain, past the overflow weir, and outlets to the MTD 562 system at Durfee Avenue. The flow rate in the Maxson Place Storm Drain continues to rise with the hydrograph, as does the water surface elevation, both at this location and downstream at Durfee Avenue. Starting at about Minute 1140, the water surface elevation rises above 1.5 feet and water starts to overflow into Infiltration Basin 1. Between Minute 1140 and Minute 1150, both the flow rate to Durfee Avenue and the flow rate to Basin 1 increase.

After Minute 1150, the peaking of the MTD 562 system starts to restrict the amount of flows that can enter it from the Maxson Place Storm Drain, and the backup raises the water surface elevation at the overflow weir, which sends more water tumbling into Basin 1. This pattern continues until the peak runoff occurs between Minute 1155 and Minute 1160. After this time, the MTD 562 system starts to clear out, which once again allows increasing flows from the Maxson Place Storm Drain to enter it. This lowers the water surface elevation at the overflow weir until Minute 1170, which is about the time when the flow depth once again goes below 1.5 feet, the height of the weir. After that time, no flow enters Infiltration Basin 1 from the overflow drain. Eventually the flow rate in the Maxson Place Storm Drain falls below 3.90 cfs, and the downstream portion dries out once again.

The volume of the portion of the hydrograph that surges over the overflow weir during the 50-year storm was calculated to be 32,220 cubic feet, or approximately 241,000 gallons. To ensure that the 50-year storm can be captured by the overflow weir, the volume of water must be restricted into Infiltration Basin 1 so that there is always at least 241,000 gallons of capacity. This can be accomplished through the installation of a float valve shutoff to the 18-inch RCP entering the basin from the hydrodynamic separator. The float should cause the valve to shutoff when the volume of water inside Infiltration Basin 1 reaches 75,289 cubic feet, which occurs at a depth of approximately 10.5 feet.

If the amount of flooding exceeds the designed capacity of Infiltration Basin 1, water will back up into the Maxson Place Storm Drain before it rises to the level of the street.

6.2 Infiltration Basin 2

Even after the addition of the Maxson Place Storm Drain, there will be a 17.8-acre area that drains to the Garvey Avenue Underpass. Though this drainage area will be reduced from the existing area of 47 acres, the area will still generate runoff that exceeds the capacity of the existing pump system. It is expected that during the average rain year, the pump's capacity will be exceeded more than once per year. The 85th percentile storm event for the portion of the drainage area that will remain tributary to the Garvey Avenue Underpass after the Maxson Place Storm Drain is constructed is 3.07 cfs. This is nearly identical to the existing pump capacity of 3.1 cfs. The 85th percentile rainfall is exceeded on average about five times per year in this region of Los Angeles County.

Infiltration Basin 2 will receive stormwater runoff from only one location, the proposed weir box on the south side of Garvey Avenue. The weir box will be constructed such that low flows continue to be removed by the existing pump system, but if the water in the pump backs up to the level of the weir in the weir box, water will tumble over the weir, through the tilted wedgewire screen to remove solid particles above 0.5 millimeters, and into a 30-inch RCP that conveys water to Infiltration Basin 2.

The 50-year 24-hour hydrograph at the Garvey Avenue Underpass under proposed conditions is shown in **Figure 6-4**. Stormwater runoff below the pump's capacity of 3.1 cfs will go to the pump, but runoff above 3.1 cfs will go to Infiltration Basin 2. During the 50-year 24-hour storm event, the volume of stormwater that will be diverted to Infiltration Basin 2 is 92,326 cubic feet, or about 691,000 gallons.

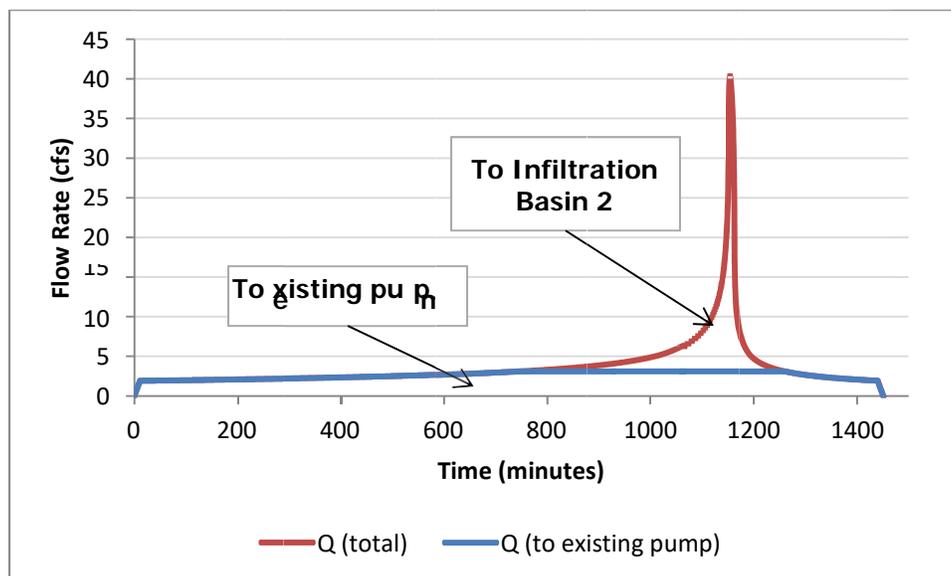


Figure 6-4 50-Year 24-Hour Hydrograph at Garvey Avenue Underpass

6.3 Infiltration Basin Volume

Table 6-1 is a summary of the design storage volume required for both basins.

Table 6-1 Basin Sizing

Storm Event	Infiltration Basin 1		Infiltration Basin 2	
	Volume (cubic feet)	Volume (gallons)	Volume (cubic feet)	Volume (gallons)
Volume (85 th Percentile)	75,289	563,000	0	0
Volume (10-year)	--	--	44,999	337,000
Volume (25-year)	--	--	69,942	523,000
Volume (50-year)	32,220 + 75,289 = 107,509	241,000 + 563,000 = 804,000	92,326	691,000

The designed capacity of Infiltration Basin 1 will be 804,000 gallons, which includes 563,000 to capture the entire water quality storm event, plus 241,000 gallons of capacity to capture overflow up to the 50-year storm event. The designed capacity of Infiltration Basin 2 will be 691,000 gallons, which is the volume of stormwater expected during the 50-year storm event. In total, the two infiltration basins will provide a storage capacity of 1.495 million gallons, or roughly 1.5 million gallons.

Approximately 13,130 square feet of the existing AC road pavement will be disturbed on Garvey Avenue north of the underpass for installation of the underground infiltration basins. This pavement, along with base course and subgrade, will be replaced to City standards.



ATTACHMENTS FOR SECTION 2.2:

CAPTURE AREA

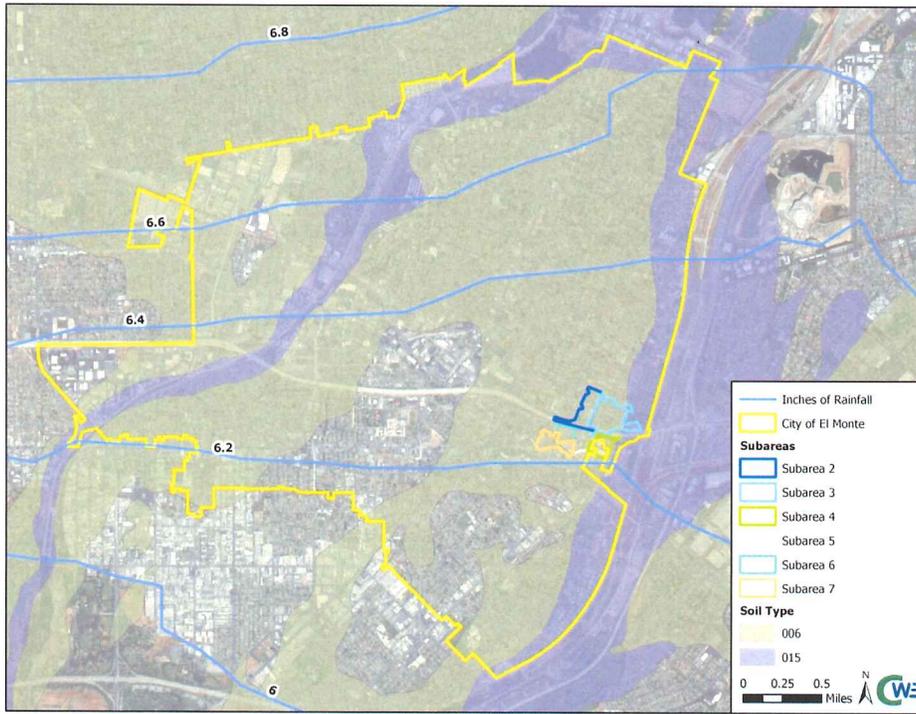


Figure 3-2 Hydrologic Map

3.1.2 Land Use

The Project catchment area is made up of many land uses including high-density single family residential areas, mixed residential areas, trailer parks, manufacturing, schools, freeway, and commercial land uses based on the LACDPW land use GIS data. This data identifies the average impervious area associated with each land use type which was used for the hydrologic analysis. **Table 3-1** Land Use Summary summarizes the land uses within the Project catchment area and identifies the imperviousness of the catchment based on the weighted average. The land use delineation is provided in **Figure 3-3**.

Table 3-1 Land Use Summary

Subarea #	Area (ac)	% Impervious	Soil Type
2	17.25	70.99	6
3	28.69	72.79	6
4	1.88	61.90	6
5	11.81	92.50	6
6	6.52	91.00	6
7	11.79	84.36	6

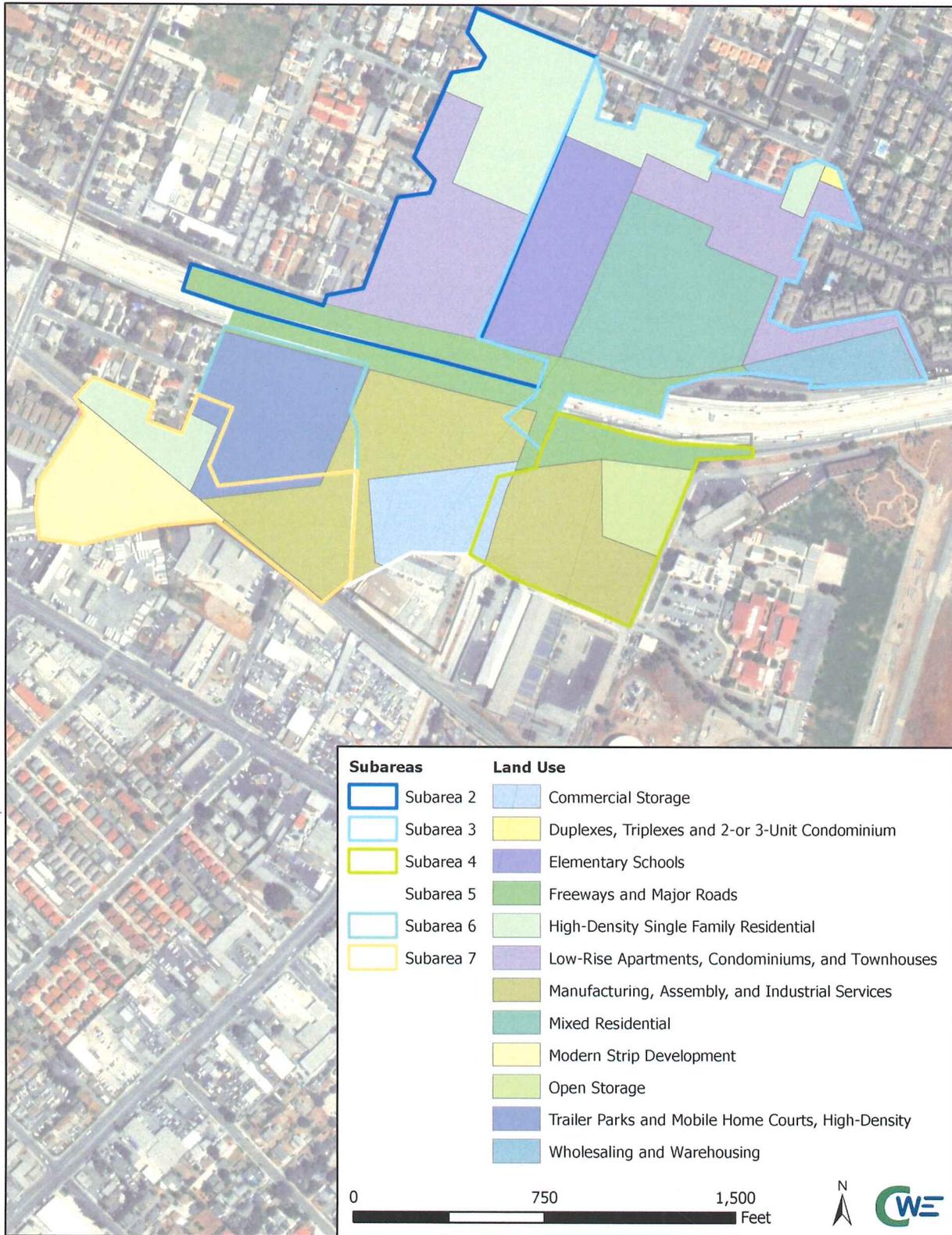
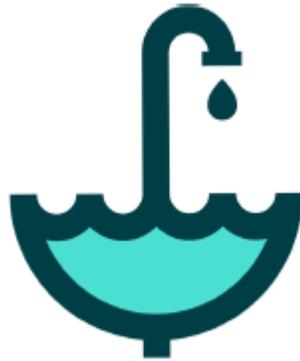


Figure 3-3 Land Use Map



ATTACHMENTS FOR SECTION 2.4:

SITE CONDITIONS & CONSTRAINTS

Geotechnical Engineering Report

**Garvey Avenue Grade Separation Drainage Project
El Monte, California**

February 5, 2018

Terracon Project No. 60175143

Prepared for:



Fullerton, California

Prepared by:

Terracon Consultants, Inc.
Tustin, California

terracon.com

Terracon

Environmental

Facilities

Geotechnical

Materials

February 5, 2018

Terracon



1561 E. Orangethorpe Ave., Suite 240,
Fullerton, CA 92831

Attn: Mr. William F. Young, PE
P: (714) 526-7500 x103
E: wyoung@cwecorp.com

**Re: Geotechnical Engineering Report
Garvey Avenue Grade Separation Drainage Project
El Monte, California
Terracon Project No. 60175143**

Dear Mr. Young,

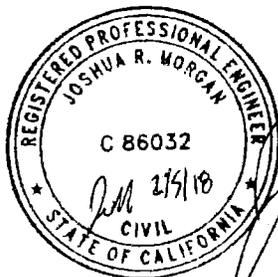
Terracon has completed the geotechnical engineering services for the proposed Garvey Avenue Grade Separation Drainage Project within El Monte, California. These services were performed in general subcontractor work order dated November 20, 2017.

The purpose of our services was to evaluate the pertinent geotechnical conditions at the multiple locations and to develop geotechnical parameters which will assist in the design and construction of the proposed storm drain lines.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning this report, or if we may be of further service, please contact us.

Sincerely,
Terracon Consultants, Inc.

Trevor M. Lillis, G.I.T.
Staff Geologist



Joshua R. Morgan, P.E.
Project Engineer

APR review by F. Fred Buhamdan, P.E.

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Construction Materials

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Exhibit B-1	Laboratory Test Description
Exhibit B-2	Atterberg Test Results
Exhibit B-3	Direct Shear Results
Exhibits B-4 and B-5	Moisture-Density Relationship Tests (Modified Proctors)
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APPENDIX C – SUPPORTING DOCUMENTS

Exhibit C-1	General Notes
Exhibit C-2	Unified Soil Classification

Geotechnical Engineering Report

Garvey Avenue Grade Separation Drainage Project ■ El Monte, CA
February 5, 2018 ■ Terracon Project No. 60175143



EXECUTIVE SUMMARY

A geotechnical exploration has been performed for the proposed project that will be located near the intersection of Garvey Avenue and Durfee Avenue in the City of El Monte within Los Angeles County, California. Terracon's geotechnical scope of work included the advancement of five (5) test borings to approximate depths ranging between 16½ to 31½ feet below the ground surface (bgs). Two (2) of these borings were utilized for percolation testing.

Based on the information obtained from our subsurface exploration, the site is considered suitable for development of the proposed project provided the recommendations included within this report are implemented during the design and construction phases of the project. The following geotechnical considerations were identified:

- Surface conditions at the site consisted of asphalt pavements with thickness of 2 inches or concrete pavements with thickness ranging from 6 to 7 inches, overlying aggregate base with thicknesses ranging from 4 to 10 inches. The subsurface materials generally consisted of medium-stiff to stiff silt with variable amounts of sand, overlying loose to dense sand with variable amounts of silt, to the maximum depth explored at 31½ feet bgs.
- Groundwater was not encountered in any of the borings. Based on nearby wells, the historic high ground water level was recorded at 36 feet below ground surface.
- It is anticipated that excavations for the proposed construction can be accomplished with conventional earthmoving equipment. Some trench wall instability should be expected throughout the proposed sewer line alignment due to the presence of granular soils with low to no cohesion. All excavations should be sloped or shored in the interest of safety following local and federal regulations, including current OSHA excavation and trench safety standards.
- Native soils encountered beneath the pavements can generally be used as backfill material for the proposed storm drain pipes.
- Recommended Asphalt Concrete (AC) and Portland Cement Concrete (PCC) sections are provided for various traffic indices. Pavement section selection should be based on anticipated traffic loading.
- The 2016 California Building Code (CBC) seismic site classification for this site is D.
- Earthwork on the project should be observed and evaluated by Terracon. The evaluation of earthwork should include observation and testing of engineered fill, subgrade preparation, foundation bearing soils, and other geotechnical conditions exposed during construction.

This geotechnical executive summary should be used in conjunction with the entire report for design and/or construction purposes. It should be recognized that specific details were not included or fully developed in this section, and the report must be read in its entirety for a comprehensive understanding of the items contained herein. The section titled General Comments should be read for an understanding of the report limitations.

GEOTECHNICAL ENGINEERING REPORT
GARVEY AVENUE GRADE SEPARATION DRAINAGE PROJECT
MULTIPLE LOCATIONS NEAR GARVEY AVENUE & DURFEE AVENUE
EL MONTE, CALIFORNIA
Terracon Project No. 60175143
February 5, 2018

1.0 INTRODUCTION

This report presents the results of our geotechnical engineering services performed for the proposed storm drain pipeline at the Garvey Avenue Grade Separation Project within El Monte, California. The Site Location Plan (Exhibit A-1) is included in Appendix A of this report. The purpose of these services is to provide information and geotechnical engineering recommendations relative to:

- subsurface soil conditions
- earthwork
- pavement design and construction
- groundwater conditions
- infiltration systems
- excavation and shoring considerations

Our geotechnical engineering scope of work for this project included the advancement of five (5) test borings to approximate depths ranging between 16½ and 31½ feet bgs. Two (2) of these borings were used for percolation testing.

Logs of the borings along with a Boring Location Diagram (Exhibit A-2) are included in Appendix A of this report. The results of the laboratory testing performed on soil samples obtained from the site during the field exploration are included in Appendix B of this report. Descriptions of the field exploration and laboratory testing are included in their respective appendices.

2.0 PROJECT AND SITE INFORMATION

ITEM	DESCRIPTION
Storm Drain Line Locations	The project is located a near the intersection of Garvey Avenue and Durfee Avenue in El Monte, California.
Trench Construction	The proposed storm drain pipes will vary in diameter from 36 to 48 inches. There are two proposed alternatives and the approximate total linear footage of each alignment alternative is 1,000 linear feet. The anticipated bottom of the proposed pipeline depth varies from approximately 4 to 10 feet below ground surface.
Pavement	The project includes the construction of new asphalt concrete (AC) or concrete pavements for the new storm drain trench construction.

ITEM	DESCRIPTION
Current ground cover	Asphalt concrete pavements, concrete pavements, concrete curb and gutters, and concrete sidewalks.
Existing topography	The proposed alignment is within existing pavements, easements, or right of ways that have been previously graded to relatively flat areas.
Traffic loading	A traffic index (TI) was not provided to Terracon at the time of preparation of this report. We are providing pavement sections for TI values of 5,6, 7, 8, and 9.
Infiltration system	An infiltration system is proposed beneath Garvey avenue. The system is anticipated to consist of chambers installed approximately 15 to 30 feet below existing grade.
Below grade structures	The proposed project will include excavations to install storm drain pipes at approximate depths of 4 to 10 feet below grade. In addition, infiltration chambers are anticipated to be installed 15 to 30 feet bgs.

3.0 SUBSURFACE CONDITIONS

3.1 Site Geology

The site is situated within the Northern Peninsular Ranges Geomorphic Province in Southern California. Geologic structures within this Province trend mostly northwest, in contrast to the prevailing east-west trend in the neighboring Transverse Ranges Geomorphic Province to the north. The Peninsular Range Province extend into Lower California, and is bounded by the Colorado Desert to the east, the Pacific Ocean to the west and the San Gabriel and San Bernardino mountains to the north.^{1,2} Surficial geologic units include Alluvium deposits of recent Quaternary age.

3.2 Typical Subsurface Profile

Specific conditions encountered at the boring locations are indicated on the individual boring logs. Stratification boundaries on the boring logs represent the approximate location of changes in soil types; in-situ, the transition between materials may be gradual. Details for the borings can be found on the boring logs included in Appendix A. Surface conditions at the site consisted of asphalt pavements with thickness of 2 inches and concrete pavements with thickness ranging from 6 to 7 inches. Aggregate base with thicknesses ranging from 4 to 10 inches was encountered beneath these pavements. The subsurface materials generally consisted of medium-stiff to stiff silt with variable amounts of sand, overlying loose to dense sand with variable amounts of silt, to the maximum depth explored at 31½ feet bgs.

Laboratory tests were conducted on selected soil samples and the test results are presented in Appendix B and on the boring logs. Atterberg limit test results indicate that the near surface silty

¹ Harden, D. R., "California Geology, Second Edition," Pearson Prentice Hall, 2004.

² Norris, R. M. and Webb, R. W., "Geology of California, Second Edition," John Wiley & Sons, Inc., 1990.

materials exhibit low to medium plasticity. Direct shear test results on the samples obtained between the depths of 5 to 20 feet indicate effective friction angles ranging from 30° to 34° with cohesion ranging from approximately 72 psf to 312 psf. Resistance value test (R-value) indicates near surface soils have an R-value ranging between 33 and 37. Moisture density relationship tests (Modified Proctor) indicate near surface soils have maximum dry densities of 103.5 pcf for the medium plasticity soils and 111.9 pcf for the low plasticity soils with respective optimum water contents of 13 and 17 percent.

3.3 Groundwater

Groundwater was not encountered to the maximum depth explored of 31½ feet bgs. These observations represent groundwater conditions at the time of the field exploration and may not be indicative of other times, or at other locations.

The Historical High Groundwater map, Plate 1.2, published by the California Geological Survey Seismic Hazard Zone Report for the El Monte Quadrangle indicates the historical high groundwater level at the site is approximately 12 to 15 feet below ground surface.

However, we reviewed ground water data recorded from Los Angeles County's monitoring wells, wells 2984K and 3003B, located approximately ¼ to ½ mile from the project site, respectively. Based on our review, the historical high groundwater levels were recorded prior to 1970. Since 1970, groundwater levels in the project vicinity have not risen higher than 30 feet below existing ground surface based on the recorded well data. Furthermore, since 1985, recorded groundwater levels in these wells have been deeper than 40 feet below existing ground surface.³

3.4 Percolation Test Results

Two (2) in-situ percolation tests (falling head borehole permeability) were performed to approximate depths of 30 feet bgs. A 2-inch thick layer of gravel was placed in the bottom of each boring after the borings were drilled to investigate the soil profile. A 3-inch diameter perforated pipe was installed on top of the gravel layer in each boring. Gravel was used to backfill between the perforated pipes and the boring sidewall. The borings were then filled with water for a pre-soak period. Testing began after the entire amount of water added to the borings had infiltrated into the ground. At the beginning of each test, the pipes were refilled with water and readings were taken at standardized time intervals. Percolation rates are provided in the following table:

³ Groundwater elevation was obtained from a monitoring wells (well numbers:2984K and 3003B) located within a distance of approximately ¼ to ½ mile of the project site (El Monte, California, <http://dpw.lacounty.gov/general/wells/#>) between April 1959 and October 2015

Geotechnical Engineering Report

Garvey Avenue Grade Separation Drainage Project ■ El monte, CA
 February 5, 2018 ■ Terracon Project No. 60175143



TEST RESULTS				
Test Location (depth, feet bgs)	Soil Classification	Slowest Measured Percolation Rate (in/hr)	Correlated Infiltration Rate* (in/hr)	Initial Water Head (in)
B-2 (18 to 31.5 ft)	Silty Sand over Poorly Graded Sand with Silt	410	13	156
		100	3.5	120
B-2A (12 to 30 ft)	Poorly Graded Sand over Silty Sand	>1,000	>100	210
		230	10.5	100

*If the proposed infiltration systems will mainly rely on vertical downward seepage, the correlated infiltration rates should be used. The correlated infiltration rates were calculated using the LA Reduction Factor Method.

Based on our test results, the correlated infiltration rates were generally greater than 0.3 in/hr in the native on-site soils. It is our opinion that infiltration onsite is feasible from a geotechnical standpoint. The field test results are not intended to be design rates. They represent the result of our tests, at the depths and locations indicated, as described above. The design rate should be determined by the designer by applying an appropriate factor of safety. The designer should take into consideration the variability of the native soils when selecting appropriate design rates. With time, the bottoms of infiltration systems tend to plug with organics, sediments, and other debris. Long term maintenance will likely be required to remove these deleterious materials to help reduce decreases in actual percolation rates.

The percolation test was performed with clear water, whereas the storm water will likely not be clear, but may contain organics, fines, and grease/oil. The presence of these deleterious materials will tend to decrease the rate that water percolates from the infiltration system. Design of the storm water infiltration systems should account for the presence of these materials and should incorporate structures/devices to remove these deleterious materials.

Based on the soils encountered in our borings, we expect the percolation rates of the soils could be different than measured in the field due to variations in fines and gravel content. The design elevation and size of the proposed infiltration system should account for this expected variability in infiltration rates.

Infiltration testing should be performed after construction of the infiltration system to verify the design infiltration rates. It should be noted that siltation and vegetation growth, along with other factors, may affect the infiltration rates of the infiltration areas. The actual infiltration rate may vary from the values reported here. Infiltration systems should be located at least 10 feet from any existing or proposed foundation system.

3.5 Corrosion Potential

Results of soluble sulfate testing indicate that ASTM Type I/II Portland cement may be used for all concrete on and below grade. Foundation concrete may be designed for negligible sulfate exposure in accordance with the provisions of the ACI Design Manual, Section 318, Chapter 19.

Laboratory test results indicate the on-site soils have a pH ranging between 8.5 and 9.0, a minimum resistivity ranging between 6693 and 7954 ohm-centimeters, a water soluble sulfate content of 0.01%, Red-Ox potential ranging between +669 and +710 mV, negligible sulfides, and a chloride content of 50 mg/kg as shown on the attached Results of Corrosivity Analysis sheet. These values should be used to evaluate corrosive potential of the on-site soils to underground ferrous metals.

Refer to the Results of Corrosivity Analysis sheet in Appendix B for the complete results of the Corrosivity testing conducted in conjunction with this geotechnical exploration.

4.0 RECOMMENDATIONS FOR DESIGN AND CONSTRUCTION

4.1 Geotechnical Considerations

The site appears suitable for the proposed construction based upon geotechnical conditions encountered in the test borings, provided the geotechnical engineering recommendations contained in this report are implemented in the design and construction of the project. On-site soils should be suitable for use as trench backfill for the proposed storm drain pipes.

Based on the findings summarized in this report, it is our professional opinion that the proposed construction will not be subject to a hazard from settlement, slippage, or landslide, provided the recommendations of our report are incorporated into the proposed construction. It is also our opinion that the proposed construction will not adversely affect the geologic stability of the site or adjacent properties provided the recommendations contained in our report are incorporated into the proposed construction.

Geotechnical engineering recommendations for shoring and other earth connected phases of the project are outlined below. The recommendations contained in this report are based upon the results of field and laboratory testing (which are presented in Appendices A and B), engineering analyses, and our current understanding of the proposed project.

4.2 Earthwork

The following presents recommendations for site preparation, excavation, subgrade preparation and placement of engineered fills on the project. The recommendations presented are for the design and construction of earth supported elements and are contingent upon following the recommendations outlined in this section.

Earthwork on the project should be observed and evaluated by Terracon. The evaluation of earthwork should include observation and testing of engineered fill, subgrade preparation, and other geotechnical conditions exposed during the construction of the project.

4.2.1 Site Preparation

Strip and remove existing sidewalk, curb and gutter, pavements and other deleterious materials from the proposed construction areas within the proposed pavements and concrete flatwork.

Subgrade soils beneath pavements, curb, gutter, and sidewalk should be scarified; moisture conditioned, and compacted to a minimum depth of 10 inches. The moisture content and compaction of subgrade soils should be maintained until pavement/flatwork construction.

Exposed areas which will receive fill, once properly cleared and benched where necessary, should be scarified to a minimum depth of 10 inches, conditioned to near optimum moisture content, and compacted. However, we recommend limiting compaction in exposed areas beneath infiltration chambers to prevent adverse drainage characteristics. These areas should be excavated to proposed depths and cleared of loose/disturbed soils.

4.2.2 Open Trench Construction

It is anticipated that excavations for the proposed construction can be accomplished with conventional earthmoving equipment. Based upon the subsurface conditions determined from the geotechnical exploration, subgrade soils exposed during construction are anticipated to be relatively workable. However, the workability of the subgrade may be affected by precipitation, repetitive construction traffic or other factors. If unworkable conditions develop, workability may be improved by scarifying and drying.

The individual contractor(s) is responsible for designing and constructing stable, temporary excavations as required to maintain stability of both the excavation sides and bottom. Excavations should be sloped or shored in the interest of safety following local, and federal regulations, including current OSHA excavation and trench safety standards.

For the entire storm drain alignment, the subsurface soils consisting of the granular materials can be considered Type C soils when applying the OSHA regulations. OSHA allows a maximum slope inclination of 1½H:1V for Type C soils in excavations of 20 feet or less. Flatter slopes may be required if caving soils or seepage is encountered in any excavation. If any excavation is extended to a depth of more than 20 feet, it will be necessary to have the side slopes designed by a professional engineer.

Soils from the trench excavation should not be stockpiled higher than six 6 feet or within ten 10 feet of the edge of an open trench. Construction of open cuts adjacent to existing structures, including underground pipes, is not recommended within a 1½ H:1V plane extending beyond and down from the perimeter of the structure. Cuts that are proposed within five 5 feet of light

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Garvey Avenue Grade Separation Drainage Project ■ El monte, CA
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standards, other utilities, underground structures, and pavement should be provided with temporary shoring.

It may be necessary for the contractor to retain a geotechnical engineer to monitor the soils exposed in all excavations and provide engineering services for slopes. This will provide an opportunity to monitor the soils encountered and to modify the excavation slopes as necessary. It also offers an opportunity to verify the stability of the excavation slopes during construction.

4.2.3 Pipe Trench Bottom Preparation

Any loose and/or unsuitable material encountered at the bottom of excavations should be removed and be replaced with an adequate bedding material. The pipe subgrade should be level, uniform, firm, and free of loose material. Pipe subgrade should also be properly graded to provide uniform bearing and support to the entire section of the pipe, over size particles larger than 2 inches in the largest dimension should be removed from the trench bottom and replaced with compacted materials.

If the exposed silt soils at the bottom of the excavations have elevated water contents and are pumping or yielding during attempts to compact the bottom of the trenches, silt soils may be stabilized using geo-synthetic or geogrid materials and coarse aggregate materials. The aggregate layer and the geotextile layer are anticipated to create a stable platform beneath the proposed trenches and overlying backfill materials.

4.2.4 Pipe Bedding

Bedding is defined as the material supporting and surrounding the pipe to 12 inches above the pipe. To provide uniform and firm support for the pipe, compacted granular materials such as clean sand may be used as pipe bedding material. The type and thickness of the granular bedding placed underneath and around the pipe, if any, should be selected by the pipe manufacturer or design. Care should be taken to densify the bedding material below the spring line of the pipe. Pipe design generally requires a granular material with a sand equivalent (SE) greater than 30.

The silt materials encountered near the surface are not anticipated to be suitable as pipe bedding materials. However the silty sands and poorly graded sands encountered below the silt layers are anticipated to be suitable as pipe bedding materials. During construction these stockpiled soils should be tested for conformance with the sand equivalent requirements set forth by the pipe manufacturer.

4.2.5 Fill Materials and Placement

All fill materials should be inorganic soils free of vegetation, debris, and fragments larger than three inches in size. Pea gravel or other similar non-cementitious, poorly-graded materials should not be used as fill or backfill without the prior approval of the geotechnical engineer.

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 February 5, 2018 ■ Terracon Project No. 60175143



The on-site materials are considered suitable for use as trench backfill on the project. Imported soils for use as fill material over the proposed pipes should conform to low volume change materials as indicated in the following specifications:

<u>Gradation</u>	<u>Percent Finer by Weight (ASTM C 136)</u>
6"	100
3"	70-100
No. 4 Sieve	50-100
No. 200 Sieve	20-50
■ Liquid Limit	20 (max)
■ Plasticity Index	10 (max)
■ Maximum expansive index*	20 (max)

*ASTM D 4829

Engineered fill should be placed and compacted in horizontal lifts, using equipment and procedures that will produce recommended moisture contents and densities throughout the lift. Fill lifts should not exceed ten inches loose thickness.

4.2.6 Compaction Requirements

Recommended compaction and moisture content criteria for engineered fill materials are as follows:

Material Type and Location	Per the Modified Proctor Test (ASTM D 1557)		
	Minimum Compaction Requirement (%)	Range of Moisture Contents for Compaction	
		Minimum	Maximum
On-site soils or approved imported fill soils:			
Beneath asphalt pavements:	95	0%	+4%
Trench backfill:	95	0%	+4%
Beneath concrete pavements:	95	0%	+4%
Bottom of trench and areas to receive fill*:	90	0%	+4%
Aggregate base (beneath pavements):	95	0%	+4%

* Compaction should be avoided beneath infiltration systems to prevent creating adverse drainage characteristics.

The contractor should select the equipment and processes to be used to achieve the specified density without damage to adjacent ground, structures, utilities and completed work. It should be the responsibility of the contractor to maintain safe working conditions during all phases of construction.

4.2.7 Grading and Drainage

Positive drainage should be provided during construction and maintained throughout the life of the development. Infiltration of water into utility trenches should be prevented during construction. Backfill in utility trenches should be well compacted and free of all construction debris to reduce the possibility of moisture infiltration. We recommend a minimum horizontal setback distance of 10 feet from the perimeter of any building and the high-water elevation of the nearest storm-water retention basin.

4.2.8 Earthwork Construction Considerations

It is anticipated that excavations for the proposed construction can be accomplished with conventional earthmoving equipment. On-site silt soils may pump and unstable subgrade conditions could develop during general construction operations, particularly if the soils are wetted and/or subjected to repetitive construction traffic. The use of light construction equipment would aid in reducing subgrade disturbance. The use of remotely operated equipment, such as a backhoe, would be beneficial to perform cuts and reduce subgrade disturbance. Should unstable subgrade conditions develop stabilization measures will need to be employed.

If the subgrade pumps or becomes unworkable, the subgrade material may be improved by scarifying and drying or may be removed and replaced if necessary. Suitable methods of stabilization will be dependent upon factors such as schedule, weather, size of area to be stabilized, and the nature of the instability. If the construction schedule does not allow for drying by aeration, silt soils may be stabilized using geo-synthetic or geogrid materials and coarse aggregate materials.

Upon completion of filling and grading, care should be taken to maintain the subgrade moisture content prior to construction of pavements. Construction traffic over the completed subgrade should be avoided to the extent practical. If the subgrade should become desiccated, saturated, or disturbed, the affected material should be removed or these materials should be scarified, moisture conditioned, and recompacted prior to pavement construction.

The geotechnical engineer should be retained during the construction phase of the project to observe earthwork and to perform necessary tests and observations during subgrade preparation, proof-rolling, placement and compaction of controlled compacted fills, backfilling of excavations to the completed subgrade.

We recommend that the earthwork portion of this project be completed during extended periods of dry weather if possible. If earthwork is completed during the wet season (typically November through March) it may be necessary to take extra precautionary measures to protect subgrade soils. Wet season earthwork may require additional mitigation measures beyond that which would be expected during the drier summer and fall months. This could include diversion of surface runoff around exposed soils and draining of ponded water on the site. Once subgrades are established, it may be necessary to protect the exposed subgrade soils from construction traffic.

Earthwork on the project should be observed and evaluated by Terracon. The evaluation of earthwork should include observation and testing of engineered fill, subgrade preparation, and other geotechnical conditions exposed during the construction of the project.

4.3 Lateral Earth Pressures

For vertical cuts, steeper temporary construction slopes, or unstable soil encountered during the excavation, shoring should be provided by the contractor as necessary, to protect the workers in the excavation. The shoring for the pipe excavations may be cantilevered or may be laterally supported.

For onsite and import soils above any free water surface, recommended equivalent fluid pressures and coefficient of friction for foundation elements are:

Item	On-site/ Import Soils
Active Case	40 psf/ft
Passive Case	360 psf/ft
At-Rest Case	60 psf/ft
Surcharge Pressure	0.33*(Surcharge)
Coefficient of friction	0.35 ^a

^a Note: Reduce to 0.30 when used in conjunction with passive pressure.

The lateral earth pressures herein do not include any factor of safety and are not applicable for submerged soils/hydrostatic loading. Additional recommendations may be necessary if submerged conditions are to be included in the design.

For the design of braced shoring, we recommend such shoring be designed using a rectangular-shaped distribution of lateral earth pressure of 26H (in psf) (H is the total height of the braced excavation). Terracon should be notified if the excavation is anticipated to be deeper than 30 feet.

In addition to the lateral earth pressure, surcharge pressures due to miscellaneous loads such as soil stockpiles, vehicular traffic, or construction equipment located adjacent to the shoring should be included in the upper 10 feet of the shoring to account for normal vehicular and construction traffic within 10 feet of the trench excavation. As previously mentioned, all shoring should be designed and installed in accordance with state and federal safety regulations.

The invert elevation of the proposed storm drain lines is anticipated to be above ground water level. Should groundwater be encountered during construction, Terracon should be notified immediately so that further investigations and supplemental recommendations can be made.

4.4 Pavements

4.4.1 Design Recommendations

A design R-Value of 35 was used to calculate asphalt concrete pavement sections for several Traffic Indices (TI). A modulus of subgrade reaction value (k) of 150 pounds per cubic inch (pci) was used in calculating the portland cement concrete pavement sections. R-value testing should be completed prior to pavement construction to verify the design R-value.

Assuming the pavement subgrades will be prepared as recommended within this report, the following pavement sections should be considered minimums for this project for the traffic indices assumed in the table below. As more specific traffic information becomes available, we should be contacted to reevaluate the pavement calculations.

	Recommended Pavement Section Thickness (inches) ^{a,b}				
	TI = 5.0	TI = 6.0	TI = 7.0	TI = 8.0	TI = 9.0
<u>Section I</u> Portland Cement Concrete	5.0" Concrete over 4" Class II Aggregate Base	6.0" Concrete over 4" Class II Aggregate Base	7.0" Concrete over 4" Class II Aggregate Base	7.5" Concrete over 4" Class II Aggregate Base	8.0" Concrete over 4" Class II Aggregate Base
<u>Section II</u> Asphaltic Concrete	3" Asphaltic Concrete over 5" Class II Aggregate Base	4" Asphaltic Concrete over 6" Class II Aggregate Base	4" Asphaltic Concrete over 9" Class II Aggregate Base	4" Asphaltic Concrete over 11" Class II Aggregate Base	5" Asphaltic Concrete over 12" Class II Aggregate Base

^aAll materials should meet the CALTRANS Standard Specifications for Highway Construction.

^bAll pavement subgrades should be scarified a minimum depth of 10 inches, moisture conditioned and compacted.

These pavement sections are considered minimal sections based upon the expected traffic and the existing subgrade conditions. However, they are expected to function with periodic maintenance and overlays if good drainage is provided and maintained.

All concrete for rigid pavements should have a minimum flexural strength of 600 psi (4,500 psi compressive strength), and be placed with a maximum slump of four inches. Proper joint spacing will also be required to prevent excessive slab curling and shrinkage cracking. All joints should be sealed to prevent entry of foreign material and dowelled where necessary for load transfer.

4.4.2 Construction Considerations

Materials and construction of pavements for the project should be in accordance with the requirements and specifications of the State of California Department of Transportation, or other approved local governing specifications.

Base course or pavement materials should not be placed when the surface is wet. Surface drainage should be provided away from the edge of paved areas to minimize lateral moisture transmission into the subgrade.

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Preventative maintenance should be planned and provided for through an on-going pavement management program in order to enhance future pavement performance. This consists of both localized maintenance (e.g. crack sealing and patching) and global maintenance (e.g. surface sealing). Preventative maintenance is usually the first priority when implementing a planned pavement maintenance program and provides the highest return on investment for pavements.

5.0 GENERAL COMMENTS

Terracon should be retained to review the final design plans and specifications so comments can be made regarding interpretation and implementation of our geotechnical recommendations in the design and specifications. Terracon also should be retained to provide observation and testing services during grading, excavation, and other earth-related construction phases of the project.

The analysis and recommendations presented in this report are based upon the data obtained from the borings performed at the indicated locations and from other information discussed in this report. This report does not reflect variations that may occur between borings, across the site, or due to the modifying effects of construction or weather. The nature and extent of such variations may not become evident until during or after construction. If variations appear, we should be immediately notified so that further evaluation and supplemental recommendations can be provided.

This report has been prepared for the exclusive use of our client for specific application to the project discussed and has been prepared in accordance with generally accepted geotechnical engineering practices. No warranties, either express or implied, are intended or made. Site safety, excavation support, and dewatering requirements are the responsibility of others. In the event that changes in the nature, design, or location of the project as outlined in this report are planned, the conclusions and recommendations contained in this report shall not be considered valid unless Terracon reviews the changes and either verifies or modifies the conclusions of this report in writing.

APPENDIX A
FIELD EXPLORATION



TOPOGRAPHIC MAP IMAGE COURTESY OF THE U.S. GEOLOGICAL SURVEY
 QUADRANGLES INCLUDE: EL MONTE, CA (1/1/1994) and BALDWIN PARK, CA (1/1/1981).

Project Manager:	JM	Project No.	60175143
Drawn by:	DTB	Scale:	1"=2,000'
Checked by:	JM	File Name:	A-1
Approved by:	FR	Date:	12/2017

Terracon
 1421 Edinger Ave Ste C
 Tustin, CA 92780-6287

SITE LOCATION
 Garvey Avenue Grade Separation Drainage
 Multiple Locations, See Logs
 El Monte, CA

Exhibit
A-1



LEGEND

-  **B-1 SOIL BORING APPROXIMATE LOCATION**
-  **B-2 SOIL BORING AND PERCOLATION TEST APPROXIMATE LOCATION**

250 feet

© 2013 Microsoft Corporation

DIAGRAM IS FOR GENERAL LOCATION ONLY, AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES

AERIAL PHOTOGRAPHY PROVIDED BY MICROSOFT BING MAPS

Project Manager:	JM
Drawn by:	OF
Checked by:	JM
Approved by:	FH

Project No.	60175143
Scale:	AS SHOWN
File Name:	A-2
Date:	01/29/18

Terracon

1421 Edinger Ave Ste C
Tustin, CA 92780-6287

EXPLORATION PLAN

Garvey Avenue Grade Separation Drainage
Multiple Locations, See Logs
El Monte, CA

Exhibit	A-2
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Geotechnical Engineering Report

Garvey Avenue Grade Separation Drainage Project ■ El monte, CA
February 5, 2018 ■ Terracon Project No. 60175143

Terracon

Field Exploration Description

A total of five (5) test borings were drilled at the site on December 27, 2017. The borings were drilled to approximate depths ranging between 16½ to 31½ feet bgs at the approximate locations shown on the attached Boring Location Diagram, Exhibit A-2. Test borings were advanced with a truck-mounted B-53 drill rig utilizing 8-inch diameter hollow-stem augers. Two (2) of those borings were utilized for percolation testing.

The borings were located in the field by using the proposed site plan, aerial photographs of the site, and measuring from existing site features. The accuracy of boring locations should only be assumed to the level implied by the method used.

Continuous lithologic logs of the borings were recorded by the field engineer during the drilling operations. At selected intervals, samples of the subsurface materials were taken by driving split-spoon or ring-barrel samplers. Bulk samples of subsurface materials were also obtained. Groundwater conditions were evaluated in the borings at the time of site exploration.

Penetration resistance measurements were obtained by driving the split-spoon and ring-barrel samplers into the subsurface materials with a 140-pound automatic hammer falling 30 inches. The penetration resistance value is a useful index in estimating the consistency or relative density of materials encountered.

An automatic hammer was used to advance the split-barrel sampler in the borings performed on this site. A significantly greater efficiency is achieved with the automatic hammer compared to the conventional safety hammer operated with a cathead and rope. This higher efficiency has an appreciable effect on the SPT-N value. The effect of the automatic hammer's efficiency has been considered in the interpretation and analysis of the subsurface information for this report.

The samples were tagged for identification, sealed to reduce moisture loss, and taken to our laboratory for further examination, testing, and classification. Information provided on the boring logs attached to this report includes soil descriptions, consistency evaluations, boring depths, sampling intervals, and groundwater conditions. The borings were backfilled with auger cuttings prior to the drill crew leaving the site.

BORING LOG NO. B-2

PROJECT: Garvey Avenue Grade Separation Drainage

CLIENT: CWE Corp
Fullerton, CA

SITE: Multiple locations near Garvey Avenue and Durfee Avenue
El Monte, CA

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL_60175143 CWE GARVEY AVENUE.GPJ TERRACON_DATATEMPLATE.GDT 2/6/18

GRAPHIC LOG	LOCATION See Exhibit A-2 Latitude: 34.0635° Longitude: -118.0134°	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	STRENGTH TEST			WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
						TEST TYPE	COMPRESSIVE STRENGTH (tsf)	STRAIN (%)				
0.6	CONCRETE , 7" thickness											
1.4	BASE , 10" thickness											
5.0	SANDY SILT (ML) , brown										37-30-7	70
5.0	SILT WITH SAND (ML) , brown, medium stiff	5		X	2-2-2 N=4			4	86			
10.0	SILTY SAND (SM) , brown, medium dense	10		▼	5-10-13			2	105			
15.0	SILTY SAND (SM) , with gravel, brown, dense	15		X	21-23-24 N=47			1	109			
20.0	SILTY SAND (SM) , brown dense	20		▼	9-17-21			3	100			
25.0		25										

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Hollow Stem Auger

See Exhibit A-3 for description of field procedures.

Notes:

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite
Surface Capped with Asphalt

See Appendix B for description of laboratory procedures and additional data (if any).

See Appendix C for explanation of symbols and abbreviations.
Elevations estimated using google earth

WATER LEVEL OBSERVATIONS

Groundwater not encountered



1421 Edinger Ave Ste C
Tustin, CA

Boring Started: 12-28-2017

Boring Completed: 12-28-2017

Drill Rig: B-53

Driller: Cal Pac

Project No.: 60175143

Exhibit: A-5

BORING LOG NO. B-2

PROJECT: Garvey Avenue Grade Separation Drainage

CLIENT: CWE Corp
Fullerton, CA

SITE: Multiple locations near Garvey Avenue and Durfee Avenue
El Monte, CA

GRAPHIC LOG	LOCATION See Exhibit A-2 Latitude: 34.0635° Longitude: -118.0134°	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	STRENGTH TEST			WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
						TEST TYPE	COMPRESSIVE STRENGTH (tsf)	STRAIN (%)				
DEPTH												
30	POORLY GRADED SAND WITH SILT (SP-SM) , brown, medium dense			X	4-8-10 N=18			4	101	NP	6	
31.5	Boring Terminated at 31.5 Feet			X	13-26-15			2	111			

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Hollow Stem Auger

See Exhibit A-3 for description of field procedures.

Notes:

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite
Surface Capped with Asphalt

See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.
Elevations estimated using google earth

WATER LEVEL OBSERVATIONS

Groundwater not encountered



1421 Edinger Ave Ste C
Tustin, CA

Boring Started: 12-28-2017

Boring Completed: 12-28-2017

Drill Rig: B-53

Driller: Cal Pac

Project No.: 60175143

Exhibit: A-5

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 60175143 CWE GARVEY AVENU GPJ TERRACON_DATATEMPLATE.GDT 2/6/18

BORING LOG NO. B-2A

PROJECT: Garvey Avenue Grade Separation Drainage

CLIENT: CWE Corp
Fullerton, CA

SITE: Multiple locations near Garvey Avenue and Durfee Avenue
El Monte, CA

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 60175143 CWE GARVEY AVENU.GPJ TERRACON_DATATEMPLATE.GDT 2/6/18

GRAPHIC LOG	LOCATION See Exhibit A-2 Latitude: 34.0634° Longitude: -118.0135°	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	STRENGTH TEST			WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
						TEST TYPE	COMPRESSIVE STRENGTH (1st)	STRAIN (%)				
0.5	CONCRETE , 6" thickness											
1.3	BASE , 10" thickness											
5.0	SANDY SILT (ML) , light brown											
5.0	SILT (ML) , light brown, stiff	5		▼	5-5-5							
10.0	SILT WITH SAND (ML) , light brown, stiff	10		X	3-4-7 N=11							
15.0	POORLY GRADED SAND WITH SILT (SP-SM) , light brown medium dense	15		▼	12-26-32							
20.0	dense	20		X	8-15-16 N=31							
25.0		25										

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Hollow Stem Auger

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.
Elevations estimated using google earth

Notes:

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite
Surface Capped with Asphalt

WATER LEVEL OBSERVATIONS

Groundwater not encountered



1421 Edinger Ave Ste C
Tustin, CA

Boring Started: 12-28-2017

Boring Completed: 12-28-2017

Drill Rig: B-53

Driller: Cal Pac

Project No.: 60175143

Exhibit: A-6

BORING LOG NO. B-2A

PROJECT: Garvey Avenue Grade Separation Drainage

CLIENT: CWE Corp
Fullerton, CA

SITE: Multiple locations near Garvey Avenue and Durfee Avenue
El Monte, CA

GRAPHIC LOG	LOCATION See Exhibit A-2 Latitude: 34.0634° Longitude: -118.0135°	DEPTH (FT.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	STRENGTH TEST			WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS	PERCENT FINES
						TEST TYPE	COMPRESSIVE STRENGTH (tsf)	STRAIN (%)			LL-PL-PI	
		DEPTH										
30.0	SILTY SAND (SM) , light brown, medium dense				50/4"							
				X	8-10-10 N=20							
	Boring Terminated at 30 Feet	30										

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Hollow Stem Auger

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.
Elevations estimated using google earth

Notes:

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite
Surface Capped with Asphalt

WATER LEVEL OBSERVATIONS

Groundwater not encountered



1421 Edinger Ave Ste C
Tustin, CA

Boring Started: 12-28-2017

Boring Completed: 12-28-2017

Drill Rig: B-53

Driller: Cal Pac

Project No.: 60175143

Exhibit: A-6

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 60175143 CWE GARVEY AVENU.GPJ TERRACON_DATATEMPLATE.GDT 2/6/18

BORING LOG NO. B-3

PROJECT: Garvey Avenue Grade Separation Drainage

CLIENT: CWE Corp
Fullerton, CA

SITE: Multiple locations near Garvey Avenue and Durfee Avenue
El Monte, CA

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 60175143 CWE GARVEY AVENU.GPJ TERRACON_DATATEMPLATE.GDT 2/6/18

GRAPHIC LOG	LOCATION See Exhibit A-2 Latitude: 34.0644° Longitude: -118.0136°	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	STRENGTH TEST			WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
						TEST TYPE	COMPRESSIVE STRENGTH (tsf)	STRAIN (%)				
0.2	ASPHALT , 2" thickness											
0.5	BASE , 4" thickness											
	SILT (ML) , trace sand, brown			↓						44-31-13	90	
5.0	SILT WITH SAND (ML) , brown, medium stiff	5		▲	3-4-5			12	79			
10.0		10		X	2-2-3 N=5					NP	71	
15.0	SILTY SAND (ML) , tan, medium dense	15		▲				1	98			
16.5	Boring Terminated at 16.5 Feet			▲	5-10-18							

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Hollow Stem Auger

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite
Surface Capped with Asphalt

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.
Elevations estimated using google earth

Notes:

WATER LEVEL OBSERVATIONS
Groundwater not encountered



Boring Started: 12-27-2017	Boring Completed: 12-27-2017
Drill Rig: B-53	Driller: Cal Pac
Project No.: 60175143	Exhibit: A-7

BORING LOG NO. B-4

PROJECT: Garvey Avenue Grade Separation Drainage

CLIENT: CWE Corp
Fullerton, CA

SITE: Multiple locations near Garvey Avenue and Durfee Avenue
El Monte, CA

GRAPHIC LOG	LOCATION See Exhibit A-2 Latitude: 34.0634° Longitude: -118.0116°	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	STRENGTH TEST			WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
						TEST TYPE	COMPRESSIVE STRENGTH (tsf)	STRAIN (%)				
0.6	CONCRETE , 7" thickness											
1.1	BASE , 6" thickness SANDY SILT (ML) , brown										32-27-5	60
5.0	SILTY SAND (SM) , brown, loose	5		▼	3-3-6			5	88			
10		10		X	2-3-3 N=6						NP	33
15.0	POORLY GRADED SAND WITH SILT (SP-SM) , tan, medium dense	15		▼	6-8-21			3	107			
16.5	Boring Terminated at 16.5 Feet											

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Hollow Stem Auger

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.
Elevations estimated using google earth

Notes:

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite
Surface capped with concrete

WATER LEVEL OBSERVATIONS

Groundwater not encountered



Boring Started: 12-27-2017

Boring Completed: 12-27-2017

Drill Rig: B-53

Driller: Cal Pac

Project No.: 60175143

Exhibit: A-8

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL_60175143 CWE GARVEY AVENUE.GPJ TERRACON DATATEMPLATE.GDT 2/6/18

APPENDIX B
LABORATORY TESTING

Geotechnical Engineering Report

Garvey Avenue Grade Separation Drainage Project ■ El monte, CA
February 5, 2018 ■ Terracon Project No. 60175143

Terracon

Laboratory Testing

Samples retrieved during the field exploration were taken to the laboratory for further observation by the project geotechnical engineer and were classified in accordance with the Unified Soil Classification System (USCS) described in Appendix C. At that time, the field descriptions were confirmed or modified as necessary and an applicable laboratory testing program was formulated to determine engineering properties of the subsurface materials.

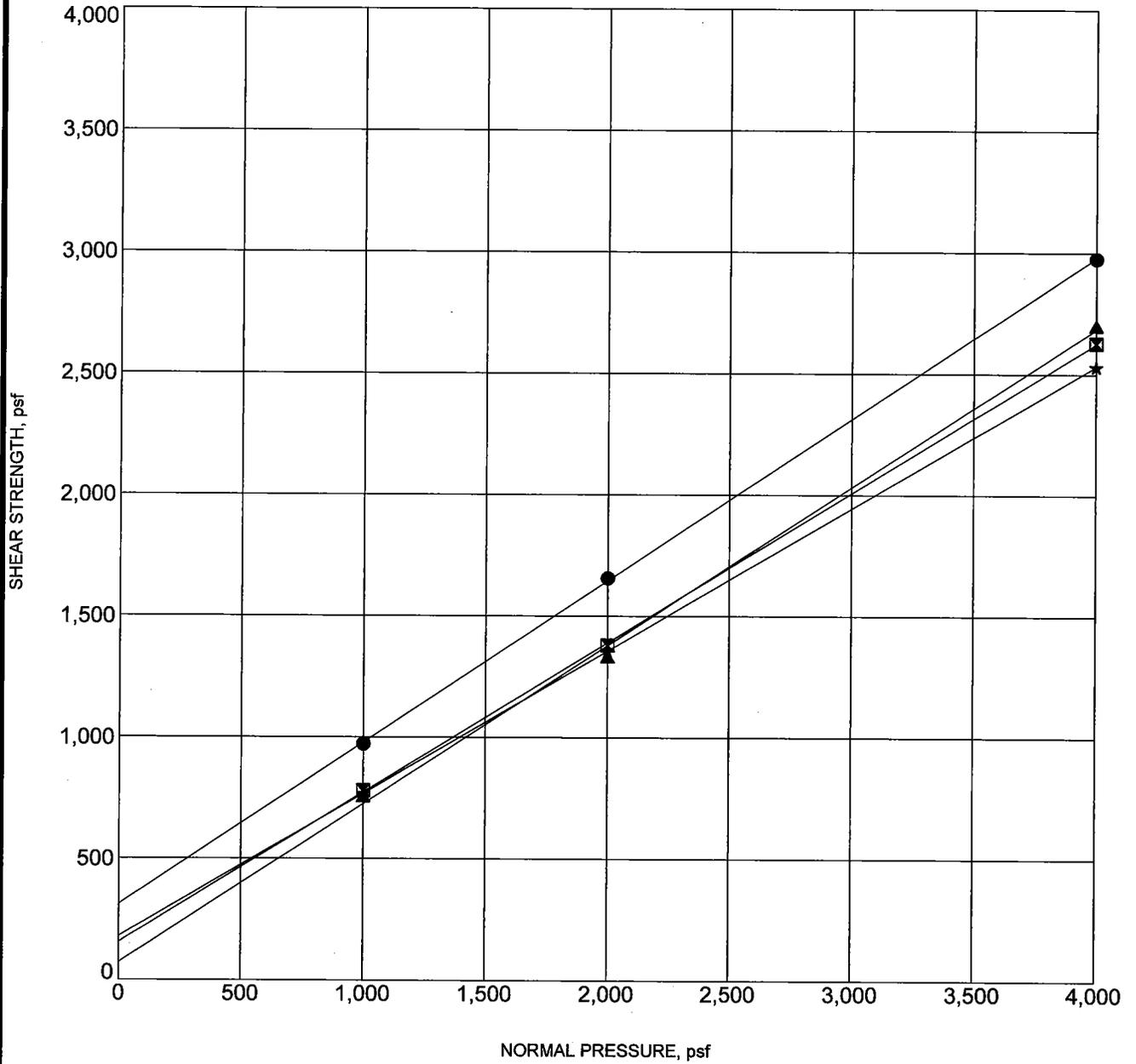
Laboratory tests were conducted on selected soil samples and the test results are presented in this appendix. The laboratory test results were used for the geotechnical engineering analyses, and the development of foundation and earthwork recommendations. Laboratory tests were performed in general accordance with the applicable ASTM, local or other accepted standards.

Selected soil samples obtained from the site were tested for the following engineering properties:

- ASTM D7263 Dry Density
- ASTM D512 Chloride Content
- AWWA 4500H pH
- ASTM D4318 Atterberg Limits
- ASTM D3080 Direct Shear
- ASTM D2216 Moisture Content
- AWWA 4500E Soluble Sulfates
- ASTM G57 Minimum Resistivity
- ASTM C136 Percent Passing #200 Sieve
- CT301 R-Value Test

Procedural standards noted above are for reference to methodology in general. In some cases, variations to methods are applied as a result of local practice or professional judgment.

DIRECT SHEAR TEST ASTM D3080



LABORATORY TESTS ARE NOT VALID IF SEPARATED FROM ORIGINAL REPORT. TC_DIRECT_SHEAR_60175143 CWE GARVEY AVENU.GPJ TERRACON DATATEMPLATE.GDT 1/29/18

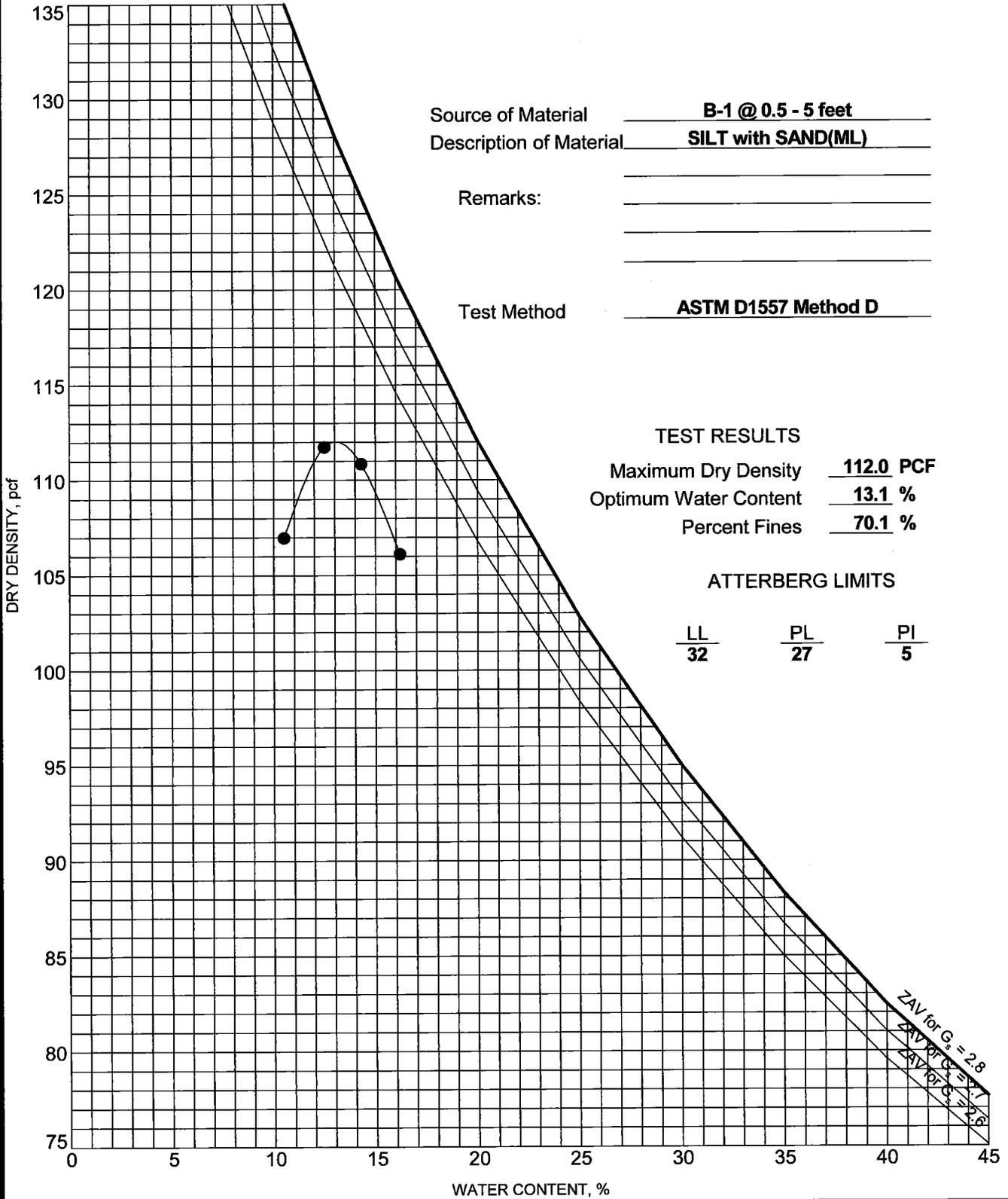
Specimen Identification	Classification	γ_d , pcf	WC, %	c, psf	ϕ°
● B-1 10.0ft	SILT with SAND (ML)	90	9	312	34
◻ B-2 20.0ft	SILTY SAND (SM)	100	3	156	32
▲ B-3 15.0ft	SILTY SAND (SM)	98	1	72	33
★ B-4 5.0ft	SILTY SAND (SM)	88	5	180	30

PROJECT: Garvey Avenue Grade Separation Drainage SITE: Multiple locations near Garvey Avenue and Durfee Avenue El Monte, CA	Terracon 1421 Edinger Ave Ste C Tustin, CA	PROJECT NUMBER: 60175143 CLIENT: CWE Corp Fullerton, CA EXHIBIT: B-3
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MOISTURE-DENSITY RELATIONSHIP

ASTM D698/D1557

LABORATORY TESTS ARE NOT VALID IF SEPARATED FROM ORIGINAL REPORT. COMPACTION - V2 60175143 CWE GARVEY AVENUE.GPJ TERRACON_DATATEMPLATE.GDT 1/29/18



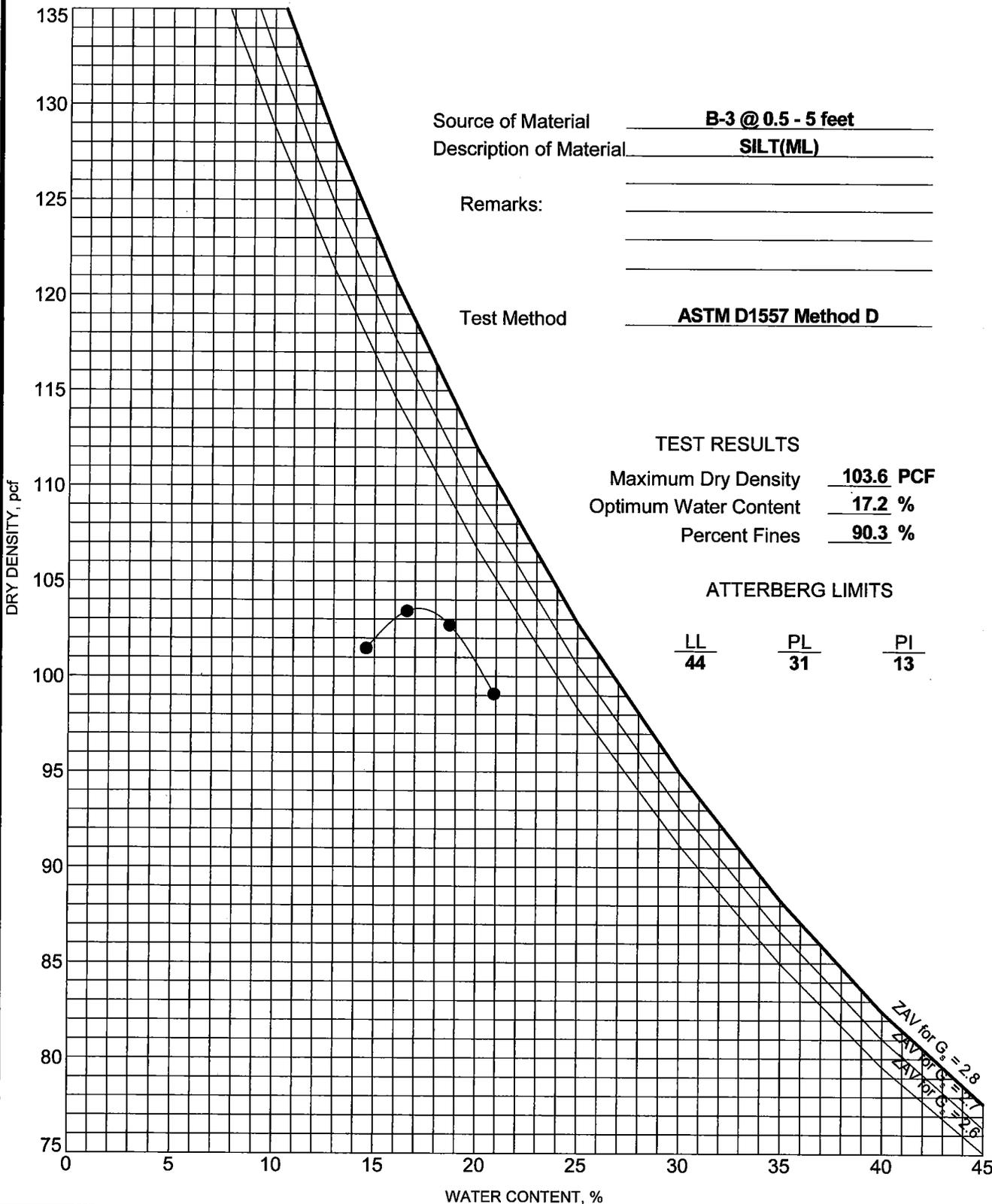
PROJECT: Garvey Avenue Grade Separation Drainage
 SITE: Multiple locations near Garvey Avenue and Durfee Avenue El Monte, CA

Terracon
 1421 Edinger Ave Ste C
 Tustin, CA

PROJECT NUMBER: 60175143
 CLIENT: CWE Corp Fullerton, CA
 EXHIBIT: B-4

MOISTURE-DENSITY RELATIONSHIP

ASTM D698/D1557



Source of Material B-3 @ 0.5 - 5 feet

Description of Material SILT(ML)

Remarks: _____

Test Method ASTM D1557 Method D

TEST RESULTS

Maximum Dry Density 103.6 PCF
 Optimum Water Content 17.2 %
 Percent Fines 90.3 %

ATTERBERG LIMITS

$\frac{LL}{44}$ $\frac{PL}{31}$ $\frac{PI}{13}$

LABORATORY TESTS ARE NOT VALID IF SEPARATED FROM ORIGINAL REPORT. COMPACTON - V2 60175143 CWE GARVEY AVENUE.GPJ TERRACON_DATATEMPLATE.GDT 1/29/18

PROJECT: Garvey Avenue Grade Separation
Drainage

SITE: Multiple locations near Garvey Avenue
and Durfee Avenue
El Monte, CA

Terracon
1421 Edinger Ave Ste C
Tustin, CA

PROJECT NUMBER: 60175143

CLIENT: CWE Corp
Fullerton, CA

EXHIBIT: B-5

Job No. 60175143
Date. 1/25/2017

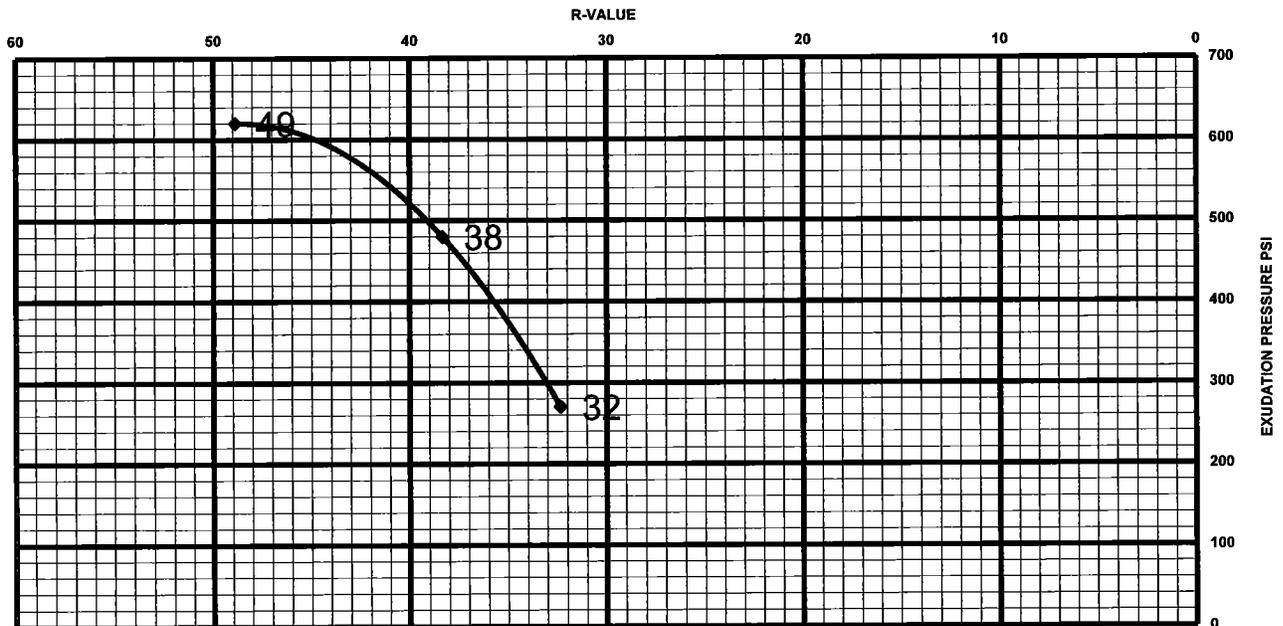
**LABORATORY RECORD OF TESTS MADE ON
BASE, SUBBASE, AND BASEMENT SOILS**

CLIENT: CWE
PROJECT Garvey Avenue Grade Separation Drainage
LOCATION: B-2
DEPTHS : 0 Ft.
T.I. : 5.0

COMPACTOR AIR PRESSURE P.S.I.
INITIAL MOISTURE %
WATER ADDED, ML
WATER ADDED %
MOISTURE AT COMPACTION %
HEIGHT OF BRIQUETTE
WET WEIGHT OF BRIQUETTE
DENSITY LB. PER CU.FT.
STABILOMETER PH AT 1000 LBS.
2000 LBS.
DISPLACEMENT
R-VALUE
EXUDATION PRESSURE
THICK. INDICATED BY STAB.
EXPANSION PRESSURE
THICK. INDICATED BY E.P.

	A	B	C	D
COMPACTOR AIR PRESSURE P.S.I.	350	350	350	
INITIAL MOISTURE %	13.1	13.1	13.1	
WATER ADDED, ML	65	55	45	
WATER ADDED %	7.5	6.3	5.2	
MOISTURE AT COMPACTION %	20.6	19.4	18.3	
HEIGHT OF BRIQUETTE	2.48	2.50	2.48	
WET WEIGHT OF BRIQUETTE	984	985	988	
DENSITY LB. PER CU.FT.	99.7	100.0	102.1	
STABILOMETER PH AT 1000 LBS.	38	33	26	
2000 LBS.	69	60	48	
DISPLACEMENT	6.90	6.70	6.10	
R-VALUE	32	38	49	
EXUDATION PRESSURE	270	480	620	
THICK. INDICATED BY STAB.	1.08	0.99	0.82	
EXPANSION PRESSURE	47	56	63	
THICK. INDICATED BY E.P.	1.57	1.87	2.10	

EXUDATION CHART



R-Value: 33

Job No. 60175143
 Date. 1/25/2017

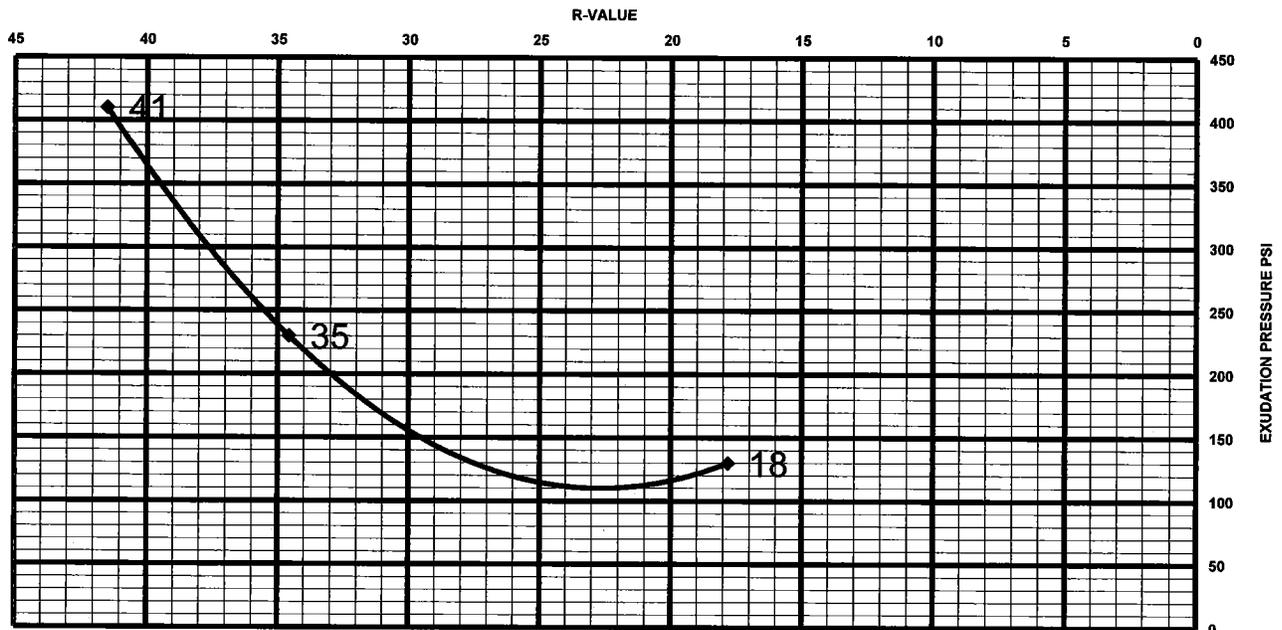
**LABORATORY RECORD OF TESTS MADE ON
 BASE, SUBBASE, AND BASEMENT SOILS**

CLIENT: CWE
PROJECT Garvey Avenue Grade Separation Drainage
LOCATION: B-4
DEPTHS : 0 Ft.
T.I. : 5.0

COMPACTOR AIR PRESSURE P.S.I.
 INITIAL MOISTURE %
 WATER ADDED, ML
 WATER ADDED %
 MOISTURE AT COMPACTION %
 HEIGHT OF BRIQUETTE
 WET WEIGHT OF BRIQUETTE
 DENSITY LB. PER CU.FT.
 STABILOMETER PH AT 1000 LBS.
 2000 LBS.
 DISPLACEMENT
 R-VALUE
 EXUDATION PRESSURE
 THICK. INDICATED BY STAB.
 EXPANSION PRESSURE
 THICK. INDICATED BY E.P.

	A	B	C	D
COMPACTOR AIR PRESSURE P.S.I.	100	350	350	
INITIAL MOISTURE %	23.7	23.7	23.7	
WATER ADDED, ML	-10	-25	-35	
WATER ADDED %	-1.2	-3.1	-4.3	
MOISTURE AT COMPACTION %	22.5	20.6	19.4	
HEIGHT OF BRIQUETTE	2.51	2.45	2.45	
WET WEIGHT OF BRIQUETTE	1005	1009	1010	
DENSITY LB. PER CU.FT.	99.1	103.4	104.6	
STABILOMETER PH AT 1000 LBS.	46	33	26	
2000 LBS.	99	68	58	
DISPLACEMENT	7.10	6.40	6.20	
R-VALUE	18	35	41	
EXUDATION PRESSURE	130	230	410	
THICK. INDICATED BY STAB.	1.31	1.05	0.94	
EXPANSION PRESSURE	13	45	59	
THICK. INDICATED BY E.P.	0.43	1.50	1.97	

EXUDATION CHART



R-Value: 37

CHEMICAL LABORATORY TEST REPORT

Project Number: 60175143
Service Date: 01/10/18
Report Date: 01/12/18
Task:

Terracon

750 Pilot Road, Suite F
Las Vegas, Nevada 89119
(702) 597-9393

Client**Project**

CWE: Garvey Avenue Grade Separation Drainage

Sample Submitted By: Terracon (60)

Date Received: 1/9/2018

Lab No.: 18-0028

Results of Corrosion Analysis

<i>Sample Number</i>		
<i>Sample Location</i>	B-2	B-4
<i>Sample Depth (ft.)</i>	0.0	0.0
pH Analysis, AWWA 4500 H	8.99	8.51
Water Soluble Sulfate (SO ₄), AWWA 4500 E (percent %)	0.01	0.01
Sulfides, AWWA 4500-S D, (mg/kg)	Nil	Nil
Chlorides, ASTM D 512, (mg/kg)	50	50
Red-Ox, AWWA 2580, (mV)	+710	+669
Total Salts, AWWA 2540, (mg/kg)	534	494
Resistivity, ASTM G 57, (ohm-cm)	7954	6693

Analyzed By:



Trisha Campo
Chemist

The tests were performed in general accordance with applicable ASTM, AASHTO, or DOT test methods. This report is exclusively for the use of the client indicated above and shall not be reproduced except in full without the written consent of our company. Test results transmitted herein are only applicable to the actual samples tested at the location(s) referenced and are not necessarily indicative of the properties of other apparently similar or identical materials.

APPENDIX C
SUPPORTING DOCUMENTS

GENERAL NOTES

DESCRIPTION OF SYMBOLS AND ABBREVIATIONS

SAMPLING	 Auger	 Shelby Tube	 Split Spoon	WATER LEVEL	 Water Initially Encountered	FIELD TESTS
	 Rock Core	 Macro Core	 Modified California Ring Sampler		 Water Level After a Specified Period of Time	
	 Grab Sample	 No Recovery	 Modified Dames & Moore Ring Sampler		 Water Level After a Specified Period of Time	
Water levels indicated on the soil boring logs are the levels measured in the borehole at the times indicated. Groundwater level variations will occur over time. In low permeability soils, accurate determination of groundwater levels is not possible with short term water level observations.						

DESCRIPTIVE SOIL CLASSIFICATION

Soil classification is based on the Unified Soil Classification System. Coarse Grained Soils have more than 50% of their dry weight retained on a #200 sieve; their principal descriptors are: boulders, cobbles, gravel or sand. Fine Grained Soils have less than 50% of their dry weight retained on a #200 sieve; they are principally described as clays if they are plastic, and silts if they are slightly plastic or non-plastic. Major constituents may be added as modifiers and minor constituents may be added according to the relative proportions based on grain size. In addition to gradation, coarse-grained soils are defined on the basis of their in-place relative density and fine-grained soils on the basis of their consistency.

LOCATION AND ELEVATION NOTES

Unless otherwise noted, Latitude and Longitude are approximately determined using a hand-held GPS device. The accuracy of such devices is variable. Surface elevation data annotated with +/- indicates that no actual topographical survey was conducted to confirm the surface elevation. Instead, the surface elevation was approximately determined from topographic maps of the area.

STRENGTH TERMS	RELATIVE DENSITY OF COARSE-GRAINED SOILS (More than 50% retained on No. 200 sieve.) Density determined by Standard Penetration Resistance Includes gravels, sands and silts.			CONSISTENCY OF FINE-GRAINED SOILS (50% or more passing the No. 200 sieve.) Consistency determined by laboratory shear strength testing, field visual-manual procedures or standard penetration resistance		
	Descriptive Term (Density)	Standard Penetration or N-Value Blows/Ft.	Ring Sampler Blows/Ft.	Descriptive Term (Consistency)	Unconfined Compressive Strength, Qu, psf	Standard Penetration or N-Value Blows/Ft.
Very Loose	0 - 3	0 - 6	Very Soft	less than 500	0 - 1	< 3
Loose	4 - 9	7 - 18	Soft	500 to 1,000	2 - 4	3 - 4
Medium Dense	10 - 29	19 - 58	Medium-Stiff	1,000 to 2,000	4 - 8	5 - 9
Dense	30 - 50	59 - 98	Stiff	2,000 to 4,000	8 - 15	10 - 18
Very Dense	> 50	≥ 99	Very Stiff	4,000 to 8,000	15 - 30	19 - 42
			Hard	> 8,000	> 30	> 42

RELATIVE PROPORTIONS OF SAND AND GRAVEL

Descriptive Term(s) of other constituents	Percent of Dry Weight
Trace	< 15
With	15 - 29
Modifier	> 30

GRAIN SIZE TERMINOLOGY

Major Component of Sample	Particle Size
Boulders	Over 12 in. (300 mm)
Cobbles	12 in. to 3 in. (300mm to 75mm)
Gravel	3 in. to #4 sieve (75mm to 4.75 mm)
Sand	#4 to #200 sieve (4.75mm to 0.075mm)
Silt or Clay	Passing #200 sieve (0.075mm)

RELATIVE PROPORTIONS OF FINES

Descriptive Term(s) of other constituents	Percent of Dry Weight
Trace	< 5
With	5 - 12
Modifier	> 12

PLASTICITY DESCRIPTION

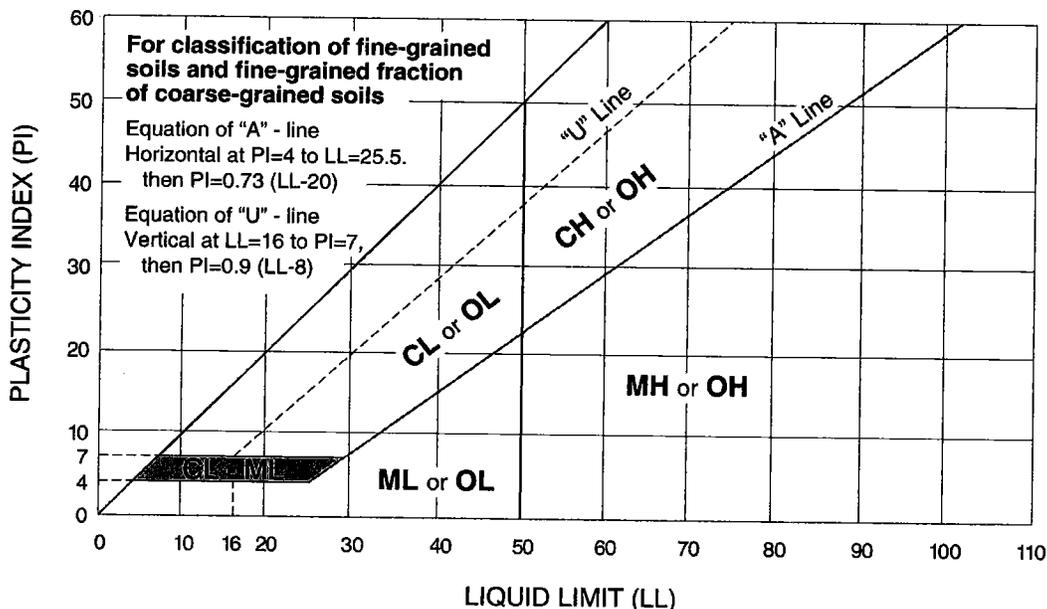
Term	Plasticity Index
Non-plastic	0
Low	1 - 10
Medium	11 - 30
High	> 30

UNIFIED SOIL CLASSIFICATION SYSTEM

Criteria for Assigning Group Symbols and Group Names Using Laboratory Tests ^A				Soil Classification		
				Group Symbol	Group Name ^B	
Coarse Grained Soils: More than 50% retained on No. 200 sieve	Gravels: More than 50% of coarse fraction retained on No. 4 sieve	Clean Gravels: Less than 5% fines ^C	$Cu \geq 4$ and $1 \leq Cc \leq 3$ ^E	GW	Well-graded gravel ^F	
		Gravels with Fines: More than 12% fines ^C	$Cu < 4$ and/or $1 > Cc > 3$ ^E	GP	Poorly graded gravel ^F	
			Fines classify as ML or MH	GM	Silty gravel ^{F,G,H}	
		Sands: 50% or more of coarse fraction passes No. 4 sieve	Clean Sands: Less than 5% fines ^D	Fines classify as CL or CH	GC	Clayey gravel ^{F,G,H}
	$Cu \geq 6$ and $1 \leq Cc \leq 3$ ^E			SW	Well-graded sand ^I	
	Sands with Fines: More than 12% fines ^D		$Cu < 6$ and/or $1 > Cc > 3$ ^E	SP	Poorly graded sand ^I	
			Fines classify as ML or MH	SM	Silty sand ^{G,H,I}	
	Fine-Grained Soils: 50% or more passes the No. 200 sieve	Silts and Clays: Liquid limit less than 50	Inorganic:	$PI > 7$ and plots on or above "A" line ^J	CL	Lean clay ^{K,L,M}
$PI < 4$ or plots below "A" line ^J				ML	Silt ^{K,L,M}	
Organic:			Liquid limit - oven dried	< 0.75	OL	Organic clay ^{K,L,M,N}
			Liquid limit - not dried			Organic silt ^{K,L,M,O}
Silts and Clays: Liquid limit 50 or more		Inorganic:	PI plots on or above "A" line	CH	Fat clay ^{K,L,M}	
			PI plots below "A" line	MH	Elastic Silt ^{K,L,M}	
		Organic:	Liquid limit - oven dried	< 0.75	OH	Organic clay ^{K,L,M,P}
			Liquid limit - not dried			Organic silt ^{K,L,M,O}
Highly organic soils:	Primarily organic matter, dark in color, and organic odor			PT	Peat	

- ^A Based on the material passing the 3-inch (75-mm) sieve
- ^B If field sample contained cobbles or boulders, or both, add "with cobbles or boulders, or both" to group name.
- ^C Gravels with 5 to 12% fines require dual symbols: GW-GM well-graded gravel with silt, GW-GC well-graded gravel with clay, GP-GM poorly graded gravel with silt, GP-GC poorly graded gravel with clay.
- ^D Sands with 5 to 12% fines require dual symbols: SW-SM well-graded sand with silt, SW-SC well-graded sand with clay, SP-SM poorly graded sand with silt, SP-SC poorly graded sand with clay
- ^E $Cu = D_{60}/D_{10}$ $Cc = \frac{(D_{30})^2}{D_{10} \times D_{60}}$
- ^F If soil contains $\geq 15\%$ sand, add "with sand" to group name.
- ^G If fines classify as CL-ML, use dual symbol GC-GM, or SC-SM.

- ^H If fines are organic, add "with organic fines" to group name.
- ^I If soil contains $\geq 15\%$ gravel, add "with gravel" to group name.
- ^J If Atterberg limits plot in shaded area, soil is a CL-ML, silty clay.
- ^K If soil contains 15 to 29% plus No. 200, add "with sand" or "with gravel," whichever is predominant.
- ^L If soil contains $\geq 30\%$ plus No. 200 predominantly sand, add "sandy" to group name.
- ^M If soil contains $\geq 30\%$ plus No. 200, predominantly gravel, add "gravelly" to group name.
- ^N $PI \geq 4$ and plots on or above "A" line.
- ^O $PI < 4$ or plots below "A" line.
- ^P PI plots on or above "A" line.
- ^Q PI plots below "A" line.



Existing Condition - WMS Input/Output Data Summary:

Project	Subareas	Area	Length	Slope	Depth	Imperviousness	Soil	Frequency	Fire	Tc (mins)	Qpeak (cfs)	24hr- Runoff V (ac-ft)	24hr- Runoff V (cu-ft)
17247	1	35.469	2356	0.0034	8.8	67.44	6	50-yr	0	17.0	91.5318	17.9957	783,892.17
17247	2	61.704	2572	0.0031	8.8	65.24	6	50-yr	0	19.0	150.1806	30.6879	1,336,766.03
17247	3	41.237	2612	0.0034	8.8	61.69	6	50-yr	0	19.0	99.9906	19.8468	864,525.33
17247	4	1	1380	0.0036	8.75	60	6	50-yr	0				
17247	5	14.029	1490	0.0047	8.75	66.423	6	50-yr	0	12.0	42.9391	7.0127	305,474.21
17247	6	27.706	1899	0.0037	8.75	72.14	6	50-yr	0	15.0	75.9921	14.5563	634,071.69
17247	7	8.765	1017	0.0098	8.7	90.99	6	50-yr	0	8.0	32.7738	5.3186	231,677.12
17247	8	6.515	763	0.0026	8.7	91	6	50-yr	0	9.0	23.029	3.9535	172,215.31
17247	9	11.794	687	0.0160	8.7	84.36	6	50-yr	0	6.0	50.5721	6.8072	296,520.17
17247	10	15.295	1201	0.0233	8.7	90.68	6	50-yr	0	8.0	57.1871	9.2597	403,354.50

Proposed Condition - WMS Output Data (Area 2,5 &6)

Storm Event	Existing Conditions				Proposed with 1 million gallons infiltration basin			
	Flow (cfs)	Volume (c ft)	Volume (ac ft)	Volume (Gallons)	Flow (cfs)	Volume (cft)	Volume (ac ft) in the street	Volume (Gallons) in the street
2 yr 24 hr	17.83	225,726	5.181955923	1,688,543	14.32	91,040	2.09	681,027.71
5 yr 24 hr	31.87	348,134	7.992066116	2,604,219	24.91	213,732	4.91	1,598,824.47
10 yr 24 hr	42.48	429,663	9.863712121	3,214,096	34.66	295,772	6.79	2,212,525.44
25 yr 24 hr	55.75	533,755	12.25332645	3,992,754	43.38	400,316	9.19	2,994,566.83
50 yr 24 hr	63.54	611,975.7	14.04902893	4,577,884	53.1	478,724.4	10.99	3,581,097.87

Flow Rate for Catch Basin Sizing:

Maxson Rd SD

Area 2, 5 & 6

Q10: 29.55 cfs				Q25: 36.72 cfs				Q50: 44.28 cfs			
A: 30.14 ac				A: 30.14 ac				A: 30.14 ac			
Q/A 0.98 cfs/ac				Q/A 1.22 cfs/ac				Q/A 1.47 cfs/ac			
	A(T)	Q10 / A(T)	Q(des)		A(T)	Q25 / A(T)	Q(des)		A(T)	Q50 / A(T)	Q(des)
SD 5-1	2.90	0.98	2.84	SD 5-1	2.90	1.22	3.53	SD 5-1	2.90	1.47	4.26
SD 5-2	2.84	0.98	2.78	SD 5-2	2.84	1.22	3.46	SD 5-2	2.84	1.47	4.17
SD 5-3	1.04	0.98	1.02	SD 5-3	1.04	1.22	1.27	SD 5-3	1.04	1.47	1.53
SD 5-4	18.54	0.98	18.18	SD 5-4	18.54	1.22	22.59	SD 5-4	18.54	1.47	27.24
SD 5-5	4.44	0.98	4.35	SD 5-5	4.44	1.22	5.41	SD 5-5	4.44	1.47	6.52
SD 5-6	0.38	0.98	0.37	SD 5-6	0.38	1.22	0.46	SD 5-6	0.38	1.47	0.56

Existing Durfee Rd SD

Area 3 and 4

Q10: 42.31 cfs				Q25: 53.90 cfs				Q50: 64.24 cfs			
A: 45.34 ac				A: 45.34 ac				A: 45.34 ac			
Q/A 0.93 cfs/ac				Q/A 1.19 cfs/ac				Q/A 1.42 cfs/ac			
	A(T)	Q10 / A(T)	Q(des)		A(T)	Q25 / A(T)	Q(des)		A(T)	Q50 / A(T)	Q(des)
SD 3-1	14.31	0.93	13.35	SD 3-1	14.31	1.19	17.01	SD 3-1	14.31	1.42	20.28
SD 3-2	14.31	0.93	13.35	SD 3-2	14.31	1.19	17.01	SD 3-2	14.31	1.42	20.28
SD 4-1	1.88	0.93	1.75	SD 4-1	1.88	1.19	2.23	SD 4-1	1.88	1.42	2.66
SD 4-2	0.31	0.93	0.29	SD 4-2	0.31	1.19	0.37	SD 4-2	0.31	1.42	0.44
SD 4-3	0.63	0.93	0.59	SD 4-3	0.63	1.19	0.75	SD 4-3	0.63	1.42	0.89
SD 4-4	8.00	0.93	7.47	SD 4-4	8.00	1.19	9.51	SD 4-4	8.00	1.42	11.33
SD 4-5	3.51	0.93	3.28	SD 4-5	3.51	1.19	4.17	SD 4-5	3.51	1.42	4.97
SD 4-6	2.40	0.93	2.24	SD 4-6	2.40	1.19	2.85	SD 4-6	2.40	1.42	3.40

Slope of street:
0.22%

Design flow rate (10 year)
2.84 cfs

Min W
3.5 feet

$\min V = CF + 0.5 + 1.2(v^2/2g) + D$

Pipe D
18 inches

CF
10 inches

v comes from full flow pipe,
according to LACFCD hydraulic manual

Mannings
A 1.767146 ft²
P 4.712389 ft
R 0.375 ft

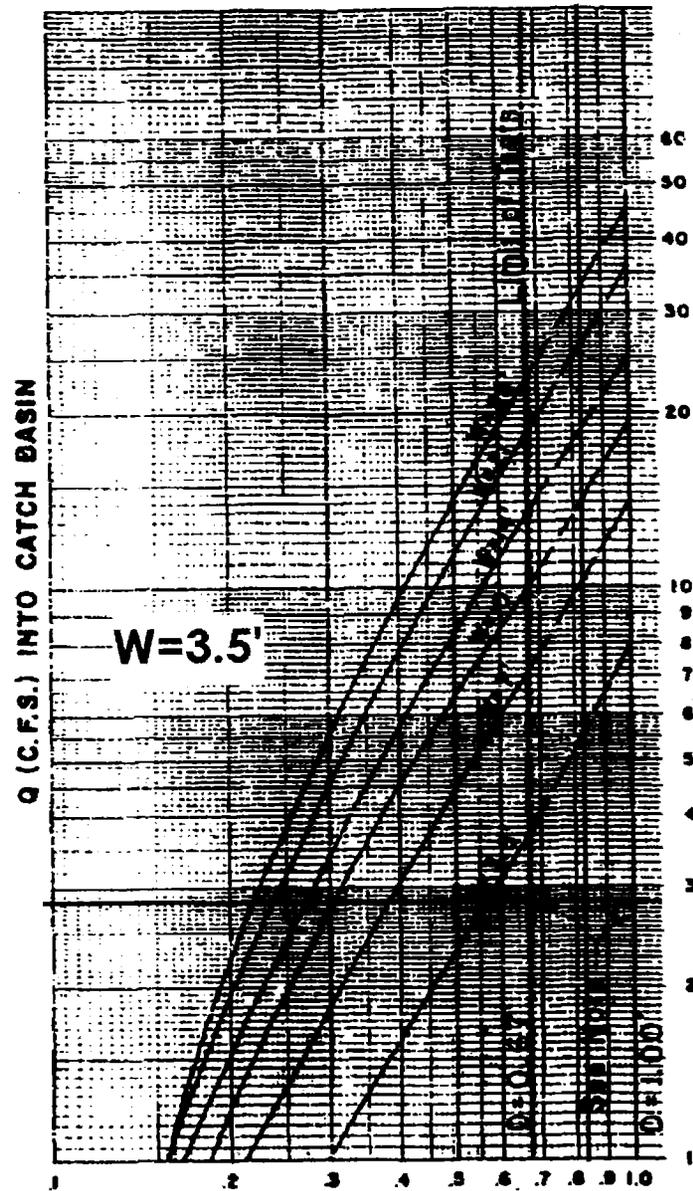
n 0.012

Assume slope
0.01 ft/ft

v = 6.439593 fps

V (CB depth) (from formula)
min V = 3.606036

2" GUTTER DEPRESSION



El at curb top
296.15

El at depressed gutter
295.3167

El at pipe connection to main line
290.018

Length of pipe
108

El at pipe inv.
291.098

V
5.052

(actual V can be much shallower)

GUTTER FLOW DEPTH - D (FEET)

Slope of street:
0.22%

Design flow rate (10 year)
2.78 cfs

min W
3.5 feet

min V = $CF + 0.5 + 1.2(v^2/2g) + D$

Pipe D
18 inches

CF
10 inches

v comes from full flow pipe,
according to LACFCD hydraulic manual

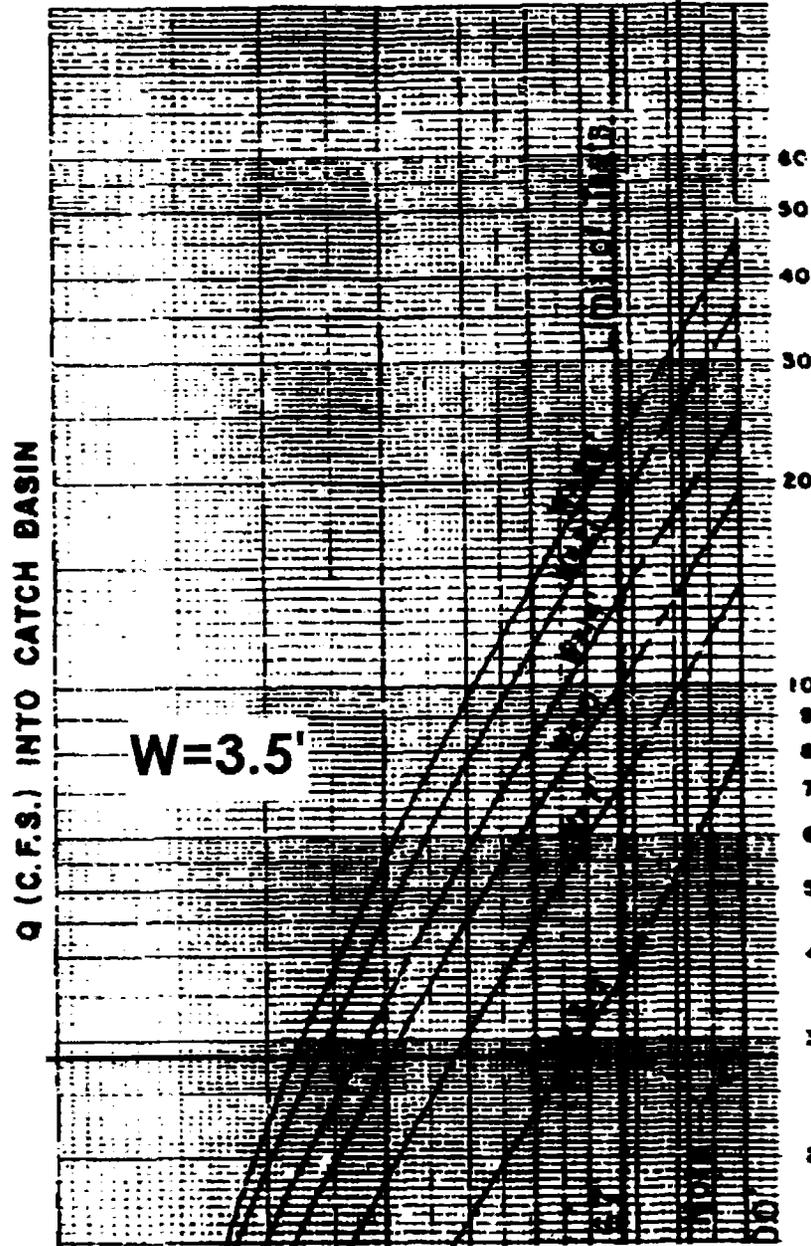
Mannings
A 1.767146 ft²
P 4.712389 ft
R 0.375 ft
n 0.012

Assume slope
0.005 ft/ft

v = 4.55348 fps

V (CB depth) (from formula)
min V = 3.219684

2' GUTTER DEPRESSION



El at curb top
296.15

El at depressed gutter
295.3167

El at pipe connection to main line
290.018

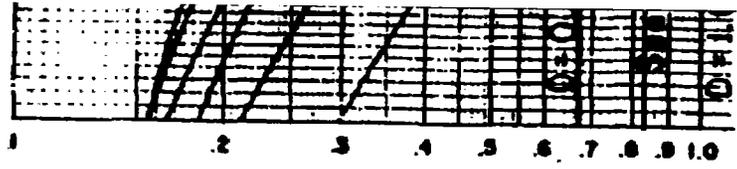
Length of pipe
94

El at pipe inv.
290.488

V
5.662

(actual V is much shallower to get above tl

V = 3.2



GUTTER FLOW DEPTH - D (FEET)

Slope of street:
0.25%

Design flow rate (10 year)
18.18 cfs

Flow designed to enter two catch basins
1/2 of design flow rate
9.09 cfs

W
10 feet (each)

V
3.3 feet (each)

Pipe D
18 inches (each)

SD5-4 (upper)
 $\min V = CF + 0.5 + 1.2(v^2/2g) + D$

Pipe D
18 inches

CF
8 inches

v comes from full flow pipe,
according to LACFCD hydraulic manual

Mannings
A 1.767146 ft²
P 4.712389 ft
R 0.375 ft
n 0.012

Assume slope
0.01 ft/ft

v = 6.439593 fps

V (CB depth) (from formula)
 $\min V = 3.439369$

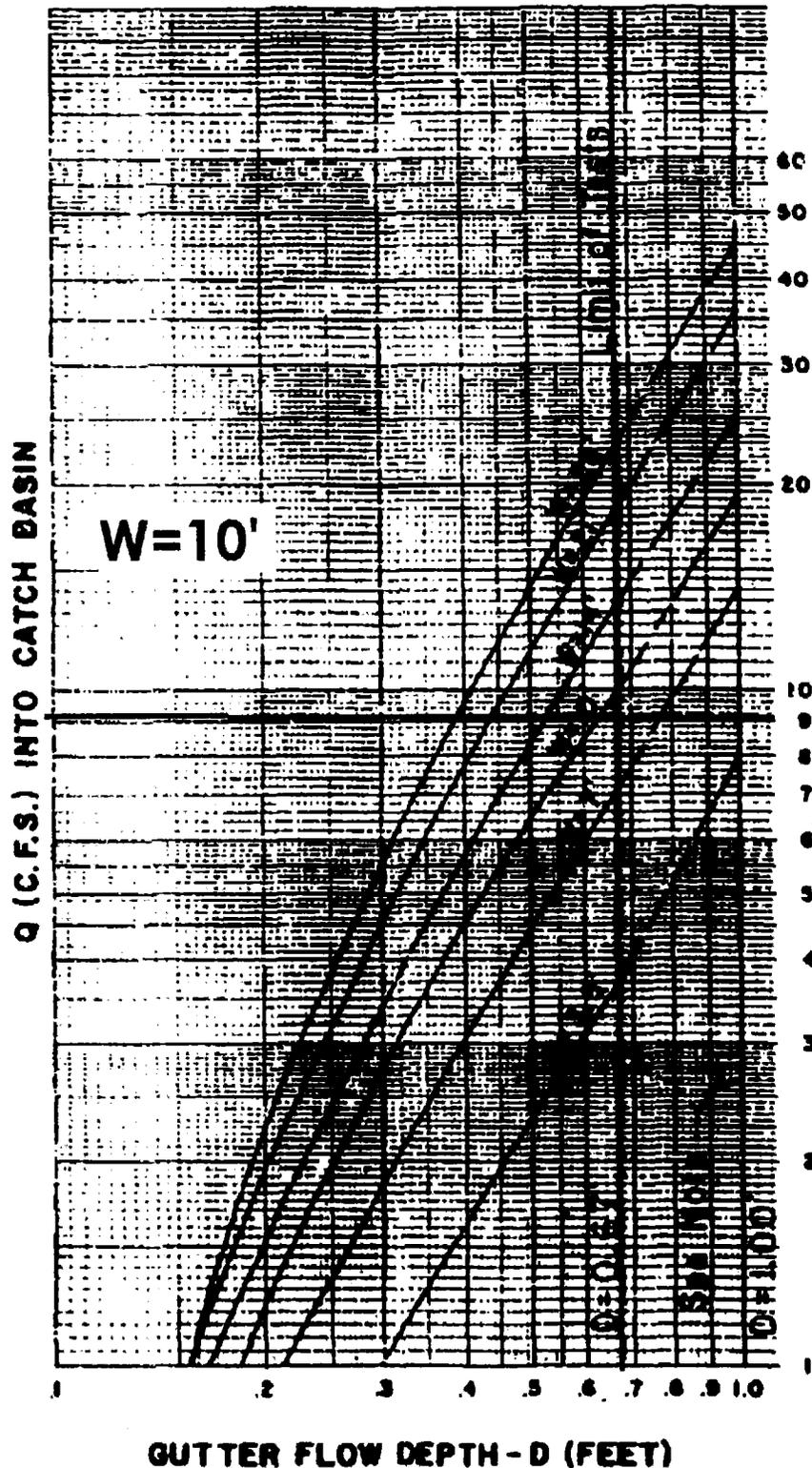
SD5-4 (lower)
 $\min V = CF + 0.5 + 1.2(v^2/2g) + D$

Pipe D
18 inches

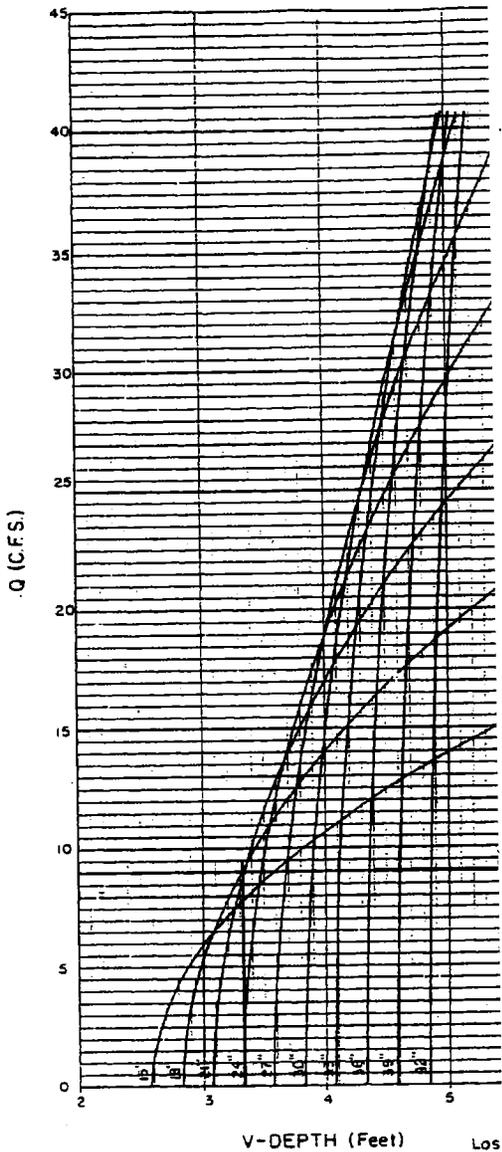
CF
8 inches

v comes from full flow pipe,
according to LACFCD hydraulic manual

2" GUTTER DEPRESSION



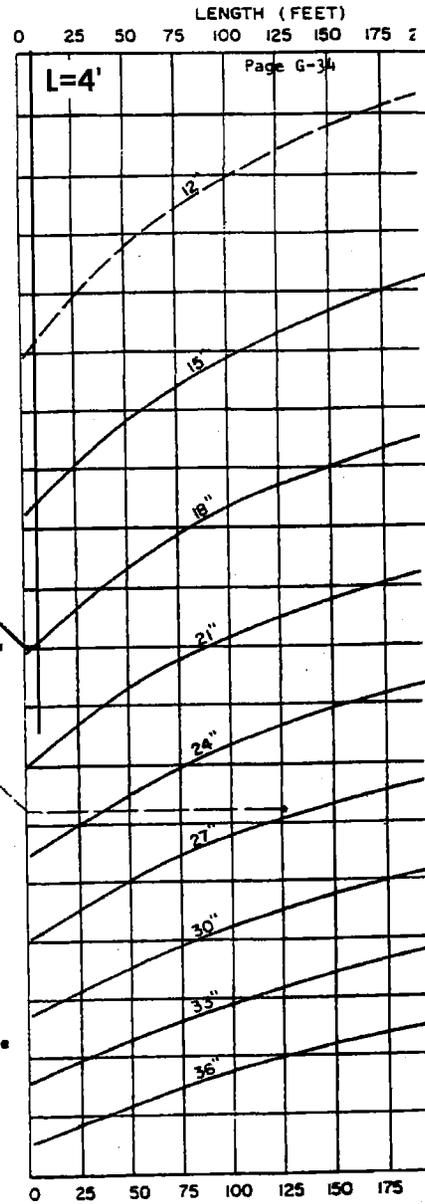
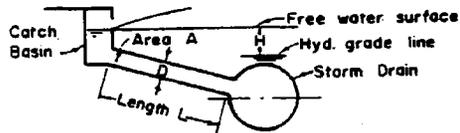
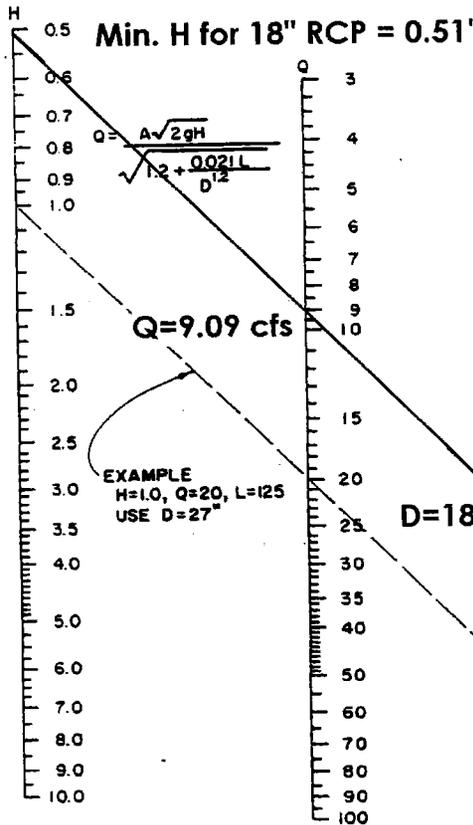
NOTE: Curves between D=0.67' and 1.0' are not from model test data and will be revised in the future when additional model test data are available.



V=3.3'

Los Angeles County Flood Control District

DESIGN OF SPUN CONCRETE
CONNECTOR PIPES FLOWING FULL



Slope of street:
0.25%

Design flow rate (10 year)
4.35 cfs

W
7 feet

min V = CF + 0.5 + 1.2(v²/2g) + D

Pipe D
18 inches

CF
8 inches

v comes from full flow pipe,
according to LACFCD hydraulic manual

Mannings

A 1.767146

P 4.712389

R 0.375

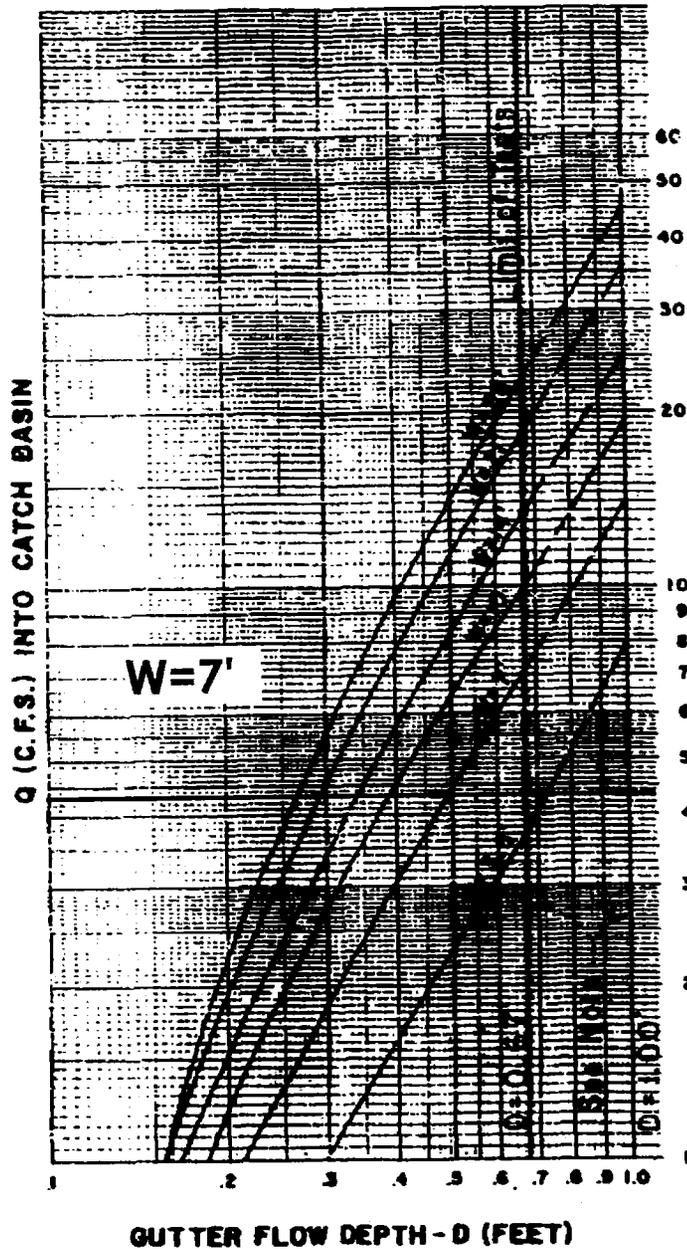
n 0.012

Assume slope
0.01 ft/ft

v = 6.439593

V (CB depth) (from formula)
min V = 3.439369

2" GUTTER DEPRESSION



El at curb top
296.45

El at depressed gutter
295.6167

El at pipe connection to main line
293.115

Length of pipe
31

El at pipe inv.
293.425

V
3.025

CB-SD5-6:

Slope of street:
0.25%

Flow rate too small to chart

Design flow rate (10 year)
0.37 cfs

W
3.5 feet

$$\text{min } V = CF + 0.5 + 1.2(v^2/2g) + D$$

Pipe D
18 inches

CF
10 inches

v comes from full flow pipe,
according to LACFCD hydraulic manual

Mannings

A 1.767146
P 4.712389
R 0.375

n 0.012

Assume slope
0.005 ft/ft

v = 4.55348

V (CB depth) (from formula)
min V = 3.219684

El at curb top
295.6

El at depressed gutter
294.7667

El at pipe connection to main line
292.225

Length of pipe
60

El at pipe inv.
292.525

V
3.075

HY-8 Input Parameters

Crossing Data - MAXSON CULVERT

Crossing Properties
 Name: MAXSON CULVERT

Parameter	Value	Units
DISCHARGE DATA		
Discharge Method	User-Defined	
Discharge Unit	Define...	
TAILWATER DATA		
Channel Type	Irregular Channel	
Irregular Channel	Define...	
Rating Curve	View...	
ROADWAY DATA		
Roadway Profile Shape	Constant Roadway Elevation	
First Roadway Station	0.00	ft
Grout Length	85.00	ft
Grout Elevation	303.00	ft
Roadway Surface	Paved	
Top Width	170.00	ft

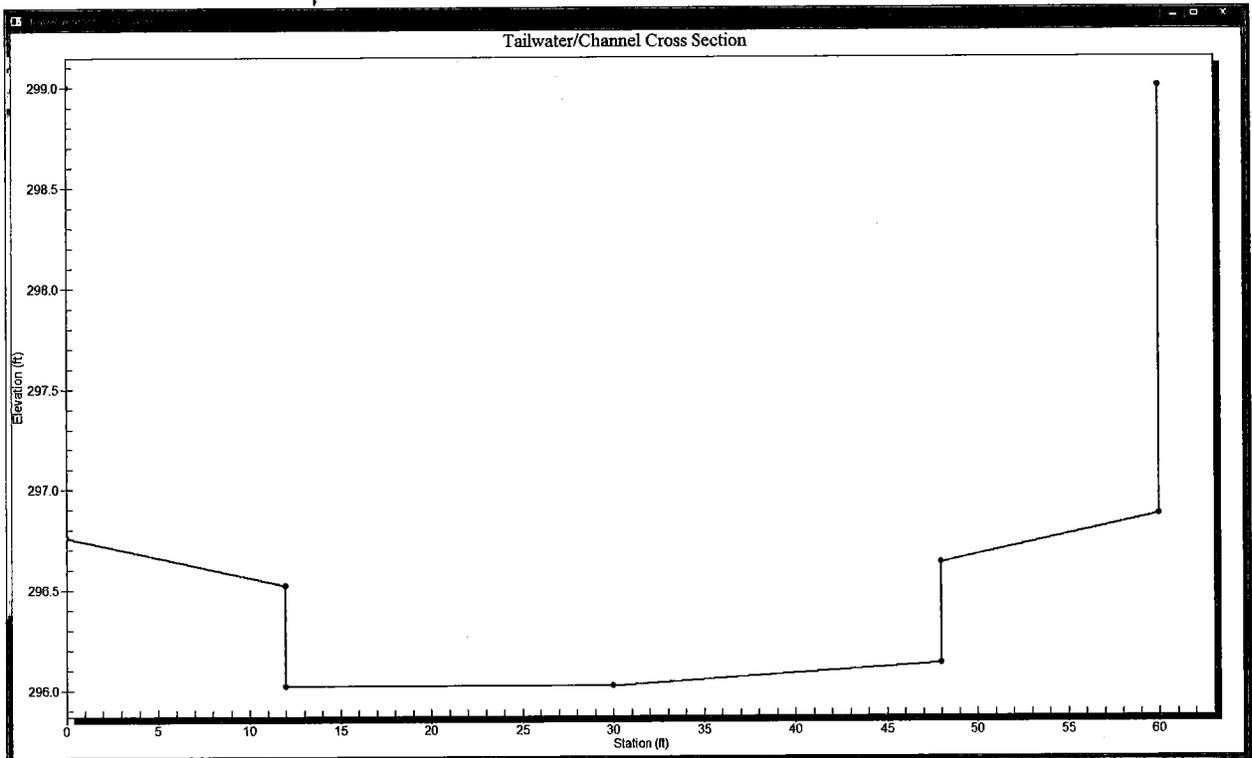
Culvert Properties

Culvert

Add Culvert
 Duplicate Culvert
 Delete Culvert

Parameter	Value	Units
CULVERT DATA		
Name	Culvert	
Shape	Circular	
Material	Concrete	
Diameter	2.00	ft
Embedment Depth	0.00	in
Manning's n	0.0150	
Culvert Type	Straight	
Inlet Configuration	Grooved End Projecting	
Inlet Depression?	No	
SITE DATA		
Site Data Input Option	Culvert Invert Data	
Inlet Station	0.00	ft
Inlet Elevation	298.34	ft
Outlet Station	170.00	ft
Outlet Elevation	297.14	ft
Number of Baffles	3	

Help Click on any icon for help on a specific topic Energy Dissipation Analyze Crossing OK Cancel



Q2-YR

HY-8 Analysis Results

Culvert Summary Table - Culvert

Culvert Crossing: MAXSON CULVERT

Total Discharge (cfs)	Culvert Discharge (cfs)	Headwater Elevation (ft)	Inlet Control Depth(ft)	Outlet Control Depth(ft)	Flow Type	Normal Depth (ft)	Critical Depth (ft)	Outlet Depth (ft)	Tailwater Depth (ft)	Outlet Velocity (ft/s)	Tailwater Velocity (ft/s)
8.20	8.20	299.12	0.78	0.0*	1-S2n	0.54	0.57	0.54	0.19	3.95	1.44
8.20	8.20	299.12	0.78	0.0*	1-S2n	0.54	0.57	0.54	0.19	3.95	1.44

Q5-YR

HY-8 Analysis Results

Culvert Summary Table - Culvert

Culvert Crossing: MAXSON CULVERT

Total Discharge (cfs)	Culvert Discharge (cfs)	Headwater Elevation (ft)	Inlet Control Depth(ft)	Outlet Control Depth(ft)	Flow Type	Normal Depth (ft)	Critical Depth (ft)	Outlet Depth (ft)	Tailwater Depth (ft)	Outlet Velocity (ft/s)	Tailwater Velocity (ft/s)
14.70	14.70	299.42	1.08	0.0*	1-S2n	0.74	0.77	0.74	0.25	4.61	1.82
14.70	14.70	299.42	1.08	0.0*	1-S2n	0.74	0.77	0.74	0.25	4.61	1.82

Q10-YR

HY-8 Analysis Results

Culvert Summary Table - Culvert

Culvert Crossing: MAXSON CULVERT

Total Discharge (cfs)	Culvert Discharge (cfs)	Headwater Elevation (ft)	Inlet Control Depth(ft)	Outlet Control Depth(ft)	Flow Type	Normal Depth (ft)	Critical Depth (ft)	Outlet Depth (ft)	Tailwater Depth (ft)	Outlet Velocity (ft/s)	Tailwater Velocity (ft/s)
20.03	20.03	299.63	1.29	0.0*	1-S2n	0.88	0.92	0.88	0.30	4.98	2.05
20.03	20.03	299.63	1.29	0.0*	1-S2n	0.88	0.92	0.88	0.30	4.98	2.05

Q-25YR

HY-8 Analysis Results

Culvert Summary Table - Culvert

Culvert Crossing: MAXSON CULVERT

Total Discharge (cfs)	Culvert Discharge (cfs)	Headwater Elevation (ft)	Inlet Control Depth(ft)	Outlet Control Depth(ft)	Flow Type	Normal Depth (ft)	Critical Depth (ft)	Outlet Depth (ft)	Tailwater Depth (ft)	Outlet Velocity (ft/s)	Tailwater Velocity (ft/s)
27.12	27.12	299.88	1.54	0.0*	1-S2n	1.05	1.07	1.05	0.35	5.38	2.32
27.12	27.12	299.88	1.54	0.38	1-S2n	1.05	1.07	1.05	0.35	5.38	2.32

Q-85Percentile

HY-8 Analysis Results

Culvert Summary Table - Culvert

Culvert Crossing: MAXSON CULVERT

Total Discharge (cfs)	Culvert Discharge (cfs)	Headwater Elevation (ft)	Inlet Control Depth(ft)	Outlet Control Depth(ft)	Flow Type	Normal Depth (ft)	Critical Depth (ft)	Outlet Depth (ft)	Tailwater Depth (ft)	Outlet Velocity (ft/s)	Tailwater Velocity (ft/s)
2.18	2.18	298.73	0.39	0.0*	1-S2n	0.27	0.29	0.27	0.10	4.00	0.87
2.18	2.18	298.73	0.39	0.0*	1-S2n	0.27	0.29	0.27	0.10	4.00	0.87

Q-50YR

HY-8 Analysis Results

Culvert Summary Table - Culvert

Culvert Crossing: MAXSON CULVERT

Total Discharge (cfs)	Culvert Discharge (cfs)	Headwater Elevation (ft)	Inlet Control Depth(ft)	Outlet Control Depth(ft)	Flow Type	Normal Depth (ft)	Critical Depth (ft)	Outlet Depth (ft)	Tailwater Depth (ft)	Outlet Velocity (ft/s)	Tailwater Velocity (ft/s)
32.16	32.16	300.10	1.70	1.76	2-M2c	1.17	1.17	1.17	0.39	5.61	2.48
32.16	32.16	300.10	1.70	1.76	2-M2c	1.17	1.17	1.17	0.39	5.61	2.48

w/ Design
Flow=50cfs,
inlet control

HY-8 Analysis Results

Culvert Summary Table - Culvert

Culvert Crossing: MAXSON CULVERT

Total Discharge (cfs)	Culvert Discharge (cfs)	Headwater Elevation (ft)	Inlet Control Depth(ft)	Outlet Control Depth(ft)	Flow Type	Normal Depth (ft)	Critical Depth (ft)	Outlet Depth (ft)	Tailwater Depth (ft)	Outlet Velocity (ft/s)	Tailwater Velocity (ft/s)
50.00	50.00	299.43	1.09	0.0*	1-S2n	0.75	0.78	0.75	0.50	4.63	2.95
50.00	50.00	299.43	1.09	0.0*	1-S2n	0.75	0.78	0.75	0.50	4.63	2.95

w/Design Flow=50cfs

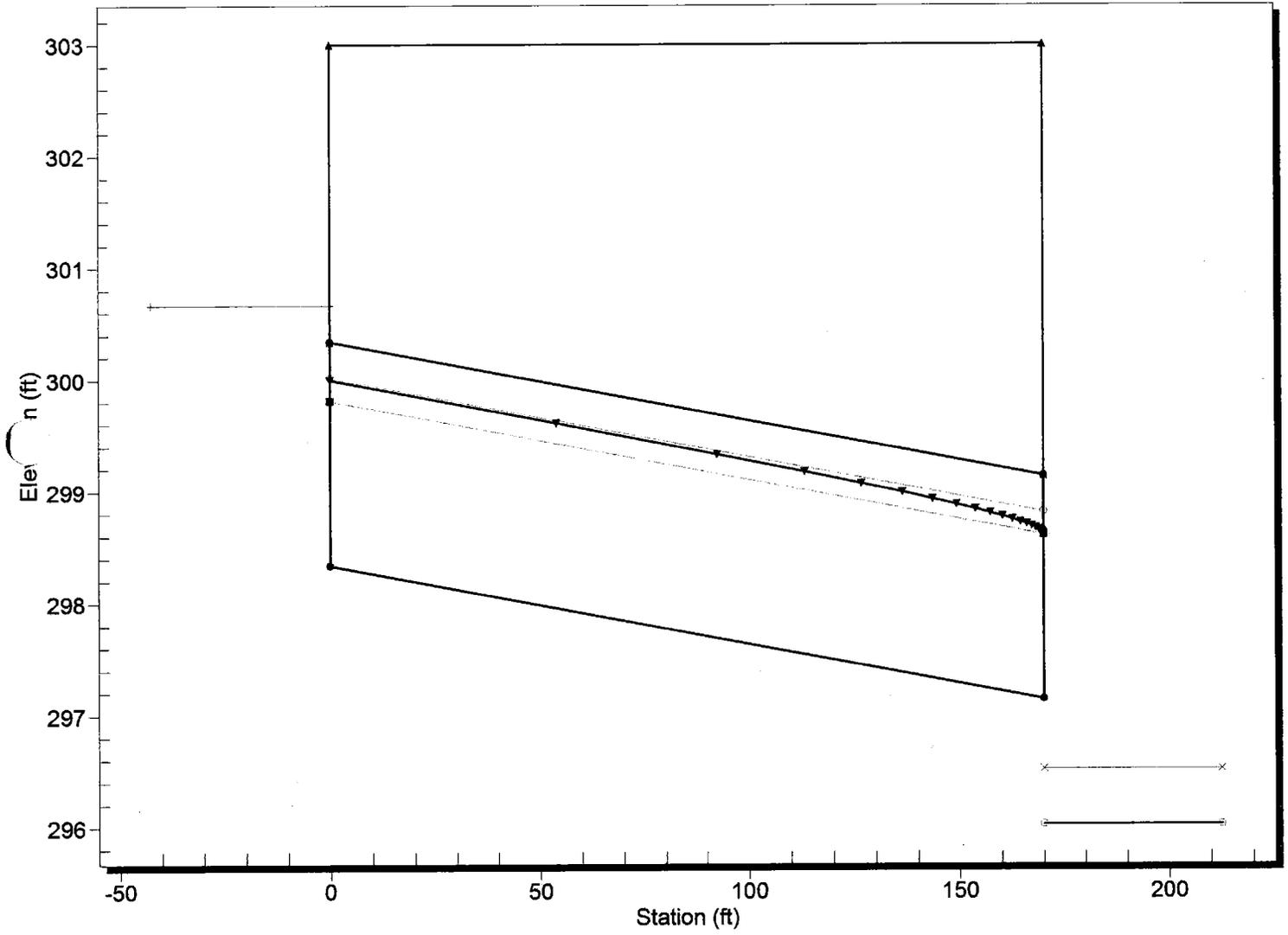
HY-8 Analysis Results

Culvert Summary Table - Culvert

Culvert Crossing: MAXSON CULVERT

Total Discharge (cfs)	Culvert Discharge (cfs)	Headwater Elevation (ft)	Inlet Control Depth(ft)	Outlet Control Depth(ft)	Flow Type	Normal Depth (ft)	Critical Depth (ft)	Outlet Depth (ft)	Tailwater Depth (ft)	Outlet Velocity (ft/s)	Tailwater Velocity (ft/s)
50.00	50.00	300.67	2.27	2.33	7-M2c	1.68	1.47	1.47	0.50	6.73	2.95
50.00	50.00	300.67	2.27	2.33	7-M2c	1.68	1.47	1.47	0.50	6.73	2.95

Crossing - MAXSON CULVERT , Design Discharge - 50.0 cfs
Culvert - Culvert , Culvert Discharge - 50.0 cfs



 Water Surface Profile Gradient (WSPG)
 XP WSPG
 Engine Version 3.0 30/09/2011
 XP Solutions www.xpsolutions.com

INPUT FILE

 Z:\17247\06 Tasks\D2 H&H\Calcs\XPWSPG\Proposed Conditions\Proposed - Alt E - Q10.wsx
 Computed 01/23/18 10:30:08

TITLE INFORMATION

WARNING SUMMARY

 WARNING 25: Link type element Link2 has different invert elevation than its upstream node.
 WARNING 25: Link type element Link3 has different invert elevation than its upstream node.
 WARNING 25: Link type element Link25 has different invert elevation than its upstream node.
 WARNING 25: Link type element Link32 has different invert elevation than its upstream node.
 WARNING 36: D/S processing stopped in junction Node3 because critical momentum is greater than maximum momentum.
 WARNING 36: D/S processing stopped in junction Node4 because critical momentum is greater than maximum momentum.
 WARNING 36: D/S processing stopped in junction Node7 because critical momentum is greater than maximum momentum.
 WARNING 36: D/S processing stopped in junction Node8 because critical momentum is greater than maximum momentum.
 WARNING 36: D/S processing stopped in junction Node9 because critical momentum is greater than maximum momentum.
 WARNING 36: D/S processing stopped in junction Node11 because critical momentum is greater than maximum momentum.
 WARNING 36: D/S processing stopped in junction Node15 because critical momentum is greater than maximum momentum.
 WARNING 36: D/S processing stopped in junction Node14 because critical momentum is greater than maximum momentum.
 WARNING 36: D/S processing stopped in junction Node21 because critical momentum is greater than maximum momentum.
 WARNING 36: D/S processing stopped in junction Node39 because critical momentum is greater than maximum momentum.
 WARNING 36: D/S processing stopped in junction Node46 because critical momentum is greater than maximum momentum.
 WARNING 36: D/S processing stopped in junction Node37 because critical momentum is greater than maximum momentum.
 WARNING 36: D/S processing stopped in junction Node45 because critical momentum is greater than maximum momentum.

RESULTS

=====
 Main Line
 =====

Composite Profile:

ELEMENT NAME	TYPE	STATION	INVERT ELEV	GROUND ELEV	W.S. ELEV	DEPTH	Q	BARREL VELOC.	VELOC. HEAD	ENERGY GRADE LN	SUPER ELEV	CRITICAL DEPTH	FROUDE NUMBER	SLOPE	NORMAL DEPTH	CROSS SECTION	
###																	
"Node24"	Outlet	0.73	283.04	293.40	284.616	1.576	69.56	1	13.53	2.84	287.46	0.000	2.391	0.0000	0.000	Circular Pipe	
	"i.p."	15.92	283.45	293.31	285.055	1.609	69.56	1	13.15	2.69	287.74	0.000	2.391	2.138	0.02670	1.447	Circular Pipe
	"i.p."	34.60	283.94	293.20	285.611	1.667	69.56	1	12.54	2.44	288.05	0.000	2.391	1.998	0.02670	1.447	Circular Pipe
	"i.p."	48.06	284.30	293.12	286.030	1.726	69.56	1	11.96	2.22	288.25	0.000	2.391	1.868	0.02670	1.447	Circular Pipe
	"i.p."	58.15	284.57	293.06	286.361	1.788	69.56	1	11.40	2.02	288.38	0.000	2.391	1.745	0.02670	1.447	Circular Pipe
	"i.p."	65.85	284.78	293.01	286.631	1.852	69.56	1	10.87	1.84	288.47	0.000	2.391	1.630	0.02670	1.447	Circular Pipe
	"i.p."	71.77	284.94	292.98	286.856	1.920	69.56	1	10.37	1.67	288.52	0.000	2.391	1.522	0.02670	1.447	Circular Pipe
	"i.p."	76.29	285.06	292.95	287.047	1.990	69.56	1	9.88	1.52	288.56	0.000	2.391	1.421	0.02670	1.447	Circular Pipe
	"i.p."	79.68	285.15	292.93	287.211	2.063	69.56	1	9.42	1.38	288.59	0.000	2.391	1.326	0.02670	1.447	Circular Pipe
	"i.p."	82.13	285.21	292.92	287.353	2.139	69.56	1	8.98	1.25	288.61	0.000	2.391	1.237	0.02670	1.447	Circular Pipe
	"i.p."	83.77	285.26	292.91	287.476	2.219	69.56	1	8.57	1.14	288.62	0.000	2.391	1.153	0.02670	1.447	Circular Pipe
	"i.p."	84.70	285.28	292.90	287.585	2.303	69.56	1	8.17	1.04	288.62	0.000	2.391	1.075	0.02670	1.447	Circular Pipe
	"i.p."	85.00	285.29	292.90	287.680	2.390	69.56	1	7.79	0.94	288.62	0.000	2.391	1.001	0.02670	1.447	Circular Pipe
"Link23"	Reach	85.00	285.29	292.90	287.680	2.390	69.56	1	7.42	0.86	288.63	0.000	2.391	0.931	0.00100	4.098	Circular Pipe
	"i.p."	87.12	285.29	292.89	287.775	2.483	69.56	1	7.08	0.78	288.66	0.000	2.391	0.865	0.00100	4.098	Circular Pipe
	"i.p."	94.57	285.30	292.86	287.879	2.580	69.56	1	6.75	0.71	288.70	0.000	2.391	0.804	0.00100	4.098	Circular Pipe
	"i.p."	109.25	285.31	292.79	287.995	2.681	69.56	1	6.43	0.64	288.77	0.000	2.391	0.746	0.00100	4.098	Circular Pipe
	"i.p."	133.87	285.34	292.67	288.127	2.788	69.56	1									Circular Pipe

Iteration 33																		
"Link22"	"i.p."	172.38	285.38	292.49	288.279	2.902	69.56	1	6.13	0.58	288.86	0.000	2.391	0.691	0.00100	4.098	Circular	Pipe
	Reach	191.69	285.40	292.40	288.343	2.946	69.56	1	6.02	0.56	288.91	0.000	2.391	0.671	0.00100	4.098	Circular	Pipe
"Link21"	Reach	224.00	285.43	291.90	288.439	3.010	69.56	1	5.88	0.54	288.97	0.000	2.391	0.644	0.00099	4.138	Circular	Pipe
HYDRAULIC	JUMP in the middle:		of length -0.00															
"Node21"	Junction	224.00	285.43	291.90	287.691	2.262	62.56	1	7.52	0.88	288.57	0.000	2.262	0.000	0.00000	0.000	Circular	Pipe
	"i.p."	226.00	285.43	291.90	287.779	2.348	62.56	1	7.17	0.80	288.58	0.000	2.262	0.931	0.00099	3.670	Circular	Pipe
	"i.p."	233.03	285.44	291.90	287.875	2.437	62.56	1	6.83	0.72	288.60	0.000	2.262	0.867	0.00099	3.670	Circular	Pipe
	"i.p."	246.87	285.45	291.90	287.983	2.532	62.56	1	6.51	0.66	288.64	0.000	2.262	0.807	0.00099	3.670	Circular	Pipe
"Link20"	Reach	249.27	285.45	291.90	287.998	2.544	62.56	1	6.47	0.65	288.65	0.000	2.262	0.799	0.00099	3.670	Circular	Pipe
	"i.p."	273.63	285.48	291.90	288.121	2.644	62.56	1	6.17	0.59	288.71	0.000	2.262	0.742	0.00097	3.707	Circular	Pipe
	"i.p."	311.47	285.51	291.90	288.263	2.749	62.56	1	5.89	0.54	288.80	0.000	2.262	0.689	0.00097	3.707	Circular	Pipe
	"i.p."	368.72	285.57	291.90	288.430	2.860	62.56	1	5.61	0.49	288.92	0.000	2.262	0.639	0.00097	3.707	Circular	Pipe
"Link19"	Reach	400.00	285.60	291.90	288.507	2.907	62.56	1	5.50	0.47	288.98	0.000	2.262	0.619	0.00097	3.707	Circular	Pipe
	"i.p."	506.92	285.71	292.20	288.735	3.028	62.56	1	5.25	0.43	289.16	0.000	2.262	0.572	0.00100	3.648	Circular	Pipe
"Link18"	Reach	579.50	285.78	292.40	288.869	3.089	62.56	1	5.13	0.41	289.28	0.000	2.262	0.551	0.00100	3.648	Circular	Pipe
"Link17"	Transition	584.00	285.84	292.40	288.666	2.826	62.56	1	6.59	0.67	289.34	0.000	2.385	0.720	0.01333	0.000	Circular	Pipe
	"i.p."	620.10	285.88	292.61	288.832	2.956	62.56	1	6.28	0.61	289.45	0.000	2.385	0.658	0.00102	4.000	Circular	Pipe
	"i.p."	674.24	285.93	292.93	289.029	3.097	62.56	1	5.99	0.56	289.59	0.000	2.385	0.598	0.00102	4.000	Circular	Pipe
	"i.p."	754.67	286.01	293.40	289.268	3.255	62.56	1	5.71	0.51	289.78	0.000	2.385	0.537	0.00102	4.000	Circular	Pipe
"Link16"	Reach	840.00	286.10	293.90	289.487	3.387	62.56	1	5.51	0.47	289.96	0.000	2.385	0.490	0.00102	4.000	Circular	Pipe
	"i.p."	1003.58	286.26	292.91	289.859	3.595	62.56	1	5.26	0.43	290.29	0.000	2.385	0.417	0.00100	4.000	Circular	Pipe
"Link15"	Reach	1006.00	286.27	292.90	289.864	3.598	62.56	1	5.25	0.43	290.29	0.000	2.385	0.416	0.00100	4.000	Circular	Pipe
HYDRAULIC	JUMP in the middle:		of length -0.00															
"Node14"	Join	1006.00	286.27	292.90	288.210	1.944	42.32	1	6.98	0.76	288.97	0.000	1.944	0.000	0.00000	0.000	Circular	Pipe
	"i.p."	1007.61	286.27	292.89	288.286	2.018	42.32	1	6.66	0.69	288.97	0.000	1.944	0.931	0.00100	3.291	Circular	Pipe
	"i.p."	1013.21	286.27	292.84	288.369	2.096	42.32	1	6.35	0.63	288.99	0.000	1.944	0.866	0.00100	3.291	Circular	Pipe
	"i.p."	1024.21	286.28	292.75	288.461	2.177	42.32	1	6.05	0.57	289.03	0.000	1.944	0.805	0.00100	3.291	Circular	Pipe
	"i.p."	1042.55	286.30	292.60	288.565	2.263	42.32	1	5.77	0.52	289.08	0.000	1.944	0.748	0.00100	3.291	Circular	Pipe
"Link24"	Reach	1044.00	286.30	292.59	288.572	2.268	42.32	1	5.76	0.51	289.09	0.000	1.944	0.745	0.00100	3.291	Circular	Pipe
HYDRAULIC	JUMP in the middle:		of length -0.00															
"Node15"	Junction	1044.00	286.30	292.59	288.193	1.889	40.08	1	6.86	0.73	288.92	0.000	1.889	0.000	0.00000	0.000	Circular	Pipe
	"i.p."	1045.55	286.31	292.57	288.266	1.961	40.08	1	6.54	0.66	288.93	0.000	1.889	0.932	0.00100	3.107	Circular	Pipe
	"i.p."	1051.00	286.31	292.52	288.346	2.035	40.08	1	6.24	0.60	288.95	0.000	1.889	0.867	0.00100	3.107	Circular	Pipe
	"i.p."	1061.69	286.32	292.41	288.436	2.114	40.08	1	5.95	0.55	288.98	0.000	1.889	0.807	0.00100	3.107	Circular	Pipe
	"i.p."	1079.58	286.34	292.23	288.536	2.196	40.08	1	5.67	0.50	289.04	0.000	1.889	0.750	0.00100	3.107	Circular	Pipe
"Link13"	Reach	1090.81	286.35	292.11	288.586	2.235	40.08	1	5.55	0.48	289.06	0.000	1.889	0.725	0.00100	3.107	Circular	Pipe
"Link12"	Reach	1109.13	286.37	292.61	288.657	2.288	40.08	1	5.39	0.45	289.11	0.000	1.889	0.694	0.00098	3.139	Circular	Pipe
"Link11"	Reach	1127.00	286.39	293.34	288.717	2.330	40.08	1	5.28	0.43	289.15	0.000	1.889	0.670	0.00101	3.102	Circular	Pipe
"Node11"	Junction	1127.00	286.39	293.34	288.906	2.519	36.80	1	4.41	0.30	289.21	0.000	1.807	0.000	0.00000	0.000	Circular	Pipe
"Link10"	Reach	1145.00	286.40	293.63	288.937	2.537	36.80	1	4.38	0.30	289.23	0.000	1.807	0.522	0.00072	3.383	Circular	Pipe
"Link9"	Reach	1156.00	286.47	294.68	288.932	2.462	36.80	1	4.54	0.32	289.25	0.000	1.807	0.554	0.00636	1.623	Circular	Pipe
"Node9"	Junction	1156.00	286.47	294.68	289.147	2.677	29.33	1	3.28	0.17	289.31	0.000	1.605	0.000	0.00000	0.000	Circular	Pipe
	"i.p."	1172.55	286.58	294.86	289.144	2.567	29.33	1	3.44	0.18	289.33	0.000	1.605	0.407	0.00643	1.432	Circular	Pipe
"Link8"	Reach	1184.00	286.65	294.98	289.141	2.491	29.33	1	3.57	0.20	289.34	0.000	1.605	0.431	0.00643	1.432	Circular	Pipe
"Node8"	Junction	1184.00	286.65	294.98	289.150	2.500	29.04	1	3.51	0.19	289.34	0.000	1.597	0.000	0.00000	0.000	Circular	Pipe
	"i.p."	1198.71	286.74	295.18	289.146	2.401	29.04	1	3.69	0.21	289.36	0.000	1.597	0.458	0.00639	1.426	Circular	Pipe
"Link7"	Reach	1207.00	286.80	295.29	289.142	2.345	29.04	1	3.79	0.22	289.37	0.000	1.597	0.479	0.00639	1.426	Circular	Pipe
"Node7"	Junction	1207.00	286.80	295.29	289.165	2.368	28.45	1	3.67	0.21	289.37	0.000	1.580	0.000	0.00000	0.000	Circular	Pipe
	"i.p."	1220.32	286.88	295.43	289.159	2.276	28.45	1	3.85	0.23	289.39	0.000	1.580	0.497	0.00640	1.410	Circular	Pipe
	"i.p."	1232.69	286.96	295.55	289.151	2.190	28.45	1	4.04	0.25	289.40	0.000	1.580	0.535	0.00640	1.410	Circular	Pipe
	"i.p."	1244.13	287.03	295.67	289.142	2.108	28.45	1	4.24	0.28	289.42	0.000	1.580	0.576	0.00640	1.410	Circular	Pipe
	"i.p."	1254.66	287.10	295.78	289.132	2.030	28.45	1	4.44	0.31	289.44	0.000	1.580	0.619	0.00640	1.410	Circular	Pipe
	"i.p."	1264.29	287.16	295.88	289.119	1.955	28.45	1	4.66	0.34	289.46	0.000	1.580	0.665	0.00640	1.410	Circular	Pipe
	"i.p."	1272.97	287.22	295.96	289.103	1.884	28.45	1	4.89	0.37	289.47	0.000	1.580	0.714	0.00640	1.410	Circular	Pipe
"Link6"	Reach	1279.33	287.26	296.03	289.088	1.828	28.45	1	5.08	0.40	289.49	0.000	1.580	0.756	0.00640	1.410	Circular	Pipe
HYDRAULIC	JUMP at 1286.00 of length 0.02																	
	"i.p."	1286.00	287.30	296.03	289.066	1.764	28.45	1	5.33	0.44	289.51	0.000	1.580	0.810	0.00640	1.410	Circular	Pipe
	"i.p."	1286.00	287.30	296.03	288.713	1.410	28.45	1	7.19	0.80	289.51	0.000	1.580	1.244	0.00640	1.410	Circular	Pipe
"Link5"	Reach	1296.83	287.37	296.04	288.782	1.410	28.45	1	7.18	0.80	289.58	0.000	1.580	1.244	0.00640	1.410	Circular	Pipe
	"i.p."	1518.65	288.79	297.84	290.202	1.410	28.45	1	7.18	0.80	291.00	0.000	1.580	1.244	0.00640	1.410	Circular	Pipe
	"i.p."	1581.58	289.19	298.35	290.614	1.420	28.45	1	7.12	0.79	291.40	0.000	1.580	1.227	0.00640	1.410	Circular	Pipe
	"i.p."	1619.30	289.44	298.66	290.906	1.471	28.45	1	6.79	0.72	291.62	0.000	1.580	1.147	0.00640	1.410	Circular	Pipe
	"i.p."	1628.86	289.50	298.73	291.020	1.												

Iteration 33

"i.p."	1645.85	289.61	298.90	291.362	1.754	26.70	1	5.04	0.39	291.76	0.000	1.528	0.768	0.00659	1.353	Circular	Pipe	
"i.p."	1651.74	289.65	298.95	291.338	1.692	26.70	1	5.28	0.43	291.77	0.000	1.528	0.823	0.00659	1.353	Circular	Pipe	
"Link3"	Reach	1652.25	289.65	298.96	291.336	1.686	26.70	1	5.31	0.44	291.77	0.000	1.528	0.829	0.00659	1.353	Circular	Pipe
"Node3"	Junction	1658.25	289.69	298.96	291.916	2.226	13.35	1	1.86	0.05	291.97	0.000	1.068	0.000	0.00667	0.000	Circular	Pipe
"i.p."	1670.90	289.77	298.92	291.914	2.142	13.35	1	1.95	0.06	291.97	0.000	1.068	0.262	0.00651	0.951	Circular	Pipe	
"i.p."	1682.88	289.85	298.89	291.913	2.062	13.35	1	2.04	0.06	291.98	0.000	1.068	0.282	0.00651	0.951	Circular	Pipe	
"i.p."	1694.23	289.92	298.86	291.910	1.986	13.35	1	2.14	0.07	291.98	0.000	1.068	0.303	0.00651	0.951	Circular	Pipe	
"Link2"	Reach	1701.25	289.97	298.84	291.909	1.939	13.35	1	2.21	0.08	291.98	0.000	1.068	0.317	0.00651	0.951	Circular	Pipe
"Node2"	Junction	1707.25	290.01	298.84	291.983	1.973	1.00	1	0.16	0.00	291.98	0.000	0.286	0.000	0.00667	0.000	Circular	Pipe
"Link1"	Reach	1711.25	290.04	299.00	291.983	1.947	1.00	1	0.16	0.00	291.98	0.000	0.286	0.024	0.00650	0.273	Circular	Pipe
"Node1"	Headwrk	1711.25	290.04	299.00	291.983	1.947	1.00	1	0.16	0.00	291.98	0.000	0.286	0.000	0.00000	0.000	Circular	Pipe

*) in the W.S.ELEV column indicates flooding, it is set whenever W.S.ELEV > GROUND ELEV
i.p. = intermediate point processing results for reaches

Node14_Maxson Alt E

Composite Profile:

ELEMENT NAME	TYPE	STATION	INVERT ELEV	GROUND ELEV	W.S. ELEV	DEPTH	Q	BARREL	VELOC.	VELOC. HEAD	ENERGY GRADE LN	SUPER ELEV	CRITICAL DEPTH	FROUDE NUMBER	SLOPE	NORMAL DEPTH	CROSS SECTION		
###																			
"Outlet/N"	Outlet	1006.00	286.27	292.90	289.037	2.771	20.24	1	2.18	0.07	289.11	0.000	1.324	0.000	0.00000	0.000	Circular Pipe		
"Link41"	Reach	1028.48	286.37	293.62	289.036	2.666	20.24	1	2.27	0.08	289.12	0.000	1.324	0.261	0.00463	1.185	Circular Pipe		
"Link40"	Reach	1045.83	286.45	293.64	289.036	2.586	20.24	1	2.36	0.09	289.12	0.000	1.324	0.277	0.00461	1.186	Circular Pipe		
"i.p."		1067.87	286.55	294.24	289.034	2.482	20.24	1	2.47	0.09	289.13	0.000	1.324	0.300	0.00464	1.185	Circular Pipe		
"i.p."		1088.49	286.65	294.81	289.032	2.384	20.24	1	2.59	0.10	289.14	0.000	1.324	0.324	0.00464	1.185	Circular Pipe		
"Link39"	Reach	1092.86	286.67	294.93	289.031	2.363	20.24	1	2.62	0.11	289.14	0.000	1.324	0.329	0.00464	1.185	Circular Pipe		
HYDRAULIC	JUMP	at 1262.09	of length	0.01															
"i.p."		1111.97	286.76	294.94	289.029	2.272	20.24	1	2.75	0.12	289.15	0.000	1.324	0.355	0.00463	1.185	Circular Pipe		
"i.p."		1129.93	286.84	294.94	289.026	2.186	20.24	1	2.88	0.13	289.15	0.000	1.324	0.382	0.00463	1.185	Circular Pipe		
"i.p."		1146.83	286.92	294.95	289.022	2.104	20.24	1	3.02	0.14	289.16	0.000	1.324	0.411	0.00463	1.185	Circular Pipe		
"i.p."		1162.71	286.99	294.96	289.017	2.026	20.24	1	3.17	0.16	289.17	0.000	1.324	0.442	0.00463	1.185	Circular Pipe		
"i.p."		1177.64	287.06	294.96	289.012	1.952	20.24	1	3.32	0.17	289.18	0.000	1.324	0.475	0.00463	1.185	Circular Pipe		
"i.p."		1191.64	287.13	294.97	289.006	1.881	20.24	1	3.49	0.19	289.19	0.000	1.324	0.509	0.00463	1.185	Circular Pipe		
"i.p."		1204.74	287.19	294.97	288.999	1.813	20.24	1	3.66	0.21	289.21	0.000	1.324	0.546	0.00463	1.185	Circular Pipe		
"i.p."		1216.94	287.24	294.98	288.990	1.748	20.24	1	3.83	0.23	289.22	0.000	1.324	0.586	0.00463	1.185	Circular Pipe		
"i.p."		1228.23	287.29	294.98	288.981	1.686	20.24	1	4.02	0.25	289.23	0.000	1.324	0.628	0.00463	1.185	Circular Pipe		
"i.p."		1238.60	287.34	294.98	288.969	1.627	20.24	1	4.22	0.28	289.25	0.000	1.324	0.673	0.00463	1.185	Circular Pipe		
"i.p."		1248.00	287.39	294.99	288.956	1.570	20.24	1	4.42	0.30	289.26	0.000	1.324	0.720	0.00463	1.185	Circular Pipe		
"i.p."		1256.33	287.42	294.99	288.939	1.515	20.24	1	4.64	0.33	289.27	0.000	1.324	0.771	0.00463	1.185	Circular Pipe		
"i.p."		1262.09	287.45	294.99	288.925	1.474	20.24	1	4.82	0.36	289.28	0.000	1.324	0.813	0.00463	1.185	Circular Pipe		
"i.p."		1262.09	287.45	294.99	288.636	1.185	20.24	1	6.49	0.65	289.29	0.000	1.324	1.239	0.00463	1.185	Circular Pipe		
"Link38"	Reach	1279.60	287.53	295.00	288.717	1.185	20.24	1	6.49	0.65	289.37	0.000	1.324	1.239	0.00463	1.185	Circular Pipe		
"Link37"	Reach	1326.29	287.75	295.00	288.933	1.185	20.24	1	6.49	0.65	289.59	0.000	1.324	1.239	0.00463	1.185	Circular Pipe		
"i.p."		1481.45	288.47	295.70	289.651	1.185	20.24	1	6.49	0.65	290.31	0.000	1.324	1.239	0.00463	1.185	Circular Pipe		
"Link36"	Reach	1549.45	288.78	296.00	289.982	1.201	20.24	1	6.38	0.63	290.61	0.000	1.324	1.208	0.00463	1.185	Circular Pipe		
"i.p."		1576.85	288.91	295.93	290.143	1.234	20.24	1	6.14	0.58	290.73	0.000	1.324	1.145	0.00465	1.184	Circular Pipe		
"i.p."		1587.32	288.96	295.90	290.235	1.278	20.24	1	5.85	0.53	290.77	0.000	1.324	1.071	0.00465	1.184	Circular Pipe		
"Link35"	Reach	1589.68	288.97	295.89	290.291	1.323	20.24	1	5.58	0.48	290.77	0.000	1.324	1.002	0.00465	1.184	Circular Pipe		
"Link34"	Transition	1596.68	289.00	295.88	290.681	1.681	20.24	1	3.01	0.14	290.82	0.000	0.926	0.409	0.00457	0.000	Tr./Rect.closed		
HYDRAULIC	JUMP	in the middle:	of length	-0.00															
"Node32"	Junction	1609.10	289.00	295.88	289.626	0.626	24.24	1	9.68	1.46	291.08	0.000	1.045	0.000	0.00000	0.000	Tr./Rect.closed		
"i.p."		1611.45	289.00	295.84	289.618	0.616	24.24	1	9.84	1.50	291.12	0.000	1.045	2.208	0.00100	1.654	Tr./Rect.closed		
"i.p."		1618.37	289.01	295.72	289.597	0.587	24.24	1	10.32	1.65	291.25	0.000	1.045	2.372	0.00100	1.654	Tr./Rect.closed		
"i.p."		1625.12	289.02	295.61	289.576	0.560	24.24	1	10.82	1.82	291.39	0.000	1.045	2.548	0.00100	1.654	Tr./Rect.closed		
"Link33"	Reach	1625.12	289.02	295.61	290.790	2.774	24.24	1	2.18	0.07	290.86	0.000	1.045	0.231	-4.00000	0.000	Tr./Rect.closed		
"Link32"	Transition	1625.37	288.02	295.61	290.710	2.694	29.54	1	2.74	0.12	290.83	0.000	1.192	0.000	0.00000	0.000	Tr./Rect.closed		
"Node34"	Junction	1625.37	288.02	295.61	290.710	2.693	29.54	1	2.74	0.12	290.83	0.000	1.192	0.295	0.00133	1.721	Tr./Rect.closed		
"Link49"	Reach	1626.87	288.02	295.61	290.711	2.693	29.54	1	2.74	0.12	290.83	0.000	1.192	0.295	0.00133	1.721	Tr./Rect.closed		
HYDRAULIC	JUMP	at 1627.00	of length	0.05															
jump data	U/S processing:	1627.00			288.56	295.61	290.593	2.035	29.54	1	3.63	0.20	290.80	0.000	1.192	0.448	4.00000	0.000	Tr./Rect.closed
jump data	D/S processing:	1627.00			288.56	295.61	289.127	0.569	29.54	1	12.97	2.61	291.74	0.000	1.192	3.030	4.00000	0.000	Tr./Rect.closed

															Iteration 33		
"Link48"	Transition	1627.12	289.02	295.61	289.635	0.617	29.54	1	11.97	2.22	291.86	0.000	1.192	2.684	4.00000	0.000	Tr./Rect.closed
"Link43"	Reach	1627.27	289.02	295.61	289.635	0.617	29.54	1	11.98	2.23	291.86	0.000	1.192	2.688	0.00000	3.000	Tr./Rect.closed
"Node42"	Junction	1627.27	289.02	295.61	289.406	0.388	23.92	1	15.41	3.69	293.09	0.000	1.035	0.000	0.00000	0.000	Tr./Rect.closed
	"i.p."	1629.59	289.02	295.60	289.400	0.379	23.92	1	15.77	3.86	293.26	0.000	1.035	4.513	0.00101	1.634	Tr./Rect.closed
"Link45"	Reach	1634.23	289.02	295.58	289.387	0.362	23.92	1	16.54	4.25	293.63	0.000	1.035	4.848	0.00101	1.634	Tr./Rect.closed
"Link30"	Transition	1639.23	292.68	295.56	293.713	1.035	23.92	1	5.78	0.52	294.23	0.000	1.036	1.001	0.73060	0.000	Tr./Rect.closed
	"i.p."	1641.03	292.68	295.55	293.767	1.086	23.92	1	5.51	0.47	294.24	0.000	1.036	0.931	0.00146	1.428	Tr./Rect.closed
	"i.p."	1647.85	292.69	295.53	293.830	1.139	23.92	1	5.25	0.43	294.26	0.000	1.036	0.867	0.00146	1.428	Tr./Rect.closed
"Link46"	Reach	1659.80	292.71	295.49	293.894	1.186	23.92	1	5.04	0.39	294.29	0.000	1.036	0.816	0.00146	1.428	Tr./Rect.closed
"Node45"	Junction	1659.80	292.71	295.49	293.952	1.244	23.55	1	4.73	0.35	294.30	0.000	1.025	0.000	0.00000	0.000	Tr./Rect.closed
"Link29"	Reach	1676.38	292.73	295.67	293.998	1.266	23.55	1	4.65	0.34	294.33	0.000	1.025	0.729	0.00145	1.416	Tr./Rect.closed
"Node37"	Junction	1676.38	292.73	295.70	294.093	1.361	22.53	1	4.14	0.27	294.36	0.000	0.995	0.000	0.00000	0.000	Tr./Rect.closed
"Link47"	Reach	1845.97	292.98	296.00	294.344	1.365	22.53	1	4.13	0.26	294.61	0.000	0.995	0.622	0.00146	1.369	Tr./Rect.closed
"Node46"	Junction	1845.97	292.98	296.00	294.599	1.620	13.44	1	2.07	0.07	294.67	0.000	0.705	0.000	0.00000	0.000	Tr./Rect.closed
"Link28"	Reach	1854.17	292.99	296.00	294.601	1.610	13.44	1	2.09	0.07	294.67	0.000	0.705	0.290	0.00146	0.951	Tr./Rect.closed
"Link27"	Reach	1870.63	293.01	296.00	294.605	1.590	13.44	1	2.11	0.07	294.67	0.000	0.705	0.295	0.00146	0.952	Tr./Rect.closed
"Node39"	Junction	1870.63	293.01	296.00	294.637	1.622	9.09	1	1.40	0.03	294.67	0.000	0.543	0.000	0.00000	0.000	Tr./Rect.closed
"Link26"	Reach	1888.73	293.04	296.00	294.639	1.597	9.09	1	1.42	0.03	294.67	0.000	0.543	0.199	0.00149	0.724	Tr./Rect.closed
"Link25"	Reach	1930.02	293.10	296.00	294.643	1.541	9.09	1	1.47	0.03	294.68	0.000	0.543	0.209	0.00145	0.730	Tr./Rect.closed
"Node41"	Headwrk	1930.02	293.10	296.00	294.643	1.541	9.09	1	1.47	0.03	294.68	0.000	0.543	0.000	0.00000	0.000	Tr./Rect.closed

*) in the W.S.ELEV column indicates flooding, it is set whenever W.S.ELEV > GROUND ELEV
i.p. = intermediate point processing results for reaches

 Water Surface Profile Gradient (WSPG)
 XP WSPG
 Engine Version 3.0 30/09/2011
 XP Solutions www.xpsolutions.com

INPUT FILE

 Z:\17247\06 Tasks\D2 H&H\Calcs\XPWSPG\Proposed Conditions\Proposed - Alt E - Q50.wsx
 Computed 01/23/18 10:43:47

TITLE INFORMATION

WARNING SUMMARY

 WARNING 25: Link type element Link2 has different invert elevation than its upstream node.
 WARNING 25: Link type element Link3 has different invert elevation than its upstream node.
 WARNING 25: Link type element Link25 has different invert elevation than its upstream node.
 WARNING 25: Link type element Link32 has different invert elevation than its upstream node.
 WARNING 36: D/S processing stopped in junction Node3 because critical momentum is greater than maximum momentum.
 WARNING 36: D/S processing stopped in junction Node4 because critical momentum is greater than maximum momentum.
 WARNING 36: D/S processing stopped in junction Node7 because critical momentum is greater than maximum momentum.
 WARNING 36: D/S processing stopped in junction Node8 because critical momentum is greater than maximum momentum.
 WARNING 36: D/S processing stopped in junction Node9 because critical momentum is greater than maximum momentum.
 WARNING 36: D/S processing stopped in junction Node11 because critical momentum is greater than maximum momentum.
 WARNING 36: D/S processing stopped in junction Node15 because critical momentum is greater than maximum momentum.
 WARNING 36: D/S processing stopped in junction Node14 because critical momentum is greater than maximum momentum.
 WARNING 36: D/S processing stopped in junction Node21 because critical momentum is greater than maximum momentum.
 WARNING 36: D/S processing stopped in junction Node39 because critical momentum is greater than maximum momentum.
 WARNING 36: D/S processing stopped in junction Node46 because critical momentum is greater than maximum momentum.
 WARNING 36: D/S processing stopped in junction Node37 because critical momentum is greater than maximum momentum.
 WARNING 36: D/S processing stopped in junction Node45 because critical momentum is greater than maximum momentum.

RESULTS

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 Main Line
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Composite Profile:

ELEMENT NAME	TYPE	STATION	INVERT ELEV	GROUND ELEV	W.S. ELEV	DEPTH	Q	BARREL	VELOC.	VELOC. HEAD	ENERGY GRADE LN	SUPER ELEV	CRITICAL DEPTH	FROUDE NUMBER	SLOPE	NORMAL DEPTH	CROSS SECTION
###																	
"Node24"	Outlet	0.73	283.04	293.40	288.900	5.860	88.23	1	4.98	0.38	289.28	0.000	2.708	0.000	0.00000	0.000	Circular Pipe
	"i.p."	45.22	284.23	293.14	288.978	4.750	88.23	1	4.98	0.38	289.36	0.000	2.708	0.044	0.02670	1.639	Circular Pipe
	"i.p."	61.24	284.66	293.04	288.965	4.310	88.23	1	5.22	0.42	289.39	0.000	2.708	0.372	0.02670	1.639	Circular Pipe
	"i.p."	69.74	284.88	292.99	288.937	4.054	88.23	1	5.48	0.47	289.40	0.000	2.708	0.441	0.02670	1.639	Circular Pipe
	"i.p."	76.32	285.06	292.95	288.901	3.843	88.23	1	5.74	0.51	289.41	0.000	2.708	0.499	0.02670	1.639	Circular Pipe
	"i.p."	81.70	285.20	292.92	288.860	3.658	88.23	1	6.02	0.56	289.42	0.000	2.708	0.555	0.02670	1.639	Circular Pipe
"Link23"	Reach	85.00	285.29	292.90	288.827	3.537	88.23	1	6.23	0.60	289.43	0.000	2.708	0.595	0.02670	1.639	Circular Pipe
"Link22"	Reach	191.69	285.40	292.40	289.097	3.700	88.23	1	5.96	0.55	289.65	0.000	2.708	0.542	0.00100	4.750	Circular Pipe
"Link21"	Reach	224.00	285.43	291.90	289.171	3.742	88.23	1	5.89	0.54	289.71	0.000	2.708	0.529	0.00099	4.750	Circular Pipe
"Node21"	Junction	224.00	285.43	291.90	289.329	3.900	81.23	1	5.22	0.42	289.75	0.000	2.593	0.000	0.00000	0.000	Circular Pipe
"Link20"	Reach	249.27	285.45	291.90	289.369	3.915	81.23	1	5.20	0.42	289.79	0.000	2.593	0.441	0.00099	4.750	Circular Pipe
"Link19"	Reach	400.00	285.60	291.90	289.603	4.003	81.23	1	5.10	0.40	290.01	0.000	2.593	0.419	0.00097	4.750	Circular Pipe
"Link18"	Reach	579.50	285.78	292.40	289.867	4.087	81.23	1	5.01	0.39	290.26	0.000	2.593	0.398	0.00100	4.750	Circular Pipe
"Link17"	Transition	584.00	285.84	292.40	289.652	3.812	81.23	1	6.58	0.67	290.32	0.000	2.730	0.429	0.01333	0.000	Circular Pipe

															Iteration 34											
"i.p."	653.94	285.91	292.81	289.911	4.000	81.23	1	6.46	0.65	290.56	0.000	2.730	0.000	0.00102	4.000	Circular	Pipe									
"Link16"	Reach	840.00	286.10	293.90	290.625	4.525	81.23	1	6.46	0.65	291.27	0.000	2.730	0.000	0.00102	4.000	Circular	Pipe								
"Link15"	Reach	1006.00	286.27	292.90	291.240	4.974	81.23	1	6.46	0.65	291.89	0.000	2.730	0.000	0.00100	4.000	Circular	Pipe								
"Node14"	Join	1006.00	286.27	292.90	291.677	5.411	64.25	1	5.11	0.41	292.08	0.000	2.418	0.000	0.00000	0.000	Circular	Pipe								
"Link24"	Reach	1044.00	286.30	292.59	291.765	5.461	64.25	1	5.11	0.41	292.17	0.000	2.418	0.000	0.00100	4.000	Circular	Pipe								
"Node15"	Junction	1044.00	286.30	292.59	291.841	5.537	60.85	1	4.84	0.36	292.20	0.000	2.351	0.000	0.00000	0.000	Circular	Pipe								
"Link13"	Reach	1090.81	286.35	292.11	291.938	5.587	60.85	1	4.84	0.36	292.30	0.000	2.351	0.000	0.00100	4.000	Circular	Pipe								
"Link12"	Reach	1109.13	286.37	292.61	292.003	5.634	60.85	1	4.84	0.36	292.37	0.000	2.351	0.000	0.00098	4.000	Circular	Pipe								
"Link11"	Reach	1127.00	286.39	293.34	292.040	5.653	60.85	1	4.84	0.36	292.40	0.000	2.351	0.000	0.00101	4.000	Circular	Pipe								
"Node11"	Junction	1127.00	286.39	293.34	292.152	5.765	55.88	1	4.45	0.31	292.46	0.000	2.249	0.000	0.00000	0.000	Circular	Pipe								
"Link10"	Reach	1145.00	286.40	293.63	292.184	5.784	55.88	1	4.45	0.31	292.49	0.000	2.249	0.000	0.00000	0.000	Circular	Pipe								
"Link9"	Reach	1156.00	286.47	294.68	292.203	5.733	55.88	1	4.45	0.31	292.51	0.000	2.249	0.000	0.00072	4.000	Circular	Pipe								
"Node9"	Junction	1156.00	286.47	294.68	292.365	5.895	44.55	1	3.55	0.20	292.56	0.000	1.997	0.000	0.00636	2.059	Circular	Pipe								
"Link8"	Reach	1184.00	286.65	294.98	292.397	5.747	44.55	1	3.55	0.20	292.59	0.000	1.997	0.000	0.00000	0.000	Circular	Pipe								
"Node8"	Junction	1184.00	286.65	294.98	292.404	5.754	44.11	1	3.51	0.19	292.60	0.000	1.986	0.000	0.00643	1.800	Circular	Pipe								
"Link7"	Reach	1207.00	286.80	295.29	292.429	5.632	44.11	1	3.51	0.19	292.62	0.000	1.986	0.000	0.00000	0.000	Circular	Pipe								
"Node7"	Junction	1207.00	286.80	295.29	292.445	5.648	43.22	1	3.44	0.18	292.63	0.000	1.986	0.000	0.00639	1.793	Circular	Pipe								
"Link6"	Reach	1279.33	287.26	296.03	292.521	5.261	43.22	1	3.44	0.18	292.70	0.000	1.965	0.000	0.00000	0.000	Circular	Pipe								
"Link5"	Reach	1296.83	287.37	296.04	292.561	5.189	43.22	1	3.44	0.18	292.74	0.000	1.965	0.000	0.00640	1.772	Circular	Pipe								
"i.p."	1520.33	288.80	297.85	292.802	4.000	43.22	1	3.44	0.18	292.99	0.000	1.965	0.000	0.00640	1.772	Circular	Pipe									
"i.p."	1585.36	289.22	298.38	292.847	3.629	43.22	1	3.61	0.20	293.05	0.000	1.965	0.280	0.00640	1.772	Circular	Pipe									
"i.p."	1621.19	289.45	298.67	292.861	3.414	43.22	1	3.78	0.22	293.08	0.000	1.965	0.332	0.00640	1.772	Circular	Pipe									
"Link4"	Reach	1631.00	289.51	298.75	292.864	3.354	43.22	1	3.84	0.23	293.09	0.000	1.965	0.346	0.00640	1.772	Circular	Pipe								
"Node4"	Junction	1631.00	289.51	298.75	292.921	3.411	40.56	1	3.55	0.20	293.12	0.000	1.901	0.000	0.00000	0.000	Circular	Pipe								
"Link3"	Reach	1652.25	289.65	298.96	292.925	3.275	40.56	1	3.68	0.21	293.14	0.000	1.901	0.343	0.00659	1.696	Circular	Pipe								
"Node3"	Junction	1652.25	289.69	298.96	293.227	3.537	20.28	1	1.73	0.05	293.27	0.000	1.325	0.000	0.00667	0.000	Circular	Pipe								
"i.p."	1688.83	289.89	298.87	293.229	3.340	20.28	1	1.81	0.05	293.28	0.000	1.325	0.164	0.00651	1.176	Circular	Pipe									
"Link2"	Reach	1701.25	289.97	298.84	293.229	3.259	20.28	1	1.85	0.05	293.28	0.000	1.325	0.174	0.00651	1.176	Circular	Pipe								
"Node2"	Junction	1701.25	290.01	298.84	293.283	3.273	1.00	1	0.09	0.00	293.28	0.000	0.286	0.000	0.00667	0.000	Circular	Pipe								
"Link1"	Reach	1711.25	290.04	299.00	293.283	3.247	1.00	1	0.09	0.00	293.28	0.000	0.286	0.009	0.00650	0.273	Circular	Pipe								
"Node1"	Headwrk	1711.25	290.04	299.00	293.283	3.247	1.00	1	0.09	0.00	293.28	0.000	0.286	0.000	0.00000	0.000	Circular	Pipe								

*) in the W.S.ELEV column indicates flooding, it is set whenever W.S.ELEV > GROUND ELEV
i.p. = intermediate point processing results for reaches

Node14_Maxson Alt E

Composite Profile:

ELEMENT NAME	TYPE	STATION	INVERT ELEV	GROUND ELEV	W.S. ELEV	DEPTH	Q	BARREL	VELOC.	VELOC. HEAD	ENERGY GRADE LN	SUPER ELEV	CRITICAL DEPTH	FROUDE NUMBER	SLOPE	NORMAL DEPTH	CROSS SECTION
###																	
"Outlet/N"	Outlet	1006.00	286.27	292.90	291.459	5.193	16.98	1	1.35	0.03	291.49	0.000	1.209	0.000	0.00000	0.000	Circular Pipe
"Link41"	Reach	1028.48	286.37	293.62	291.461	5.091	16.98	1	1.35	0.03	291.49	0.000	1.209	0.000	0.00463	1.083	Circular Pipe
"Link40"	Reach	1045.83	286.45	293.64	291.463	5.013	16.98	1	1.35	0.03	291.49	0.000	1.209	0.000	0.00461	1.084	Circular Pipe
"Link39"	Reach	1092.86	286.67	294.93	291.474	4.806	16.98	1	1.35	0.03	291.50	0.000	1.209	0.000	0.00464	1.083	Circular Pipe
"i.p."	1271.59	287.49	295.00	291.495	4.000	16.98	1	1.35	0.03	291.52	0.000	1.209	0.013	0.00463	1.083	Circular Pipe	
"Link38"	Reach	1279.60	287.53	295.00	291.496	3.964	16.98	1	1.35	0.03	291.52	0.000	1.209	0.059	0.00463	1.083	Circular Pipe
"Link37"	Reach	1326.29	287.75	295.00	291.499	3.751	16.98	1	1.39	0.03	291.53	0.000	1.209	0.097	0.00463	1.083	Circular Pipe
"i.p."	1380.14	288.00	295.24	291.502	3.505	16.98	1	1.45	0.03	291.53	0.000	1.209	0.122	0.00463	1.083	Circular Pipe	
"i.p."	1421.84	288.19	295.43	291.503	3.313	16.98	1	1.53	0.04	291.54	0.000	1.209	0.140	0.00463	1.083	Circular Pipe	
"i.p."	1457.51	288.36	295.59	291.504	3.149	16.98	1	1.60	0.04	291.54	0.000	1.209	0.157	0.00463	1.083	Circular Pipe	
"i.p."	1489.23	288.50	295.73	291.504	3.002	16.98	1	1.68	0.04	291.55	0.000	1.209	0.173	0.00463	1.083	Circular Pipe	
"i.p."	1518.01	288.64	295.86	291.504	2.869	16.98	1	1.76	0.05	291.55	0.000	1.209	0.190	0.00463	1.083	Circular Pipe	
"i.p."	1544.44	288.76	295.98	291.504	2.746	16.98	1	1.85	0.05	291.56	0.000	1.209	0.207	0.00463	1.083	Circular Pipe	
"Link36"	Reach	1549.45	288.78	296.00	291.504	2.723	16.98	1	1.86	0.05	291.56	0.000	1.209	0.210	0.00463	1.083	Circular Pipe
"i.p."	1573.48	288.89	295.93	291.503	2.610	16.98	1	1.95	0.06	291.56	0.000	1.209	0.228	0.00465	1.082	Circular Pipe	
"Link35"	Reach	1589.68	288.97	295.89	291.502	2.534	16.98	1	2.02	0.06	291.57	0.000	1.209	0.242	0.00465	1.082	Circular Pipe
"Link34"	Transition	1596.68	289.00	295.88	291.525	2.525	16.98	1	1.68	0.04	291.57	0.000	0.824	0.186	0.00457	0.000	Tr./Rect.closed

Iteration 34

HYDRAULIC JUMP in the middle: of length -0.00																	
"Node32"	Junction	1609.10	289.00	295.88	289.910	0.910	38.48	1	10.57	1.73	291.64	0.000	1.422	0.000	0.00000	0.000	Tr./Rect.closed
	"i.p."	1615.57	289.01	295.77	289.888	0.881	38.48	1	10.91	1.85	291.74	0.000	1.422	2.049	0.00100	2.338	Tr./Rect.closed
"Link33"	Reach	1625.12	289.02	295.61	289.856	0.840	38.48	1	11.45	2.03	291.89	0.000	1.422	2.200	0.00100	2.338	Tr./Rect.closed
"Link32"	Transition	1625.37	288.02	295.61	288.652	0.636	38.48	1	15.12	3.55	292.20	0.000	1.422	3.339	-4.00000	0.000	Tr./Rect.closed
"Node34"	Junction	1625.37	288.02	295.61	288.760	0.744	44.28	1	14.88	3.44	292.20	0.000	1.561	0.000	0.00000	0.000	Tr./Rect.closed
"Link49"	Reach	1626.87	288.02	295.61	288.756	0.738	44.28	1	14.99	3.49	292.25	0.000	1.561	3.075	0.00133	2.331	Tr./Rect.closed
"Link48"	Transition	1627.12	289.02	295.61	289.898	0.880	44.28	1	12.59	2.46	292.36	0.000	1.561	2.365	4.00000	0.000	Tr./Rect.closed
"Link43"	Reach	1627.27	289.02	295.61	289.897	0.879	44.28	1	12.59	2.46	292.36	0.000	1.561	2.367	0.00000	3.000	Tr./Rect.closed
"Node42"	Junction	1627.27	289.02	295.61	289.564	0.546	35.85	1	16.41	4.18	293.74	0.000	1.356	0.000	0.00000	0.000	Tr./Rect.closed
	"i.p."	1627.41	289.02	295.61	289.564	0.546	35.85	1	16.42	4.19	293.75	0.000	1.356	3.917	0.00101	2.209	Tr./Rect.closed
"Link45"	Reach	1634.23	289.02	295.58	289.545	0.520	35.85	1	17.22	4.61	294.15	0.000	1.356	4.207	0.00101	2.209	Tr./Rect.closed
"Link30"	Transition	1639.23	292.68	295.56	294.033	1.355	35.85	1	6.61	0.68	294.71	0.000	1.356	1.001	0.73060	0.000	Tr./Rect.closed
	"i.p."	1641.42	292.68	295.55	294.104	1.423	35.85	1	6.30	0.62	294.72	0.000	1.356	0.931	0.00146	1.921	Tr./Rect.closed
	"i.p."	1649.56	292.69	295.52	294.185	1.492	35.85	1	6.01	0.56	294.75	0.000	1.356	0.867	0.00146	1.921	Tr./Rect.closed
"Link46"	Reach	1659.80	292.71	295.49	294.248	1.540	35.85	1	5.82	0.53	294.77	0.000	1.356	0.827	0.00146	1.921	Tr./Rect.closed
"Node45"	Junction	1659.80	292.71	295.49	294.329	1.621	35.29	1	5.44	0.46	294.79	0.000	1.342	0.000	0.00000	0.000	Tr./Rect.closed
"Link29"	Reach	1676.38	292.73	295.67	294.381	1.649	35.29	1	5.35	0.44	294.83	0.000	1.342	0.734	0.00145	1.904	Tr./Rect.closed
"Node37"	Junction	1676.38	292.73	295.70	294.507	1.775	33.76	1	4.76	0.35	294.86	0.000	1.303	0.000	0.00000	0.000	Tr./Rect.closed
"Link47"	Reach	1845.97	292.98	296.00	294.784	1.805	33.76	1	4.68	0.34	295.12	0.000	1.303	0.613	0.00146	1.838	Tr./Rect.closed
"Node46"	Junction	1845.97	292.98	296.00	295.073	2.094	20.14	1	2.60	0.10	295.18	0.000	0.923	0.000	0.00000	0.000	Tr./Rect.closed
"Link28"	Reach	1854.17	292.99	296.00	295.079	2.088	20.14	1	2.60	0.10	295.18	0.000	0.923	0.329	0.00146	1.261	Tr./Rect.closed
"Link27"	Reach	1870.63	293.01	296.00	295.102	2.087	20.14	1	2.60	0.10	295.21	0.000	0.923	0.329	0.00146	1.263	Tr./Rect.closed
"Node39"	Junction	1870.63	293.01	296.00	295.134	2.119	13.62	1	1.76	0.05	295.18	0.000	0.711	0.000	0.00000	0.000	Tr./Rect.closed
"Link26"	Reach	1888.73	293.04	296.00	295.146	2.104	13.62	1	1.76	0.05	295.19	0.000	0.711	0.222	0.00149	0.953	Tr./Rect.closed
"Link25"	Reach	1930.02	293.10	296.00	295.161	2.059	13.62	1	1.76	0.05	295.21	0.000	0.711	0.222	0.00145	0.962	Tr./Rect.closed
"Node41"	Headwrk	1930.02	293.10	296.00	295.161	2.059	13.62	1	1.76	0.05	295.21	0.000	0.711	0.000	0.00000	0.000	Tr./Rect.closed

*) in the W.S.ELEV column indicates flooding, it is set whenever W.S.ELEV > GROUND ELEV
i.p. = intermediate point processing results for reaches

Iteration 35

Water Surface Profile Gradient (WSPG)
XP WSPG
Engine Version 3.0 30/09/2011
XP Solutions www.xpsolutions.com

INPUT FILE

Z:\17247\06 Tasks\D2 H&H\Calcs\XPWSPG\Proposed Conditions\Proposed - Alt E - Q25.wsx
Computed 01/23/18 16:12:44

TITLE INFORMATION

WARNING SUMMARY

WARNING 25: Link type element Link2 has different invert elevation than its upstream node.
WARNING 25: Link type element Link3 has different invert elevation than its upstream node.
WARNING 25: Link type element Link25 has different invert elevation than its upstream node.
WARNING 25: Link type element Link32 has different invert elevation than its upstream node.
WARNING 36: D/S processing stopped in junction Node3 because critical momentum is greater than maximum momentum.
WARNING 36: D/S processing stopped in junction Node4 because critical momentum is greater than maximum momentum.
WARNING 36: D/S processing stopped in junction Node7 because critical momentum is greater than maximum momentum.
WARNING 36: D/S processing stopped in junction Node8 because critical momentum is greater than maximum momentum.
WARNING 36: D/S processing stopped in junction Node9 because critical momentum is greater than maximum momentum.
WARNING 36: D/S processing stopped in junction Node11 because critical momentum is greater than maximum momentum.
WARNING 36: D/S processing stopped in junction Node15 because critical momentum is greater than maximum momentum.
WARNING 36: D/S processing stopped in junction Node14 because critical momentum is greater than maximum momentum.
WARNING 36: D/S processing stopped in junction Node21 because critical momentum is greater than maximum momentum.
WARNING 38: U/S processing stopped in junction Node21 because the downstream momentum is less than maximum momentum.
WARNING 36: D/S processing stopped in junction Node39 because critical momentum is greater than maximum momentum.
WARNING 36: D/S processing stopped in junction Node46 because critical momentum is greater than maximum momentum.
WARNING 36: D/S processing stopped in junction Node37 because critical momentum is greater than maximum momentum.
WARNING 36: D/S processing stopped in junction Node45 because critical momentum is greater than maximum momentum.

RESULTS

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Main Line
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Composite Profile:

ELEMENT NAME	TYPE	STATION	INVERT ELEV	GROUND ELEV	W.S. ELEV	DEPTH	Q	BARREL	VELOC.	VELOC. HEAD	ENERGY GRADE LN	SUPER ELEV	CRITICAL DEPTH	FROUDE NUMBER	SLOPE	NORMAL DEPTH	CROSS SECTION
###																	
"Node24"	Outlet	0.73	283.04	293.40	288.000	4.960	83.62	1	4.72	0.35	288.35	0.000	2.633	0.000	0.00000	0.000	Circular Pipe
HYDRAULIC	JUMP at	50.18	of length	0.07													
"i.p."		9.09	283.26	293.35	288.013	4.750	83.62	1	4.72	0.35	288.36	0.000	2.633	0.041	0.02670	1.593	Circular Pipe
"i.p."		25.16	283.69	293.26	288.002	4.310	83.62	1	4.95	0.38	288.38	0.000	2.633	0.352	0.02670	1.593	Circular Pipe
"i.p."		33.77	283.92	293.20	287.976	4.054	83.62	1	5.19	0.42	288.39	0.000	2.633	0.418	0.02670	1.593	Circular Pipe
"i.p."		40.50	284.10	293.16	287.945	3.843	83.62	1	5.44	0.46	288.41	0.000	2.633	0.473	0.02670	1.593	Circular Pipe
"i.p."		46.04	284.25	293.13	287.908	3.658	83.62	1	5.71	0.51	288.41	0.000	2.633	0.526	0.02670	1.593	Circular Pipe
"i.p."		50.18	284.36	293.11	287.872	3.512	83.62	1	5.95	0.55	288.42	0.000	2.633	0.572	0.02670	1.593	Circular Pipe
"i.p."		50.18	284.36	293.11	286.297	1.937	83.62	1	12.31	2.35	288.65	0.000	2.633	1.799	0.02670	1.593	Circular Pipe
"i.p."		53.42	284.45	293.09	286.404	1.957	83.62	1	12.15	2.29	288.69	0.000	2.633	1.764	0.02670	1.593	Circular Pipe
"i.p."		62.51	284.69	293.03	286.718	2.029	83.62	1	11.58	2.08	288.80	0.000	2.633	1.646	0.02670	1.593	Circular Pipe
"i.p."		69.47	284.88	292.99	286.979	2.103	83.62	1	11.04	1.89	288.87	0.000	2.633	1.536	0.02670	1.593	Circular Pipe
"i.p."		74.78	285.02	292.96	287.199	2.182	83.62	1	10.53	1.72	288.92	0.000	2.633	1.432	0.02670	1.593	Circular Pipe

Iteration 35

	"i.p."	78.76	285.12	292.94	287.387	2.263	83.62	1	10.04	1.56	288.95	0.000	2.633	1.335	0.02670	1.593	Circular	Pipe
	"i.p."	81.63	285.20	292.92	287.549	2.349	83.62	1	9.57	1.42	288.97	0.000	2.633	1.244	0.02670	1.593	Circular	Pipe
	"i.p."	83.55	285.25	292.91	287.690	2.439	83.62	1	9.13	1.29	288.98	0.000	2.633	1.158	0.02670	1.593	Circular	Pipe
"Link23"	"i.p."	84.65	285.28	292.90	287.814	2.533	83.62	1	8.70	1.18	288.99	0.000	2.633	1.077	0.02670	1.593	Circular	Pipe
	Reach	85.00	285.29	292.90	287.922	2.632	83.62	1	8.30	1.07	288.99	0.000	2.633	1.001	0.02670	1.593	Circular	Pipe
	"i.p."	87.33	285.29	292.89	288.030	2.738	83.62	1	7.91	0.97	289.00	0.000	2.633	0.928	0.00100	4.750	Circular	Pipe
	"i.p."	95.49	285.30	292.85	288.149	2.848	83.62	1	7.54	0.88	289.03	0.000	2.633	0.861	0.00100	4.750	Circular	Pipe
	"i.p."	111.56	285.32	292.78	288.282	2.965	83.62	1	7.19	0.80	289.08	0.000	2.633	0.797	0.00100	4.750	Circular	Pipe
	"i.p."	138.43	285.34	292.65	288.433	3.089	83.62	1	6.85	0.73	289.16	0.000	2.633	0.736	0.00100	4.750	Circular	Pipe
	"i.p."	180.29	285.39	292.45	288.608	3.222	83.62	1	6.53	0.66	289.27	0.000	2.633	0.678	0.00100	4.750	Circular	Pipe
"Link22"	Reach	191.69	285.40	292.40	288.648	3.251	83.62	1	6.47	0.65	289.30	0.000	2.633	0.666	0.00100	4.750	Circular	Pipe
"Link21"	Reach	224.00	285.43	291.90	288.755	3.326	83.62	1	6.31	0.62	289.37	0.000	2.633	0.637	0.00099	4.750	Circular	Pipe
HYDRAULIC	JUMP in the middle:				of length -0.00													
"Node21"	Junction	224.00	285.43	291.90	288.944	2.515	76.62	1	8.04	1.00	288.95	0.000	2.515	0.000	0.00000	0.000	Circular	Pipe
	"i.p."	226.22	285.43	291.90	288.045	2.614	76.62	1	7.67	0.91	288.96	0.000	2.515	0.929	0.00099	4.750	Circular	Pipe
	"i.p."	234.01	285.44	291.90	288.156	2.717	76.62	1	7.31	0.83	288.99	0.000	2.515	0.863	0.00099	4.750	Circular	Pipe
"Link20"	Reach	249.27	285.45	291.90	288.280	2.826	76.62	1	6.97	0.75	289.03	0.000	2.515	0.800	0.00099	4.750	Circular	Pipe
	"i.p."	274.56	285.48	291.90	288.420	2.942	76.62	1	6.65	0.69	289.11	0.000	2.515	0.741	0.00097	4.750	Circular	Pipe
	"i.p."	313.86	285.52	291.90	288.581	3.065	76.62	1	6.34	0.62	289.20	0.000	2.515	0.685	0.00097	4.750	Circular	Pipe
	"i.p."	373.01	285.57	291.90	288.769	3.196	76.62	1	6.04	0.57	289.34	0.000	2.515	0.631	0.00097	4.750	Circular	Pipe
"Link19"	Reach	400.00	285.60	291.90	288.843	3.243	76.62	1	5.94	0.55	289.39	0.000	2.515	0.613	0.00097	4.750	Circular	Pipe
	"i.p."	504.91	285.71	292.19	289.093	3.388	76.62	1	5.67	0.50	289.59	0.000	2.515	0.563	0.00100	4.750	Circular	Pipe
"Link18"	Reach	579.50	285.78	292.40	289.247	3.467	76.62	1	5.53	0.47	289.72	0.000	2.515	0.538	0.00100	4.750	Circular	Pipe
"Link17"	Transition	584.00	285.84	292.40	288.992	3.152	76.62	1	7.21	0.81	289.80	0.000	2.650	0.705	0.01333	0.000	Circular	Pipe
	"i.p."	622.40	285.88	292.63	289.196	3.317	76.62	1	6.88	0.73	289.93	0.000	2.650	0.630	0.00102	4.000	Circular	Pipe
	"i.p."	682.49	285.94	292.98	289.449	3.509	76.62	1	6.56	0.67	290.12	0.000	2.650	0.548	0.00102	4.000	Circular	Pipe
	"i.p."	781.42	286.04	293.56	289.799	3.758	76.62	1	6.25	0.61	290.41	0.000	2.650	0.435	0.00102	4.000	Circular	Pipe
"Link16"	Reach	840.00	286.10	293.90	289.988	3.888	76.62	1	6.15	0.59	290.57	0.000	2.650	0.352	0.00102	4.000	Circular	Pipe
	"i.p."	890.49	286.15	293.60	290.150	4.000	76.62	1	6.10	0.58	290.73	0.000	2.650	0.000	0.00100	4.000	Circular	Pipe
"Link15"	Reach	1006.00	286.27	292.90	290.532	4.266	76.62	1	6.10	0.58	291.11	0.000	2.650	0.000	0.00100	4.000	Circular	Pipe
"Node14"	Join	1006.00	286.27	292.90	291.027	4.761	53.90	1	4.29	0.29	291.31	0.000	2.206	0.000	0.00000	0.000	Circular	Pipe
"Link24"	Reach	1044.00	286.30	292.59	291.089	4.785	53.90	1	4.29	0.29	291.37	0.000	2.206	0.000	0.00000	0.000	Circular	Pipe
"Node15"	Junction	1044.00	286.30	292.59	291.142	4.838	51.05	1	4.06	0.26	291.40	0.000	2.145	0.000	0.00100	4.000	Circular	Pipe
"Link13"	Reach	1090.81	286.35	292.11	291.211	4.860	51.05	1	4.06	0.26	291.47	0.000	2.145	0.000	0.00000	0.000	Circular	Pipe
"Link12"	Reach	1109.13	286.37	292.61	291.256	4.887	51.05	1	4.06	0.26	291.47	0.000	2.145	0.000	0.00100	4.000	Circular	Pipe
"Link11"	Reach	1127.00	286.39	293.34	291.282	4.895	51.05	1	4.06	0.26	291.51	0.000	2.145	0.000	0.00098	4.000	Circular	Pipe
"Node11"	Junction	1127.00	286.39	293.34	291.361	4.974	46.88	1	3.73	0.22	291.58	0.000	2.051	0.000	0.00000	0.000	Circular	Pipe
"Link10"	Reach	1145.00	286.40	293.63	291.384	4.984	46.88	1	3.73	0.22	291.60	0.000	2.051	0.000	0.00000	0.000	Circular	Pipe
"Link9"	Reach	1156.00	286.47	294.68	291.397	4.927	46.88	1	3.73	0.22	291.61	0.000	2.051	0.000	0.00636	1.858	Circular	Pipe
"Node9"	Junction	1156.00	286.47	294.68	291.511	5.041	37.37	1	2.97	0.14	291.65	0.000	1.821	0.000	0.00000	0.000	Circular	Pipe
"Link8"	Reach	1184.00	286.65	294.98	291.533	4.883	37.37	1	2.97	0.14	291.67	0.000	1.821	0.000	0.00643	1.632	Circular	Pipe
"Node8"	Junction	1184.00	286.65	294.98	291.539	4.889	37.00	1	2.94	0.13	291.67	0.000	1.812	0.000	0.00000	0.000	Circular	Pipe
"Link7"	Reach	1207.00	286.80	295.29	291.557	4.760	37.00	1	2.94	0.13	291.69	0.000	1.812	0.000	0.00639	1.626	Circular	Pipe
"Node7"	Junction	1207.00	286.80	295.29	291.567	4.770	36.25	1	2.88	0.13	291.70	0.000	1.793	0.000	0.00000	0.000	Circular	Pipe
"Link6"	Reach	1279.33	287.26	296.03	291.621	4.361	36.25	1	2.88	0.13	291.75	0.000	1.793	0.000	0.00640	1.607	Circular	Pipe
"Link5"	Reach	1296.83	287.37	296.04	291.649	4.277	36.25	1	2.88	0.13	291.78	0.000	1.793	0.000	0.00640	1.607	Circular	Pipe
	"i.p."	1345.97	287.69	296.44	291.686	4.000	36.25	1	2.88	0.13	291.82	0.000	1.793	0.029	0.00640	1.607	Circular	Pipe
	"i.p."	1408.64	288.09	296.95	291.717	3.629	36.25	1	3.03	0.14	291.86	0.000	1.793	0.235	0.00640	1.607	Circular	Pipe
	"i.p."	1443.76	288.31	297.23	291.726	3.414	36.25	1	3.17	0.16	291.88	0.000	1.793	0.278	0.00640	1.607	Circular	Pipe
	"i.p."	1472.32	288.49	297.46	291.731	3.236	36.25	1	3.33	0.17	291.90	0.000	1.793	0.315	0.00640	1.607	Circular	Pipe
	"i.p."	1497.01	288.65	297.66	291.733	3.081	36.25	1	3.49	0.19	291.92	0.000	1.793	0.350	0.00640	1.607	Circular	Pipe
	"i.p."	1518.98	288.79	297.84	291.734	2.941	36.25	1	3.66	0.21	291.94	0.000	1.793	0.385	0.00640	1.607	Circular	Pipe
	"i.p."	1538.83	288.92	298.00	291.733	2.812	36.25	1	3.84	0.23	291.96	0.000	1.793	0.421	0.00640	1.607	Circular	Pipe
	"i.p."	1556.91	289.04	298.15	291.730	2.694	36.25	1	4.03	0.25	291.98	0.000	1.793	0.458	0.00640	1.607	Circular	Pipe
	"i.p."	1573.47	289.14	298.28	291.725	2.583	36.25	1	4.22	0.28	292.00	0.000	1.793	0.497	0.00640	1.607	Circular	Pipe
	"i.p."	1588.65	289.24	298.41	291.719	2.480	36.25	1	4.43	0.30	292.02	0.000	1.793	0.538	0.00640	1.607	Circular	Pipe
	"i.p."	1602.56	289.33	298.52	291.710	2.382	36.25	1	4.65	0.34	292.05	0.000	1.793	0.581	0.00640	1.607	Circular	Pipe
	"i.p."	1615.25	289.41	298.62	291.699	2.290	36.25	1	4.87	0.37	292.07	0.000	1.793	0.626	0.00640	1.607	Circular	Pipe
	"i.p."	1626.76	289.48	298.72	291.686	2.203	36.25	1	5.11	0.41	292.09	0.000	1.793	0.675	0.00640	1.607	Circular	Pipe
"Link4"	Reach	1631.00	289.51	298.75	291.679	2.169	36.25	1	5.21	0.42	292.10	0.000	1.793	0.695	0.00640	1.607	Circular	Pipe
"Node4"	Junction	1631.00	289.51	298.75	291.825	2.315	34.02	1	4.51	0.32	292.14	0.000	1.734	0.000	0.00000	0.000	Circular	Pipe
	"i.p."	164																

															Iteration 35		
"Node3"	Junction	1658.25	289.69	298.96	292.322	2.632	17.01	1	1.94	0.06	292.38	0.000	1.210	0.000	0.00667	0.000	Circular Pipe
	"i.p."	1674.45	289.80	298.91	292.321	2.525	17.01	1	2.03	0.06	292.39	0.000	1.210	0.244	0.00651	1.075	Circular Pipe
	"i.p."	1689.61	289.89	298.87	292.320	2.425	17.01	1	2.13	0.07	292.39	0.000	1.210	0.263	0.00651	1.075	Circular Pipe
"Link2"	Reach	1701.25	289.97	298.84	292.318	2.348	17.01	1	2.22	0.08	292.39	0.000	1.210	0.280	0.00651	1.075	Circular Pipe
"Node2"	Junction	1707.25	290.01	298.84	292.395	2.385	1.00	1	0.13	0.00	292.40	0.000	0.286	0.000	0.00667	0.000	Circular Pipe
"Link1"	Reach	1711.25	290.04	299.00	292.395	2.359	1.00	1	0.13	0.00	292.40	0.000	0.286	0.016	0.00650	0.273	Circular Pipe
"Node1"	Headwrk	1711.25	290.04	299.00	292.395	2.359	1.00	1	0.13	0.00	292.40	0.000	0.286	0.000	0.00000	0.000	Circular Pipe

*) in the W.S.ELEV column indicates flooding, it is set whenever W.S.ELEV > GROUND ELEV
i.p. = intermediate point processing results for reaches

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Node14_Maxson Alt E
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Composite Profile:

ELEMENT NAME	TYPE	STATION	INVERT ELEV	GROUND ELEV	W.S. ELEV	DEPTH	Q	BARREL	VELOC.	VELOC. HEAD	ENERGY GRADE LN	SUPER ELEV	CRITICAL DEPTH	FRUDE NUMBER	SLOPE	NORMAL DEPTH	CROSS SECTION
###																	
"Outlet/N"	Outlet	1006.00	286.27	292.90	290.779	4.513	22.72	1	1.81	0.05	290.83	0.000	1.405	0.000	0.00000	0.000	Circular Pipe
"Link41"	Reach	1028.48	286.37	293.62	290.784	4.414	22.72	1	1.81	0.05	290.83	0.000	1.405	0.000	0.00463	1.258	Circular Pipe
"Link40"	Reach	1045.83	286.45	293.64	290.788	4.338	22.72	1	1.81	0.05	290.84	0.000	1.405	0.000	0.00461	1.260	Circular Pipe
"Link39"	Reach	1092.86	286.67	294.93	290.806	4.138	22.72	1	1.81	0.05	290.86	0.000	1.405	0.000	0.00464	1.258	Circular Pipe
	"i.p."	1124.15	286.81	294.94	290.813	4.000	22.72	1	1.81	0.05	290.86	0.000	1.405	0.018	0.00463	1.258	Circular Pipe
	"i.p."	1206.70	287.19	294.97	290.824	3.629	22.72	1	1.90	0.06	290.88	0.000	1.405	0.147	0.00463	1.258	Circular Pipe
	"i.p."	1254.02	287.41	294.99	290.828	3.414	22.72	1	1.99	0.06	290.89	0.000	1.405	0.174	0.00463	1.258	Circular Pipe
"Link38"	Reach	1279.60	287.53	295.00	290.829	3.297	22.72	1	2.05	0.07	290.89	0.000	1.405	0.189	0.00463	1.258	Circular Pipe
	"i.p."	1315.00	287.70	295.00	290.830	3.134	22.72	1	2.15	0.07	290.90	0.000	1.405	0.212	0.00463	1.258	Circular Pipe
"Link37"	Reach	1326.29	287.75	295.00	290.830	3.082	22.72	1	2.19	0.07	290.90	0.000	1.405	0.219	0.00463	1.258	Circular Pipe
	"i.p."	1356.65	287.89	295.14	290.831	2.942	22.72	1	2.29	0.08	290.91	0.000	1.405	0.241	0.00463	1.258	Circular Pipe
	"i.p."	1384.31	288.02	295.26	290.830	2.814	22.72	1	2.41	0.09	290.92	0.000	1.405	0.264	0.00463	1.258	Circular Pipe
	"i.p."	1409.76	288.13	295.37	290.830	2.695	22.72	1	2.52	0.10	290.93	0.000	1.405	0.287	0.00463	1.258	Circular Pipe
	"i.p."	1433.35	288.24	295.48	290.828	2.585	22.72	1	2.65	0.11	290.94	0.000	1.405	0.311	0.00463	1.258	Circular Pipe
	"i.p."	1455.31	288.35	295.58	290.826	2.481	22.72	1	2.77	0.12	290.95	0.000	1.405	0.337	0.00463	1.258	Circular Pipe
	"i.p."	1475.82	288.44	295.67	290.824	2.383	22.72	1	2.91	0.13	290.96	0.000	1.405	0.364	0.00463	1.258	Circular Pipe
	"i.p."	1495.02	288.53	295.76	290.820	2.291	22.72	1	3.05	0.14	290.96	0.000	1.405	0.392	0.00463	1.258	Circular Pipe
	"i.p."	1513.01	288.61	295.84	290.816	2.204	22.72	1	3.20	0.16	290.98	0.000	1.405	0.422	0.00463	1.258	Circular Pipe
	"i.p."	1529.89	288.69	295.91	290.811	2.121	22.72	1	3.36	0.18	290.99	0.000	1.405	0.454	0.00463	1.258	Circular Pipe
	"i.p."	1545.68	288.76	295.98	290.806	2.042	22.72	1	3.52	0.19	291.00	0.000	1.405	0.489	0.00463	1.258	Circular Pipe
"Link36"	Reach	1549.45	288.78	296.00	290.804	2.023	22.72	1	3.56	0.20	291.00	0.000	1.405	0.497	0.00463	1.258	Circular Pipe
	"i.p."	1563.89	288.85	295.96	290.797	1.949	22.72	1	3.74	0.22	291.01	0.000	1.405	0.534	0.00465	1.257	Circular Pipe
	"i.p."	1577.33	288.91	295.92	290.789	1.878	22.72	1	3.92	0.24	291.03	0.000	1.405	0.573	0.00465	1.257	Circular Pipe
"Link35"	Reach	1589.68	288.97	295.89	290.779	1.811	22.72	1	4.11	0.26	291.04	0.000	1.405	0.615	0.00465	1.257	Circular Pipe
"Link34"	Transition	1596.68	289.00	295.88	290.925	1.925	22.72	1	2.95	0.14	291.06	0.000	1.001	0.375	0.00457	0.000	Tr./Rect.closed
HYDRAULIC	JUMP	in the middle: of length -0.00															
"Node32"	Junction	1609.10	289.00	295.88	289.766	0.766	31.22	1	10.19	1.61	291.38	0.000	1.237	0.000	0.00000	0.000	Tr./Rect.closed
	"i.p."	1616.90	289.01	295.75	289.741	0.733	31.22	1	10.65	1.76	291.50	0.000	1.237	2.193	0.00100	1.996	Tr./Rect.closed
"Link33"	Reach	1625.12	289.02	295.61	289.715	0.699	31.22	1	11.17	1.94	291.65	0.000	1.237	2.355	0.00100	1.996	Tr./Rect.closed
"Link32"	Transition	1625.37	288.02	295.61	291.008	2.992	31.22	1	2.61	0.11	291.11	0.000	1.237	0.266	-4.00000	0.000	Tr./Rect.closed
"Node34"	Junction	1625.37	288.02	295.61	290.916	2.900	36.72	1	3.17	0.16	291.07	0.000	1.378	0.000	0.00000	0.000	Tr./Rect.closed
"Link49"	Reach	1626.87	288.02	295.61	290.917	2.899	36.72	1	3.17	0.16	291.07	0.000	1.378	0.328	0.00133	2.023	Tr./Rect.closed
HYDRAULIC	JUMP	at 1626.98 of length 0.06															
	jump data U/S processing:	1626.98	288.47	295.61	290.795	2.322	36.72	1	3.95	0.24	291.04	0.000	1.378	0.457	4.00000	0.000	Tr./Rect.closed
	jump data D/S processing:	1626.98	288.47	295.61	289.151	0.679	36.72	1	13.52	2.84	291.99	0.000	1.378	2.893	4.00000	0.000	Tr./Rect.closed
"Link48"	Transition	1627.12	289.02	295.61	289.763	0.745	36.72	1	12.31	2.35	292.12	0.000	1.378	2.514	4.00000	0.000	Tr./Rect.closed
"Link43"	Reach	1627.27	289.02	295.61	289.763	0.745	36.72	1	12.33	2.36	292.12	0.000	1.378	2.517	0.00000	3.000	Tr./Rect.closed
"Node42"	Junction	1627.27	289.02	295.61	289.484	0.466	29.73	1	15.95	3.95	293.44	0.000	1.197	0.000	0.00000	0.000	Tr./Rect.closed
	"i.p."	1628.50	289.02	295.60	289.481	0.461	29.73	1	16.11	4.03	293.51	0.000	1.197	4.181	0.00101	1.919	Tr./Rect.closed
"Link45"	Reach	1634.23	289.02	295.58	289.465	0.440	29.73	1	16.90	4.43	293.90	0.000	1.197	4.490	0.00101	1.919	Tr./Rect.closed
"Link30"	Transition	1639.23	292.68	295.56	293.874	1.196	29.73	1	6.21	0.60	294.47	0.000	1.197	1.001	0.73060	0.000	Tr./Rect.closed

														Iteration 35			
"i.p."	1641.24	292.68	295.55	293.937	1.256	29.73	1	5.92	0.54	294.48	0.000	1.197	0.931	0.00146	1.673	Tr./Rect.closed	
"i.p."	1648.78	292.69	295.53	294.009	1.317	29.73	1	5.64	0.49	294.50	0.000	1.197	0.867	0.00146	1.673	Tr./Rect.closed	
"Link46"	Reach	1659.80	292.71	295.49	294.072	1.364	29.73	1	5.45	0.46	294.53	0.000	1.197	0.822	0.00146	1.673	Tr./Rect.closed
"Node45"	Junction	1659.80	292.71	295.49	294.141	1.433	29.27	1	5.10	0.40	294.55	0.000	1.185	0.000	0.00000	0.000	Tr./Rect.closed
"Link29"	Reach	1676.38	292.73	295.67	294.190	1.458	29.27	1	5.02	0.39	294.58	0.000	1.185	0.733	0.00145	1.658	Tr./Rect.closed
"Node37"	Junction	1676.38	292.73	295.70	294.301	1.569	28.00	1	4.46	0.31	294.61	0.000	1.150	0.000	0.00000	0.000	Tr./Rect.closed
"Link47"	Reach	1845.97	292.98	296.00	294.565	1.586	28.00	1	4.41	0.30	294.87	0.000	1.150	0.617	0.00146	1.602	Tr./Rect.closed
"Node46"	Junction	1845.97	292.98	296.00	294.842	1.863	16.70	1	2.24	0.08	294.92	0.000	0.815	0.000	0.00000	0.000	Tr./Rect.closed
"Link28"	Reach	1854.17	292.99	296.00	294.844	1.853	16.70	1	2.25	0.08	294.92	0.000	0.815	0.292	0.00146	1.105	Tr./Rect.closed
"Link27"	Reach	1870.63	293.01	296.00	294.848	1.833	16.70	1	2.28	0.08	294.93	0.000	0.815	0.297	0.00146	1.107	Tr./Rect.closed
"Node39"	Junction	1870.63	293.01	296.00	294.877	1.862	11.29	1	1.52	0.04	294.91	0.000	0.628	0.000	0.00000	0.000	Tr./Rect.closed
"Link26"	Reach	1888.73	293.04	296.00	294.878	1.836	11.29	1	1.54	0.04	294.92	0.000	0.628	0.200	0.00149	0.838	Tr./Rect.closed
"Link25"	Reach	1930.02	293.10	296.00	294.883	1.781	11.29	1	1.58	0.04	294.92	0.000	0.628	0.209	0.00145	0.846	Tr./Rect.closed
"Node41"	Headwrk	1930.02	293.10	296.00	294.883	1.781	11.29	1	1.58	0.04	294.92	0.000	0.628	0.000	0.00000	0.000	Tr./Rect.closed

*) in the W.S.ELEV column indicates flooding, it is set whenever W.S.ELEV > GROUND ELEV
i.p. = intermediate point processing results for reaches

DIVERSIONS FOR ALT B:

Version 1 10 year model run

Iteration no.	Assumed WQ pipe flow	Assumed weir box flow	WSE at WQ pipe (16+20.5 1)	WSE at weir box (15+98.0 8)	Q at WQ pipe	Q at weir
11	6	10	295.037	292.079	8.6	72
12	8	25	294.952	289.592	8.51	0
13	8.4	15	294.939	291.451	8.51	44

Version 3 10 year model run

14	6	10	292.927	291.318	7.45	0 hydraulic jump DS of weir section; supercritical flow means no flow enters inf basin bypass
15	7.5	0	292.933	292.846	7.46	25 hydraulic jump US of weir section
16	7.5	5	292.864	292.257	7.4	8.5 hydraulic jump within weir section; WSE at weir box is highest number throughout weir section and therefore produces the highest diverted Q

50 year model run

17	9	60	293.682	292.4	8.1	11 WSE at weir box represents head at Durfee SD, since the inf basin bypass was assumed to take so much flow out of the main channel
18	8.1	50	293.716	293.433	8.13	44.5 WSE at weir box represents head at Durfee SD as before, jump assumed at the zero-length junction
19	8.1	49.2	293.716	293.517	8.13	49.2 WSE at weir box represents head at Durfee SD as before, jump assumed at the zero-length junction

DIVERSIONS FOR ALT C:

Version 1 10 year model run

Iteration no.	Assumed WQ pipe flow	Assumed weir box flow	WSE at WQ pipe (16+26.1 2)	WSE at weir, upstream (16+09.1 0)	WSE at weir, downstre (15+96.6 8)	Average WSE at weir	Q at WQ pipe	Q at weir
20	6	10	292.759	292.16	291.531	291.8455	6.4	1.2 Flow in Durfee SD higher than 50yr Q by 2 cfs; subcritical at upstream of weir, supercritical at downstream of weir due to loss of flow, jump back to subcritical 30' ds of weir
21	6.3	7	292.745	292.375	292.639	292.507	6.36	11 Flow in Durfee SD higher than 50yr Q by around 5 cfs; subcritical upstream of weir, goes supercritical within the weir, back up to subcritical within the weir.
50 year model run								
22	8	50	290.959	292.43	293.491	292.9605	4	28 Supercritical from drop through WQ pipe and to US of weir; meets up with high Durfee WSE within weir. Flow in Durfee SD is 27 cfs higher than 50yr even with unrealistically high weir flow

Version 2 Change to 9" WQ pipe depth for orifice (up from 8")
Lower weir to 7 inches (down from 12 inches)

50 year model run

23	8	60	290.959	292.43	292.489	292.4595	4.7	25 Flow stays supercritical from drop through WQ pipe and to US of weir where it meets the higher Durfee WSE.
24	8	50	290.759	292.43	293.491	292.9605	3.8	48

ALT D Change pipe to 48", 7' transition downstream of weir, same elevations and grades as the 4x3 box

50 year model run

24	8	50	290.959	292.43	293.465	292.9475	4.7	44
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10 year model run

25	6.3	7	292.745	292.152	292.82	292.486	6.36	25
26	6.3	12	292.745	292.152	292.649	292.4005	6.36	23.68

version 2 Change pipe to 36"

10 year model run

27	6.3	12	292.745	292.152	292.979	292.5655	6.36	28
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ALT E Pipe back to 48"; weir back to 12"

10 year model run

28	6.3	5	292.676	292.55	292.642	292.596	6.3	17 Erroneously high Q for Lateral C
----	-----	---	---------	--------	---------	---------	-----	-------------------------------------

50 year

29	8	30	292.612	292.067	290.865	291.466	6.2	0 Downstream flow rate is so low now that the backwater is far below where the weir is
----	---	----	---------	---------	---------	---------	-----	--

version 2 Lower elevation of pipe - slope = 0.30%, reconfigure WQ inlet to notch

50 year

30	7	30	287.752	288.821	290.824	289.8225	5.5	14 Higher drop, different configuration (2'-wide notch rather than berm), means more energy over the WQ diversion area, but overflow works as planned
31	5.5	29.5	288.809	288.857	290.961	289.909	5.6	10 The total amount of water into the inf basin (WQ plus weir) will be 35 cfs

10 year

32	5.3	9.7	288.554	288.602	289.876	289.239	5.3	2 Total amount of water into inf basin (WQ plus weir) will be 15 cfs
----	-----	-----	---------	---------	---------	---------	-----	--

Version 3 Slope of 48" pipe raised to 0.46%

10 year									
33	5.3	4	289.576	289.626	290.681	290.1535	5.3	2	Total amount of water - 9 to 9.3
50 year									
34	5.8	21.5	289.856	289.91	291.525	290.7175	5.8	12	Total amount of water - 26.8 to 27.3 cfs
25 year									
35	5.5	8.5	289.715	289.766	290.925	290.3455	5.5	4	Total amount of water - 13.5 to 14 cfs

Melanie Morita

From: Ed Suher <e_suher@cascinc.com>
Sent: Tuesday, December 31, 2019 11:29 AM
To: Julian Juarez
Cc: Melanie Morita; DPW-SafeCleanWaterLA
Subject: Request for Conceptual Approval for projects submitted for Safe, Clean Water Program funding

CAUTION: External Email. Proceed Responsibly.

Hi Julian:

Re: Garvey Avenue Grade Separation Drainage Improvement Project (City of El Monte)

I'm reaching out to you for your assistance in obtaining Conceptual Approval for the above listed project. I received your name from Melanie Morita (see her email below). I'm not sure if you have access to the plans and other information that was submitted with the SCWP application package so please let me know what I need to provide you in order to obtain Conceptual Approval.

Also, we submitted a second project: **MacLaren Hall Property Park and Sports Field Project – Concept (City of El Monte)** (also in Upper San Gabriel River Watershed). Would you be the LACFCD contact for obtaining Conceptual Approval for this project as well?

Since we are into the holidays, I will check back with you on January 2, 2020.

Thank you very much for your help.

Ed

Edmond G. Suher, P.G.
Environmental Program Manager
CASC ENGINEERING AND CONSULTING
633 W. Route 66, Suite A
Glendora, CA 91740
mobile: (310) 291-1150
(consultant to the City of El Monte)

From: Melanie Morita <mmorita@dpw.lacounty.gov>
Sent: Thursday, December 26, 2019 5:09 PM
To: Ed Suher <e_suher@cascinc.com>
Cc: Kevin Kim <KKIM@dpw.lacounty.gov>
Subject: RE: Request for Supplemental Information - Safe, Clean Water Program

Hi Ed,

As discussed, you can reach out to Julian Juaraz at JJUAREZ@dpw.lacounty.gov to obtain conceptual approval.

NOTE: Conceptual approval does not indicate LACFCD's consent to support or even permit a project but rather an acknowledgment that LACFCD has been engaged and the concept is not currently inconsistent with any LACFCD plans, policies, or goals. If funding is ultimately allocated to the project, it is required that the developer remain closely engaged with LACFCD throughout each project phase and comply with any eventual applicable agreement and/or permit provisions.

Let me know if you have any other questions. Thank you.

Melanie Morita
Associate Civil Engineer
Los Angeles County Public Works
(626) 300-2380

2. Existing Conditions

The Garvey Avenue Grade Separation was built in 1933. Land use surrounding the underpass has changed over the past 85 years from farm lands to industrial and commercial sites. The I-10 Freeway was constructed in the 1960s, which altered the drainage patterns, delivering additional flow to the underpass from Exline Street to Maxson Place through a triple (3) 24-inch culvert crossing under the I-10 Freeway. Under existing conditions, stormwater accumulated in the Garvey Avenue underpass is pumped to an existing storm drain that ultimately discharges to the Rio Hondo Channel to the north. Each year during the rainy season, flooding occurs in the underpass, and city personnel must devote time to respond to traffic disruptions, including towing of motor vehicles that become trapped as observed in **Figure 2-1**. The limited pump station wet well capacity and lack of drainage facilities to capture the additional flow from the California Department of Transportation's (Caltrans') roadway improvements and changed land uses upstream has contributed to flooding in the Garvey Avenue underpass several times each storm season.

The existing Garvey Avenue underpass pump station was part of the original construction in 1933. It consists of a 6-foot by 9-foot by 16-foot concrete sump with two submersible pumps. The pumps were replaced in August 2002 and have a combined capacity of 1,400 gpm (3.1 cubic feet per second). Prior to the construction of the Metrolink tracks, there were two discharge lines for the pumps: a 12-inch discharge line (3,100 liner feet) to the San Gabriel River, and an 8-inch discharge line that drained into a catch basin located on the corner of Garvey Avenue and Valley Boulevard. The 12-inch discharge line was abandoned when the Durfee Avenue grade separation was constructed in 1974. The 8-inch discharge line is still in operation, draining into a catch basin that discharges to a City storm drain system along Valley Boulevard, which eventually conveys flow to the Rio Hondo Channel.

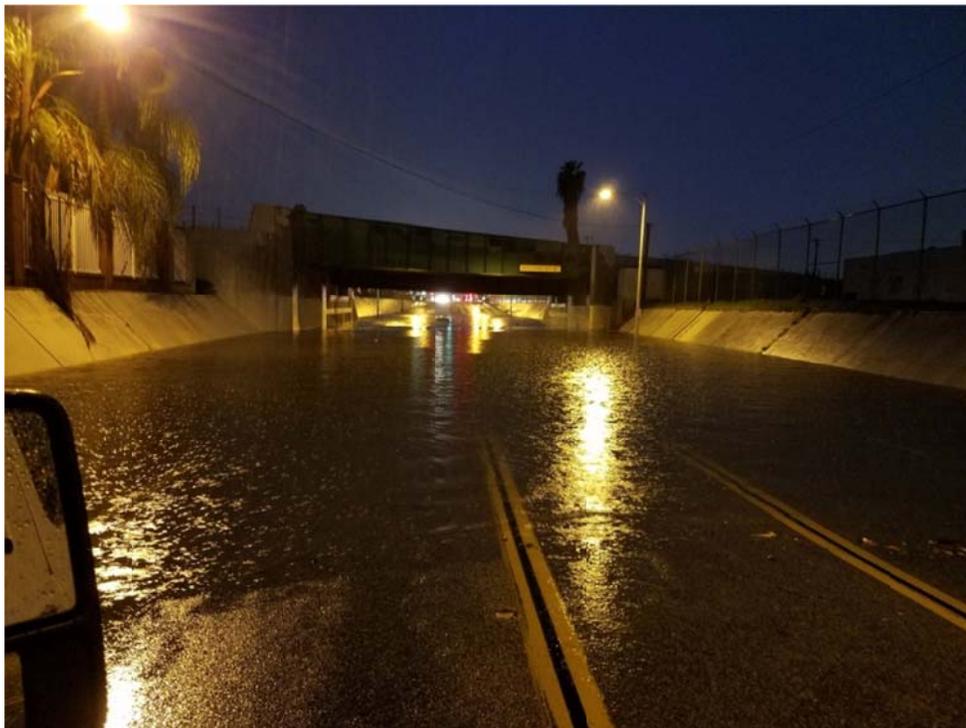


Figure 2-1 Flooding at the Garvey Avenue Underpass

The existing pumping system include a 7.5HP lead pump with 700 gallon per minute (gpm) capacity, and a 7.5HP lag pump with the same capacity. The pumps operate with level controls at the wet well. This system is deficient and requires modification to correct the flooding issues in Garvey Avenue.

2.1 Topography

The topography of the site consists of urban landscapes with nearly flat slopes. The terrain generally slopes from the northeast to the southwest at a slope of less than half a percent. Construction of the Garvey Avenue Underpass altered the local drainage pattern and created an extended depressed area underneath the Southern Pacific Railroad tracks. The lowest street surface elevation beneath the railroad tracks is at an elevation of about 282 feet above mean sea level (MSL), about 13 feet below the lowest elevations of surrounding parcels. No diversions were apparently created on Garvey Avenue on either side of the underpass. Surface drainage patterns and contours are depicted in the topography map in **Figure 2-2**.



Figure 2-2 Topographic Map

2.2 On-Site Drainage

Drainage to the site comes from excess stormwater runoff northeast of the Garvey Avenue Underpass. The drainage area is bounded on the north and east by Ferris Road and Durfee Avenue, respectively, where existing storm drains convey stormwater runoff eastward to the San Gabriel River. The potential exists for drainage from areas beyond Ferris Road and Durfee Avenue to be conveyed to the Garvey Avenue Underpass during extreme storm events that produces a flow rate of runoff larger than the capacity of those storm drains. However, for this design, the areas north of Ferris Road and east of Durfee Avenue were assumed not to contribute runoff to the Garvey Avenue Underpass.

The drainage area tributary to the Garvey Avenue Underpass is illustrated in **Figure 2-3**. The drainage area is 47 acres. A detailed discussion on the Garvey Avenue Underpass is provided in **Section 3**.



Figure 2-3 Drainage Map

2.3 Geotechnical Investigation

Terracon performed geotechnical exploration for the proposed project site included the advancement of five (5) test borings to approximate depths ranging between 16½ to 31½ feet below the ground surface (bgs). Two (2) of these borings were utilized for percolation testing. The Geotechnical Engineering Report dated on February 5, 2018 (**Appendix E**) provides information and geotechnical engineering recommendations relate to the following: subsurface soil conditions, groundwater conditions, earthwork, infiltration systems, pavement design and construction, and excavation and shoring considerations.

Based on the information obtained from Terracon's subsurface exploration, the site is considered suitable for development of the proposed project provided the recommendations included within this report are implemented during the design and construction phases of the project. The following geotechnical considerations were identified:

- Surface conditions at the site consisted of asphalt pavements with thickness of 2 inches or concrete pavements with thickness ranging from 6 to 7 inches, overlying aggregate base with thicknesses ranging from 4 to 10 inches. The subsurface materials generally consisted of medium-stiff to stiff silt with variable amounts of sand, overlying loose to dense sand with variable amounts of silt, to the maximum depth explored at 31½ feet bgs.
- Groundwater was not encountered in any of the borings. Based on nearby wells, the historic high ground water level was recorded at 36 feet below ground surface.
- It is anticipated that excavations for the proposed construction can be accomplished with conventional earthmoving equipment. Some trench wall instability should be expected throughout the proposed sewer line alignment due to the presence of granular soils with low to no cohesion. All excavations should be sloped or shored in the interest of safety following local and federal regulations, including current OSHA excavation and trench safety standards.
- Native soils encountered beneath the pavements can generally be used as backfill material for the proposed storm drain pipes.
- Recommended Asphalt Concrete (AC) and Portland Cement Concrete (PCC) sections are provided for various traffic indices. Pavement section selection should be based on anticipated traffic loading.
- The 2016 California Building Code (CBC) seismic site classification for this site is D.
- Earthwork on the project should be observed and evaluated by Terracon. The evaluation of earthwork should include observation and testing of engineered fill, subgrade preparation, foundation bearing soils, and other geotechnical conditions exposed during construction.

2.3.1 Groundwater

Groundwater was not encountered to the maximum depth explored of 31½ feet bgs during the geotechnical investigation. Since 1970, groundwater levels in the project vicinity have not risen higher than 30 feet below existing ground surface based on the recorded well data. Furthermore, since 1985, recorded groundwater levels in these wells have been deeper than 40 feet below existing ground surface. The bottom of the lower infiltration basin will be set at elevation 266.50, approximately 11 feet above the historical (since 1985) high ground water level of 255.60. The infiltration systems will be located at

approximately 100 feet from the existing bridge foundation more than the 10 feet separation recommended in section 3.4 of the Geotechnical Engineering Report.

2.3.2 Percolation Rate for Infiltration Basin

Two (2) in-situ percolation tests (falling head borehole permeability) were performed to approximate depths of 30 feet bgs with proposed basin depth range from 16.5 to 22 feet. Percolation rates are provided in Table 2-1 below.

Table 2-1 In-Situ Percolation Test Results

Test Location (depth, feet bgs)	Soil Classification	Slowest Measured Percolation Rate (in/hr)	Correlated Infiltration Rate* (in/hr)	Initial Water Head (in)
B-2 (18 to 31.5 ft)	Silty Sand over Poorly Graded Sand with Silt	410	13	156
		100	3.5	120
B-2A (12 to 30 ft)	Poorly Graded Sand over Silty Sand	>1,000	>100	210
		230	10.5	100

* The correlated infiltration rates used for the proposed infiltration systems will mainly rely on vertical downward seepage at the bottom of the basin. The correlated infiltration rates were calculated using the LA Reduction Factor Method.

Based on the test results above, the correlated infiltration rates were generally greater than 0.3 in/hr in the native on-site soils. In Terracon's opinion infiltration onsite is feasible from a geotechnical standpoint. The two borings are within 50 feet distance with B-2A closer to the proposed location of the infiltration basin. The required footprint of the openings of the infiltration basin will be estimated using a 10.5 in/hr correlated infiltration rate from B-2A, and 3.5 in/hr correlated infiltration rate from B-2 for sizing the basin as a conservative approach.

2.3.3 Recommendations for Design and Construction

Geotechnical engineering recommendations for shoring and other earth connected phases of the project are outlined below. The following presents recommendations for site preparation, excavation, subgrade preparation and placement of engineered fills on the project. The recommendations presented are for the design and construction of earth supported elements and are contingent upon following the recommendations outlined in section 4.0 of the Geotechnical Engineering Report in **Appendix E**.

2.3.3.1 Site Preparation

Subgrade soils beneath pavements, curb, gutter, and sidewalk should be scarified; moisture conditioned, and compacted to a minimum depth of 10 inches. The moisture content and compaction of subgrade soils should be maintained until pavement/flatwork construction.

Exposed areas which will receive fill, once properly cleared and benched where necessary, should be scarified to a minimum depth of 10 inches, conditioned to near optimum moisture content, and compacted. Compaction in exposed areas beneath infiltration chambers shall be limited to prevent

adverse drainage characteristics. These areas should be excavated to proposed depths and cleared of loose/disturbed soils.

2.3.3.2 Open Trench Construction

For the entire storm drain alignment, the subsurface soils consisting of the granular materials can be considered Type C soils when applying the OSHA regulations. OSHA allows a maximum slope inclination of 1½H:1V for Type C soils in excavations of 20 feet or less. Flatter slopes may be required if caving soils or seepage is encountered in any excavation. If any excavation is extended to a depth of more than 20 feet, it will be necessary to have the side slopes designed by a professional engineer.

Soils from the trench excavation should not be stockpiled higher than six 6 feet or within ten 10 feet of the edge of an open trench. Construction of open cuts adjacent to existing structures, including underground pipes, is not recommended within a 1½ H:1V plane extending beyond and down from the perimeter of the structure. Cuts that are proposed within five 5 feet of light standards, other utilities, underground structures, and pavement should be provided with temporary shoring.

It may be necessary for the contractor to retain a geotechnical engineer to monitor the soils exposed in all excavations and provide engineering services for slopes. This will provide an opportunity to monitor the soils encountered and to modify the excavation slopes as necessary. It also offers an opportunity to verify the stability of the excavation slopes during construction.

2.3.3.3 Pipe Trench Bottom Preparation

Any loose and/or unsuitable material encountered at the bottom of excavations should be removed and be replaced with an adequate bedding material. The pipe subgrade should be level, uniform, firm, and free of loose material. Pipe subgrade should also be properly graded to provide uniform bearing and support to the entire section of the pipe, over size particles larger than 2 inches in the largest dimension should be removed from the trench bottom and replaced with compacted materials.

If the exposed silt soils at the bottom of the excavations have elevated water contents and are pumping or yielding during attempts to compact the bottom of the trenches, silt soils may be stabilized using geosynthetic or geogrid materials and coarse aggregate materials. The aggregate layer and the geotextile layer are anticipated to create a stable platform beneath the proposed trenches and overlying backfill materials.

2.3.3.4 Pipe Bedding

Bedding is defined as the material supporting and surrounding the pipe to 12 inches above the pipe. To provide uniform and firm support for the pipe, compacted granular materials such as clean sand may be used as pipe bedding material. The type and thickness of the granular bedding placed underneath and around the pipe, if any, should be selected by the pipe manufacturer or design. Care should be taken to densify the bedding material below the spring line of the pipe. Pipe design generally requires a granular material with a sand equivalent (SE) greater than 30.

The silt materials encountered near the surface are not anticipated to be suitable as pipe bedding materials. However the silty sands and poorly graded sands encountered below the silt layers are anticipated to be suitable as pipe bedding materials. During construction these stockpiled soils should be tested for conformance with the sand equivalent requirements set forth by the pipe manufacturer.

2.3.3.5 Fill Materials and Placement

All fill materials should be inorganic soils free of vegetation, debris, and fragments larger than three inches in size. Pea gravel or other similar non-cementitious, poorly-graded materials should not be used as fill or backfill without the prior approval of the geotechnical engineer.

The on-site materials are considered suitable for use as trench backfill on the project. Imported soils for use as fill material over the proposed pipes should conform to low volume change materials as indicated in the following specifications:

<u>Gradation</u>	<u>Percent Finer by Weight</u> <u>(ASTM C 136)</u>
6"	100
3"	70-100
No. 4 Sieve	50-100
No. 200 Sieve	20-50
Liquid Limit	20 (max)
Plasticity Index	10 (max)
Maximum expansive index*	20 (max)
*ASTM D 4829	

Engineered fill should be placed and compacted in horizontal lifts, using equipment and procedures that will produce recommended moisture contents and densities throughout the lift. Fill lifts should not exceed ten inches loose thickness.

2.3.3.6 Compaction Requirements

Recommended compaction and moisture content criteria for engineered fill materials are described in **Table 2-2** as follows:



Table 2-2 Engineered Fill Requirements

Material Type and Location	Per the Modified Proctor Test (ASTM D 1557)		
	Minimum Compaction Requirement (%)	Range of Moisture Contents for Compaction	
		Minimum	Maximum
On-site soils or approved imported fill soils:			
Beneath asphalt pavements:	95	0%	+4%
Trench backfill:	95	0%	+4%
Beneath concrete pavements:	95	0%	+4%
Bottom of trench and areas to receive fill*:	90	0%	+4%
Aggregate base (beneath pavements):	95	0%	+4%

* Compaction should be avoided beneath infiltration systems to prevent creating adverse drainage characteristics.

The contractor should select the equipment and processes to be used to achieve the specified density without damage to adjacent ground, structures, utilities and completed work. It should be the responsibility of the contractor to maintain safe working conditions during all phases of construction.

2.3.3.7 Grading and Drainage

Positive drainage should be provided during construction and maintained throughout the life of the development. Infiltration of water into utility trenches should be prevented during construction. Backfill in utility trenches should be well compacted and free of all construction debris to reduce the possibility of moisture infiltration. We recommend a minimum horizontal setback distance of 10 feet from the perimeter of any building and the high-water elevation of the nearest storm-water retention basin.

2.3.3.8 Earthwork Construction Considerations

The geologist recommends that the earthwork portion of this project be completed during extended periods of dry weather if possible. If earthwork is completed during the wet season (typically November through March) it may be necessary to take extra precautionary measures to protect subgrade soils. Wet season earthwork may require additional mitigation measures beyond that which would be expected during the drier summer and fall months. This could include diversion of surface runoff around exposed soils and draining of ponded water on the site. Once subgrades are established, it may be necessary to protect the exposed subgrade soils from construction traffic.

Earthwork on the project should be observed and evaluated by Terracon. The evaluation of earthwork should include observation and testing of engineered fill, subgrade preparation, and other geotechnical conditions exposed during the construction of the project. Refer to the Geotechnical Engineering Report in **Appendix E** for details of the earthwork construction consideration.

2.3.3.9 Lateral Earth Pressures

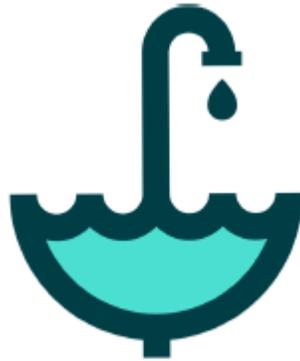
Design of the infiltration chamber units shall comply with lateral earth pressure requirements indicated in the Geotechnical Engineering Report in **Appendix E**.

Earthwork on the project should be observed and evaluated by Terracon. The evaluation of earthwork should include observation and testing of engineered fill, subgrade preparation, and other geotechnical conditions exposed during the construction of the project.



ATTACHMENTS FOR SECTION 2.5:

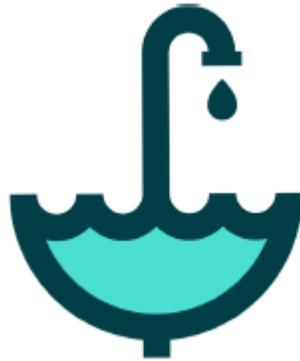
COST



ATTACHMENTS FOR SECTION 2.7:

MONITORING

CASC Engineering and Consulting conducts the MS4 Permit required Outfall Monitoring for the City of El Monte as part of the City's Integrated Monitoring Program (IMP). CASC will add effectiveness monitoring for the proposed project and its associated BMPs to the existing IMP. The metrics and constituents analyzed to measure the effectiveness of the project are still being determined at this time. The specific metrics, constituents, and the monitoring schedule will be finalized prior to project commencement.



ATTACHMENTS FOR SECTION 2.8:

O & M

**OPERATIONS AND MAINTENANCE PLAN FOR
GARVEY AVENUE GRADE SEPARATION DRAINAGE IMPROVEMENT PROJECT**

1.0 Responsible Party for Maintenance:

City of El Monte
Department of Public Works

2.0 Technical Expertise Required:

Maintenance personnel shall be trained for the tasks involved in maintaining the infiltration gallery and hydrodynamic separator. All maintenance personnel assigned to work inside of the infiltration gallery or hydrodynamic separator shall be OSHA certified in confined space entry.

3.0 Operations and Maintenance Procedures:

3.1 Hydrodynamic Separator

3.1.1 Maintenance procedures shall be in conformance with manufacturers specifications and maintenance procedures.

3.1.2 Manufacturer shall provide maintenance guidelines after activation of the hydrodynamic separator.

3.1.3 Typical tasks involved with operations and maintenance of the hydrodynamic separator include:

3.1.3.1 Inspections:

3.1.3.1.1 The hydrodynamic separator unit shall be inspected at least twice per year, and after each rain event during the first two years. The inspection history of the first two years will inform the schedule for future inspections.

3.1.3.1.2 Maintenance personnel shall visually inspect the unit for any damage to system components, blockages, or obstructions. Damage shall be reported, and blockages and obstructions removed.

3.1.3.1.3 Sediment accumulation shall be measured with a calibrated dipstick, and the level recorded in the maintenance log.

3.1.3.1.4 When sediments and accumulated debris occupy more than 50% of the depth of the solids storage sump, the unit shall be cleaned.

3.1.3.1.5 If the hydrodynamic separator includes absorbent material for removal of hydrocarbons, the material shall be inspected and discoloration noted. The material should be replaced prior to full discoloration.

3.1.3.2 Maintenance

3.1.3.2.1 If the accumulation of sediments is greater than 50% of the depth of the solids storage sump, the sump shall be cleaned by a vacuum truck. The sump shall be fully cleaned out of debris.

- 3.1.3.2.2 Damaged components shall be replaced. Minor repairs of components is acceptable if agreed to by the manufacturer.
- 3.1.3.2.3 Replacement of absorbent material shall be per manufacturer's guidelines and recommendations.

3.2 Infiltration Gallery

3.2.1 Typical tasks involved with operations and maintenance of the infiltration gallery include:

3.2.1.1 Inspections:

3.2.1.1.1 The sedimentation unit shall be inspected at least twice per year. One inspection shall occur within 30 days of October 1. Inspections should take place after rain events during the first two years. The inspection history will inform the schedule for future inspections.

3.2.1.1.2 The depth of the sediment shall be measured using a calibrated dipstick or other acceptable method.

3.2.1.1.3 The sediment depth shall be recorded in the maintenance log.

3.2.1.2 Maintenance:

3.2.1.2.1 When sediment depth exceeds three inches, the sedimentation unit shall be cleaned out with a vacuum truck.



ATTACHMENTS FOR SECTION 3.1:

24-HOUR STORM CAPACITY



ATTACHMENTS FOR SECTION 3.2:

EVENT-BASED DESIGN DETAILS

Peak Flow Hydrologic Analysis

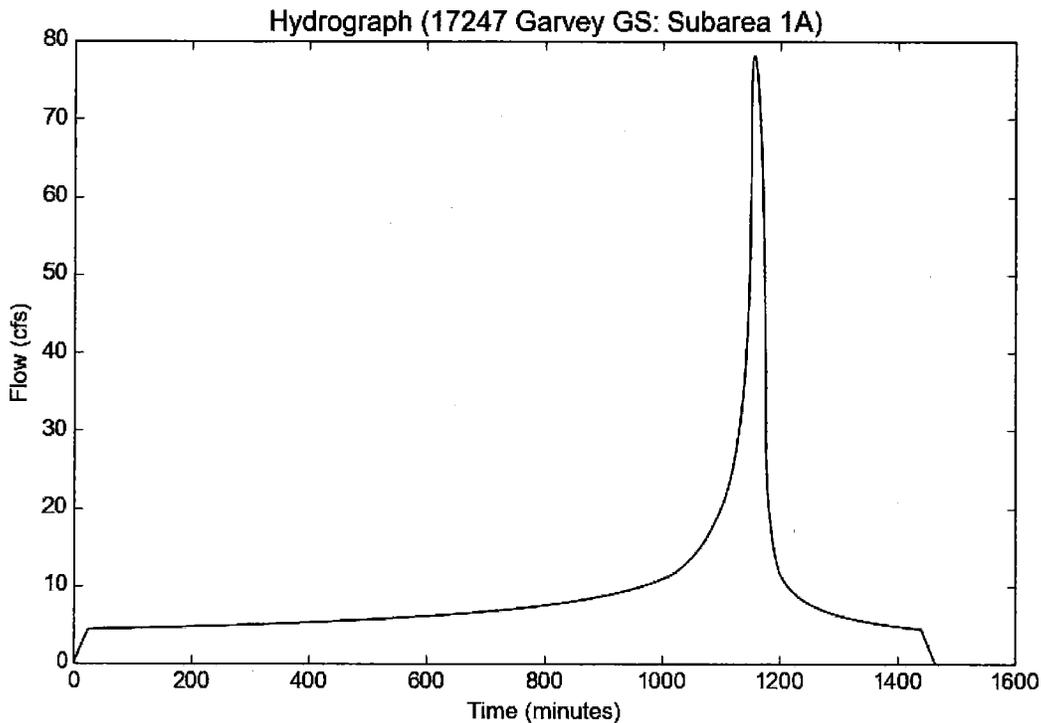
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Version: HydroCalc 1.0.2

Input Parameters

Project Name	17247 Garvey GS
Subarea ID	Subarea 1A
Area (ac)	52.51
Flow Path Length (ft)	2612.0
Flow Path Slope (vft/hft)	0.0034
50-yr Rainfall Depth (in)	6.3
Percent Impervious	0.6169
Soil Type	6
Design Storm Frequency	50-yr
Fire Factor	0
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	6.3
Peak Intensity (in/hr)	1.7983
Undeveloped Runoff Coefficient (Cu)	0.7102
Developed Runoff Coefficient (Cd)	0.8273
Time of Concentration (min)	24.0
Clear Peak Flow Rate (cfs)	78.1177
Burned Peak Flow Rate (cfs)	78.1177
24-Hr Clear Runoff Volume (ac-ft)	17.4811
24-Hr Clear Runoff Volume (cu-ft)	761478.0807



Peak Flow Hydrologic Analysis

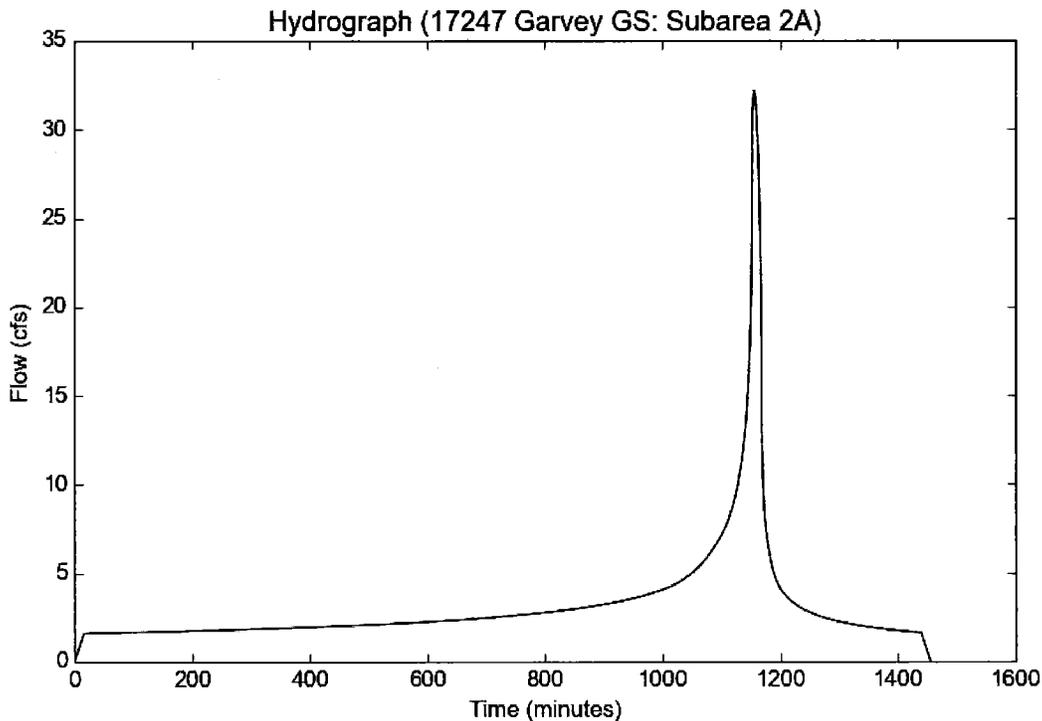
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Version: HydroCalc 1.0.2

Input Parameters

Project Name	17247 Garvey GS
Subarea ID	Subarea 2A
Area (ac)	17.25
Flow Path Length (ft)	1490.0
Flow Path Slope (vft/hft)	0.0047
50-yr Rainfall Depth (in)	6.3
Percent Impervious	0.7099
Soil Type	6
Design Storm Frequency	50-yr
Fire Factor	0
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	6.3
Peak Intensity (in/hr)	2.1758
Undeveloped Runoff Coefficient (Cu)	0.7516
Developed Runoff Coefficient (Cd)	0.8569
Time of Concentration (min)	16.0
Clear Peak Flow Rate (cfs)	32.1637
Burned Peak Flow Rate (cfs)	32.1637
24-Hr Clear Runoff Volume (ac-ft)	6.3134
24-Hr Clear Runoff Volume (cu-ft)	275010.5476



Peak Flow Hydrologic Analysis

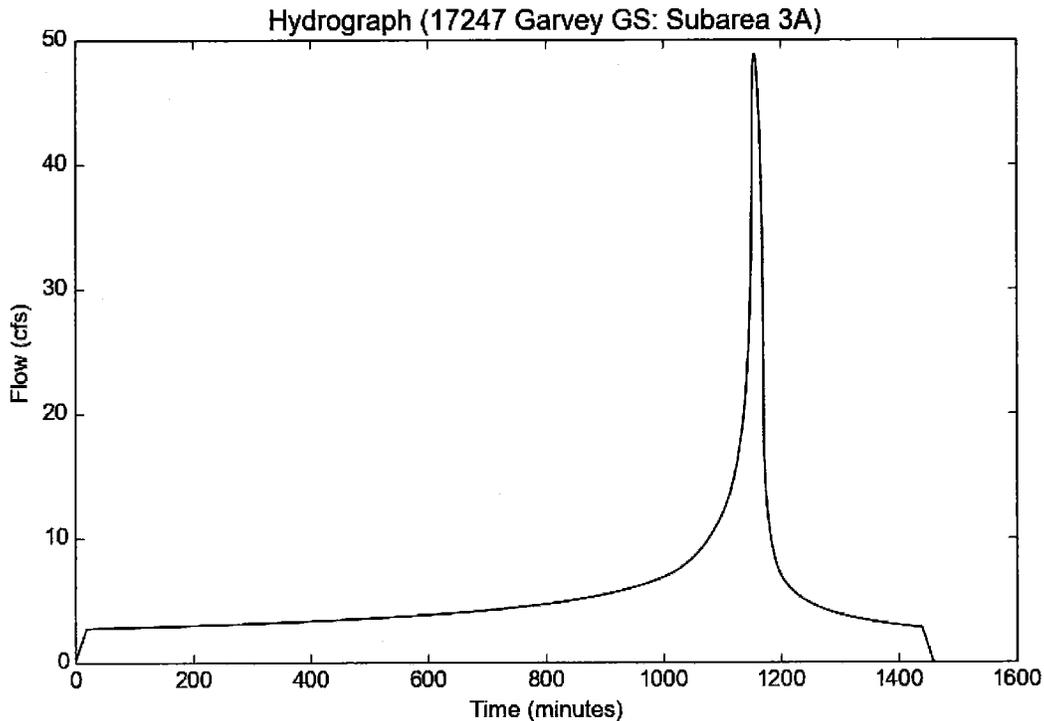
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Version: HydroCalc 1.0.2

Input Parameters

Project Name	17247 Garvey GS
Subarea ID	Subarea 3A
Area (ac)	28.69
Flow Path Length (ft)	1899.0
Flow Path Slope (vft/hft)	0.0037
50-yr Rainfall Depth (in)	6.25
Percent Impervious	0.7279
Soil Type	6
Design Storm Frequency	50-yr
Fire Factor	0
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	6.25
Peak Intensity (in/hr)	1.9911
Undeveloped Runoff Coefficient (Cu)	0.7313
Developed Runoff Coefficient (Cd)	0.8541
Time of Concentration (min)	19.0
Clear Peak Flow Rate (cfs)	48.7892
Burned Peak Flow Rate (cfs)	48.7892
24-Hr Clear Runoff Volume (ac-ft)	10.5918
24-Hr Clear Runoff Volume (cu-ft)	461380.4749



Peak Flow Hydrologic Analysis

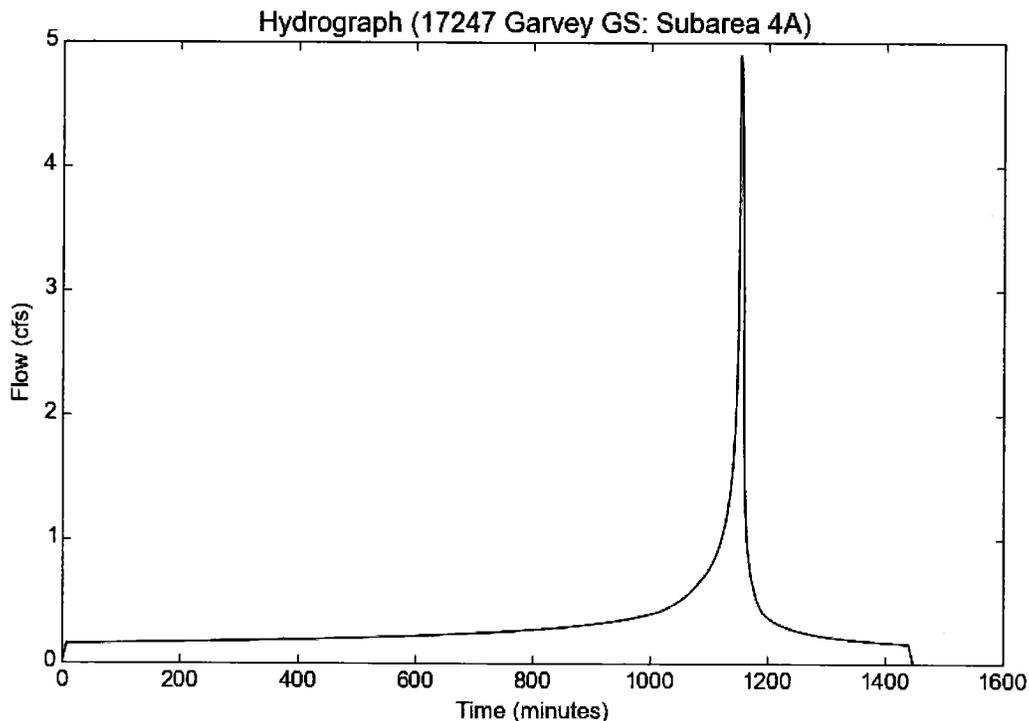
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Version: HydroCalc 1.0.2

Input Parameters

Project Name	17247 Garvey GS
Subarea ID	Subarea 4A
Area (ac)	1.881
Flow Path Length (ft)	876.0
Flow Path Slope (vft/hft)	0.024
50-yr Rainfall Depth (in)	6.25
Percent Impervious	0.619
Soil Type	6
Design Storm Frequency	50-yr
Fire Factor	0
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	6.25
Peak Intensity (in/hr)	2.9898
Undeveloped Runoff Coefficient (Cu)	0.8216
Developed Runoff Coefficient (Cd)	0.8701
Time of Concentration (min)	8.0
Clear Peak Flow Rate (cfs)	4.8934
Burned Peak Flow Rate (cfs)	4.8934
24-Hr Clear Runoff Volume (ac-ft)	0.6232
24-Hr Clear Runoff Volume (cu-ft)	27147.4989



Peak Flow Hydrologic Analysis

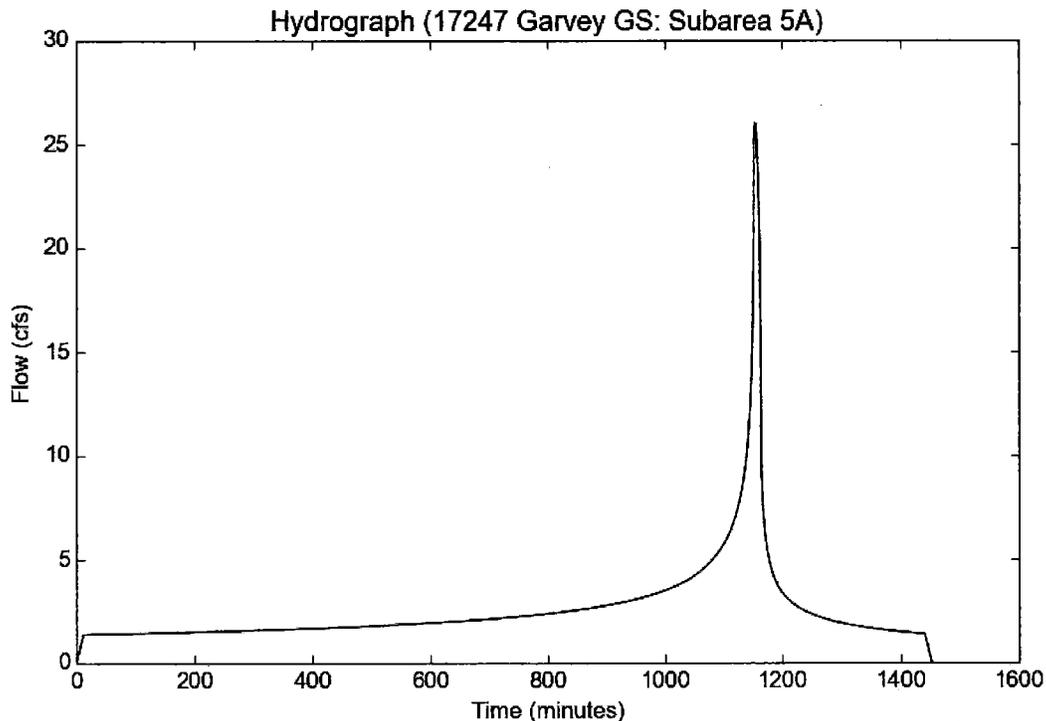
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Version: HydroCalc 1.0.2

Input Parameters

Project Name	17247 Garvey GS
Subarea ID	Subarea 5A
Area (ac)	11.805
Flow Path Length (ft)	1144.0
Flow Path Slope (vft/hft)	0.0087
50-yr Rainfall Depth (in)	6.25
Percent Impervious	0.925
Soil Type	6
Design Storm Frequency	50-yr
Fire Factor	0
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	6.25
Peak Intensity (in/hr)	2.4711
Undeveloped Runoff Coefficient (Cu)	0.784
Developed Runoff Coefficient (Cd)	0.8913
Time of Concentration (min)	12.0
Clear Peak Flow Rate (cfs)	26.0
Burned Peak Flow Rate (cfs)	26.0
24-Hr Clear Runoff Volume (ac-ft)	5.1771
24-Hr Clear Runoff Volume (cu-ft)	225515.1994



Peak Flow Hydrologic Analysis

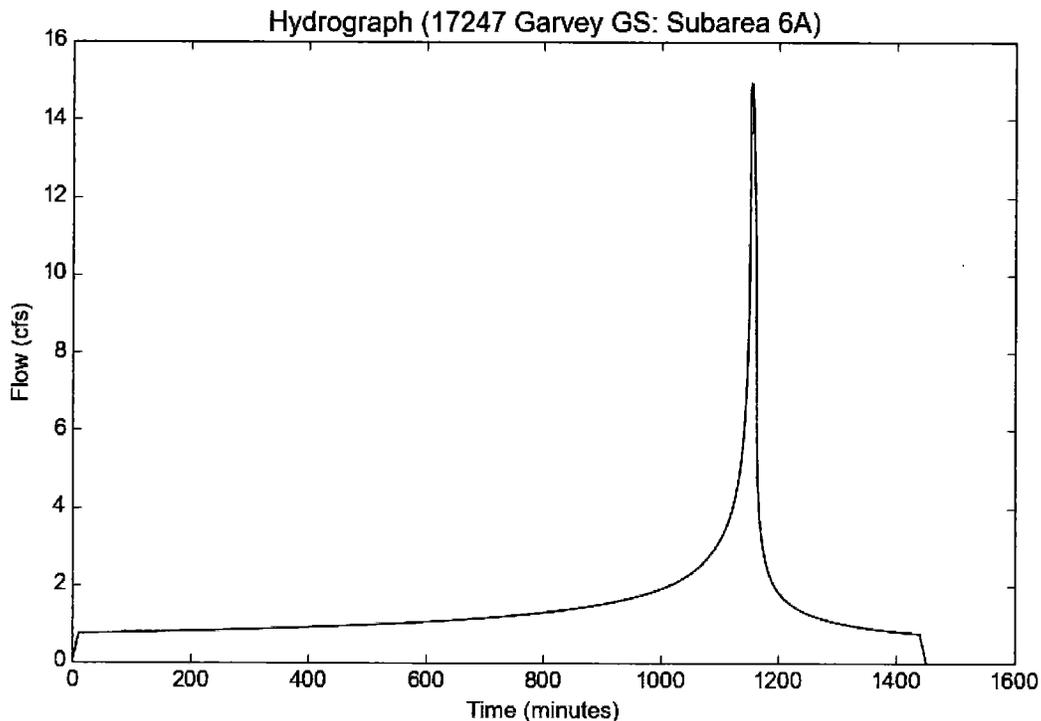
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Version: HydroCalc 1.0.2

Input Parameters

Project Name	17247 Garvey GS
Subarea ID	Subarea 6A
Area (ac)	6.515
Flow Path Length (ft)	763.0
Flow Path Slope (vft/hft)	0.0026
50-yr Rainfall Depth (in)	6.25
Percent Impervious	0.91
Soil Type	6
Design Storm Frequency	50-yr
Fire Factor	0
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	6.25
Peak Intensity (in/hr)	2.5742
Undeveloped Runoff Coefficient (Cu)	0.7924
Developed Runoff Coefficient (Cd)	0.8903
Time of Concentration (min)	11.0
Clear Peak Flow Rate (cfs)	14.9315
Burned Peak Flow Rate (cfs)	14.9315
24-Hr Clear Runoff Volume (ac-ft)	2.8229
24-Hr Clear Runoff Volume (cu-ft)	122967.5977



Peak Flow Hydrologic Analysis

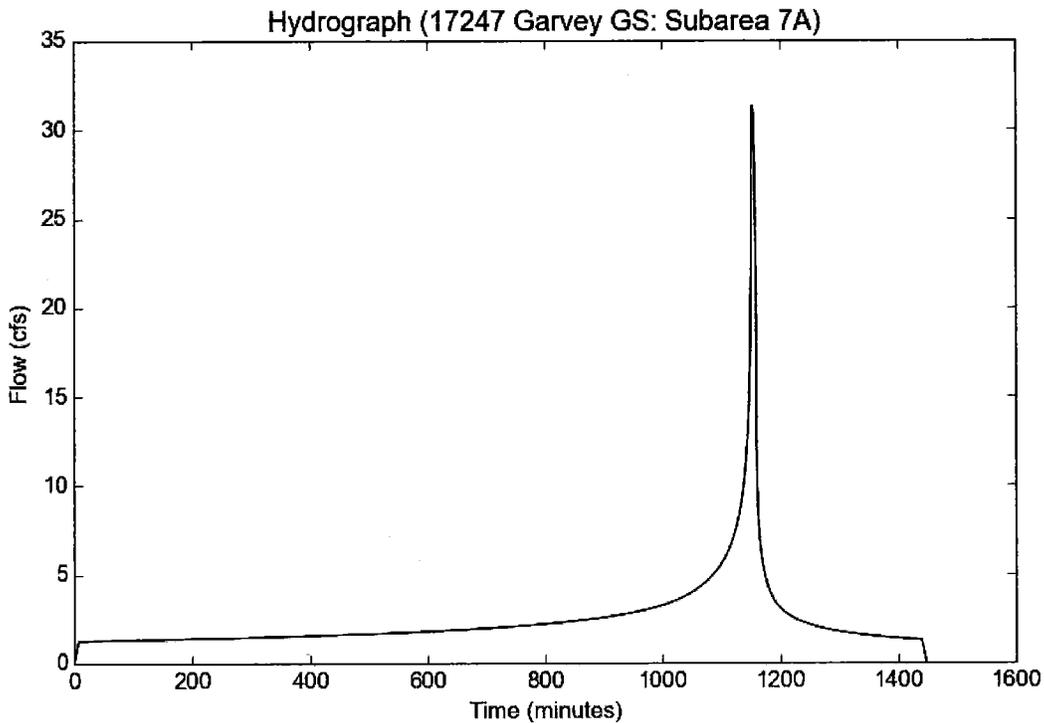
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Version: HydroCalc 1.0.2

Input Parameters

Project Name	17247 Garvey GS
Subarea ID	Subarea 7A
Area (ac)	11.794
Flow Path Length (ft)	687.0
Flow Path Slope (vft/hft)	0.016
50-yr Rainfall Depth (in)	6.25
Percent Impervious	0.8436
Soil Type	6
Design Storm Frequency	50-yr
Fire Factor	0
LID	False

Output Results

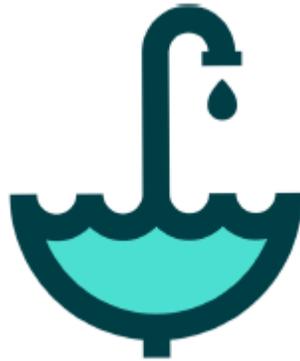
Modeled (50-yr) Rainfall Depth (in)	6.25
Peak Intensity (in/hr)	2.9898
Undeveloped Runoff Coefficient (Cu)	0.8216
Developed Runoff Coefficient (Cd)	0.8877
Time of Concentration (min)	8.0
Clear Peak Flow Rate (cfs)	31.3033
Burned Peak Flow Rate (cfs)	31.3033
24-Hr Clear Runoff Volume (ac-ft)	4.8362
24-Hr Clear Runoff Volume (cu-ft)	210663.557





ATTACHMENTS FOR SECTION 3.3:

LONG-TERM PERFORMANCE



ATTACHMENTS FOR SECTION 4.1:

NEXUS

5. Proposed Infiltration Basins

The proposed underground infiltration basins will capture the peak flows from the XX-year events and store up to 1 million gallons of stormwater. The infiltration basins serve a dual function of storing runoff to reduce peak flows and recharging the local ground water supply. The stormwater storage accommodates the limited capacity of the existing storm drain and helps reduce the potential surcharge of the existing storm drain system on Durfee Avenue (See **Figure 5-1**). An upper storage basin will be sized to capture and pre-treat the 85th percentile storm runoff volume and also serve as a temporary relief for flows from the surcharged Durfee Storm Drain. The high water level elevation of the upper basin was set to have the dual functions of temporarily capturing the backflow and releasing the excess flow back to the Durfee Avenue storm drain as the hydraulic grade line (HGL) at the diversion structure falls below the HGL of the basin as shown in **Figure 3-9**.

Tributary Area 7 that drains to the sump under the railroad has no potential gravity flow diversion options to the existing storm drain systems. The existing pump system will remain in service with a pump capacity of 3.1 cfs. A lower basin located approximately 150 feet north of the Garvey Avenue underpass will be constructed to capture flows that exceed the pumping capacity up to the 50-yr event flow volume with a maximum rate of 26 cfs. **Table 5-1** is a summary of the design storage volume required for both basins.

Table 5-1 Basin Sizing

Storm Event	Upper Basin (Diversion)		Lower Basin (Overflow)	
	Estimated (gallons)	Required Capacity (gallons)	Estimated (gallons)	Required Capacity (gallons)
Volume (10-yrs):	3,263,175	Diversion	139,850	140,000
Volume (25-yrs):	4,038,648	Diversion	211,598	220,000
Volume (50-yrs):	4,648,925	Diversion	280,047	280,000
Volume (85 Percentile)	728,227	730,000	N/A	N/A

The anticipated capacity of the upper basin will be 820,000 gallons with 90,000 gallons of temporary storage sized to capture and release the backflow from Durfee Avenue Storm Drain. The estimated footprint of the upper basin is 150 feet by 56 feet situated south of the intersection of Maxson Road and Garvey Avenue. The estimated footprint of the lower basin is 56 feet by 56 feet with top of the basin set at elevation 281.50 below the lowest elevation of the finish grade at the underpass. A 24-inch overflow line will be installed to divert the excessive storm water collected in the pump sump to the lower basin. The bottom of the basin will be set at 266.50.

Flow Distribution at Diversion Structure (10-Year, 24-hrs Storm Event)

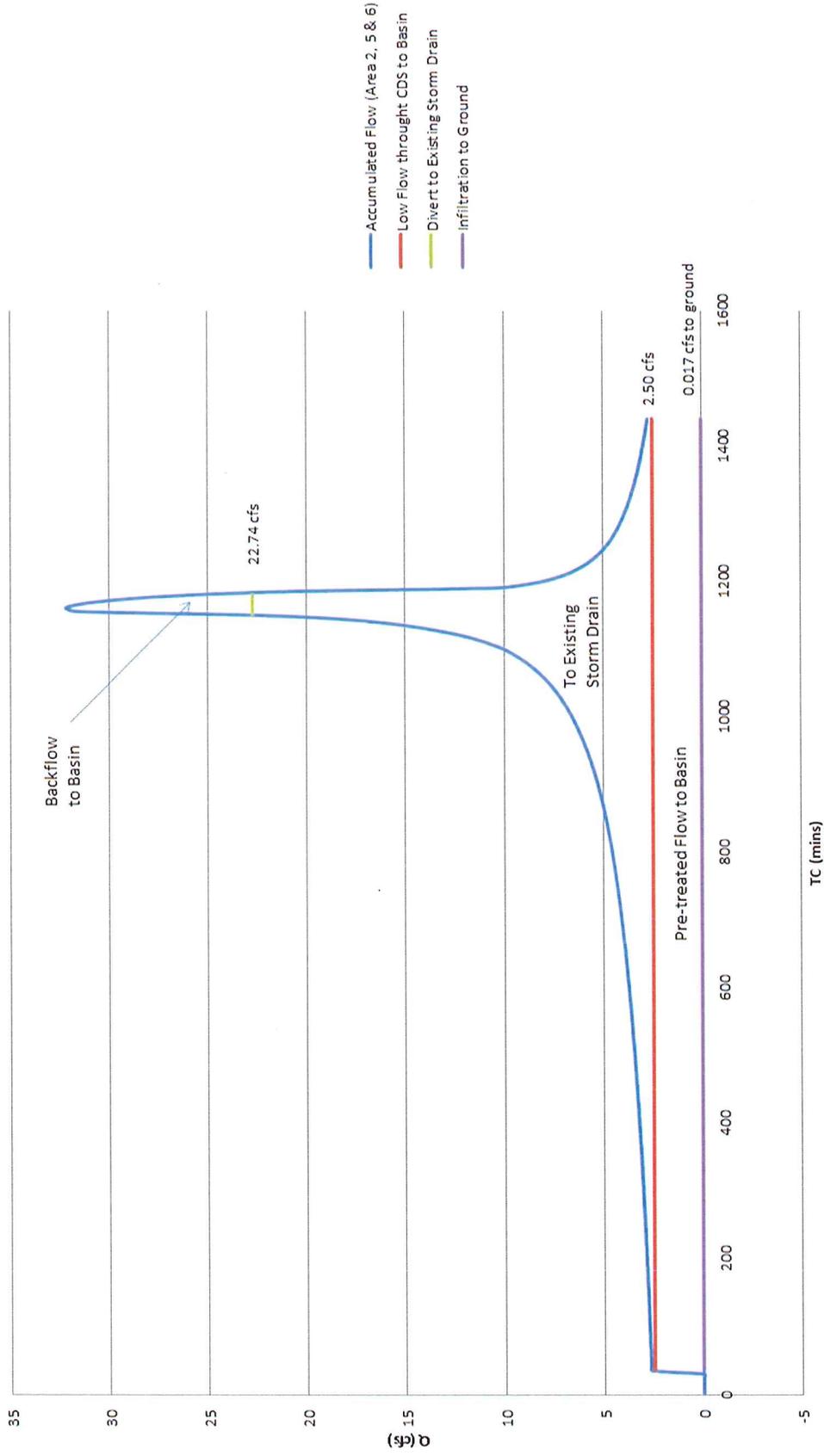


Figure 5-1 Flow Distribution at Diversion Structure

Approximately 13,130 square feet of the existing AC road pavement will be disturbed on Garvey Avenue north of the grade separation for installation of the underground infiltration gallery. The gallery is of a series of chambers with an average depth ranging between 5 and 10 feet for the 8-foot drop sloping towards the underpass. The footprint of the upper basin is estimated to be 54 feet wide by 152 feet long and located approximately 300 feet east of the Garvey Avenue underpass. The lower basin has footprint of 60 feet by 54 feet located approximately 150 from the underpass bridge. The water quality volume is sized so that the 85th percentile storm event with a total rainfall depth of 1.05 inches is captured. The basin is sized for entire water quality volume being infiltrated within 48 hours.

5.1 Infiltration Feasibility

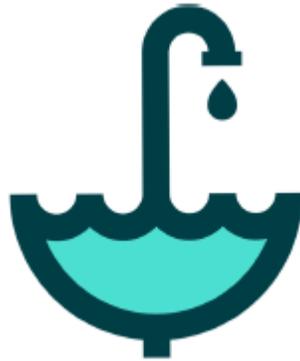
Infiltration basins require a minimum soil infiltration rate of 0.5 inches/hour and are not appropriate at sites with Hydrologic Soil Types C and D or on fill sites or steep slopes. The upstream drainage area for the infiltration basin is approximately 40 acres and runoff will be diverted into the underground infiltration chambers by gravity flow. The preliminary assessment of the feasibility for using infiltration on the project site has been confirmed by the geotechnical engineering investigation. Infiltration and percolation testes were performed to verify soil and subsoil infiltration and percolation rates. The following site factors were determined:

Hydrologic Soil Group	Poorly Graded Sand over Silty Sand
Soil infiltration rate	3.5~13 in/hr (> 0.5 in/hr)
Slope	3% (< 5%)
Depth to bedrock/impermeable layers	N/A
Depth to seasonal high water table	11~20 feet (> 10 feet)
Setback from pump sump	150~300 feet (> 50 feet)
Landslide risk	Low
Soil contamination	None

5.2 Water Quality

The proposed infiltration basins store the captured peak flow and it gradually infiltrates through the soil and into the water table. This practice has high pollutant removal efficiency and provides 100% reduction in the load discharged into the San Gabriel River. The benefits of storm water infiltration include reduced pollutant loading in the river and increased groundwater recharge.

Infiltration basins may not be appropriate for industrial sites or locations where pollutant spills may occur. Geotechnical investigation will be carried out to confirm the proposed site is free of contamination. The hydrologic soil group is Handford fine sandy loam with an infiltration rate ranging from 1 to 3 inches per hour. If infiltration rates exceed 2.4 inches per hour, the runoff will be fully treated prior to infiltration to protect groundwater quality.



ATTACHMENTS FOR SECTION 4.2:

BENEFIT MAGNITUDE



ATTACHMENTS FOR SECTION 4.3:

COST EFFECTIVENESS



ATTACHMENTS FOR SECTION 5:

COMMUNITY INVESTMENT



ATTACHMENTS FOR SECTION 7.1:

COST SHARE



ATTACHMENTS FOR SECTION 7.2:

LOCAL SUPPORT



MOUNTAIN VIEW SCHOOL DISTRICT

ADMINISTRATIVE OFFICE

3320 Gilman Road, El Monte, California 91732-3201
(626) 652-4000 • www.mtviewschools.com

BOARD OF EDUCATION

Adam C. Carranza
Christian Diaz
Jacqueline Saldaña
Veronica Sifuentes
Cindy Wu

DISTRICT ADMINISTRATION

Lillian Maldonado French
Superintendent
Darin De Knikker
*Assistant Superintendent
Business Services*
John Lovato, Ed.D.
*Assistant Superintendent
Personnel Services*
Raymond Andry
*Assistant Superintendent
Educational Services*

Baker School
12043 Exline St.
El Monte, CA 91732-2797
(626) 652-4700

Cogswell School
11050 Fineview St.
El Monte, CA 91733-2817
(626) 652-4100

Kranz Intermediate School
12460 Fineview St.
El Monte, CA 91732-3996
(626) 652-4200

La Primaria School
4220 Gilman Rd.
El Monte, CA 91732-2597
(626) 652-4150

Madrid Middle School
3300 Gilman Rd.
El Monte, CA 91732-3226
(626) 652-4300

Maxson School
12380 Felipe St.
El Monte, CA 91732-3694
(626) 652-4500

Miramonte School
10620 Schmidt Rd.
S. El Monte, CA 91733-2702
(626) 652-4600

Monte Vista School
11111 Thienes Ave.
S. El Monte, CA 91733-4099
(626) 652-4650

Parkview School
12044 Elliott St.
El Monte, CA 91732-3799
(626) 652-4800

Payne School
2850 N. Mt. View Rd.
El Monte, CA 91732-3593
(626) 652-4900

Twin Lakes School
3900 Gilman Rd.
El Monte, CA 91732-2515
(626) 652-4400

Voorhis School
3501 N. Durfee Ave.
El Monte, CA 91732-2999
(626) 652-4450

Children's Center
2109 Burkett
El Monte, CA 91733-4113
(626) 652-4250

Magnolia Center
11919 Magnolia St.
El Monte, CA 91732-3401
(626) 652-4938

February 6, 2020

From:
Juan Castillo
Madrid Middle School, Principal
3300 Gilman Road
El Monte, CA 91732
626-652-4300

To:
Sal Mendez
Deputy Public Works and Utilities Director
City of El Monte
City Hall West
11333 Valley Boulevard
El Monte, CA 91731

Dear Mr. Mendez:

Re: Letter of Support – Garvey Avenue Grade Separation Drainage Improvement Project

On behalf of Madrid Middle School, please accept this letter of support to the City of El Monte on their application for Safe Clean Water Program (Measure W) funding.

We support the **Garvey Avenue Grade Separation Drainage Improvement Project** and the potential benefits it will bring to the community including improved public access to residences, businesses, and schools. In addition to mitigating local flooding and providing for fewer street closures due to the flooded underpass, we understand the project will also provide water quality improvements.

Good luck with your application.

Sincerely,

Juan Castillo,
Principal
Madrid Middle School



February 7, 2020

Signatures of Local of Support – Garvey Avenue Grade Separation Drainage Improvement Project

On February 7, 2020, CASC Engineering and Consulting, on behalf of the City of El Monte, canvassed local businesses and residents within a 0.5-mile radius of the project location for the **Garvey Avenue Grade Separation Drainage Improvement Project** and informed the community of the upcoming project. Response from local community members is that the flooding in the underpass is a very well-known phenomenon. When asked if they would support a project to mitigate local flooding, provide for fewer street closures, and provide for water quality improvements, all agreed. Community members were asked to sign a sheet supporting the project. The business or residence addresses are numbered and listed below and correspond to names and signatures on the following page.

- 1) America's Best Value Inn & Suites, 12040 Garvey Avenue
- 2) Service Center of El Monte, Inc., 12222 Garvey Avenue
- 3) A-1 Self Storage, 12260 Garvey Avenue
- 4) Tile & Cabinet Expo, 12231 Garvey Avenue
- 5) Route 66 Gas, 12269 Garvey Avenue
- 6) JS Glass Corporation, 12211 Garvey Avenue
- 7) Skyline Mobile Estates, 12201 Garvey Avenue
- 8) Skyline Mobile Estates, 12201 Garvey Avenue



February 7, 2020

Signatures of Local of Support – Garvey Avenue Grade Separation Drainage Improvement Project

We support the **Garvey Avenue Grade Separation Drainage Improvement Project** and the potential benefits it will bring to the community including improved public access to residences, businesses, and schools. In addition to mitigating local flooding and providing for fewer street closures due to the flooded underpass, we understand the project will also provide water quality improvements.

Please accept the following signatures as support for the City of El Monte's **Garvey Avenue Grade Separation Drainage Improvement Project** for their application for Safe Clean Water Program (Measure W) funding.

Claudia P Mercado

Name

CPM

Signature

RICHARD SALCIDO

Richard Salcido 2/9/2020

Name

Signature

Maria Mantua O.

Maria Mantua O.

Name

Signature

MARTIN GUERRA

Martin Guerra

Name

Signature

Korosh Sharaf

Korosh Sharaf 2/7/2020

Name

Signature

Shelley Lee

Shelley Lee

Name

Signature

Ronald Perez

Ronald Perez 2/7/20

Name

Signature

Elizabeth Rocha

Elizabeth Rocha

Name

Signature



February 6, 2020

From:

Claire Robinson
Managing Director
Amigos de los Rios
908 E. Altadena Dr.
Altadena, CA 91001

To:

Sal Mendez
Deputy Public Works and Utilities Director
City of El Monte
City Hall West
11333 Valley Boulevard
El Monte, CA 91731

Dear Sal:

Re: Letter of Support – Garvey Avenue Grade Separation Drainage Improvement Project

On behalf of Amigos de los Rios, please accept this letter of support to the City of El Monte on their application for Safe Clean Water Program (Measure W) funding.

We support the **Garvey Avenue Grade Separation Drainage Improvement Project** and the potential benefits it will bring to the community including improved public access to residences, businesses, and schools. In addition to mitigating local flooding and providing for fewer street closures due to the flooded underpass, we understand the project will also provide water quality improvements.

Good luck with your application.

Sincerely,

Claire Robinson
Managing Director
Amigos de los Rios



ATTACHMENTS FOR SECTION 8.1:

**ENVIRONMENTAL DOCUMENTS AND
PERMITS**



Initial Study and Mitigated Negative Declaration

City of El Monte

Garvey Avenue Grade Separation
Drainage Improvement Project



1561 E. Orangethorpe Avenue, Suite 240
Fullerton, California 92831
TEL (714) 526-7500 | FAX (714) 526-7004
www.cwecorp.com



Initial Study and Mitigated Negative Declaration

Prepared for:



City of El Monte
11333 Valley Boulevard
El Monte, California 91731
TEL (310) 458-8411

Prepared by:



1561 E. Orangethorpe Avenue, Suite 240
Fullerton, California, 92831

TEL (714) 526-7500 | FAX (714) 526-7004 | www.cwecorp.com

February 2018

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Figure 2-2 Project Location.....4



Acronyms

APE	Area of Potential Effects
AQCRs	Air Quality Control Regions
BMPs	Best Management Practices
CCR	California Code of Regulations
CDS	Continuous Deflection Separation
CEQ	Council on Environmental Quality
CEQA	California Environmental Quality Act
CHRIS	California Historical Resources Information System
EIR	Environmental Impact Report
FMMP	Farmland Mapping and Monitoring Program
IPaC	Information for Planning and Conservation
IS/MND	Initial Study/Mitigated Negative Declaration
LACFCD	Los Angeles County Flood Control District
NAAQS	National Ambient Air Quality Standards
NRHP	National Register of Historic Preservation
RCP	Reinforced Concrete Pipe
SCCIC	South Central Coastal Information Center
SHPO	California State Historic Preservation Office
SWPPP	Stormwater Pollution Prevention Plan
TCE	Temporary Construction Easements
USEPA	United States Environmental Protection Agency
USFWS	United States Fish and Wildlife Services

1. Introduction

The California Environmental Quality Act (CEQA) Initial Study/Mitigated Negative Declaration (IS/MND) has been prepared on behalf of the City of El Monte (City) to identify potential site-specific environmental constraints associated with the Garvey Avenue Grade Separation Drainage Improvement Project (Project) located near the Interstate 10 (I-10) and Garvey Avenue. This document has been prepared in accordance with the California Environmental Quality Act (CEQA) (Public Resources Code §21000 et seq.), and the State CEQA Guidelines (Title 14, California Code of Regulations (CCR) §15000 et seq).

This IS/MND is an information documentation intended for use by the City of El Monte and members of the general public as a preliminary analysis to determine if there is substantial evidence that the Project may have significant effects on the environment. If site-specific environmental constraints are found to potentially have a significant effect on the environment, with mitigation, a site-specific Environmental Impact Report (EIR) should be prepared; otherwise the lead agency may adopt a negative declaration or MND. This IS/MND was compiled for the City with the assistance of CWE. The City is serving as the Lead Agency for the proposed Project pursuant to CEQA §21067 and CEQA Guidelines Article 4 and §15367. "Lead Agency" refers to the public agency that has the principal responsibility for carrying out or approving a Project.

1.1 Purpose and Document Organization

The purpose of this document is to evaluate the potential environmental effects of the proposed Project. Mitigation measures, if required, have been incorporated into the Project to eliminate potential significant impacts or reduce them to a less-than-significant level. This document was developed with information found in the Environmental Assessment performed by the United States Environmental Protection Agency (USEPA) Region 9, and can be found in **Appendix A**.

This IS/MND is organized as follows:

- Section 1 – Introduction
- Section 2 – Project Description
- Section 3 – Initial Study/Environmental Checklist
- Section 4 – References

1.2 Summary of Findings

The CEQA Appendix G Environmental (Initial Study) Checklist is included in **Section 3**. The Initial Study Checklist identifies potential environmental impacts, by sections, and provides a brief discussion of each impact resulting from implementation of the proposed Project.

2. Project Description

Proposed storm drain improvements are intended to meet current design standards for a 10-year storm and reduce the occurrence of flooding at the Garvey Avenue Grade Separation from rainfall with a return frequency of less than 1-year storm event. The design objective of the improvements is to reduce the potential flooding hazards to the general public from yearly encounters to once every 10 years. The underground infiltration basins will capture up to one million gallons of the peak flows of any significant storm events (for 1-year storm events or greater) with the capacity of the existing storm drain in Durfee Avenue being fully utilized. The infiltration basin system will capture water quality flows and infiltrate those flows for groundwater recharge. The proposed improvements include the following key elements:

- New catch basins will capture the additional flow from Caltran's roadway runoff as well as the outflow from the triple-24-inch culvert crossing under the I-10. A new 2-foot by 4-foot Reinforced Concrete Box (RCB) storm drain will convey the intercepted flow with addition runoffs from the nearby mobile home park and two commercial lots. Three catch basins will be constructed with laterals connecting to the 2-foot by 4-foot RCB. The storm drain will increase its size to 3-foot by 4-foot RCB and connects to the existing 48-inch storm drain at Durfee Avenue.
- Runoff from the mobile home park south, the commercial properties adjacent to the underpass, and the railroad captured with the existing concrete "V" channel along the toe of the underpass embankment will drain to new infiltration basin with drop inlets and an overflow line from the pump sump.
- Additional runoffs from the commercial lots between Durfee Avenue and Maxson Road along Garvey Avenue will be captured with two new catch basins. The catch basins connect to the new storm drain on Garvey Avenue.

An overflow line will be installed between the new storm drain system and the new infiltration gallery system to divert the peak flow from a significant storm event when the existing 48-inch storm drain in Durfee Avenue reaches its full capacity.

- A hydrodynamic separator will be installed between the new storm drain and the infiltration basins to provide pre-treatment for water quality assurance. The storm drain diversion line will deliver runoff to a pre-treatment screening/separation device such as a continuous deflection separation (CDS) unit. The pre-treatment device will be sized for the full 85th percentile, 24-hour storm event. It will screen, separate, and trap gross solids to remove floatables and neutrally buoyant materials. Runoff will be infiltrated for groundwater recharge following pre-treatment.
- The construction of the underground infiltration basins will require excavation of approximately 134,000 cubic feet of soil from the project site. The excavated soil will be hauled off to nearby project sites as recycled fill materials. If the soil is found to be contaminated, it will be disposed to the local waste management site six (6) miles away in the City of Irwindale.
- A 12-inch pump discharge line will be installed conveying the stormwater from the existing sump to the street gutter on Maxson Road south of the railroad track. A 9-foot wide easement in the private property along the railroad right-of-way will be required for installation of the discharge line.

Two alignment alternatives, shown in **Figure 2-1**, are considered for conveying the street runoffs from the upstream drainage areas to the existing storm drain at Durfee Avenue.

- Alternative #1: The proposed alignment will be within public right-of-ways of Garvey Avenue and Durfee Avenue.
- Alternative #2: Storm drain easements will be needed for two (2) parcels, and a Temporary Construction Easements (TCE's) will be needed within these two (2) parcels for installation of the pipe.

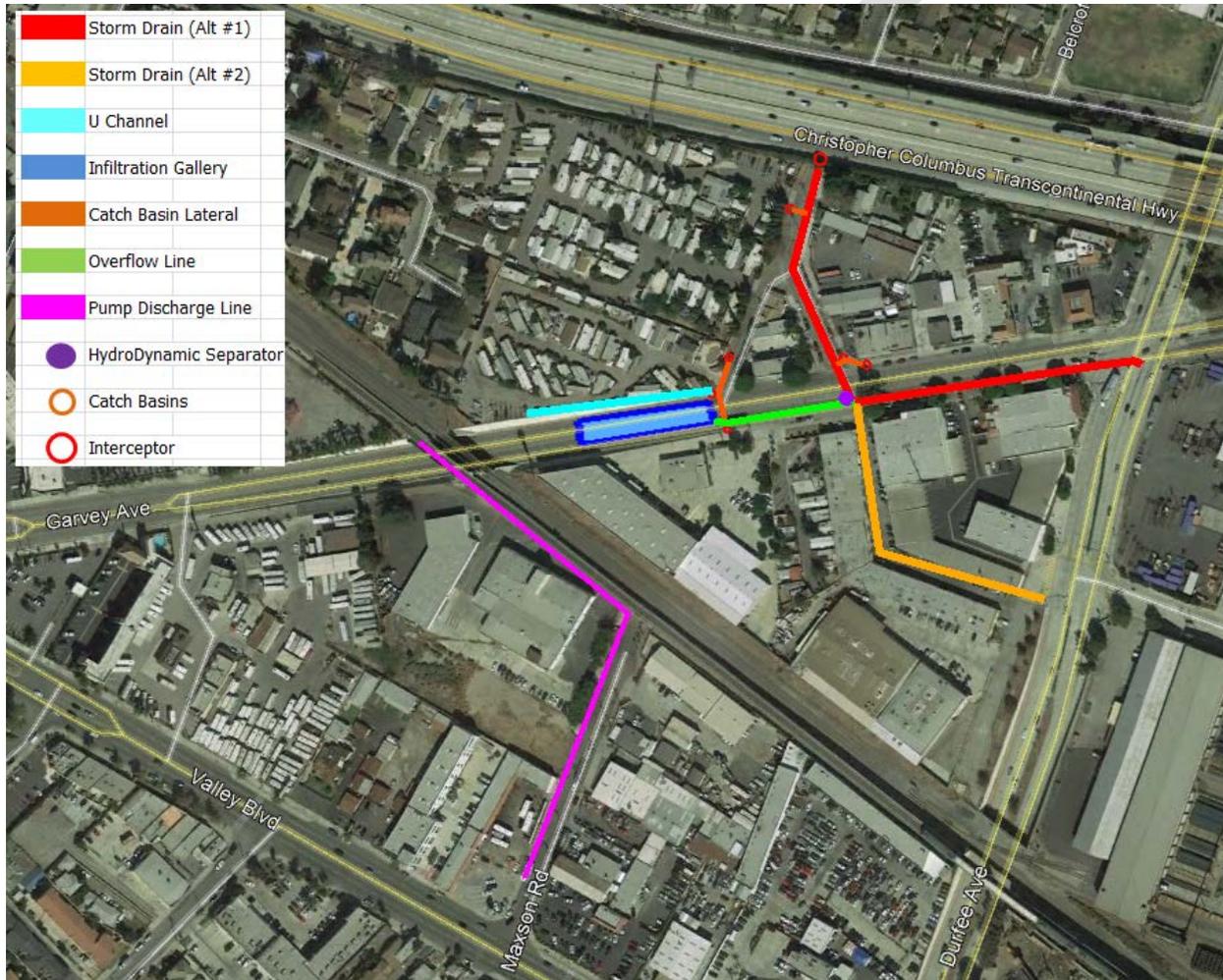


Figure 2-1 Proposed Improvements (Two Alignment Alternatives)

2.1 Project Location

The proposed Project will be constructed in the City of El Monte, in Los Angeles County, California,. The City of El Monte, as shown in **Figure 2-2** is the eastern part of Los Angeles County, between Alhambra to the west and Baldwin Park to the east. The Project site is located near I-10 and Garvey Avenue and is generally bound by the triangular area formed by the San Gabriel River, the Southern Pacific Railroad, I-10, and Valley Boulevard.

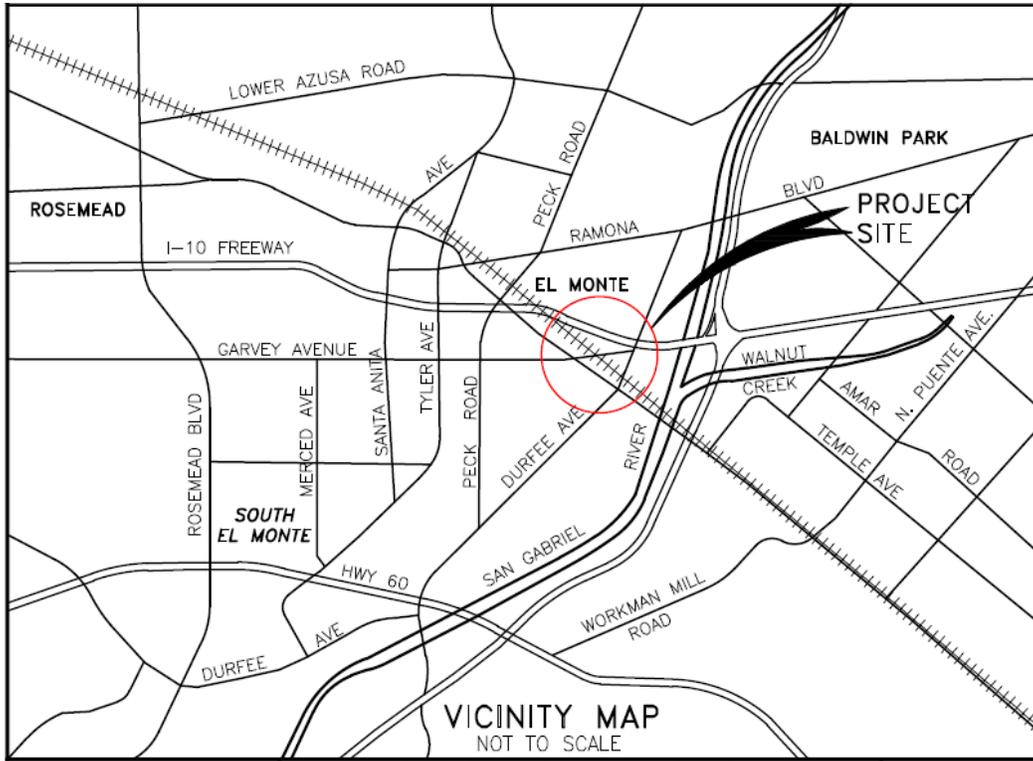


Figure 2-2 Project Location

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3. Initial Study/Environmental Checklist

Environmental Checklist Form		
1.	Project Title:	Garvey Avenue Stormwater System Improvement
2.	Lead Agency Name and Address:	City of El Monte 11333 Valley Boulevard, El Monte, California 91731
3.	Contact Person and Phone Number:	Carla Dillion (626) 580-2034
4.	Project Location:	Garvey Avenue in the City of El Monte, California
5.	Project Sponsor's Name and Address:	City of El Monte 11333 Valley Boulevard, El Monte, California 91731
6.	General Plan Designation:	Public Streets and Regional Commercial
7.	Zoning:	Commercial
8.	Description of Project:	The City of El Monte proposes to construct two new storm drain lines to minimize flooding at the Garvey Avenue underpass.
9.	Surrounding land uses and setting:	Medium density residential and industrial land use
10.	Other public agencies whose approval is required:	--
11.	Have California Native American tribes traditionally and culturally affiliated with the project area requested consultation pursuant to Public Resources Code section 21080.3.1? If so, has consultation begun?^a	Yes, the California Native American Heritage Commission (NAHC) was consulted about the Garvey Avenue Underpass Project.

^a Conducting consultation early in the CEQA process allows tribal governments, lead agencies, and project proponents to discuss the level of environmental review, identify and address potential adverse impacts to tribal cultural resources, and reduce the potential for delay and conflict in the environmental review process. (See Public Resources Code section 21083.3.2.) Information may also be available from the California Native American Heritage Commission's Sacred Lands File per Public Resources Code section 5097.96 and the California Historical Resources Information System administered by the California Office of Historic Preservation. Please also note that Public Resources Code section 21082.3(c) contains provisions specific to confidentiality.



The environmental factors checked below would be potentially affected by this project, involving at least one impact that is a "Potentially Significant Impact" as indicated by the checklist on the following pages.

- | | | |
|---|---|--|
| <input type="checkbox"/> Aesthetics | <input type="checkbox"/> Agriculture and Forestry Resources | <input type="checkbox"/> Air Quality |
| <input type="checkbox"/> Biological Resources | <input type="checkbox"/> Cultural Resources | <input type="checkbox"/> Geology /Soils |
| <input type="checkbox"/> Greenhouse Gas Emissions | <input type="checkbox"/> Hazards & Hazardous Materials | <input type="checkbox"/> Hydrology / Water Quality |
| <input type="checkbox"/> Land Use / Planning | <input type="checkbox"/> Mineral Resources | <input type="checkbox"/> Noise |
| <input type="checkbox"/> Population / Housing | <input type="checkbox"/> Public Services | <input type="checkbox"/> Recreation |
| <input type="checkbox"/> Transportation/Traffic | <input type="checkbox"/> Tribal Cultural Resources | <input type="checkbox"/> Utilities/Service Systems |
| <input type="checkbox"/> Mandatory Findings of Significance | | |

On the basis of this initial evaluation:

- I find that the proposed project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.
- I find that although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because revisions in the project have been made by or agreed to by the project proponent. A MITIGATED NEGATIVE DECLARATION will be prepared.
- I find that the proposed project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.
- I find that the proposed project MAY have a "potentially significant impact" or "potentially significant unless mitigated" impact on the environment, but at least one effect 1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and 2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed.
- I find that although the proposed project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier EIR or NEGATIVE DECLARATION pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier EIR or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required.

Signature

Date

I. Aesthetics

Would the project:

Environmental Issue	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Have a substantial adverse effect on a scenic vista?				X
b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?				X
c) Substantially degrade the existing visual character or quality of the site and its surroundings?				X
d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?				X

Discussion:

a. Would the project have a substantial adverse effect on a scenic vista?

No Impact. The Project is not located near a scenic vista. The Project plans to construct storm drain lines underground which will temporarily obstruct existing views during construction. Therefore there is no impact to a scenic vista.

b. Would the project substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?

No Impact. The Project is not located within or adjacent to scenic resources. Additionally, according to the California Department of Transportation Scenic Highways Program Database, there are no designated state scenic highways located near the Project. Therefore there is no impact to scenic resources.

c. Would the project substantially degrade the existing visual character or quality of the site and its surroundings?

No Impact. The Project will have no impact and will not substantially degrade the existing visual character or quality of the site and its surroundings. The existing site is surrounded by industrial and commercial activities and the construction of the proposed project will be below grade once completed. Therefore there is no impact to the existing visual character or quality of the site and its surroundings.

- d. **Would the project create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?**

No Impact. Construction of the Project will take place during daylight hours. Therefore there is no impact by creating a new source of substantial lighting and glare.

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II. Agriculture and Forestry Resources

Would the project:

Environmental Issue	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?				X
b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?				X
c) Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))?				X
d) Result in the loss of forest land or conversion of forest land to non-forest use?				X
e) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use?				X

Discussion:

- a. **Would the project convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?**

No Impact. According to the State of California Department of Conservation Farmland Mapping and Monitoring Program (FMMP), the Project site is not located in an area designated as Prime Farmland, Unique Farmland, or Farmland of Statewide Importance. Therefore there is no impact to farmland or agricultural resources.

- b. **Would the project conflict with existing zoning for agricultural use, or a Williamson Act contract?**

No Impact. The project site is not zoned for agricultural use and is not under a Williamson Act contract. Therefore there is no impact to land zoned for agricultural use or a Williamson Act contract.

- c. **Would the project conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))?**

No Impact. The Project location is located in land zoned for regional commercial and industrial/business park use. The project will not conflict with existing zoning of forest land, timberland, or timberland zoned Timberland Production.

- d. **Would the project result in the loss of forest land or conversion of forest land to non-forest use?**

No Impact. The Project is not located in forest land. Therefore there is no impact to forest land.

- e. **Would the project involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use?**

No Impact. The Project site is not on land designated for agricultural land use and will not result in conversion of Farmland to non-agricultural use or forest land to non-forest use.

III. Air Quality

Would the project:

Environmental Issue	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Conflict with or obstruct implementation of the applicable air quality plan?			X	
b) Violate any air quality standard or contribute substantially to an existing or projected air quality violation?			X	
c) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?			X	
d) Expose sensitive receptors to substantial pollutant concentrations?			X	
e) Create objectionable odors affecting a substantial number of people?				X

Discussion:

a. Conflict with or obstruct implementation of the applicable air quality plan?

Less than Significant Impact. The City of El Monte is located in the South Coast Air Quality Management District and USEPA Region 9. These agencies are county or regional governing authorities that have primary responsibility for controlling air pollution from stationary sources.

USEPA established primary and secondary National Ambient Air Quality Standards (NAAQS) (Title 40 of the *Code of Federal Regulations* part 50) that specify acceptable concentration levels of six criteria pollutants: particulate matter (measured as both particulate matter less than 10 microns in diameter [PM₁₀] and particulate matter less than 2.5 microns in diameter [PM_{2.5}]), sulfur dioxide, carbon monoxide, oxides of nitrogen (NO_x), ozone, and lead.

Federal regulations designate air quality control regions (AQCRs) in violation of the NAAQS as nonattainment areas. Federal regulations designate AQCRs with levels below the NAAQS as attainment areas. Maintenance areas are AQCRs that have previously been designated as nonattainment and have been redesignated to attainment for a probationary period through implementation of maintenance plans.



USEPA has designated the portion of Los Angeles County where the action is located as a nonattainment area for lead (through December 31, 2015), PM_{2.5}, and ozone, and as a maintenance area for PM₁₀, carbon monoxide and NO₂.

Applicable air quality plans include:

- 2012 Los Angeles County Lead Attainment State Implementation Plan
- South Coast 2012 PM_{2.5} Plan and 2015 Supplement
- South Coast 1-Hour Ozone Attainment Demonstration
- South Coast PM₁₀ Redesignation Request and Maintenance Plan
- California State Implementation Plan for Carbon Monoxide in the South Coast Air Basin

During the construction phase, there will be temporary and minor amounts of air pollutants emitted, but the effects will cease after construction is complete. Therefore there is a less than significant impact to applicable air quality plans.

b. Violate any air quality standard or contribute substantially to an existing or projected air quality violation?

Less than Significant Impact. See discussion above in part a.

c. Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?

Less than Significant Impact. See discussion above in part a.

d. Expose sensitive receptors to substantial pollutant concentrations?

Less than Significant Impact. See discussion above in part a.

e. Create objectionable odors affecting a substantial number of people?

No Impact. The project will not create objectionable odors affecting a substantial number of people. Construction equipment use is similar to vehicular use and will be used during construction on roadways and away from sensitive receptors.

IV. Biological Resources

Would the project:

Environmental Issue	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?				X
b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Game or US Fish and Wildlife Service?				X
c) Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?				X
d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?				X
e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?				X
f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?				X

- a. **Would the project have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?**

No Impact. According to a report generated through the U.S. Fish and Wildlife Services (USFWS) Information for Planning and Conservation (IPaC), three federally listed species have the potential of occurring in the area: Coastal California Gnatcatcher, Least Bell's Vireo, and

Nevin's Barberry. Since the project is located in a highly urbanized area, no suitable habitat exists for any of the species. Therefore there will be no impact to the listed species.

- b. Would the project have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Game or US Fish and Wildlife Service?**

No Impact. According to the National Wetlands Inventory mapped by the USFWS, there are no riparian habitat near the project area. Therefore there will be no impact to these resources.

- c. Would the project have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?**

No Impact. According to the National Wetlands Inventory mapped by the USFWS, there are riverine, fresh water emergent, and freshwater forested/shrub wetland habitats in the San Gabriel River. There will be no direct removal, filling or hydrological interruption in the San Gabriel River. Stormwater directed to the Rio Hondo will be diverted to the San Gabriel River resulting in increased flows to the wetlands in the San Gabriel River. Therefore there will be no adverse effect on federally protected wetlands.

- d. Would the project interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?**

No Impact. No fish or wildlife will be affected since there is no natural habitat for fish in the urban environment of the project.

- e. Does the project conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?**

No Impact. The Project will not conflict with the City's Tree Protection and Preservation Ordinance.

- f. Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?**

No Impact. The Project will not conflict with any adopted conservation plan.

V. Cultural Resources

Would the project:

Environmental Issue	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Cause a substantial adverse change in the significance of a historical resource as defined in § 15064.5?				X
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to § 15064.5?			X	
c) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?				X
d) Disturb any human remains, including those interred outside of dedicated cemeteries?				X

a. Would the project cause a substantial adverse change in the significance of a historical resource as defined in § 15064.5?

No Impact. The USEPA has defined the archeological area of potential effects (APE) as the surfaces and depths that would be disturbed by excavation and storm drain installation activities, as well as the footprint of the Garvey Avenue underpass pump station building. The historical architectural APE is the pump station and the pipes and culverts that may be replaced that are 50 years or older. Staging areas would be limited to paved parking lots and areas along the APE and outside of the public right-of-way. No undertaking-related activities would occur outside of the APE.

The USEPA conducted a records search of the archeological APE and surrounding areas via the South Central Coastal Information Center (SCCIC) of the California Historical Resources Information System (CHRIS) (Records Search File No.: 16371.2401). The search area included a one-mile buffer centered on the APE of the proposed storm drains. No part of the APE was previously surveyed, and no resources have been recorded within the APE, 39 surveys have been conducted in the study area, and 18 resources have been recorded in the same area. The 18 resources include 1 prehistoric archaeological site, 11 historic buildings, 1 historic district, 1 historic highway/trail, 1 historic railroad, and 3 historic transmission/utility lines.

The historic buildings (P-19-188913, P-19-188914, P-19-188915, P-19-188916, P-19-188917, P-19-188918, P-19-188919, P-19-188921, P-19-188922, P-19-188923, and P-19-188924) are concentrated in Baldwin Park on the east side of I-605 and the San Gabriel River. The historic district, consisting of the Woodland Duck Farms and Equestrian Center/Louise A. Ward Residence (P-19-004079/CA-LAN-004079H), is on the east side of the San Gabriel River.

The historic highway/trail (P-19-187085/The Mojave Road) corresponds with Ramona Boulevard, north of I-10. The historic railroad is the Southern Pacific Railroad/Union Pacific Railroad (P-19-186112) adjacent to the Garvey Avenue underpass pump station.

The three transmission/utility lines (P-19-188983/Los Angeles Department of Water and Power Boulder Lines North and South, P-19-190504/Southern California Edison Rio Hondo-Amador-Jose-Mesa-Narrows 66kV Transmission Line, and P-19-186876/Southern California Edison Eagle Rock-Pardee and Antelope-Vincent No.1 220kV Transmission Line Corridor) are along Ramona Boulevard, north of the I-10, and along the I-605/San Gabriel River corridor. In addition to the resources listed above, the Garvey Avenue underpass pump station was constructed in 1934 and is considered of historic age (50 years or older). It was evaluated by a qualified historian who determined the pump station to not be National Register of Historic Preservation (NRHP) eligible. The Southern Pacific Railroad/Union Pacific Railroad, (P-19-186112), was not formally evaluated but was part of a reconnaissance survey (CRM Tech 2010), which found that the rail lines had been upgraded and undergone maintenance activities as part of their ongoing use and did not demonstrate historical characteristics.

The California Native American Heritage Commission (NAHC) was consulted about the Garvey Avenue Underpass Project and responded that sacred sites have been identified by the Gabrielino Band of Mission Indians–Kizh Nation as within the project region. USEPA is pursuing a concurrent government-to-government consultation with the Soboba Band of Luiseno Indians, as well as seeking and considering the input of the Gabrieleno Band of Mission Indians–Kizh Nation, Gabrieleno/Tongva San Gabriel Band of Mission Indians, Gabrieleno/Tongva Nation, Gabrielino Tongva Indians of California Tribal Council, and Gabrieleno/Tongva Tribe.

Based on the information presented above and pursuant to Section 106 of the NHPA, USEPA made a determination of “no historic properties affected” for this project. USEPA conveyed this finding of effect to the California State Historic Preservation Office (SHPO) in a letter dated August 24, 2016, and the SHPO concurred with this finding on September 21, 2016. In its letter, SHPO did not object to the identification and delineation of the APE, concurred with the finding that the existing storm drain system is not eligible for listing on the NRHP, and did not object to the finding of “no historic properties affected” for the proposed undertaking.

b. Would the project cause a substantial adverse change in the significance of an archaeological resource pursuant to § 15064.5?

Less Than Significant Impact. See discussion above in part a. However, if during construction any archaeological remains are found, all construction will cease until qualified personnel can identify the remains and mitigate the findings.

c. Would the project directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?

No Impact. See discussion above in part a.

d. Would the project disturb any human remains, including those interred outside of dedicated cemeteries?

No Impact. The Project site is not located near a cemetery and will not disturb any human remains.

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VI. Geology and Soils

Would the project:

Environmental Issue	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:				
i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.				X
ii) Strong seismic ground shaking?				X
iii) Seismic-related ground failure, including liquefaction?			X	
iv) Landslides?				X
b) Result in substantial soil erosion or the loss of topsoil?				X
c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?			X	
d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property?				X
e) Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?				X

a. **Would the project expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:**

- i) **Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.**

No Impact. The Project is not located within a known earthquake fault zone delineated on a Alquist-Priolo Earthquake Fault Zoning Map.

ii) Strong seismic ground shaking?

No Impact. See discussion above in a.i.

iii) Seismic-related ground failure, including liquefaction?

Less Than Significant Impact. The Project is located in a Liquefaction Zone. The liquefaction zone is created by the increased groundwater and the Montebello forebay area recharge. The Project is not a public roadway and has been in place over several decades. Therefore the impacts associated with liquefaction are anticipated to be minimal.

iv) Landslides?

No Impact. The Project is located in a developed industrialized area and will not expose people or structures to the risk of landslides.

b. Would the project result in substantial soil erosion or the loss of topsoil?

No Impact. The Project is located on paved streets; therefore there is no impact to topsoil.

c. Would the project be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?

Less Than Significant Impact. See discussion above in a.iii.

d. Would the project be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property?

No Impact. The Project will not adversely affect the geologic stability of the site and is not located on expansive soils.

e. Would the project have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?

No Impact. The Project will not require the installation of septic tanks or alternative waste water disposal systems.

VII. Greenhouse Gas Emissions

Would the project:

Environmental Issue	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?			X	
b) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?				X

Discussion:

- a. **Would the project generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?**

Less Than Significant Impact. During the construction phases, greenhouse gases will be emitted from combustion-powered construction machinery and vehicle exhausts, from asphalt and concrete paving. Emissions were estimated for a model one-year construction project and do not exceed the Council on Environmental Quality (CEQ) threshold. Therefore the Project will have less than a significant impact on the generation of greenhouse gas emissions.

- b. **Would the project conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?**

No Impact. The Project would not conflict with the State plan and policy AB 32 (California Global Warming Solutions Act of 2006) quantitative goal of AB 32 is to reduce GHG emissions to 1990 levels by 2020.

VIII. Hazards and Hazardous Materials

Would the project:

Environmental Issue	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?				X
b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?				X
c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?				X
d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?				X
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 result in a safety hazard for people residing or working in the project area?			X	
f) For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?				X
g) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?			X	
h) Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?				X

Discussion:

- a. **Would the project create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?**



No Impact. There will be no transport, use, or disposal of hazardous materials involved in the Project.

- b. **Would the project create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?**

No Impact. The project will not create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment since there are no hazardous materials involved in the Project.

- c. **Would the project emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?**

No Impact. Baker Elementary School and Madrid Middle School are within a quarter-mile of the Project site, but no hazardous materials or substances will be emitted during the construction, therefore there is no impact to the schools nearby.

- d. **Would the project be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?**

No Impact. The Project is not located on a list of hazardous materials site.

- 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 result in a safety hazard for people residing or working in the project area?**

Less Than Significant Impact. The Project is located less than two miles from the El Monte Airport. A land use plan for the El Monte airport was not made available, however the project will not result a safety hazard for people residing or working in the project area. The project construction will not impact airport operations as there are other buildings and structures that are larger than construction equipment that will be used for the construction of the project, located within the area. The construction contractor will be required to notify the Airport prior to construction and will follow any required protocol for use of construction equipment within the vicinity of an airport including flagging the equipment. Residential housing surrounds the airport.

- f. **For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?**

No Impact. The project is not in the vicinity of a private airstrip.

- g. **Would the project impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?**

Less Than Significant Impact. The Project will not interfere with any emergency response plan or emergency evacuation plan. The local emergency agencies will be notified by the project prior to construction and will be able to accommodate alternate routes if necessary.

- h. Would the project expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?**

No Impact. The Project will not expose people or structures to significant risk of loss, injury, or death involving wildland fires.

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IX. Hydrology and Water Quality

Would the project:

Environmental Issue	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Violate any water quality standards or waste discharge requirements?		X		
b) Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?				X
c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site?				X
d) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site?				X
e) Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?				X
f) Otherwise substantially degrade water quality?				X
g) Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?				X
h) Place within a 100-year flood hazard area structures which would impede or redirect flood flows?				X
i) Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?				X

j) Inundation by seiche, tsunami, or mudflow?				X
---	--	--	--	---

Discussion:

a. Would the project violate any water quality standards or waste discharge requirements?

Less Than Significant with Mitigation Incorporated. The Project will provide an enhancement to water quality by capturing runoff generated from an 85th percentile storm event and treat and capture for groundwater recharge purposes. During construction a Stormwater Pollution Prevention Plan (SWPPP) will be prepared and Best Management Practices (BMPs) will be implemented to prevent pollutants from entering any nearby catch basins. Therefore with the above mitigation incorporated, the Project will not violate any water quality standards or waste discharge requirements.

b. Would the project substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?

No Impact. Groundwater supplies will not be affected since there is no additional demand for groundwater. The Project intends to pretreat stormwater for groundwater recharge which will have a beneficial impact to the local groundwater supplies.

c. Would the project substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site?

No Impact. The project area is urbanized and developed and mostly impervious. The Project will route runoff that currently drains to the grade separation and will instead route the runoff east towards San Gabriel River. The runoff will be routed via the proposed storm drain and connect to an existing storm drain. The Project will not alter the existing drainage pattern of the area which will result in substantial erosion or siltation on or off site. The Project intends to capture runoff from the drainage area upstream to prevent the excess flows from reaching the sump of the Garvey Avenue underpass.

d. Would the project substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site?

No Impact. The Project will not substantially alter the existing drainage pattern of the area resulting in flooding on or off site. The Project intends to capture runoff from the drainage area upstream to prevent the excess flows from reaching the sump of the Garvey Avenue underpass.



- e. **Would the project create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?**

No Impact. The Project will not contribute runoff water which will exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff. The Project intends to capture runoff from the drainage area upstream to prevent the excess flows from reaching the sump of the Garvey Avenue underpass. The captured runoff will be treated and routed in a subsurface storage system to reduce stormwater discharged to downstream facilities.

- f. **Would the project otherwise substantially degrade water quality?**

No Impact. The Project will provide water quality enhancements for the area. The runoff generated from the 85th percentile rainfall event will be captured and treated and then will be recharged to increase local groundwater supplies. Therefore, the Project will not otherwise substantially degrade water quality.

- g. **Would the project place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?**

No Impact. The City is classified as No Special Flood hazard Areas and is not a part of a 100-year flood hazard area.

- h. **Would the project place within a 100-year flood hazard area structures which would impede or redirect flood flows?**

No Impact. The project will not place structures in a 100-year flood hazard area.

- i. **Would the project expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?**

No Impact. The project will not expose people or structures to a significant risk of loss, injury or death involving flooding.

- j. **Would the project cause inundation by seiche, tsunami, or mudflow?**

No Impact. The project will not cause inundation by seiche, tsunami, or mudflow.

X. Land Use and Planning

Would the project:

Environmental Issue	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Physically divide an established community?				X
b) Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?			X	
c) Conflict with any applicable habitat conservation plan or natural community conservation plan?				X

Discussion:

a. Physically divide an established community?

No Impact. The project will not physically divide an established community.

b. b) Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?

Less Than Significant Impact. The Project will not conflict with any applicable land use plan, policy, or regulation. The Project however will require a permanent easement through one property for the construction of a portion of the storm drain. The City will work with the property owner to obtain the easement.

c. c) Conflict with any applicable habitat conservation plan or natural community conservation plan?

No Impact. The Project will not conflict with any applicable habitat plan or natural community conservation plan.

XI. Mineral Resources

Would the project:

Environmental Issue	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?				X
b) Result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?				X

Discussion:

- a. **Would the project result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?**

No Impact. There is no known mineral resource available at the Project site.

- b. **Would the project result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?**

No Impact. There is no known locally-important mineral resource recovery site at the Project site.

XII. Noise

Would the project:

Environmental Issue	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
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?		X		
b) Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?			X	
c) A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?				X
d) A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?			X	
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?				X
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?				X

Discussion:

- a. **Would the project exposure people 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 with Mitigation Incorporated. There are two schools within a quarter mile of the Project. Baker Elementary School is located north of the I-10, and has noise levels that are associated to the vehicular traffic on the freeway. Madrid Middle School is just east of the Project. The construction equipment will increase the ambient noise around the school grounds. Due to the proximity of the school, the contractor will be required to monitor noise levels and use construction muffler devices to reduce to ambient noise levels at the schools. This excessive noise is associated with the construction phase, and will cease after construction.

- b. **Would the project exposure people to or generation of excessive groundborne vibration or groundborne noise levels?**

Less Than Significant Impact. The Project construction will create some groundborne vibrations as part of the construction. However, once the construction is complete, all groundborne vibration or groundborne noise levels will cease.

- c. **Would the project cause a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?**

No Impact. The Project will only temporarily cause an increase in noise levels during the construction phase, but will not be permanent.

- d. **Would the project cause a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?**

Less Than Significant Impact. See discussion above in parts a. and c.

- 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 is not located in an area designated as airport land use.

The Project is located less than two miles from the El Monte Airport. A land use plan for the El Monte airport was not made available, however the project will not expose people residing or working in the area to excessive noise levels. As mentioned in part a., the construction equipment will increase the ambient noise in the area. Due to the proximity of the schools, the contractor will be required to monitor noise levels and use construction muffler devices to reduce to ambient noise levels at the schools. This excessive noise is associated with the construction phase, and will cease after construction.

- 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 is not located in the vicinity of a private airstrip.

XIII. Population and Housing

Would the project:

Environmental Issue	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?				X
b) Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?				X
c) Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?				X

Discussion:

- a. **Would the project induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?**

No Impact. The Project will not induce substantial population growth in the area.

- b. **Would the project displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?**

No Impact. The Project will not displace substantial number of existing housing.

- c. **Would the project displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?**

No Impact. The Project will not displace substantial number of people.

XIV. Public Services

Would the project:

Environmental Issue	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services:				
Fire protection?				X
Police protection?				X
Schools?				X
Parks?				X
Other public facilities?				X

Discussion:

- a. **Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for Fire Protection, Police Protection, Schools, Parks, or other public facilities?**

No Impact. No impacts to these services are anticipated.



XV. Recreation

Would the project:

Environmental Issue	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?				X
b) Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?				X

Discussion:

- a. **Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?**

No Impact. The project will not increase the use of existing neighborhood, regional parks, or other recreational facilities.

- b. **Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?**

No Impact. The project does not include recreational facilities.

XVI. Transportation/Traffic

Would the project:

Environmental Issue	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit?				X
b) Conflict with an applicable congestion management program, including, but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways?				X
c) Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?				X
d) Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?				X
e) Result in inadequate emergency access?			X	
f) Conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities?				X

Discussion:

- a. **Would the project conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit?**

No Impact. The Project will not conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system.

- b. **Would the project conflict with an applicable congestion management program, including, but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways?**

No Impact. The Project will not conflict with an applicable congestion management program.

- c. **Would the project result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?**

No Impact. The Project will not result in a change in air traffic patterns.

- d. **Would the project substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?**

No Impact. The Project will not substantially increase hazards due to a design feature.

- e. **Would the project result in inadequate emergency access?**

Less Than Significant Impact. During construction, the project area may have limited access along the roadway. Emergency services will be notified of the construction in advance in case of access needs that may arise during the construction of the Project. The Project will provide emergency access at all times and therefore will not result in inadequate emergency access.

- f. **Would the project conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities?**

No Impact. The Project will not conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities.

XVII. Tribal Cultural Resources

Would the project:

Environmental Issue	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:				
i) Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code section 5020.1(k), or				X
ii) A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resource Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.		X		

Discussion:

- a. **Cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:**
 - i) **Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code section 5020.1(k)**
 - ii) **A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resource Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.**

Less Than Significant Impact with Mitigation Incorporated. A request for record search of the American Heritage Commission's sacred land files determined that there is no presence of Native American cultural Resources in the APE. However, Mr. Andy Salas, chairman of the Gabrieleno Band of Native American Indians-Kizh Nation, discussed by phone to the USEPA about recommending having a Native American monitor from the Gabrieleno Band of Mission Indians present during excavation activities of the Project. Therefore with the incorporation of the above mitigation measure, the impacts to California Native American tribal cultural resources are considered less than significant.

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XIX. Mandatory Findings of Significance

Would the project:

Environmental Issue	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?				X
b) Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)?				X
c) Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?				X

Discussion:

- a. **Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?**

No Impact. The Project is not anticipated to affect the quality of the environment, habitat, fish, wildlife, and plant populations.

- b. **Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)?**



No Impact. The Project does not have impacts that are individually limited, but cumulatively considerable.

- c. **Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?**

No Impact. The Project is not anticipated to cause substantial adverse effects on human beings.

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Appendix A
Environmental Assessment

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ENVIRONMENTAL ASSESSMENT

for the

City of El Monte, California

Garvey Avenue Stormwater System Improvement Project



U.S. Environmental Protection Agency

Region 9

75 Hawthorne Street

San Francisco, California 94105

November 2016

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ACRONYMS

AQCRs	Air Quality Control Regions
AQMD	Air Quality Management Districts
CEQ	Council on Environmental Quality
cfs	Cubic feet per second
CO ₂	Carbon dioxide
EO	Executive Order
EPA	U.S. Environmental Protection Agency
FWS	U.S. Fish and Wildlife Service
GCR	General Conformity Rule
GHG	Greenhouse gas
gpm	Gallons per minute
IPaC	Information for Planning and Conservation
µg/m ³	Micrograms per cubic meter
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
NO _x	Oxides of nitrogen
NPDES	National Pollutant Discharge Elimination System
PM ₁₀	Particulate matter less than 10 microns in diameter
PM _{2.5}	Particulate matter less than 2.5 microns in diameter
ppb	Parts per billion
ppm	Parts per million
RECLAIM	Regional Clean Air Incentives Market
RCB	Reinforced concrete block
RCP	Reinforced concrete pipe
SHPO	State Historic Preservation Officer
SIP	State Implementation Plan

SECTION A.

PROPOSED PROJECT AND FUNDING STATUS

1. Project Purpose and Need

Water Quantity Problems and Inadequate System or System Components

Storms regularly flood Garvey Avenue in the City of El Monte, California (Figure 1), where the street passes under the Southern Pacific Railroad at the Garvey Avenue underpass. The existing stormwater pumps and conveyance pipes draining the underpass are insufficient to effectively convey stormwater from the street's surface to the intended storm drainage facilities.

Each year during the rainy season, flooding occurs in the Garvey Avenue underpass in the City of El Monte. The existing Garvey Avenue underpass pump station was constructed in 1934, and land use surrounding it has changed over the past 82 years. The pumps were replaced within the last 10 years, but the pump station is still insufficient to handle the stormwater load at the Garvey Avenue underpass from minor and major (the 100-year storm) precipitation events.

The existing Garvey Avenue underpass pump station consists of a 6-foot by 9-foot, 4-inch concrete sump with two submersible pumps with a combined capacity of 1,400 gallons per minute (gpm). The pumps transfer water from the underpass into a catch basin on the corner of Garvey Avenue and Valley Boulevard, which drains into a City of El Monte storm drain system along Valley Boulevard that conveys flow to the Rio Hondo Channel to the west. This flow configuration has proved to be deficient.

In addition, northeast of the Garvey Avenue underpass, three existing 24-inch culverts convey stormwater from Exline Street north of Interstate 10 (I-10), under the expressway, and to outlets on Maxson Road south of I-10. Surface drainage from that point is deficient.

The purpose of this project is to improve the storm drain lines and pump station, and it is needed to address the system's insufficient capacity to remove stormwater from Garvey Avenue.

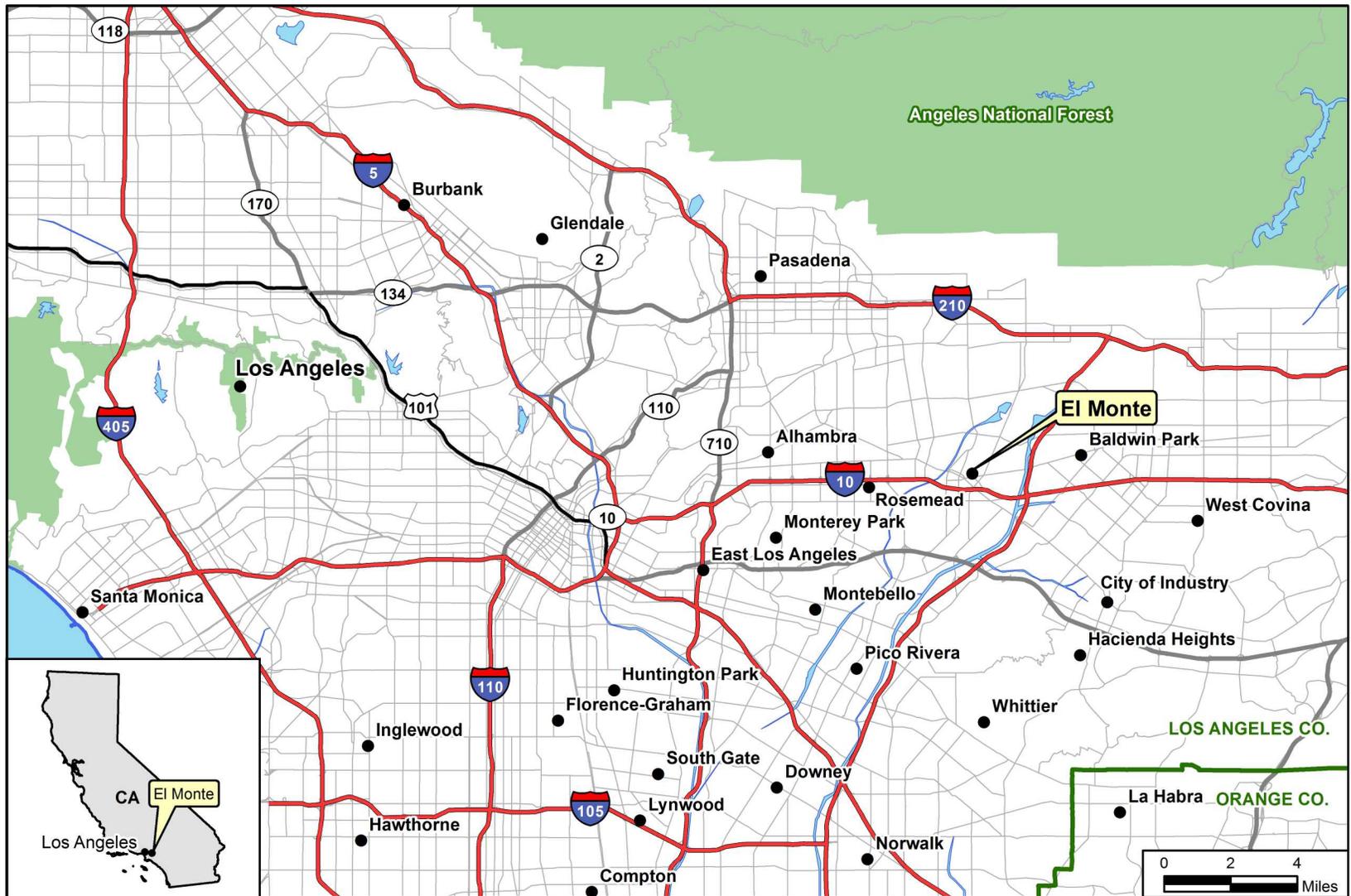
2. Project Description

Project Summary

The City of El Monte proposes to construct two new storm drain lines and upgrade the existing pump station to minimize flooding at the Garvey Avenue underpass. The new storm drain lines would convey the outflow from the new pump station to a new outfall on the San Gabriel River, divert some stormwater away from the underpass, and connect to an existing Los Angeles County Flood Control District (LACFCD) storm drain (Durfee storm drain). The existing pump station and pumps would be replaced with a larger capacity pump station and pumps.

Planning Area Description

The proposed project would occur in the City of El Monte, California, in Los Angeles County. The City of El Monte is the eastern part of Los Angeles County, between Alhambra to the west and Baldwin Park to the east. The project site is located near I-10 and Garvey Avenue and is generally bounded by the triangular area formed by the San Gabriel River, the Southern Pacific Railroad, I-10, and Valley Boulevard (Figure 2).



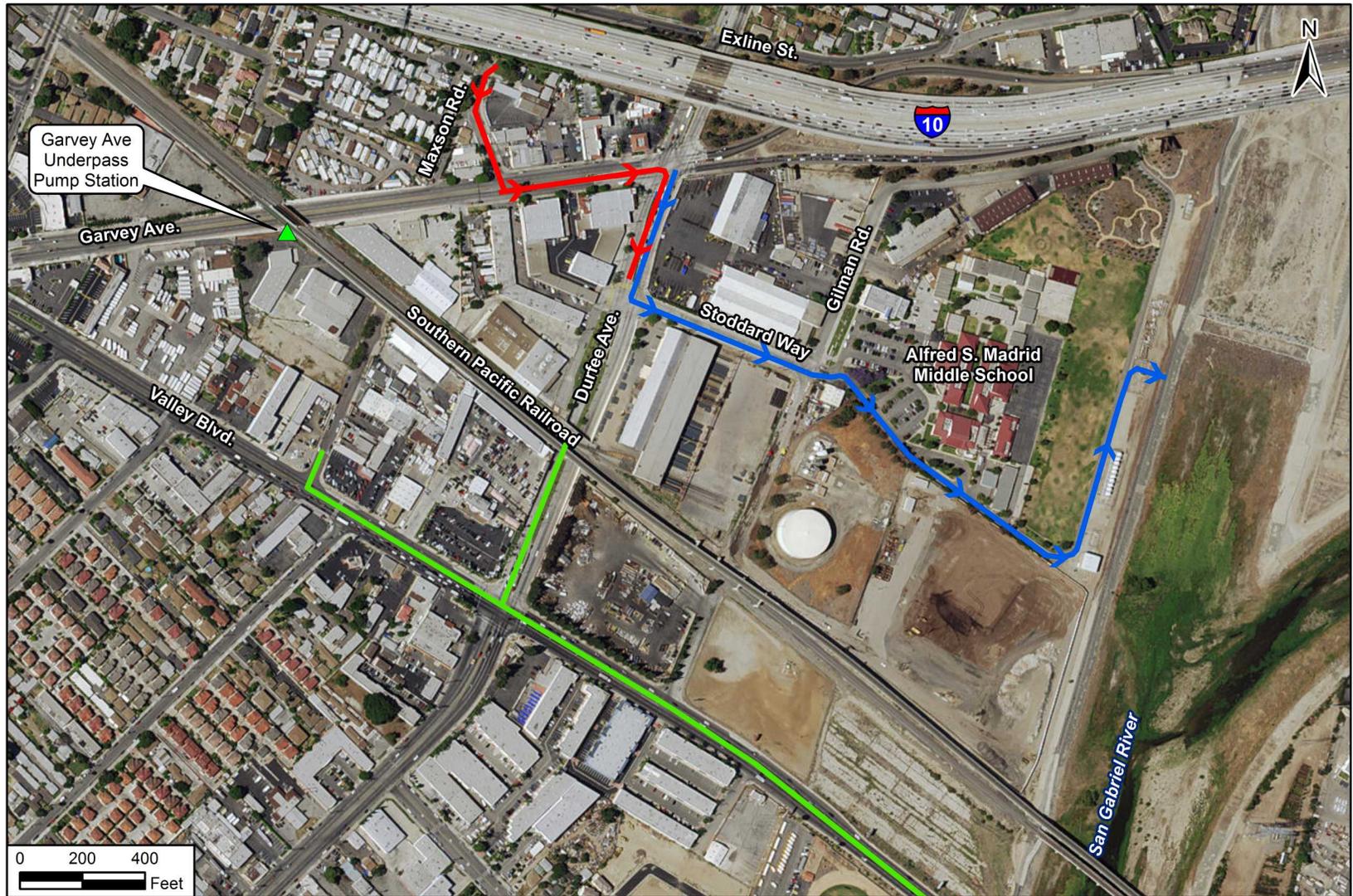
LEGEND

- Interstate
- U.S. Route
- State Route
- Road
- County Boundary
- Surface Water
- National Park/Forest/Recreation Area

General Location

El Monte, California

Figure 1



LEGEND

- ↗ Existing Storm Drain
- ↘ Proposed Storm Drain - Line A
- ↘ Proposed Storm Drain - Line B

Project Components
El Monte, California

Figure 2

Planning Period

Project planning began with commissioning a preliminary design study and report, which was completed in 2010. Proposals from contracting firms are due to the City of El Monte in the latter part of 2016, with award and project commencement to follow.

Description of Project Construction Phases

Details of construction phases will not be known until a project design has been selected by the City of El Monte.

Owner and Operator of the Facilities

The City of El Monte owns, operates, and maintains the stormwater facilities. Incorporated in 1912 as a general law city, the City of El Monte is the hub of the San Gabriel Valley, located approximately 12 miles east of downtown Los Angeles, and is the ninth largest city in Los Angeles County, with a population of approximately 120,000. The City of El Monte occupies a 10-square-mile area and is primarily built out, with a few remaining undeveloped parcels.

Location of the Facilities

The project area is in the southeastern area of the City of El Monte adjacent to the neighboring cities of Baldwin Park and the City of Industry. The area is bounded to the north by I-10, to the east by the San Gabriel River, to the south by Valley Boulevard, and to the west by the Southern Pacific Railroad. The Garvey Avenue underpass separates traffic on Garvey Avenue from the Southern Pacific Railroad tracks.

Figure 2 shows the project components, including the Garvey Avenue underpass pump station and the alignment of the proposed storm drain lines. The pump station is located at Latitude 34° 3' 47.6166" and Longitude -118° 0' 55.9542". New storm drain Line "A" would begin at the intersection of Garvey Avenue and Durfee Avenue, align southward along Durfee Avenue, eastward along Gilman Road, northward along the east boundary of the Alfred S. Madrid Middle School, and discharge to the San Gabriel River. Proposed storm drain Line "B" would extend from the northern point of Maxson Road southward, along Garvey Avenue eastward, along Durfee Avenue southward, and discharge to the existing storm Durfee storm drain.

3. Relevant Design Parameters

Description of Major Unit Processes

The project includes three components: (1) a new pump station building, (2) three new pumps and one sump pump, and (3) two new storm drain pipes. The existing pump station at the Garvey Avenue underpass would be demolished and replaced with a new, larger-capacity pump station. The conceptual design specifies a pump station with three 9,000-gpm pumps [20 cubic feet per second (cfs)] and one 2,200-gpm (4.9 cfs) sump pump. One of the three 9,000-gpm pumps would be a backup pump, and the sump pump would not operate when the main pumps are running. Total pump station capacity would be approximately 60 cfs. The new pump station footprint would be roughly 48 feet by 20 feet and would include an adjacent electrical room with a footprint of roughly 12 feet by 21 feet. A new storm drain (Line A) would be installed to convey flow from upstream portions of the existing Durfee storm drain plus the outflow from the new pump station directly to the San Gabriel River. The second storm drain (Line B) would be installed to divert stormwater from areas upstream of the underpass near Maxson Road to the existing Durfee storm drain to reduce the hydraulic loading to the new pump station.

Flow Diagram

Figure 2 shows the proposed new storm drains (Lines A and B) and the proposed replacement pump station. All flow in Lines A and B would eventually discharge to the San Gabriel River.

Sewer/Water Pipe Lengths, Sizes, and Locations

Line A

Multiple catch basins at the upstream end of the existing Durfee storm drain would be re-routed into the proposed Line A along with the stormwater collected at the pump station. Line A would consist of 515 feet of 54-inch-diameter reinforced concrete pipe (RCP) and 2,318 feet of 72-inch-diameter RCP and would directly discharge into the San Gabriel River at Gilman Road, adjacent to the middle school.

Line B

To reduce hydraulic loading of the pump station, proposed Line B, a reinforced concrete box (RCB) storm drain, would be installed to intercept stormwater runoff from Maxson Road and convey it to the existing 48-inch RCP Durfee storm drain, just south of Garvey Avenue. Line B would consist of 931 feet of 3-foot-high by 5.5-foot-wide RCB and 340 feet of 4-foot-high by 5.5-foot-wide RCB storm drain.

Basic Design Criteria

Basic design parameters include the storm hydrograph for the pump station, maximum design flow for various portions of the system during a 50-year storm, available pipe slope, and water elevation at the pipe outlet. The flow data are used to determine the required pump capacity, and pipe sizes are determined based on flow and pipe slope.

Design Storm(s)

System design is based on hydraulic estimates using a 50-year storm.

Description of Major Stormwater Components (Structural and Non-Structural)

The major stormwater components are two new storm drain lines and an upgraded pump station to minimize flooding at the Garvey Avenue underpass. The new storm drain lines would convey the outflow from the replaced pump station to a new outfall on the San Gabriel River, divert stormwater away from the underpass, and connect to the existing Durfee storm drain.

4. Project Cost

Proposed Total Project Cost

Estimated Total Cost of Construction: \$3,868,313

Portion of Total Project Cost Funded by EPA

U.S. Environmental Protection Agency funded portion: \$485,000

SECTION B. EXISTING STORMWATER SYSTEM

1. Existing Stormwater System

Detailed Description of Existing Stormwater System

In the existing stormwater system, water from the vicinity of the Garvey Avenue underpass, including flow from the Maxson Road area, is pumped to an existing storm drain that ultimately discharges to the Rio Hondo Channel to the north. The existing Durfee storm drain currently conveys stormwater from the Durfee Avenue area to the San Gabriel River.

Description of Major Structural Components

The existing Garvey Avenue underpass pump station was constructed in 1934. It consists of a 6-foot by 9-foot, 4-inch concrete sump with two submersible pumps. The pumps were replaced within the last 10 years and have a combined capacity of 1,400 gpm (3.1 cfs). The existing discharge is pumped from the underpass into a catch basin located on the corner of Garvey Avenue and Valley Boulevard. The catch basin discharges to a City of El Monte storm drain system along Valley Boulevard that conveys flow to the Rio Hondo Channel. This flow configuration has proved to be deficient and needs to be realigned.

The existing storm drains at the project site consists of a 48-inch storm drain line (MTD 562), owned by the LACFCD, that drains south on Durfee Avenue towards Valley Boulevard and ultimately to the San Gabriel River. The upstream end of the Durfee storm drain system has multiple catch basins that receive surface runoff on the northerly corners of Durfee Avenue and Garvey Avenue. Three existing 24-inch culverts convey stormwater from Exline Street under I-10 and outlets on Maxson Road.

Design Parameters/Performance Criteria/Permits

The City of El Monte is a permittee under the *Waste Discharge Requirements for Municipal Separate Storm Sewer System (MS4) Discharges within the Coastal Watersheds of Los Angeles County, Except those Discharges Originating from the City of Long Beach MS4* issued by the Los Angeles Regional Water Quality Control Board (Order No. R4-2012-0175), which also serves as a National Pollutant Discharge Elimination System (NPDES) permit under the Federal Clean Water Act (NPDES No. CAS004001) and as Waste Discharge Requirements under California law (*Municipal NPDES permit*).

2. Existing System Performance

The proposed improvements are expected to address the current system inadequacies in managing stormwater flow.

SECTION C. NEED FOR PROPOSED PROJECT

1. Expanded Description of Need

The stormwater collection system owned by the City of El Monte in the vicinity of the Garvey Avenue underpass uses a pump station and drain lines to convey stormwater runoff into the storm drain system. Each year, during the rainy season, flooding occurs in the underpass, and city personnel must devote time to respond to traffic disruptions, including towing of motor vehicles that become trapped. The reason for flooding and traffic disruptions at this underpass is the limited capacity of the stormwater pump and drainage facilities and additional flow from Caltrans' roadway improvements upstream. The Garvey Avenue underpass was built in 1934. Land use surrounding the underpass has changed over the past 82 years. The existing pump station is insufficient to effectively convey stormwater runoff into the storm drain system.

2. Land Use Projections/Impervious Cover/Pollutant Sources

Continuing development in the area over the 82 years since the Garvey Avenue underpass was constructed resulted in the stormwater pumps and conveyance pipes being inadequate for the current quantity and flow of stormwater during precipitation events. Impervious cover in the area is nearly 100 percent. The project would not create a new pollutant source.

3. Calculations and Assumptions for Forecasted Flow

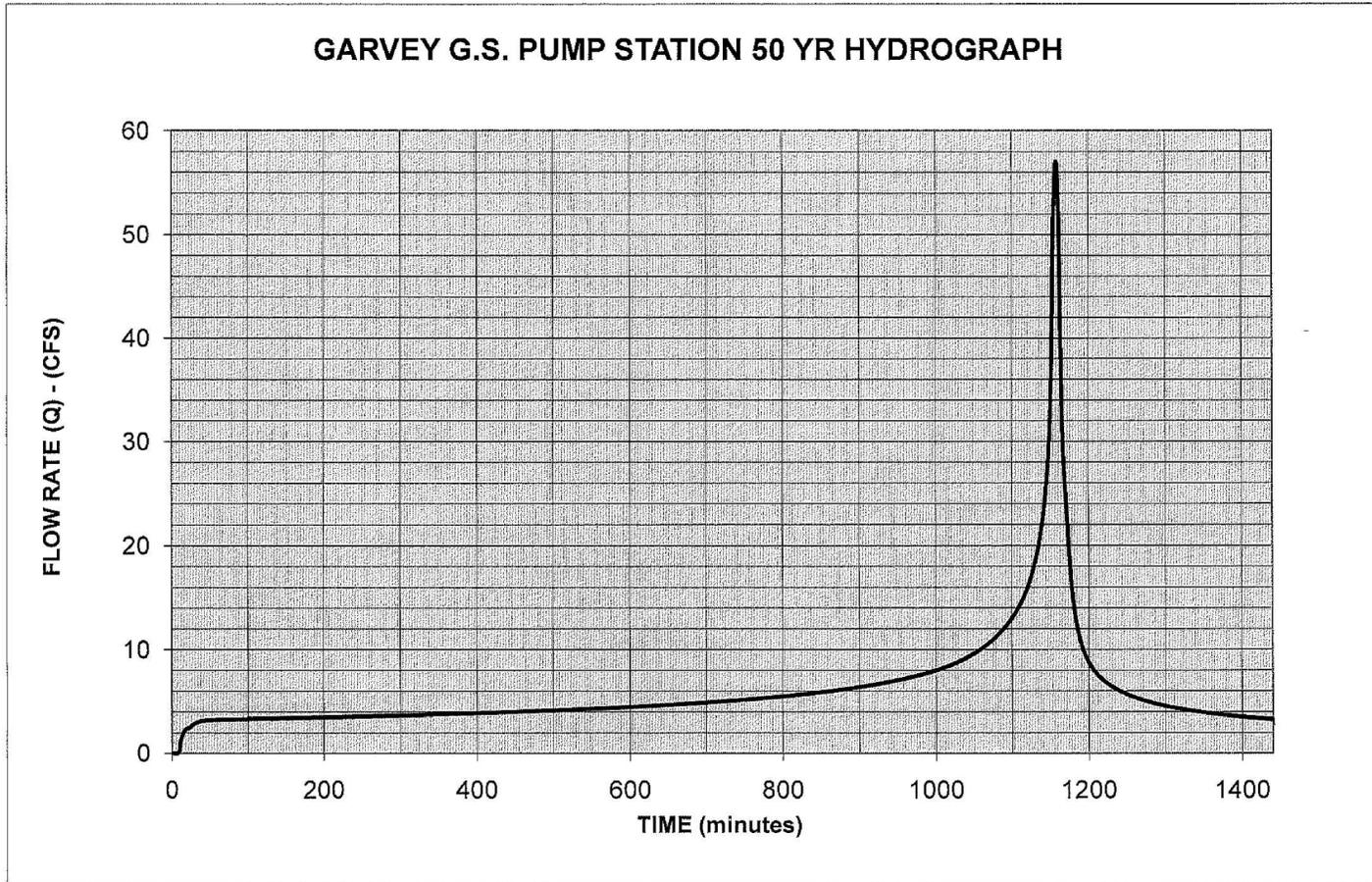
Table 1 presents the results of hydraulic calculations for storm drain pipes from areas contributing to each proposed storm drain pipe. Figure 3 presents the 50-year storm hydrograph used to design the pump station, which shows a short-term peak flow of 57 cfs.

Table 1. Summary of the results of the hydrology analyses			
	Storm Returns Period	Area (acres)	Flow at Storm Drain Outfall (cfs)
Durfee (Line A)	10-year	124.5	74.05
	50-year		151.24
Maxson (Line B)	10-year	48.3	51.2
	50-year		86.8

4. Future Environment without the Project

The flow capacity of existing pump station at the Garvey Avenue underpass is inadequate to handle existing stormwater flow during the rainy season. When heavy rain occurs, the underpass becomes flooded creating a requirement to close the road and redirect traffic. Motorists who attempt passage through the flooded roadway can become stranded. City personnel must devote time to respond to traffic disruptions, including towing of motor vehicles which become trapped at this underpass, even after the road is closed. These events will continue to occur periodically until project improvements are implemented.

Storm Day 4
Reduction Factor = 1.0
Total Runoff = 12.147 Acre-Ft
Peak Q = 57.05 CFS @ 1158 minutes



Garvey GS Pump Station 50-Year Hydrograph

SECTION D. ANALYSIS OF ALTERNATIVES

1. Development of Alternatives

No-action

Under the no-action alternative, the Garvey Avenue underpass pump station would not be replaced, and new stormwater drain lines would not be constructed. The stormwater pump and drainage facilities would remain inadequate and unable to sufficiently convey stormwater from the underpass. Flooding in the underpass during the rainy season would continue, and city personnel would have to close the road when it floods and tow motor vehicles that become trapped in the flood waters.

Optimum Utilization of Existing Facility

Use of the existing system with no structural change cannot be optimized to improve the current situation.

New Construction Alternatives

Only one construction alternative, as detailed in Section A, has been proposed by the City of El Monte. No other construction alternative will meet the scope of the project.

2. Identification of Selected Alternative

The preferred alternative is the proposed project described in Section A.

SECTION E. EXISTING ENVIRONMENT, ENVIRONMENTAL CONSEQUENCES AND MITIGATION MEASURES

1. Existing Environment

Public Health Problems Due to Water Quality

There are no public health problems due to water quality because this stormwater system is not a source of drinking water, operates only intermittently, and does not otherwise present potential exposure pathways for the public.

Water Quality Problems, Fish Kills, etc.

Surface water in the project area and other nearby areas drains toward the San Gabriel River (AECOM 2010), but no water quality issues are known or cited as reasons for implementing the proposed action. There are no water quality problems associated with the stormwater system because it operates only intermittently, does not support fish and wildlife populations, and does not otherwise affect environmental receptors impacted by changes in water quality.

Surface & Ground Water Hydrology

Surface water in the project area generally drains to the east towards the San Gabriel River (AECOM 2010). The general regional groundwater flow pattern is southward and westward from the Central Coastal Plain toward the ocean (DWR 2004). The project area is adjacent to the San Gabriel River, as shown in Figure 4.

Drinking Water Sources and Supply

There are no drinking water sources associated with the stormwater system.

Physiography, Topography, Geology & Soils

The proposed project area is in the San Gabriel valley. The streets within the project area are relatively flat with approximate ground slope of 0.5% (AECOM 2010). The grades within the Garvey Avenue underpass are significantly greater at approximately 3% to dip under the railroad tracks. The area generally drains to the east toward the San Gabriel River. The entire site is in an area that is subject to liquefaction (CDC 1999). Figure 5 shows the area geology.

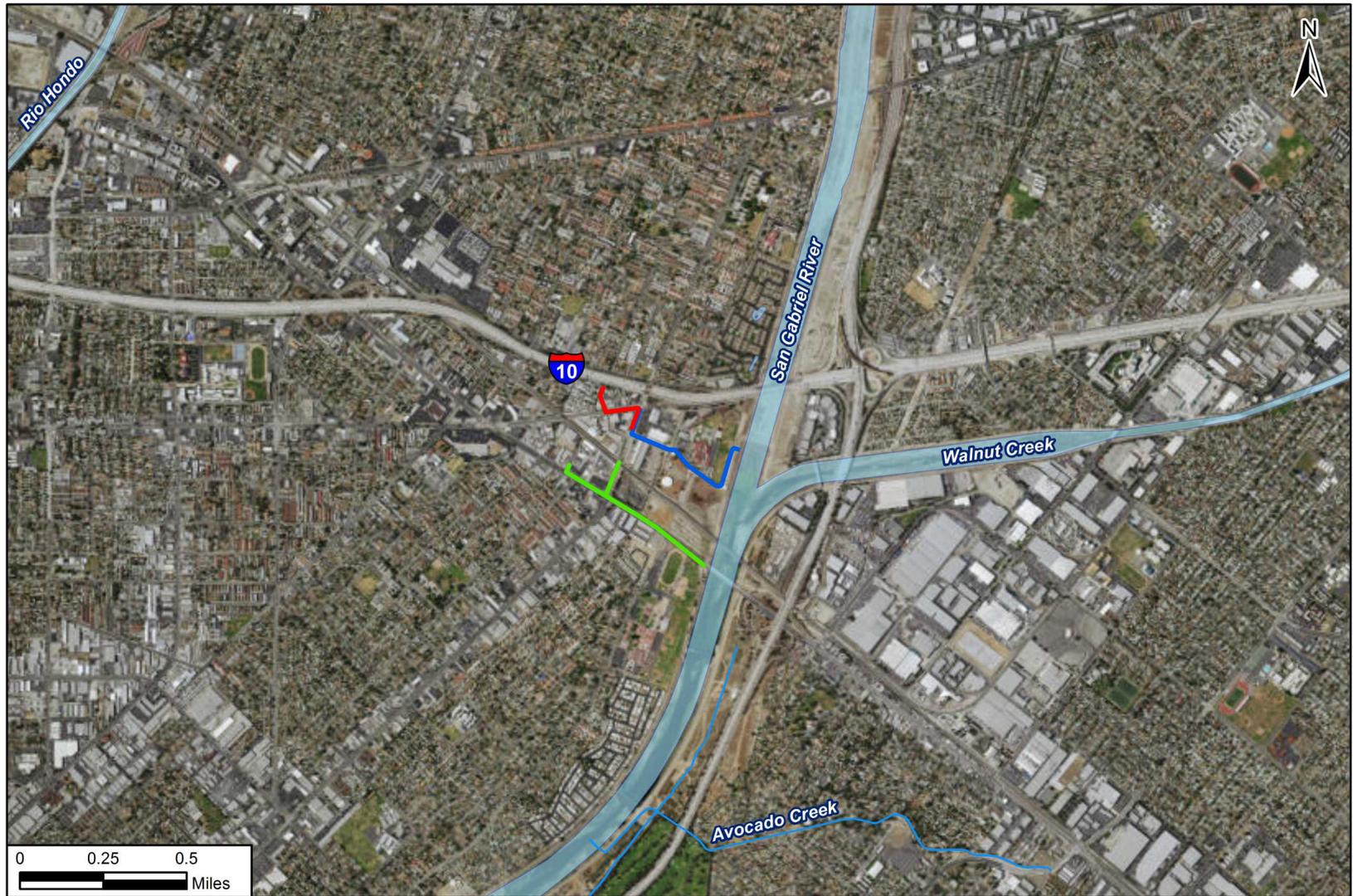
Federally Endangered & Threatened Species

A report for the project area was generated through the USFWS's Information for Planning and Conservation (IPaC) online system (see Appendix C). The system provides background information on listed species in an area of interest. A USFWS list of threatened and endangered species also was generated for the project area (Appendix C). Three Federally listed species have the potential to occur in the area (FWS 2016a, 2016c):

- Coastal California Gnatcatcher (*Polioptila californica californica*): (Federal: Threatened) (FWS2016a). They generally prefer open sage scrub, with California sagebrush as a dominant or co-dominant species, and are more abundant near areas where sage scrub transitions to chaparral (Mock 2004). Small, disjunct populations of the species have been documented in Los Angeles County.

- Least Bell's Vireo (*Vireo bellii pusillus*): (Federal: Endangered) (FWS 2016a). They inhabit dense, low, shrubby vegetation in generally early successional stages in riparian areas, brushy fields, young second-growth woodland, and coastal chaparral near water in arid regions (CLO 2015).
- Nevin's Barberry (*Berberis nevinii*): (Federal: Endangered) (FWS 2016a). Nevin's barberry is an evergreen shrub, historically found in scattered areas throughout Los Angeles, San Bernardino, Riverside, and possibly San Diego Counties. It is found in a variety of topographical conditions ranging from nearly flat sandy washes, terraces, and canyon floors to ridges and mountain summits (CDFW 2013).

Because the project location is a developed, highly urbanized area, no suitable habitat exists for any of these species. Therefore, the project would have "no effect" on listed species, and formal consultation with the USFWS under Section 7 of the Endangered Species Act is not required.



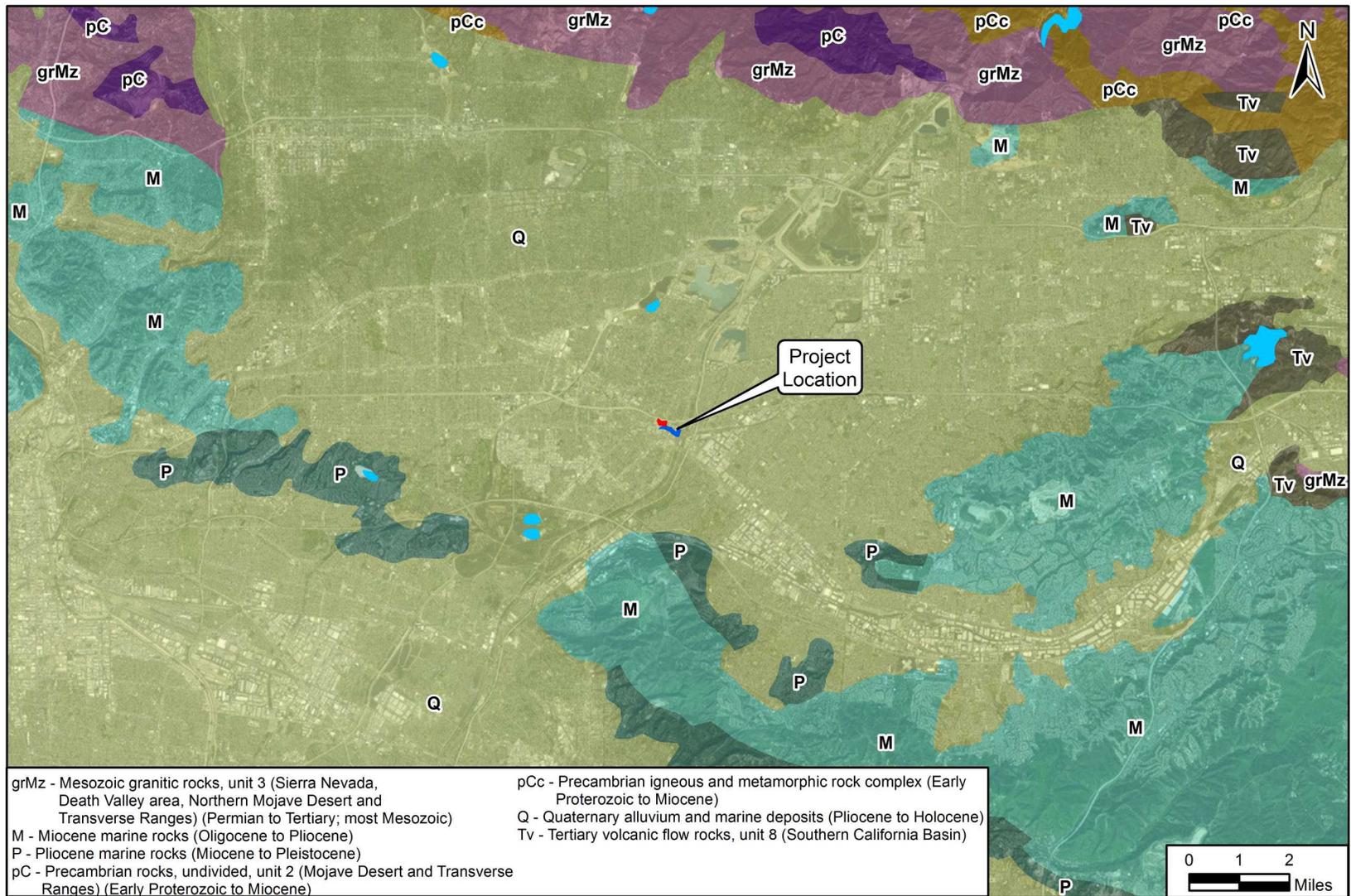
LEGEND

-  Existing Storm Drain
-  Proposed Storm Drain - Line A
-  Proposed Storm Drain - Line B

Surface Waters
El Monte, California

Figure 4

Source: USGS 2016.



LEGEND

-  Proposed Storm Drain - Line A
-  Proposed Storm Drain - Line B

Area Geology
 El Monte, California

Figure 5

Source: USGS 2005.

Air Quality

California is divided into Air Pollution Control Districts and Air Quality Management Districts (AQMD), which are also called air districts. These agencies are county or regional governing authorities that have primary responsibility for controlling air pollution from stationary sources. The City of El Monte is located within the South Coast Air Basin. Its air quality is regulated by EPA Region 9 and California's South Coast AQMD (SCAQMD).

Criteria Air Pollutants

EPA established primary and secondary National Ambient Air Quality Standards (NAAQS) (Title 40 of the *Code of Federal Regulations* part 50) that specify acceptable concentration levels of six criteria pollutants: particulate matter (measured as both particulate matter less than 10 microns in diameter [PM_{10}] and particulate matter less than 2.5 microns in diameter [$PM_{2.5}$]), sulfur dioxide, carbon monoxide, oxides of nitrogen (NOx), ozone, and lead. Short-term NAAQS (i.e., 1-, 8-, 24-hour periods) have been established for pollutants contributing to acute health effects, and long-term NAAQS (annual averages) have been established for pollutants contributing to chronic health effects. Each state has the authority to adopt standards more stringent than those established under the federal program. California's SCAQMD adopted California's Standards; federal standards also continue to apply.

Federal regulations designate air quality control regions (AQCRs) in violation of the NAAQS as *nonattainment areas*. Federal regulations designate AQCRs with levels below the NAAQS as *attainment areas*. *Maintenance areas* are AQCRs that have previously been designated as nonattainment and have been redesignated to attainment for a probationary period through implementation of maintenance plans.

EPA has designated the portion of Los Angeles County where the action is located as a nonattainment area for lead (through December 31, 2015), $PM_{2.5}$, and ozone, and as a maintenance area for PM_{10} , carbon monoxide and NO_2 . For reference purposes, Table 2 shows the monitored concentrations of criteria pollutants for South Coast Air Basin.

Lead

On February 11, 2014, EPA's Regional Administrator signed a final rule to approve the 2012 Los Angeles County Lead Attainment State Implementation Plan (SIP). The plan was developed and adopted by the SCAQMD, adopted and submitted by the California Air Resources Board, and shows how the area will attain the lead standard by the attainment date of December 31, 2015.

$PM_{2.5}$

On March 15, 2016, EPA finalized action on the South Coast 2012 $PM_{2.5}$ Plan and 2015 Supplement, which address Clean Air Act requirements for the 2006 $PM_{2.5}$ NAAQS. EPA approved the demonstration that the South Coast cannot practicably attain by the Moderate area attainment date of December 31, 2015, and disapproved the following portions of the plan:

- The demonstration that the plan provides for the implementation of reasonably available control measures and reasonably available control technology due to deficiencies in the 2010 version of the area's Regional Clean Air Incentives Market (RECLAIM) included in the plan.
- The demonstration that the plan provides for reasonable further progress.

To correct these deficiencies, California must submit to EPA a demonstration that the $PM_{2.5}$ RECLAIM program, either as adopted in 2010 or as subsequently amended, ensures emissions reductions equivalent in the aggregate to the reductions anticipated from the direct application of reasonably available control technology on covered sources.

Ozone

On August 13, 2014, EPA approved the South Coast 1-Hour ozone attainment demonstration. The revised plan demonstrates attainment of the 1-hour ozone standard in the South Coast area in 2022. Although EPA replaced the 1-hour ozone standard with a more health protective 8-hour standard, the Clean Air Act requires that California have approved plans in place for attaining the 1-hour standard in 1-hour ozone nonattainment areas. EPA noted that air quality has been steadily improving in the South Coast. Since 1985, there have been 95 percent fewer exceedances of the 1-hour ozone standard.

PM_{10}

On June 12, 2013, EPA approved the South Coast PM_{10} redesignation request and maintenance plan. This plan, known as a SIP, is the roadmap to maintaining the 1987 PM_{10} NAAQS set by EPA to protect public health for ten years. The area has not violated the 24-hour PM_{10} standard since 2008.

Carbon Monoxide

On April 24, 2007, EPA approved the South Coast maintenance plan and redesignation request for carbon monoxide. The plan, prepared by the SCAQMD and the California Air Resources Board, shows that the area will have in place the controls necessary to maintain the carbon monoxide standard through the year 2020.

Nitrogen Dioxide

On January 15, 2009, EPA approved in part and disapproved in part the South Coast 2003 1-hour ozone plan and the NO₂ maintenance plan. EPA approved the revised nitrogen dioxide maintenance demonstration based on the downward trend in baseline NO_x emissions. The disapproved portions of the plan were not required by the Clean Air Act.

Table 2. Air Quality Standards and Monitored Data					
Pollutant	Air Quality Standard		Monitored Concentrations		
	Level	Averaging Period	2013	2014	2015
<i>Lead</i>					
Federal					
3-month average (µg/m ³)	0.15	Rolling 3-month average	<no data> ^A		
State					
30-day average (µg/m ³)	1.5	30-day average, not to be equaled or exceeded	<no data> ^A		
<i>Carbon monoxide</i>					
Federal					
1-hour (ppm)	35	Not to be exceeded more than once per year	5.8	5.8	4.4
8-hour (ppm)	9		N/A	N/A	N/A
State					
1-hour (ppm)	20	Not to be exceeded	5.8	5.8	4.4
8-hour (ppm)	9		N/A	N/A	N/A
<i>Nitrogen dioxide</i>					
Federal					
1-hour (ppb)	100	98th percentile of 1-hour daily maximum concentrations, averaged over 3 years	<No data> ^B		
Annual mean (ppm)	0.053	Annual mean	<No data> ^B		
State					
1-hour (ppm)	0.18	98th percentile of 1-hour daily maximum concentrations, averaged over 3 years	<No data> ^B		
Annual mean (ppm)	0.03	Annual mean	<No data> ^B		
<i>Ozone</i>					
Federal					
8-hour (ppm)	0.07	3-year average of the fourth highest daily maximum	0.122	0.11	0.127
State					
1-hour (ppm)	0.09	Not to be exceeded	0.151	0.141	0.144
8-hour (ppm)	0.07	3-year average of the fourth highest daily maximum	0.123	0.111	0.128
<i>Sulfur dioxide</i>					
Federal					
1-hour (ppb)	75	99th percentile, averaged over 3 years	<No data> ^C		
3-hour (ppm)	0.5	Not to be exceeded more than once per year	<No data> ^C		
State					

**Table 2.
Air Quality Standards and Monitored Data**

Pollutant	Air Quality Standard		Monitored Concentrations		
	Level	Averaging Period	2013	2014	2015
1-hour (ppm)	0.25 ppm	99th percentile, averaged over 3 years	<No data> ^c		
24-hour (ppm)	0.04 ppm	Not to be exceeded	<No data> ^c		
<i>PM_{2.5}</i>					
Federal					
24-hour (µg/m ³)	35	98th percentile, averaged over 3 years	37.5	40	49
Annual mean (µg/m ³)	12	Averaged over 3 years	14.1	14.4	14.4
State					
Annual mean (µg/m ³)	12	Averaged over 3 years	18.9	18.9	14.4
<i>PM₁₀</i>					
Federal					
24-hour (µg/m ³)	150	Not to be exceeded more than once per year over 3 years	286	157.2	95.3
Annual mean (µg/m ³)	50	Averaged over 3 years	53	56	54
State					
24-hour (µg/m ³)	50	Not to be exceeded more than once per year over 3 years	199.2	131	107.4
Annual mean (µg/m ³)	20	Averaged over 3 years	40	45	45
<i>Visibility Reducing Particles</i>					
State					
8-hour (mile)	10	Extinction of 0.23 per kilometer, not to be exceeded	<no data>		
<i>Sulfates</i>					
State					
24-hour (µg/m ³)	25	Not to be exceeded	<No data> ^d		
<i>Hydrogen Sulfide</i>					
State					
1-hour (ppm)	0.03	Not to be exceeded	0.119	0.156	0.106
<i>Vinyl Chloride</i>					
State					
24-hour (ppm)	0.01	Not to be exceeded	<no data>		

Source: California Air Resources Board 2016, USEPA 2016d.

µg/m³ = micrograms per cubic meter; ppb = parts per billion; ppm = parts per million

Notes:

^A South Coast Air Basin data were not available for lead for the past three years; however data for the entire state of California during this timeframe indicate that federal and state lead standards were not exceeded.

^B South Coast Air Basin 1-hour maximum and 1-day average nitrogen dioxide data were available for this time frame. The 1-hour maximum nitrogen dioxide values (among stations in the South Coast Air Basin) were 0.1046, 0.1359, and 0.1019 ppm for 2013, 2014, and 2015, respectively. The 1-day average nitrogen dioxide values (maximum among stations in the South Coast Air Basin) were 0.0579, 0.0637, and 0.0602 ppm for 2013, 2014, and 2015, respectively.

^C South Coast Air Basin 1-hour maximum and 1-day average sulfur dioxide data were available for this time frame. The 1-hour maximum sulfur dioxide values (among stations in the South Coast Air Basin) were 0.0219, 0.0154, 0.0375 ppm for 2013, 2014, and 2015, respectively. The 1-day average sulfur dioxide values (maximum among stations in the South Coast Air Basin) were 0.0039, 0.0031, and 0.0046 ppm for 2013, 2014, and 2015, respectively.

^D Data were not available specifically for the South Coast Air Basin. Sulfate data reported for the entire state of California indicated that maximum 24-hour values in the years 2013, 2014, and 2015 were less than the corresponding state standard.

The General Conformity Rule (GCR) applies to the proposed action. The GCR ensures that federal actions comply with the NAAQS. The GCR applies to all federal actions that are taken in designated nonattainment or maintenance areas, with three exceptions. One exception is federal actions with emissions clearly at or below *de minimis* (of minimal importance) levels. Emissions were estimated for a model one-year construction project. Those emissions, which are greater than those expected for the proposed project, would not exceed the *de minimis* thresholds (see Table 3 and Appendix A).

Table 3. Summary of Construction Emissions Estimates							
	Air Pollutants						
	CO	NOx	VOC	SOx	PM₁₀	PM_{2.5}	CO₂
<i>De minimis</i> (tons per year) (attainment area/non-attainment or maintenance area)	100/50	100/50	100/50	100/50	100/50	100/50	27,563
Exceeds <i>de minimis</i> threshold?	No	No	No	No	No	No	No

Note: CO – carbon monoxide, SOx – sulfur oxides, VOC – volatile organic compounds.
The CO₂ value includes other greenhouse gases converted to CO₂ equivalents.

Greenhouse Gases and Climate Change

Greenhouse gases (GHGs) are components of the atmosphere that trap heat relatively near the surface of the earth and therefore contribute to the greenhouse effect and climate change. Most GHGs occur naturally in the atmosphere, but increases in their concentration result from human activities, such as the burning of fossil fuels. Global temperatures are expected to continue to rise as human activities continue to add carbon dioxide (CO₂), methane, nitrous oxide, and other greenhouse (or heat-trapping) gases to the atmosphere. Whether rainfall will increase or decrease remains difficult to project for specific regions (EPA 2016). The Council on Environmental Quality (CEQ) released draft guidance on when and how federal agencies should consider GHG emissions and climate change in NEPA analyses. The draft guidance includes a presumptive effects threshold of 27,563 tons per year (25,000 metric tons per year) of CO₂ equivalent emissions from a federal action (CEQ 2010). Emissions were estimated for a model one-year construction project. Those emissions, which are greater than those expected for this smaller project, would not exceed the CEQ threshold (see Table 4 and Appendix A).

Environmental Justice Information

Conditions, Minority & Low Income Areas (include median family income)

Executive Order (EO) 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-income Populations, was issued by President Clinton on February 11, 1994. The EO requires that federal agencies take into consideration disproportionately high and adverse environmental effects of governmental decisions, policies, projects, and programs on minority and low-income populations.

Per CEQ environmental justice guidance, minority populations should be identified where either the minority population of the affected area exceeds 50 percent, or the minority population percentage of the affected area is meaningfully greater than the minority population percentage in the general population or other appropriate unit of geographic analysis (CEQ 1997). The U.S. Census Bureau identifies minority populations as Black or African American; American Indian and

Alaska Native; Asian; Native Hawaiian and other Pacific Islander; persons of two or more races; and persons of Hispanic or Latino origin.

Per CEQ guidance, poverty thresholds established by the U.S. Census Bureau are used to identify low-income populations (CEQ 1997). Poverty status is reported as the number of persons or families with income below a defined threshold level. As of 2014, the U.S. Census Bureau defined the poverty threshold level as \$12,071 or less annual income for an individual and \$24,008 or less annual income for a family of four (U.S. Census Bureau 2015).

The EJSCREEN was used for this environmental justice analysis to identify minority and low-income populations. EJSCREEN is an environmental justice mapping and screening tool developed by EPA (and available on the internet) to provide a nationally consistent dataset and approach that combines environmental and demographic indicators in maps and reports (EPA 2015). Using the tool, a one-mile radius was drawn around the proposed Garvey Avenue underpass project site, generating a report on the populations within this boundary. The report, which is provided in Appendix A, shows the boundary map and lists selected demographic and environmental indicators within the defined boundary, as well as provides the state, regional, and national averages for each indicator for comparison.

The EJSCREEN report for demographic indicators shows that within the defined project boundary the population is comprised of 97 percent of persons of a minority race or ethnicity, which is higher compared to the state average of 60 percent, the EPA regional average of 57 percent, and the United States average of 36 percent. The percent of the population within the defined project boundary identified as low income (i.e., living below the poverty threshold) is 63 percent, higher than the state average of 35 percent, the EPA regional average of 35 percent, and the United States average of 34 percent. The indicators for those linguistically isolated or with less than a high-school education is higher for the project area compared to the state, EPA region, and United States averages.

Census Maps

Figure 6 provides the census maps highlighting the project area.

Land Use & Development, Percent Impervious Cover, Pollutant Sources

The existing land use within the project area is primarily commercial along Garvey Avenue, residential and commercial along Maxson Road, commercial along Durfee Avenue, industrial along Clora Place, and institutional along Gilman Road (City of El Monte 2011). A middle school is along Gilman Avenue next to the San Gabriel River.

Identification of Floodplains and Wetlands

As shown in Figure 7, no floodplains are in or near the proposed project area (FEMA 2008). The San Gabriel River abuts the southern edge of the proposed project area and is considered riverine temporarily flooded. As shown in Figure 8, wetlands are not in the proposed project area; however, patches of freshwater forested/shrub wetlands and riverine wetlands exist in the San Gabriel River channel (FWS 2016b).

2. Direct Impacts

The project would be expected to have minor (i.e., less than significant) adverse impacts on air quality, noise, and transportation. The adverse effects would be short term, lasting generally no longer than the duration of the construction phase of the project. No adverse impacts would be

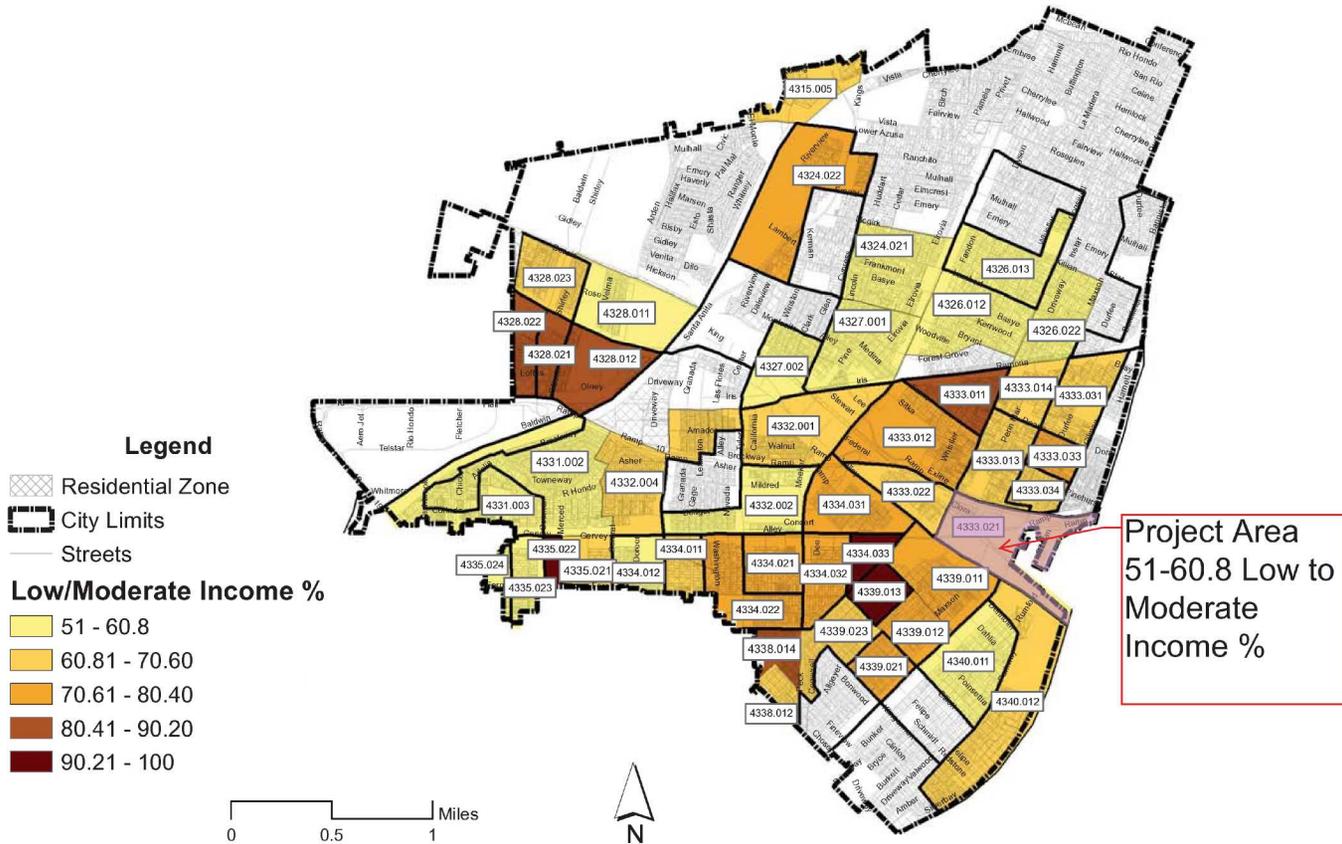
expected on other resource areas. The project would be expected to have beneficial effects on the local economy, the El Monte sewer system, environmental justice, and transportation. Table 4 summarizes the expected environmental and human health effects of the proposed action.

3. Secondary Impacts of Future Growth and Development

This project is not expected to induce future growth and development because it would not increase system capacity or provide water service to currently un-served areas. No secondary impacts of future growth and development are anticipated to affect the project area. The area is nearly 100% developed.



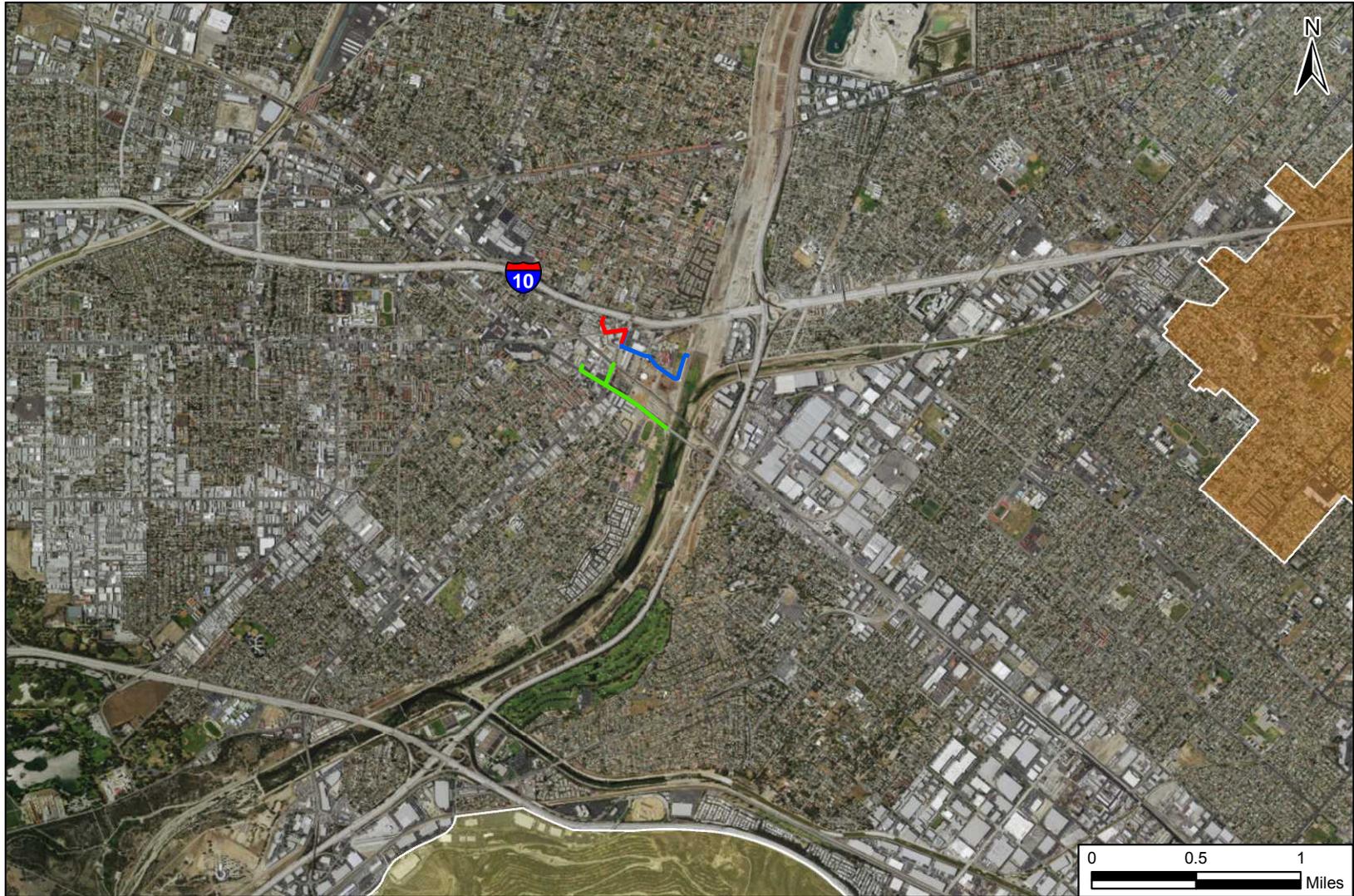
Low and Moderate Income Census Group Map



Based on U.S. Census 2000 Block Group I Map created April/2013

Low and Moderate Income Census Group Map

Figure 6



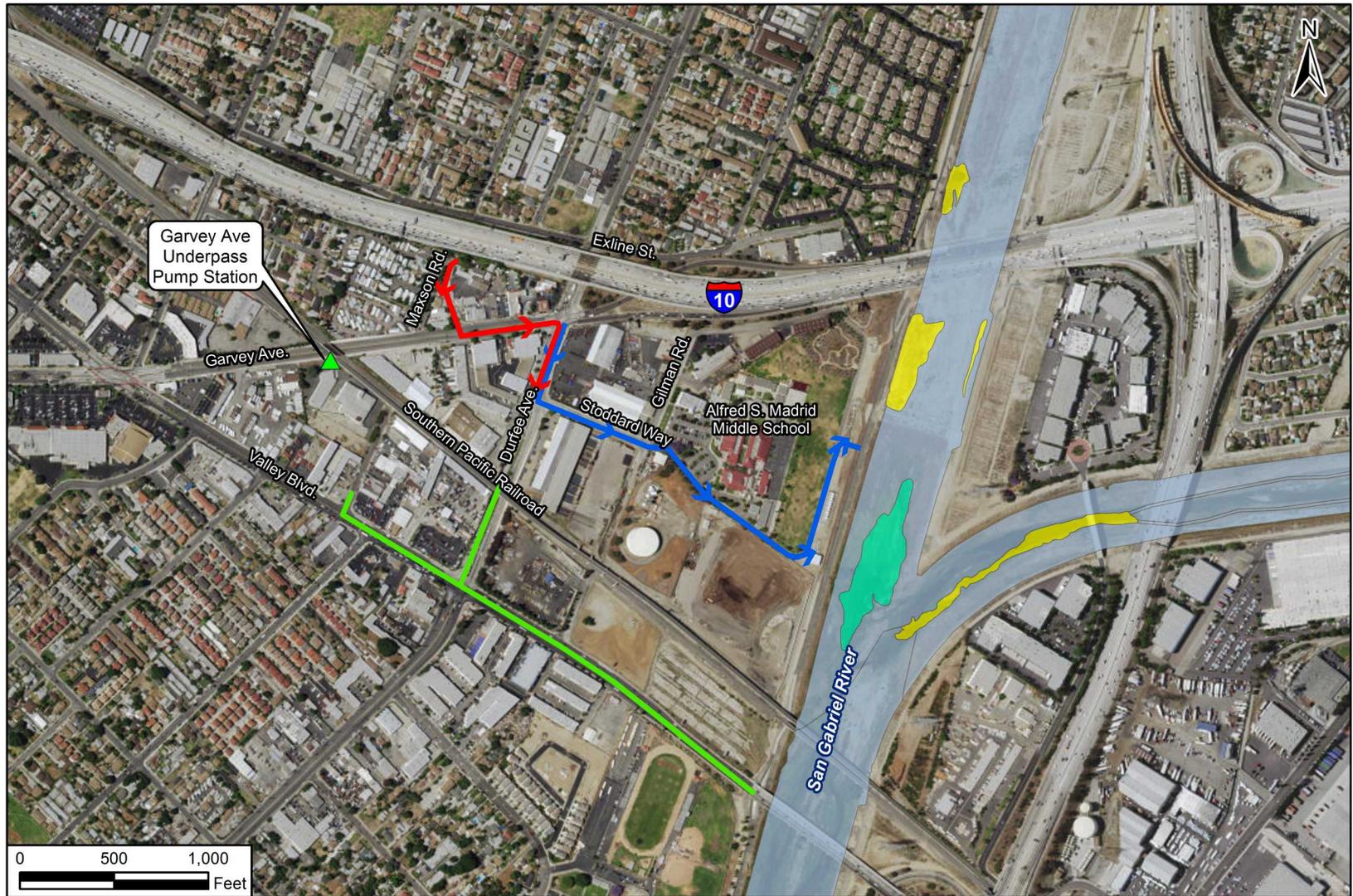
LEGEND

- ↗↘ Existing Storm Drain
- ↗↘ Proposed Storm Drain - Line A
- ↗↘ Proposed Storm Drain - Line B
- Area of Undetermined Flood Hazard
- 500-Year Floodplain

Floodplains
El Monte, California

Figure 7

Source: FEMA 2016.



LEGEND

-  Existing Storm Drain
-  Proposed Storm Drain - Line A
-  Proposed Storm Drain - Line B

NWI Wetland

-  Freshwater Emergent
-  Freshwater Forested/Shrub
-  Riverine

Wetlands
El Monte, California

Figure 8

Source: FWS 2016b.

**Table 4.
Summary of Potential Environmental Effects**

Resource Area	Environmental Effect(s) of Proposed Action	Environmental Effect(s) of No-Action Alternative	Note
Land Use	No effect	No effect	Land use would not be affected by the proposed action.
Climate	No effect	No effect	No change in the local or regional climate would result from implementing the proposed action, and climate change would not have a discernible effect on the project.
Air Quality	Short-term minor adverse effect	No effect	Minor amounts of air pollutants would be emitted during construction. The effects would end upon completion of construction. Dust from vehicles and ground disturbance would be minimized by using dust control best management practices (BMPs), in accordance with SCAQMD guidance.
Noise	Short-term minor adverse effect	No effect	Construction noise would be associated with the project. However, the noise would cease upon completion of construction.
Earth Resources – Topography	No effect	No effect	No topographic changes would result from implementing the proposed action.
Earth Resources – Soils	No effect	No effect	Some soil disturbance would occur during construction. The areas disturbed, however, are highly developed and do not have natural soil profiles. Disturbed areas would be repaved or stabilized after construction, as necessary.
Earth Resources – Geology	No effect	No effect	No changes in the local geology would result from implementing the proposed action.

**Table 4.
Summary of Potential Environmental Effects**

Resource Area	Environmental Effect(s) of Proposed Action	Environmental Effect(s) of No-Action Alternative	Note
Water Resources – Groundwater	No effect	No effect	Groundwater would be unaffected by the proposed action. No additional demand on groundwater resources would be created from implementing the proposed project. No pollutants would be introduced into groundwater during project implementation.
Water Resources – Surface waters	No effect	No effect	No natural surface waters would be affected by the proposed project.
Water Resources – Wetlands	No effect	No effect	Wetlands in the San Gabriel River would receive additional stormwater runoff, but no long-term changes to the wetlands would be expected.
Water Resources – Floodplains	No effect	No effect	No floodplains would be altered by implementing the proposed action.
Water Resources – Stormwater	No effect	No effect	No increase in the quantity or quality of stormwater would be expected from implementing the proposed action. Stormwater would be rerouted as a result of the proposed action.
Biological Resources – Flora	No effect	No effect	No adverse effects on local flora would result from implementing the proposed action.
Biological Resources – Fauna	No effect	No effect	No adverse effects on local fauna would result from implementing the proposed action.
Biological Resources – Protected species	No effect	No effect	No adverse impacts on protected species would be expected from implementing the proposed action.

**Table 4.
Summary of Potential Environmental Effects**

Resource Area	Environmental Effect(s) of Proposed Action	Environmental Effect(s) of No-Action Alternative	Note
Cultural Resources	No effect	No effect	No effects on cultural resources would be expected from implementing the proposed action. Consultation with the California SHPO has confirmed this determination. Effects would be further minimized by the use of Native American and archaeological monitors.
Socioeconomics – Economic environment	No effect	No effect	Beneficial effects would be expected on the regional economy. The expenditures and employment associated with the proposed action would increase regional employment, income, and sales volume in the local construction industry and related industries. The economic benefits would be short-term, lasting for the duration of the construction period.
Socioeconomics – Environmental justice	No effect	No effect	Because the proposed action would have no substantially adverse effects, it would not disproportionately affect low-income or minority populations. The short-term effects of the proposed action would affect all populations equally.
Socioeconomics – Protection of children	No effect	No effect	No environmental health risks and safety risks that could disproportionately affect children are associated with the proposed project.
Transportation	Short-term minor adverse effect Long-term minor beneficial effect	No effect	Construction would adversely affect traffic on roads directly affected and on nearby roads indirectly. Traffic on Garvey Avenue would be improved upon completion of the project because it would reduce flooding of that roadway.
Infrastructure and Utilities	Long-term minor beneficial effect	No effect	Stormwater management would improve as a result of implementing the project.

**Table 4.
 Summary of Potential Environmental Effects**

Resource Area	Environmental Effect(s) of Proposed Action	Environmental Effect(s) of No-Action Alternative	Note
Hazardous and Toxic Materials and Waste	No effect	No effect	No hazardous or toxic substances would be transported, used, stored, or disposed of during project implementation. Any lubricants, oils, or petroleum products used would be those only for normal equipment operation and maintenance.
Safety and Occupational Health	No effect	No effect	No change in safety or occupational health would result from implementing the proposed action. All contractors would be required to comply with normal industry standards of safety or occupational health during project implementation, and the public would be excluded from or routed around the project area during construction.

4. Cumulative Impacts

Cumulative effects on environmental resources result from the incremental effects of an action when combined with other past, present, and reasonably foreseeable future projects in the area. Cumulative effects can result from individually minor but collectively substantial actions taken over a period of time. In accordance with NEPA, a discussion is required of cumulative effects that could result from projects proposed or anticipated in the foreseeable future.

Cumulative effects are possible for those resource areas on which the project could have an adverse effect. The El Monte proposed project could have an adverse effect on air quality, noise, and transportation. Cumulative impacts on air quality from construction activities cause temporary increases in air pollutants. Once construction is completed, emissions return to baseline levels. Therefore, construction projects may cause short-term, but do not cause long-term cumulative impacts on air quality. The magnitude of the short-term impact, if any, would depend on whether other projects in the region were active at the same time as the proposed project and the nature of the projects.

Construction noise is generally loud enough to be annoying within 800 feet from the construction site. If another source of loud noise is within 1,600 feet of the construction site, the two noise sources can overlap. In the case of this project, cumulative noise impacts would be expected to be negligible because of the urban nature of the project area, with continuous road traffic and intermittent train traffic.

Cumulative impacts on the transportation network would be expected if road closures and detours for other projects occur in the same area and during the same time as those for this proposed project. The timing of the project has not been determined, so cumulative impacts on the transportation network cannot be determined at this time. The Town of El Monte Public Works Department would schedule road closures and plan detours to minimize adverse effects on the transportation network.

5. Unavoidable Adverse Impacts

Unavoidable adverse impacts from the project include the following:

- Short-term traffic flow delays and interruptions.
- Short-term air quality emissions from construction activities and equipment.
- Short-term noise during construction.

6. Minimization of Adverse Impacts

If the proposed project disturbs 1 acre or more of total area, the construction contractor would obtain a 2009-0009-DWQ Construction General Permit (General Permit No. CAS000002 Storm Water Discharges Associated with Construction and Land Disturbance Activities) in compliance with the requirements of the California State Water Resources Control Board, Division of Water Quality. Implementing the conditions of the permit, including preparation of a stormwater pollution prevention plan that incorporate best management practices accepted by California's State Water Resources Control Board, would minimize sediment runoff from the site.

7. Mitigation

Compliance with applicable construction activity controls (e.g., dust control during construction/demolition activities, construction equipment maintained to minimize emissions)

included in the SIPs and Maintenance Plans for the SCAQMD is required to minimize air quality issues.

SCAQMD Rule 403 (Fugitive Dust) is intended to reduce the amount of particulate matter entrained in the ambient air as a result of anthropogenic (man-made) fugitive dust sources by requiring actions to prevent, reduce or mitigate fugitive dust emissions (SCAQMD 2016). Under the rule, dust suppression is to be applied in sufficient quantity and frequency to maintain a stabilized surface. Any areas which cannot be stabilized, as evidenced by wind driven fugitive dust must have an application of water at least twice per day to at least 80 percent of the unstabilized area.

The California Code of Regulations requires that construction equipment idling time be minimized either by shutting equipment off when not in use or reducing the time of idling to 5 minutes (Title 13 Sections 2449(d)(3), 2485) (SAQMD 2010). All construction equipment should be maintained in proper working condition according to manufacturer's specifications. The equipment must be checked by a certified mechanic and determine to be running in proper condition before it is operated.

To avoid impacts on subsurface cultural resources, a Native American monitor and archaeological monitor would be present during ground-disturbing activities. Each monitor would be empowered to halt project activities to avoid or minimize disturbance of Native American or archaeological resources.

Should any known or potential cultural materials be encountered during ground-disturbing activities, all work that may affect those materials would be halted until a qualified archaeologist can be consulted on the nature and significance of those materials.

8. Cross-cutter Environmental Laws and Coordination and Consultation Process

Archeological and Historic Preservation Act

EPA made a determination of "no historic properties affected" for this project. EPA conveyed this finding of effect to the California SHPO in a letter dated August 24, 2016, and the SHPO concurred with this finding on September 21, 2016 (Appendix B). In its letter, SHPO did not object to the identification and delineation of the APE, concurred with the finding that the existing storm drain system is not eligible for listing on the NRHP, and did not object to the finding of "no historic properties affected" for the proposed undertaking.

Clean Air Act

Under the GCR in the Clean Air Act, air emissions attributable to the project will be required to be in compliance with the SIP and Los Angeles County Maintenance Plan for air quality.

Coastal Barrier Resources Act

The proposed project would not affect coastal barrier resources. No coastal barrier resources are within the project area.

Coastal Zone Management Act

The proposed project would not affect the California coastal zone. El Monte is not within the California coastal zone.

Endangered Species Act

No federally listed species would be affected by the proposed project. The U.S. Fish and Wildlife Services' (USFWS) IPaC (*Information for Planning and Conservation*) website (<https://ecos.fws.gov/ipac/>) was searched for protected species information specific to the proposed project area. The project area has no habitat suitable for the federal species listed as potentially occurring in the project area. The results of this search are provided in Appendix C.

Environmental Justice

Because the proposed action would have no substantially adverse effects, it would not disproportionately affect low-income or minority populations. The proposed action would affect all populations equally.

Floodplain Management

Because no floodplains exist in the project area, they would not be affected by the proposed project.

Protection of Wetlands

No effects on wetlands in the San Gabriel River would be expected. Stormwater formerly directed to the Rio Hondo Channel would be diverted to the San Gabriel River, resulting in increased stormwater runoff to the river and its wetlands. Freshwater forested/shrub wetlands and riverine wetlands are in the river channel at the proposed outfall location at the end of Line A. Because stormwater peak flow subsides quickly after a storm event, it would not be expected that the additional flow would be substantial enough to alter the wetlands in the river.

Farmland Protection Policy Act

Because no farmlands exist in the project area, farmland would not be affected by the proposed project (NRCS 2014).

Fish and Wildlife Coordination Act

Fish and wildlife would not be affected by the proposed project. The urban environment of the project area contains no natural habitat for any fish or wildlife species.

National Historic Preservation Act

Pursuant to Section 106 of the NHPA, EPA made a determination of "no historic properties affected" for this project. EPA conveyed this finding of effect to the California SHPO in a letter dated August 24, 2016, and the SHPO concurred with this finding on September 21, 2016 (Appendix B). In its letter, SHPO did not object to the identification and delineation of the APE, concurred with the finding that the existing storm drain system is not eligible for listing on the NRHP, and did not object to the finding of "no historic properties affected" for the proposed undertaking.

Safe Drinking Water Act

Drinking water supplies would not be affected by the proposed project.

Wild and Scenic River Act

No wild and scenic rivers exist in the project area. Wild and scenic rivers would not be affected by the proposed project (BLM 2016).

Essential Fish Habitat

Because no essential fish habitat exists in the project area, that habitat type would not be affected by the proposed project (NOAA 2016).

SECTION F. REFERENCES

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APPENDIX A

EJSCREEN

1 mile Ring Centered at 34.063184,-118.015540

CALIFORNIA, EPA Region 9

Save as PDF

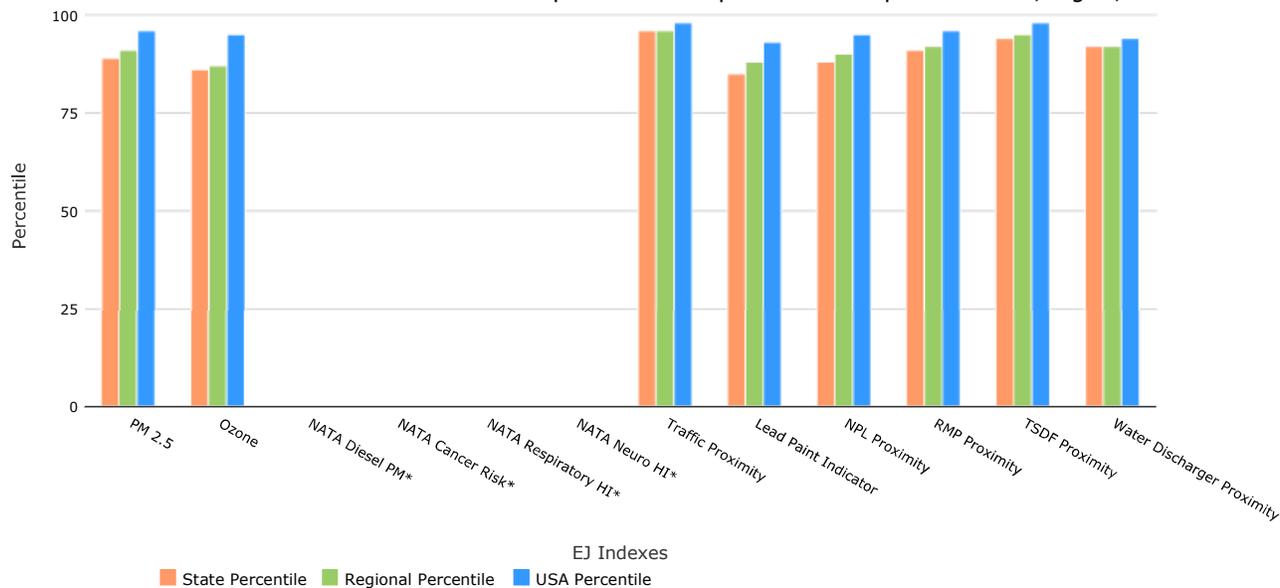


1 mile Ring Centered at 34.063184,-118.015540
CALIFORNIA, EPA Region 9
Approximate Population: 36211
 Garvey Ave Drainage Improvements



Selected Variables	Percentile in State	Percentile in EPA Region	Percentile in USA
EJ Indexes			
EJ Index for Particulate Matter (PM 2.5)	89	91	96
EJ Index for Ozone	86	87	95
EJ Index for NATA Diesel PM*	N/A	N/A	N/A
EJ Index for NATA Air Toxics Cancer Risk*	N/A	N/A	N/A
EJ Index for NATA Respiratory Hazard Index*	N/A	N/A	N/A
EJ Index for NATA Neurological Hazard Index*	N/A	N/A	N/A
EJ Index for Traffic Proximity and Volume	96	96	98
EJ Index for Lead Paint Indicator	85	88	93
EJ Index for NPL Proximity	88	90	95
EJ Index for RMP Proximity	91	92	96
EJ Index for TSDF Proximity	94	95	98
EJ Index for Water Discharger Proximity	92	92	94

EJ Index for the Selected Area Compared to All People's Block Groups in the State/Region/US



This report shows environmental, demographic, and EJ indicator values. It shows environmental and demographic raw data (e.g., the estimated concentration of ozone in the air), and also shows what percentile each raw data value represents. These percentiles provide perspective on how the selected block group or buffer area compares to the entire state, EPA region, or nation. For example, if a given location is at the 95th percentile nationwide, this means that only 5 percent of the US population has a higher block group value than the average person in the location being analyzed. The years for which the data are available, and the methods used, vary across these indicators. Important caveats and uncertainties apply to this screening-level information, so it is essential to understand the limitations on appropriate interpretations and applications of these indicators. Please see EJSscreen documentation for discussion of these issues before using reports.



Selected Variables	Raw data	State Average	%ile in State	EPA Region Average	%ile in EPA Region	USA Average	%ile in USA
Environmental Indicators							
Particulate Matter (PM 2.5 in $\mu\text{g}/\text{m}^3$)	12.4	10.4	80	9.95	84	9.78	95
Ozone (ppb)	48.9	48.4	55	49.7	45	46.1	65
NATA Diesel PM ($\mu\text{g}/\text{m}^3$)*	N/A	N/A	N/A	N/A	N/A	N/A	N/A
NATA Air Toxics Cancer Risk (risk per MM)*	N/A	N/A	N/A	N/A	N/A	N/A	N/A
NATA Respiratory Hazard Index*	N/A	N/A	N/A	N/A	N/A	N/A	N/A
NATA Neurological Hazard Index*	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Traffic Proximity and Volume (daily traffic count/distance to road)	510	210	89	190	90	110	95
Lead Paint Indicator (% pre-1960s housing)	0.37	0.3	63	0.25	69	0.3	65
NPL Proximity (site count/km distance)	0.13	0.13	74	0.11	78	0.096	81
RMP Proximity (facility count/km distance)	0.74	0.46	84	0.41	85	0.31	89
TSDF Proximity (facility count/km distance)	0.29	0.13	91	0.12	92	0.054	97
Water Discharger Proximity (count/km)	0.25	0.18	83	0.19	81	0.25	75
Demographic Indicators							
Demographic Index	80%	47%	91	46%	92	35%	95
Minority Population	97%	60%	91	57%	92	36%	95
Low Income Population	63%	35%	86	35%	86	34%	89
Linguistically Isolated Population	30%	10%	91	9%	92	5%	96
Population with Less Than High School Education	48%	19%	89	18%	91	14%	96
Population under Age 5	9%	7%	70	7%	69	7%	73
Population over Age 64	7%	12%	34	12%	35	13%	25

*The National-Scale Air Toxics Assessment (NATA) environmental indicators and EJ indexes, which include cancer risk, respiratory hazard, neurodevelopment hazard, and diesel particulate matter will be added into EJSCREEN during the first full public update after the soon-to-be-released 2011 dataset is made available. The National-Scale Air Toxics Assessment (NATA) is EPA's ongoing, comprehensive evaluation of air toxics in the United States. EPA developed the NATA to prioritize air toxics, emission sources, and locations of interest for further study. It is important to remember that NATA provides broad estimates of health risks over geographic areas of the country, not definitive risks to specific individuals or locations. More information on the NATA analysis can be found at: <https://www.epa.gov/national-air-toxics-assessment>.

For additional information, see: www.epa.gov/environmentaljustice

EJSCREEN is a screening tool for pre-decisional use only. It can help identify areas that may warrant additional consideration, analysis, or outreach. It does not provide a basis for decision-making, but it may help identify potential areas of EJ concern. Users should keep in mind that screening tools are subject to substantial uncertainty in their demographic and environmental data, particularly when looking at small geographic areas. Important caveats and uncertainties apply to this screening-level information, so it is essential to understand the limitations on appropriate interpretations and applications of these indicators. Please see EJSCREEN documentation for discussion of these issues before using reports. This screening tool does not

provide data on every environmental impact and demographic factor that may be relevant to a particular location. EJSOREEN outputs should be supplemented with additional information and local knowledge before taking any action to address potential EJ concerns.

APPENDIX B

Letters to Agencies and Tribes

APPENDIX C

**U.S. Fish and Wildlife Service
IPaC Search Results and Species List**

Garvey Avenue Underpass Drainage Improvement Project

IPaC Trust Resources Report

Generated April 21, 2016 10:00 AM MDT, IPaC v3.0.2

This report is for informational purposes only and should not be used for planning or analyzing project level impacts. For project reviews that require U.S. Fish & Wildlife Service review or concurrence, please return to the IPaC website and request an official species list from the Regulatory Documents page.



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- Project Description [1](#)
- Endangered Species [2](#)
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U.S. Fish & Wildlife Service

IPaC Trust Resources Report



NAME

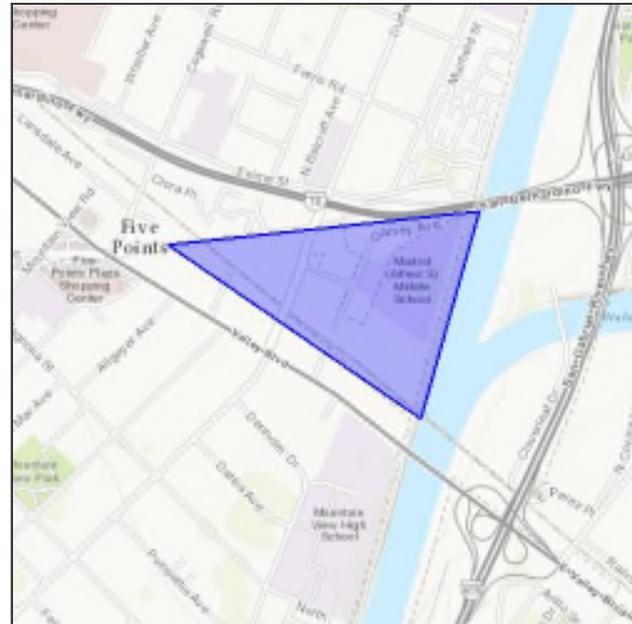
Garvey Avenue Underpass Drainage Improvement Project

LOCATION

Los Angeles County, California

IPAC LINK

<https://ecos.fws.gov/ipac/project/HDMVN-7XOEF-FNDNT-VQJ27-2AGUPA>



U.S. Fish & Wildlife Service Contact Information

Trust resources in this location are managed by:

Carlsbad Fish And Wildlife Office

2177 Salk Avenue - Suite 250

Carlsbad, CA 92008-7385

(760) 431-9440

Endangered Species

Proposed, candidate, threatened, and endangered species are managed by the [Endangered Species Program](#) of the U.S. Fish & Wildlife Service.

This USFWS trust resource report is for informational purposes only and should not be used for planning or analyzing project level impacts.

For project evaluations that require USFWS concurrence/review, please return to the IPaC website and request an official species list from the Regulatory Documents section.

[Section 7](#) of the Endangered Species Act **requires** Federal agencies to "request of the Secretary information whether any species which is listed or proposed to be listed may be present in the area of such proposed action" for any project that is conducted, permitted, funded, or licensed by any Federal agency.

A letter from the local office and a species list which fulfills this requirement can only be obtained by requesting an official species list either from the Regulatory Documents section in IPaC or from the local field office directly.

The list of species below are those that may occur or could potentially be affected by activities in this location:

Birds

Coastal California Gnatcatcher *Polioptila californica californica* Threatened

CRITICAL HABITAT

There is **final** critical habitat designated for this species.

http://ecos.fws.gov/tess_public/profile/speciesProfile.action?sPCODE=B08X

Least Bell's Vireo *Vireo bellii pusillus* Endangered

CRITICAL HABITAT

There is **final** critical habitat designated for this species.

http://ecos.fws.gov/tess_public/profile/speciesProfile.action?sPCODE=B067

Flowering Plants

Nevin's Barberry *Berberis nevinii* Endangered

CRITICAL HABITAT

There is **final** critical habitat designated for this species.

http://ecos.fws.gov/tess_public/profile/speciesProfile.action?sPCODE=Q08G

Critical Habitats

There are no critical habitats in this location

Migratory Birds

Birds are protected by the [Migratory Bird Treaty Act](#) and the [Bald and Golden Eagle Protection Act](#).

Any activity that results in the take of migratory birds or eagles is prohibited unless authorized by the U.S. Fish & Wildlife Service.^[1] There are no provisions for allowing the take of migratory birds that are unintentionally killed or injured.

Any person or organization who plans or conducts activities that may result in the take of migratory birds is responsible for complying with the appropriate regulations and implementing appropriate conservation measures.

1. 50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)

Additional information can be found using the following links:

- Birds of Conservation Concern
<http://www.fws.gov/birds/management/managed-species/birds-of-conservation-concern.php>
- Conservation measures for birds
<http://www.fws.gov/birds/management/project-assessment-tools-and-guidance/conservation-measures.php>
- Year-round bird occurrence data
<http://www.fws.gov/birds/management/project-assessment-tools-and-guidance/akn-histogram-tools.php>

The following species of migratory birds could potentially be affected by activities in this location:

Bald Eagle <i>Haliaeetus leucocephalus</i>	Bird of conservation concern
Season: Wintering http://ecos.fws.gov/tess_public/profile/speciesProfile.action?sPCODE=B008	
Bell's Vireo <i>Vireo bellii</i>	Bird of conservation concern
Season: Breeding http://ecos.fws.gov/tess_public/profile/speciesProfile.action?sPCODE=B0JX	
Brewer's Sparrow <i>Spizella breweri</i>	Bird of conservation concern
Year-round http://ecos.fws.gov/tess_public/profile/speciesProfile.action?sPCODE=B0HA	
Burrowing Owl <i>Athene cunicularia</i>	Bird of conservation concern
Year-round http://ecos.fws.gov/tess_public/profile/speciesProfile.action?sPCODE=B0NC	

Cactus Wren <i>Campylorhynchus brunneicapillus</i> Year-round http://ecos.fws.gov/tess_public/profile/speciesProfile.action?spcode=B0FZ	Bird of conservation concern
California Spotted Owl <i>Strix occidentalis occidentalis</i> Year-round http://ecos.fws.gov/tess_public/profile/speciesProfile.action?spcode=B08L	Bird of conservation concern
Costa's Hummingbird <i>Calypte costae</i> Season: Breeding http://ecos.fws.gov/tess_public/profile/speciesProfile.action?spcode=B0JE	Bird of conservation concern
Fox Sparrow <i>Passerella iliaca</i> Season: Wintering	Bird of conservation concern
Green-tailed Towhee <i>Pipilo chlorurus</i> Season: Breeding http://ecos.fws.gov/tess_public/profile/speciesProfile.action?spcode=B0IO	Bird of conservation concern
Lawrence's Goldfinch <i>Carduelis lawrencei</i> Year-round http://ecos.fws.gov/tess_public/profile/speciesProfile.action?spcode=B0J8	Bird of conservation concern
Least Bittern <i>Ixobrychus exilis</i> Year-round http://ecos.fws.gov/tess_public/profile/speciesProfile.action?spcode=B092	
Lesser Yellowlegs <i>Tringa flavipes</i> Season: Wintering http://ecos.fws.gov/tess_public/profile/speciesProfile.action?spcode=B0MD	Bird of conservation concern
Lewis's Woodpecker <i>Melanerpes lewis</i> Season: Wintering http://ecos.fws.gov/tess_public/profile/speciesProfile.action?spcode=B0HQ	Bird of conservation concern
Loggerhead Shrike <i>Lanius ludovicianus</i> Year-round http://ecos.fws.gov/tess_public/profile/speciesProfile.action?spcode=B0FY	Bird of conservation concern
Long-billed Curlew <i>Numenius americanus</i> Season: Wintering http://ecos.fws.gov/tess_public/profile/speciesProfile.action?spcode=B06S	Bird of conservation concern
Marbled Godwit <i>Limosa fedoa</i> Season: Wintering http://ecos.fws.gov/tess_public/profile/speciesProfile.action?spcode=B0JL	Bird of conservation concern
Mountain Plover <i>Charadrius montanus</i> Season: Wintering http://ecos.fws.gov/tess_public/profile/speciesProfile.action?spcode=B078	Bird of conservation concern

Nuttall's Woodpecker <i>Picoides nuttallii</i> Year-round http://ecos.fws.gov/tess_public/profile/speciesProfile.action?spcode=B0HT	Bird of conservation concern
Oak Titmouse <i>Baeolophus inornatus</i> Year-round http://ecos.fws.gov/tess_public/profile/speciesProfile.action?spcode=B0MJ	Bird of conservation concern
Olive-sided Flycatcher <i>Contopus cooperi</i> Season: Breeding http://ecos.fws.gov/tess_public/profile/speciesProfile.action?spcode=B0AN	Bird of conservation concern
Peregrine Falcon <i>Falco peregrinus</i> Season: Wintering http://ecos.fws.gov/tess_public/profile/speciesProfile.action?spcode=B0FU	Bird of conservation concern
Red-crowned Parrot <i>Amazona viridigenalis</i> Year-round http://ecos.fws.gov/tess_public/profile/speciesProfile.action?spcode=B0GO	Bird of conservation concern
Rufous-crowned Sparrow <i>Aimophila ruficeps</i> Year-round http://ecos.fws.gov/tess_public/profile/speciesProfile.action?spcode=B0MX	Bird of conservation concern
Short-eared Owl <i>Asio flammeus</i> Season: Wintering http://ecos.fws.gov/tess_public/profile/speciesProfile.action?spcode=B0HD	Bird of conservation concern
Tricolored Blackbird <i>Agelaius tricolor</i> Year-round http://ecos.fws.gov/tess_public/profile/speciesProfile.action?spcode=B06P	Bird of conservation concern
Western Grebe <i>aechmophorus occidentalis</i> Season: Wintering http://ecos.fws.gov/tess_public/profile/speciesProfile.action?spcode=B0EA	Bird of conservation concern
Williamson's Sapsucker <i>Sphyrapicus thyroideus</i> Season: Wintering http://ecos.fws.gov/tess_public/profile/speciesProfile.action?spcode=B0FX	Bird of conservation concern
Red Knot <i>Calidris canutus ssp. roselaari</i> Season: Wintering http://ecos.fws.gov/tess_public/profile/speciesProfile.action?spcode=B0G6	Bird of conservation concern

Wildlife refuges and fish hatcheries

There are no refuges or fish hatcheries in this location

Wetlands in the National Wetlands Inventory

Impacts to [NWI wetlands](#) and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local [U.S. Army Corps of Engineers District](#).

DATA LIMITATIONS

The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

The accuracy of image interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground truth verification work conducted. Metadata should be consulted to determine the date of the source imagery used and any mapping problems.

Wetlands or other mapped features may have changed since the date of the imagery or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site.

DATA EXCLUSIONS

Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and nearshore coastal waters. Some deepwater reef communities (coral or tubercid worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

DATA PRECAUTIONS

Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.

This location overlaps all or part of the following wetlands:

Freshwater Forested/shrub Wetland

[PSSAx](#)

1.57 acres

Riverine

[R4SBAx](#)

181.0 acres

A full description for each wetland code can be found at the National Wetlands Inventory website: <http://107.20.228.18/decoders/wetlands.aspx>



United States Department of the Interior



FISH AND WILDLIFE SERVICE

Carlsbad Fish and Wildlife Office
2177 SALK AVENUE - SUITE 250
CARLSBAD, CA 92008

PHONE: (760)431-9440 FAX: (760)431-5901

URL: www.fws.gov/carlsbad/

Consultation Code: 08ECAR00-2016-SLI-0811

July 26, 2016

Event Code: 08ECAR00-2016-E-01254

Project Name: El Monte Storm Sewer Improvement

Subject: List of threatened and endangered species that may occur in your proposed project location, and/or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, and proposed species, designated critical habitat, and candidate species that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*).

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 *et seq.*), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)(c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

<http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF>

Please be aware that bald and golden eagles are protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668 *et seq.*), and projects affecting these species may require development of an eagle conservation plan (http://www.fws.gov/windenergy/eagle_guidance.html). Additionally, wind energy projects should follow the wind energy guidelines (<http://www.fws.gov/windenergy/>) for minimizing impacts to migratory birds and bats.

Guidance for minimizing impacts to migratory birds for projects including communications towers (e.g., cellular, digital television, radio, and emergency broadcast) can be found at: <http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/towers.htm>; <http://www.towerkill.com>; and <http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/comtow.html>.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Tracking Number in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment



United States Department of Interior
Fish and Wildlife Service

Project name: El Monte Storm Sewer Improvement

Official Species List

Provided by:

Carlsbad Fish and Wildlife Office
2177 SALK AVENUE - SUITE 250
CARLSBAD, CA 92008
(760) 431-9440
<http://www.fws.gov/carlsbad/>

Consultation Code: 08ECAR00-2016-SLI-0811

Event Code: 08ECAR00-2016-E-01254

Project Type: WASTEWATER PIPELINE

Project Name: El Monte Storm Sewer Improvement

Project Description: Install new storm sewer lines to reduce flooding

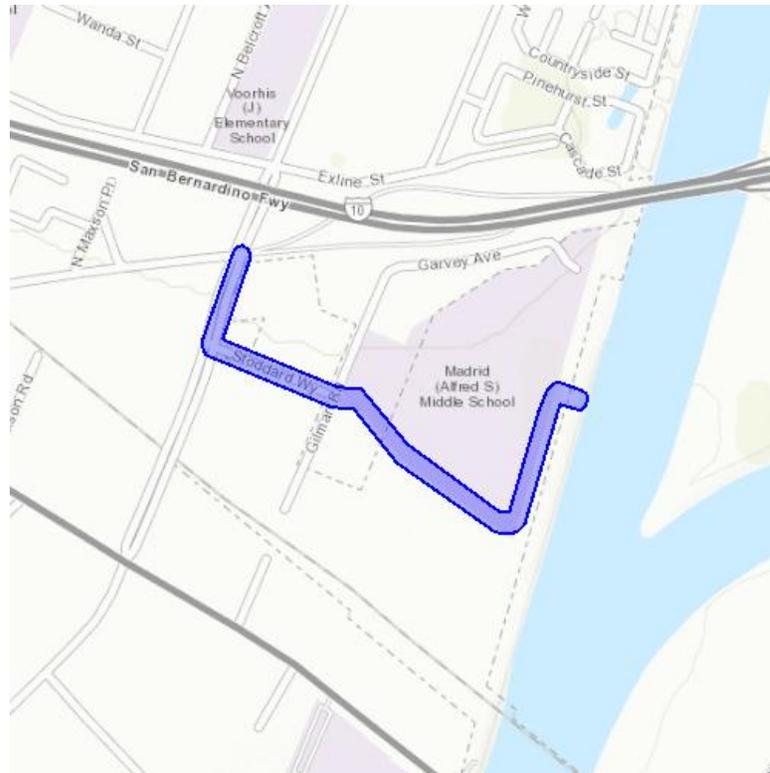
Please Note: The FWS office may have modified the Project Name and/or Project Description, so it may be different from what was submitted in your previous request. If the Consultation Code matches, the FWS considers this to be the same project. Contact the office in the 'Provided by' section of your previous Official Species list if you have any questions or concerns.



United States Department of Interior
Fish and Wildlife Service

Project name: El Monte Storm Sewer Improvement

Project Location Map:



Project Coordinates: The coordinates are too numerous to display here.

Project Counties: Los Angeles, CA



United States Department of Interior
Fish and Wildlife Service

Project name: El Monte Storm Sewer Improvement

Endangered Species Act Species List

There are a total of 3 threatened or endangered species on your species list. Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species. Critical habitats listed under the **Has Critical Habitat** column may or may not lie within your project area. See the **Critical habitats within your project area** section further below for critical habitat that lies within your project. Please contact the designated FWS office if you have questions.

Birds	Status	Has Critical Habitat	Condition(s)
Coastal California gnatcatcher (<i>Polioptila californica californica</i>) Population: Entire	Threatened	Final designated	
Least Bell's vireo (<i>Vireo bellii pusillus</i>) Population: Entire	Endangered	Final designated	
Flowering Plants			
Nevin's barberry (<i>Berberis nevinii</i>)	Endangered	Final designated	



United States Department of Interior
Fish and Wildlife Service

Project name: El Monte Storm Sewer Improvement

Critical habitats that lie within your project area

There are no critical habitats within your project area.

APPENDIX D
Air Quality Modeling

Table D-1. Construction Equipment Use

Equipment Type	Number of Units	Days on Site	Hours Per Day	Operating Hours
Excavators	2	260	4	2,080
Plate Compactors	2	260	4	2,080
Trenchers	2	260	8	4,160
Cement Mixers	2	260	4	2,080
Generator Sets	1	260	4	1,040
Loaders/Backhoes	2	260	7	3,640
Pavers	1	58	8	464
Paving Equipment	1	58	8	464

Table D-2. Construction Equipment Emission Factors (lbs/hour)

Equipment	CO	NOx	VOC	SOx	PM10	PM2.5	CO2
Excavators	0.5828	1.3249	0.1695	0.0013	0.0727	0.0727	119.6
Plate Compactors	0.0263	0.0328	0.0052	0.0001	0.0021	0.0021	4.3
Trenchers	0.508	0.8237	0.1851	0.0007	0.0688	0.0688	58.7
Cement Mixers	0.0447	0.0658	0.0113	0.0001	0.0044	0.0044	7.2
Generator Sets	0.3461	0.698	0.1075	0.0007	0.043	0.043	61
Loaders/Backhoes	0.4063	0.7746	0.1204	0.0008	0.0599	0.0599	66.8
Pavers	0.5874	1.0796	0.1963	0.0009	0.0769	0.0769	77.9
Paving Equipment	0.0532	0.1061	0.0166	0.0002	0.0063	0.0063	12.6

Table D-3. Construction Equipment Emissions (tons)

Equipment	CO	NOx	VOC	SOx	PM10	PM2.5	CO2
Excavators	0.606112	1.377896	0.17628	0.001352	0.075608	0.075608	124.384
Plate Compactors	0.027352	0.034112	0.005408	0.000104	0.002184	0.002184	4.472
Trenchers	1.05664	1.713296	0.385008	0.001456	0.143104	0.143104	122.096
Cement Mixers	0.046488	0.068432	0.011752	0.000104	0.004576	0.004576	7.488
Generator Sets	0.211276	0.402792	0.062608	0.000416	0.031148	0.031148	34.736
Loaders/Backhoes	0.739466	1.409772	0.219128	0.001456	0.109018	0.109018	121.576
Pavers	0.1362768	0.2504672	0.0455416	0.0002088	0.0178408	0.0178408	18.0728
Paving Equipment	0.0123424	0.0246152	0.0038512	0.0000464	0.0014616	0.0014616	2.9232
Total	2.8359532	5.2813824	0.9095768	0.0051432	0.3849404	0.3849404	435.748

Table D-4. Emissions from Delivery of Equipment and Supplies

Number of Deliveries (per day)	4						
Number of Trips (per delivery)	2						
Miles Per Trip	50						
Days of Construction	260						
Total Miles	104,000						
Pollutant	CO	NOx	VOC	SOx	PM10	PM2.5	CO2
Emission Factor (lbs/mile)	2.20E-02	2.40E-02	3.00E-03	2.60E-05	8.60E-04	7.40E-04	2.70E+00
Total Emissions (lbs)	2,288.00	2,496.00	312.00	2.70	89.44	76.96	280,800.00
Total Emissions (tons)	1.144	1.248	0.156	0.001352	0.04472	0.03848	140.4

Table D-5. Particulates from Surface Disturbance

TSP Emissions	37.4 lb/acre					
PM10/TSP	0.45					
PM2.5/PM10	0.15					
Period of Disturbance	260 days					
Capture Fraction	0.5					
Building/Facility	Area [acres]	TSP [lbs]	PM10 [lbs]	PM10 [tons]	PM2.5 [lbs]	PM2.5 [tons]
All Facilities	2.3	11,183	5,032	2.516085	1,677	0.838695
Total	2.3	11182.6	5032.17	2.516085	1677.39	0.838695

Table D-6. Emissions from Construction Worker Commutes

Number of Workers	30						
Number of Trips (per worker per day)	2						
Miles Per Trip	50						
Days of Construction	260						
Total Miles	780,000						
Pollutant	CO	NOx	VOC	SOx	PM10	PM2.5	CO2
Emission Factor (lbs/mile)	1.10E-02	1.10E-03	1.10E-03	1.10E-05	8.50E-05	5.30E-05	1.10E+00
Total Emissions (lbs)	8,580	858	858	9	66	41	858,000
Total Emissions (tons)	4.29	0.429	0.429	0.00429	0.03315	0.02067	429

Table D-7. Total Construction Emissions (tons)

Activity/Source	CO	NOx	VOC	SOx	PM10	PM2.5	CO2
Heavy Equipment	2.8359532	5.2813824	0.9095768	0.0051432	0.3849404	0.3849404	435.748
Delivery of Equipment	1.144	1.248	0.156	0.001352	0.04472	0.03848	140.4
Surface Disturbance	0	0	0	0	2.516085	0.838695	0
Worker Commutes	4.29	0.429	0.429	0.00429	0.03315	0.02067	429
Total Emissions	8.2699532	6.9583824	1.4945768	0.0107852	2.9788954	1.2827854	1005.148
de minimis (tons per year) (attainment/non-attainment or maintenance)	100/50	100/50	100/50	100/50	100/50	100/50	27,563
Exceeds de minimis threshold?	No	No	No	No	No	No	No
Years of construction to exceed de minimis threshold	12.09196686	14.37115615	66.90857238	9271.965286	33.56949	77.9553618	27.421832



ATTACHMENTS FOR SECTION 8.2:

VECTOR MINIMIZATION

Checklist for Minimizing Vector Production in Stormwater Management Structures

Management of mosquitoes and other vectors in stormwater management structures, such as flood control basins and Best Management Practices, is critical for protecting public health. With careful planning, such structures can be designed, built, operated, and maintained in a manner that minimizes opportunities for the proliferation of vectors. This publication provides checklists of action items intended to lessen the short and long-term potential for vector production in stormwater management structures while reducing dependence on pesticides to the maximum extent possible. With the wide variety of structures and build locations, it is anticipated that not all action items will apply to every project. Answers to frequently asked questions follow the checklist.

For simplicity, stormwater management structures have been divided into three categories, each with specific considerations. Certain structures may require reference to more than one checklist.

Dry Systems. Any structure designed to drain completely following capture and/or treatment of runoff. Examples include flood control basins, extended detention basins, infiltration basins and trenches, Austin sand filters, swales and strips, drain inlet inserts, linear-radial gross solids removal devices. Permanent-water features sometimes included as part of dry system design, such as micropools, should be considered separately using the checklist for “wetlands”.

Wet Systems. Any structure designed with features such as sumps, vaults, and/or basins that hold water permanently, or longer than 4 days. Examples include open catch basins, concrete retention basins, Delaware sand filters, and a variety of belowground proprietary devices.

Wetlands. Any structure constructed as a naturalistic system with permanent surface waters, regardless of the formal given name (e.g., stormwater pond, retention basin, wet basin, constructed wetlands, treatment wetlands, etc.). This section also applies to permanent-water features sometimes included as part of dry system design such as micropools.

Additional information is available on the [California Department of Public Health \(CDPH\) Mosquito-borne Diseases webpage](https://www.cdph.ca.gov/Programs/CID/DCDC/Pages/MosquitoesandMosquitoBorneDiseases.aspx)
(<https://www.cdph.ca.gov/Programs/CID/DCDC/Pages/MosquitoesandMosquitoBorneDiseases.aspx>)
and in the [University of California, Division of Agriculture and Natural Resources \(UCANR\) stormwater publication](http://www.ipm.ucdavis.edu/PDF/MOSQ/mosquitostormwater.pdf)
(<http://www.ipm.ucdavis.edu/PDF/MOSQ/mosquitostormwater.pdf>)

To facilitate public health mosquito control, it is strongly recommended that project locations be provided to the local vector control agency. To locate your local mosquito and vector control agency, visit the [CDPH West Nile virus webpage](http://westnile.ca.gov) (<http://westnile.ca.gov>) and search by zip code.

DRY SYSTEMS

Recommended strategy: Complete discharge of all captured water in 4 days or less.

- Is the structure designed to discharge all captured water in 4 days or less?
- Has every effort been made to trace and eliminate persistent non-stormwater flows (e.g. irrigation runoff) that may enter the system and jeopardize non-chemical vector control efforts?
- Has groundwater depth been carefully evaluated to ensure that the structure will not be permanently or seasonally flooded (i.e. is the base of the basin higher than the local groundwater table)?
- Does the design provide an adequate slope between the inlets and outlets, with special attention given to ensure corners are above grade?
- Has soil been compacted adequately during grading to minimize subsidence, which can result in pools of standing water?
- Does the design slope take into consideration the inevitable accumulation of sediment and debris between maintenance periods that can result in standing water, especially in and around the inlet?
- Does the design minimize the use of features that increase the potential for standing water, such as loose riprap and concrete curbs?
- Does the structure include a concrete or earthen low-flow channel to concentrate (i.e. minimize available surface area) and direct non-stormwater flows to the outlet?
- Is the distribution piping sloped adequately and smooth (not corrugated) on the inside to prevent standing water?
- Are the inlet structures and energy dissipaters designed and sloped sufficiently to prevent scour depressions?
- Are the outlets designed with debris screens or other features that reduce the potential for clogging?
- Is the structure designed with safe and sufficient access for inspection, maintenance, and/or vector control activities when needed?
- Does the operation and maintenance plan include a minimum of quarterly inspections to ensure that vegetation overgrowth, sediment accumulation, or other factors have not created areas of standing water?

- Does the operation and maintenance plan include a minimum annual maintenance to remove vegetation overgrowth, remove sediment and debris accumulation, and otherwise return the structure to “as-designed” conditions?
- Is signage provided and clearly visible with minimum information indicating the type of structure (e.g. extended detention basin), ownership, and contact information?

WET SYSTEMS

Recommended strategy: Deny mosquito access to standing water by using covers, screens, and/or other barriers.

- Have sumps, vaults, or basins that hold water permanently, or longer than 4 days, been completely or partially sealed against adult mosquito entry?
- If used, are covers tight fitting, with gaps or holes of no greater than 1/16” (2 mm)?
- If used, are aluminum or nylon screens for sealing small openings secured with gaps or holes of no greater than 1/16” (2 mm)?
- If cast iron manhole covers are used, are pick holes sealed or is a mosquito-proof insert provided below?
- Where feasible, are the inlet and/or outlet conveyance pipes submerged to prevent adult mosquito entry into the main water storage area?
- Where feasible, are conveyance pipes fitted with flapper valves, collapsible fabric tubes, or other barriers to prevent adult mosquito entry into the main water storage area?
- Is the structure designed with safe and sufficient access to permanent water areas for inspection, maintenance, and/or vector control activities when needed?
- Does the operation and maintenance plan include a minimum of quarterly inspections to ensure that barriers to mosquito entry are intact and in place as designed?
- Where possible, is signage provided with minimum information indicating type of structure (e.g. CDSTM), ownership, and contact information?

WETLANDS

Recommended strategy: Create and maintain habitat least-suitable for mosquito breeding.

- Is the system designed with features that minimize the areas suitable for mosquito production?
- Does the design discourage emergent vegetation in shallow water zones where vegetation is not needed or desired, for example by using concrete liners in sediment forebays?
- Are slopes designed as steep and uniform as possible to discourage invasive, emergent vegetation?
- Does the system include deep water zones, in excess of 4 ft, to reduce available area for emergent vegetation and provide refuge for natural mosquito predators such as mosquitofish and certain invertebrates?
- Where permitted, have mosquitofish been introduced to help control mosquitoes?
- Does the system include provisions for rapid dewatering if needed for emergency control of mosquitoes?
- Is the structure designed with safe and sufficient access for inspection, maintenance, and/or vector control activities when needed?
- Are access roads built close to the shoreline and around the perimeter of the wetland to the extent feasible?
- Are access points incorporated at regular intervals along the perimeter to allow for vector monitoring and control when necessary.
- Does the operation and maintenance plan include a minimum of quarterly inspections to ensure that vegetation overgrowth, sediment accumulation, or other factors have not created areas suitable for mosquito production?
- Does the operation and maintenance plan include a minimum annual maintenance to remove vegetation overgrowth, remove sediment and debris accumulation, and otherwise return the structure to “as-designed” conditions?
- Is signage provided and clearly visible with minimum information indicating type of structure (e.g. stormwater treatment pond), ownership, and contact information?

Frequently Asked Questions

DRY SYSTEMS

1. Why is it important to drain all captured water in 4 days or less?
2. Most mosquito species important to public health require at least 6 days to develop from egg to adult. Designing dry systems to drain completely in 4 days ensures that no mosquitoes will be produced with a built-in margin of safety of several days.
3. Our stormwater treatment BMPs were designed to dewater in 4 days, but persistent non-stormwater flows result in areas of standing water that routinely produce mosquitoes. How do we address this problem?
4. Dry-weather urban runoff is a major contributor to mosquito production in urban areas everywhere. If the source(s) cannot be traced and eliminated, the best alternate solution is to minimize the surface area available to mosquitoes by cutting a low-flow channel through the BMP to direct the water to the outlet as efficiently as possible.
5. Will very shallow areas of standing water that remain in our detention basins after a storm event provide a potential source of mosquito production?
6. Certain species of mosquitoes important to public health are very adaptable. Water as shallow as 1/16", and sometimes less, can be sufficient to allow mosquito larvae to develop.

WET SYSTEMS

1. Our stormwater treatment BMPs are installed belowground and covered. Why should we be concerned about mosquitoes?
2. Unfortunately, certain species of mosquitoes capable of transmitting disease are well-adapted for finding and breeding in belowground habitats. These mosquitoes can access belowground sources through openings as small as 1/16" (2mm) and they can fly great distances through pipes.
3. We wish to install a belowground proprietary BMP in a new housing development. If we seal the access covers against mosquitoes, how far away should we design the inlet grates to keep mosquitoes from accessing the permanent-water sump?
4. The absolute flight limits of mosquitoes that can breed belowground are unknown; however, recent studies found that females could fly at least 80 feet through 4" diameter pipe to reach a source of standing water and were unaffected by changes in pipe course. It is unlikely that mosquitoes can be excluded from underground sources using conveyance pipe length alone.
5. We are considering the addition of weep holes to our belowground sumps to allow them to dewater between storms so they do not produce mosquitoes. Will this work?
6. Weep holes are typically not a reliable choice for preventing mosquito production due to their high probability of failure due to clogging.

7. I was told that mosquitoes cannot breed in water with a visible oil sheen on the water surface. Is this true or false?
8. With some exceptions, this is false. In most cases, the oil sheen visible on the water surface is not uniform, but is broken. Certain species of mosquitoes capable of transmitting disease can exploit these habitats by using the oil-free areas for egg laying and larval development. In addition, surface oils are broken down over time, disappearing altogether if not regularly replenished by oily runoff.
9. We are considering a provision to dewater our belowground sumps after every storm event to prevent mosquito production. Will this be effective?
10. It has the potential to be effective, but there are several complicating factors to consider:
 - 1) dry-weather urban runoff frequently replenishes belowground sumps making pumping efforts futile, and
 - 2) pumps often leave a small amount of residual water in the bottom of the sumps, and water as shallow as 1/16" or less can be sufficient to allow mosquito larvae to develop.
11. Our stormwater sumps contain very deep water. Will this prevent mosquito production? Unlike deep water zones in ponds and wetlands where mosquitoes generally do not develop due to predators, wind, and wave action, mosquitoes are unaffected by water depth and/or surface area in belowground systems.
12. Will flowing water prevent mosquito production?
13. Flowing water will discourage females from laying eggs and can kill larvae. For example, a vortex separator receiving year-round flow from an urban stream should not produce mosquitoes due to constant movement of the entire water surface area. However, water flow through systems with square sumps (or sumps of other geometrical shapes) may not completely eliminate mosquito production due to the stagnant zones created in the corners where water movement is minimal.
14. Will surface agitators prevent mosquito production?
15. Agitators, sprinklers, or other means of disturbing the water surface will discourage females from laying eggs and can kill larvae, however, in order to be effective the entire surface must be disturbed.
16. It seems that controlling mosquitoes in belowground stormwater systems without resorting to chemical treatment is rarely successful. How do we deal with this problem? Field research has documented the difficulty in controlling mosquitoes in belowground stormwater systems without chemicals (i.e. exclusion of mosquitoes was successful in a few systems studied, but the vast majority of attempts resulted in only marginal reductions). However, for reasons that are not entirely understood, not all belowground systems produce mosquitoes equally; some are sporadic and some are year-round producers. It is strongly recommended that the local vector control agency be consulted to determine site-specific monitoring and control needs.

WETLANDS

1. Why are mosquitoes still being detected in well designed and maintained wetlands? Mosquitoes are difficult to eliminate completely from wetlands due to the complexity of the created environment. The goal should be to minimize mosquito production by making the habitat less desirable for them.
2. Will the deep areas of stormwater ponds where no emergent vegetation can grow produce mosquitoes?
3. Deep, open areas of water are typically unsuitable for mosquito production due to surface disturbance caused by wind and exposure to predators. However, if the deep zones become colonized by floating vegetation such as water hyacinth or by clumps of floating filamentous algae, mosquitoes may breed in the shelters created among these plants.
4. Why is it important to keep emergent vegetation such as cattails and bulrush from getting overly dense?
5. Dense emergent vegetation, especially along perimeter margins, will prevent predators such as mosquitofish from accessing these areas, creating ideal habitats for mosquitoes.
6. Why is it important to eliminate floating vegetation such as water hyacinth and maintain water quality to discourage clumps of floating filamentous algae?
7. Not only are certain floating plants such as water hyacinth considered exotic invasive species harmful to North American ecosystems, but these plants provide excellent habitats for mosquitoes sheltered from predators.
8. How do I determine if mosquitofish are permissible for use in my area?
9. As a general rule, if the stormwater wetland is self contained, and does not empty into a natural waterway, mosquitofish can be used to control mosquitoes. If in doubt, it is best to consult with the local office of the Department of Fish and Game before stocking fish.
10. How often should mosquitofish be restocked to reduce mosquito numbers?
11. In general, mosquitofish are very hardy and will rapidly increase in numbers to form a stable population. Large game fish such as bluegill and bass may negatively impact or eradicate mosquitofish populations, as can large numbers of fishing birds; however, low temperatures are the leading cause of population failures. In cold climates, mosquitofish may need to be restocked each spring following the last frost.
12. Do we need to be concerned with mosquito production during “cold snaps” or winter periods?
13. Most mosquitoes important to public health can develop successfully in water ranging from approximately 45 to 100°F, with the ability to survive short periods outside this spectrum. Short cold snaps may not be lethal to larvae if the habitat provides a buffer area, however, extended periods of cold below 45°F will halt mosquito production.
14. Will encouraging nesting and roosting habitat for certain birds and bats

around our stormwater wetland reduce the population of adult mosquitoes appreciatively?

15. Although certain birds (e.g. swallows, martins) and bats have been reported to consume large numbers of adult mosquitoes, these animals do not preferentially feed on mosquitoes and there is no evidence to show that they substantially reduce mosquito populations.

Vector-Borne Disease Section
California Department of Public Health
(916) 552-9730
September 2010



ATTACHMENTS FOR SECTION 8.6:

TECHNICAL REPORTS

APPENDIX A

EJSCREEN

1 mile Ring Centered at 34.063184,-118.015540

CALIFORNIA, EPA Region 9

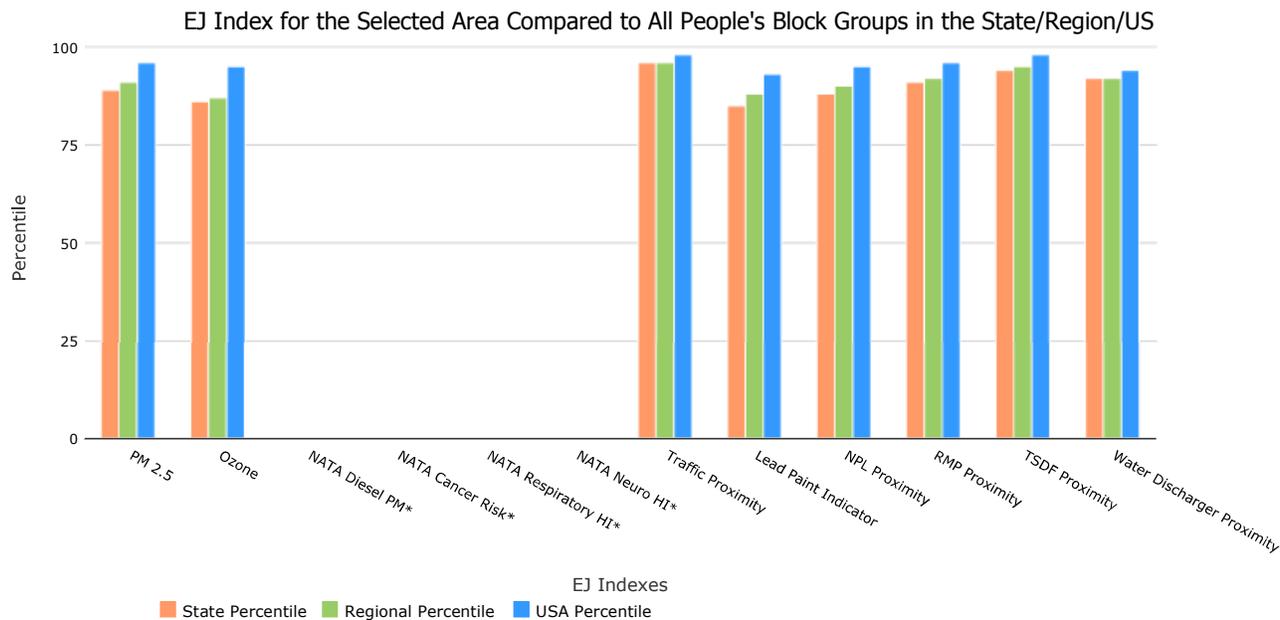
Save as PDF



1 mile Ring Centered at 34.063184,-118.015540
CALIFORNIA, EPA Region 9
Approximate Population: 36211
 Garvey Ave Drainage Improvements



Selected Variables	Percentile in State	Percentile in EPA Region	Percentile in USA
EJ Indexes			
EJ Index for Particulate Matter (PM 2.5)	89	91	96
EJ Index for Ozone	86	87	95
EJ Index for NATA Diesel PM*	N/A	N/A	N/A
EJ Index for NATA Air Toxics Cancer Risk*	N/A	N/A	N/A
EJ Index for NATA Respiratory Hazard Index*	N/A	N/A	N/A
EJ Index for NATA Neurological Hazard Index*	N/A	N/A	N/A
EJ Index for Traffic Proximity and Volume	96	96	98
EJ Index for Lead Paint Indicator	85	88	93
EJ Index for NPL Proximity	88	90	95
EJ Index for RMP Proximity	91	92	96
EJ Index for TSDF Proximity	94	95	98
EJ Index for Water Discharger Proximity	92	92	94



This report shows environmental, demographic, and EJ indicator values. It shows environmental and demographic raw data (e.g., the estimated concentration of ozone in the air), and also shows what percentile each raw data value represents. These percentiles provide perspective on how the selected block group or buffer area compares to the entire state, EPA region, or nation. For example, if a given location is at the 95th percentile nationwide, this means that only 5 percent of the US population has a higher block group value than the average person in the location being analyzed. The years for which the data are available, and the methods used, vary across these indicators. Important caveats and uncertainties apply to this screening-level information, so it is essential to understand the limitations on appropriate interpretations and applications of these indicators. Please see EJSscreen documentation for discussion of these issues before using reports.



Selected Variables	Raw data	State Average	%ile in State	EPA Region Average	%ile in EPA Region	USA Average	%ile in USA
Environmental Indicators							
Particulate Matter (PM 2.5 in $\mu\text{g}/\text{m}^3$)	12.4	10.4	80	9.95	84	9.78	95
Ozone (ppb)	48.9	48.4	55	49.7	45	46.1	65
NATA Diesel PM ($\mu\text{g}/\text{m}^3$)*	N/A	N/A	N/A	N/A	N/A	N/A	N/A
NATA Air Toxics Cancer Risk (risk per MM)*	N/A	N/A	N/A	N/A	N/A	N/A	N/A
NATA Respiratory Hazard Index*	N/A	N/A	N/A	N/A	N/A	N/A	N/A
NATA Neurological Hazard Index*	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Traffic Proximity and Volume (daily traffic count/distance to road)	510	210	89	190	90	110	95
Lead Paint Indicator (% pre-1960s housing)	0.37	0.3	63	0.25	69	0.3	65
NPL Proximity (site count/km distance)	0.13	0.13	74	0.11	78	0.096	81
RMP Proximity (facility count/km distance)	0.74	0.46	84	0.41	85	0.31	89
TSDf Proximity (facility count/km distance)	0.29	0.13	91	0.12	92	0.054	97
Water Discharger Proximity (count/km)	0.25	0.18	83	0.19	81	0.25	75
Demographic Indicators							
Demographic Index	80%	47%	91	46%	92	35%	95
Minority Population	97%	60%	91	57%	92	36%	95
Low Income Population	63%	35%	86	35%	86	34%	89
Linguistically Isolated Population	30%	10%	91	9%	92	5%	96
Population with Less Than High School Education	48%	19%	89	18%	91	14%	96
Population under Age 5	9%	7%	70	7%	69	7%	73
Population over Age 64	7%	12%	34	12%	35	13%	25

*The National-Scale Air Toxics Assessment (NATA) environmental indicators and EJ indexes, which include cancer risk, respiratory hazard, neurodevelopment hazard, and diesel particulate matter will be added into EJSCREEN during the first full public update after the soon-to-be-released 2011 dataset is made available. The National-Scale Air Toxics Assessment (NATA) is EPA's ongoing, comprehensive evaluation of air toxics in the United States. EPA developed the NATA to prioritize air toxics, emission sources, and locations of interest for further study. It is important to remember that NATA provides broad estimates of health risks over geographic areas of the country, not definitive risks to specific individuals or locations. More information on the NATA analysis can be found at: <https://www.epa.gov/national-air-toxics-assessment>.

For additional information, see: www.epa.gov/environmentaljustice

EJSCREEN is a screening tool for pre-decisional use only. It can help identify areas that may warrant additional consideration, analysis, or outreach. It does not provide a basis for decision-making, but it may help identify potential areas of EJ concern. Users should keep in mind that screening tools are subject to substantial uncertainty in their demographic and environmental data, particularly when looking at small geographic areas. Important caveats and uncertainties apply to this screening-level information, so it is essential to understand the limitations on appropriate interpretations and applications of these indicators. Please see EJSCREEN documentation for discussion of these issues before using reports. This screening tool does not

provide data on every environmental impact and demographic factor that may be relevant to a particular location. EJSscreen outputs should be supplemented with additional information and local knowledge before taking any action to address potential EJ concerns.

APPENDIX B

Letters to Agencies and Tribes

**OFFICE OF HISTORIC PRESERVATION
DEPARTMENT OF PARKS AND RECREATION**

1725 23rd Street, Suite 100
SACRAMENTO, CA 95816-7100
(916) 445-7000 Fax: (916) 445-7053
calshpo@parks.ca.gov
www.ohp.parks.ca.gov



September 21, 2016

Reply to: EPA_2016_0829_001

Howard Kakan, Environmental Scientist
Tribal Water Section (WTR-3-4)
U. S. Environmental Protection Agency, Region 9
75 Hawthorne Street
San Francisco, California 94105-3901

RE: Section 106 Consultation Regarding U. S. Environmental Protection Agency's Special Appropriation Act Projects Grant Funding for the City of El Monte's Garvey Avenue Underpass Drainage Improvement Project; Los Angeles County (your letter of August 24, 2016)

Dear Mr. Kahan:

The U. S. Environmental Protection Agency (EPA) is initiating consultation on the above cited undertaking, in accordance with Section 106 of the *National Historic Preservation Act of 1966* (16 U.S.C. §306108) as amended, and its implementing regulations found at 36 CFR Part 800. On September 21, 2016, Duane Marti (of my staff) and you had a telephone call in which you discussed the proposed undertaking and provided clarifying information about it.

The City of El Monte (City) is proposing to reconstruct the existing Garvey Avenue Underpass storm drain which was originally constructed in 1934. The proposed undertaking would involve the construction of two new storm drain lines (Lines A and B) and a new storm water pump station at the Garvey Avenue underpass. Line A will be located within the rights-of-way of three urban streets and be approximately 1,271 feet long and Line B will be located within the rights-of-way of two urban streets and be approximately 2, 840 feet long. The new pump station will replace the existing pump station and the existing storm drain lines will be abandoned in place. The infrastructure of the existing storm drain system was evaluated by EPA for its eligibility for listing on the National Register of Historic Places (NRHP) and it was determined to be ineligible.

The area of potential effects (APE) contains the elements described above. The APE is located in the southeastern portion of the City and the APE is an urban setting containing streets, commercial buildings, Madrid Middle School, and residential housing. The APE is bounded on the north by Interstate 10 (San Bernardino Freeway) and on the east by the San Gabriel River, which has been channelized.

As documentation for your finding of effect, EPA conducted a records review at the South Central Coastal Information Center at CSU-Fullerton. That records review: (1) identified no cultural resources as being located with the APE; (2) identified 39 previous cultural resources surveys which had been conducted within a one mile radius of the APE, but none of which included the APE; and (3) identified 18 cultural resources as being located within a one mile radius of the APE. None of those cultural resources will be affected by the proposed undertaking. EPA did not require a pedestrian survey of the APE because of the urban setting of the APE.

P-19-000136/CA-LAN-000136 is a prehistoric habitation site with burials located approximately 0.8 mile southeast of the APE and on the opposite side of the San Gabriel River. Given the

proximity of the APE to this site and the river, EPA has determined the archaeological sensitivity of the APE to be moderate. The site will not be affected by the proposed undertaking.

Native American consultation included contacting the American Heritage Commission (NAHC) on April 27, 2016 and requesting a record search of their sacred land file. The NAHC responded that their search did indicate the presence of Native American cultural resources in the APE. EPA sent request for comment letters to the ten Native American contacts provided by NAHC. EPA received the following response to those letters:

- EPA discussed the proposed undertaking with Andy Salas, Chairman, Gabrieleno Band of Mission Indians – Kizh Nation, who stated the APE was culturally sensitive and requested that Native American monitors be used during ground disturbing activities.

Based on the records review, the tribal consultation, and the above described conditions, EPA has determined that a finding of No Historic Properties Affected is appropriate for the proposed undertaking. EPA has requested me to review and comment on their identification of the APE and their finding of No Historic Properties Affected for the proposed undertaking.

After reviewing the information submitted with your letter, I offer the following comments:

- I have no objections to your identification and delineation of the APE, pursuant to 36 CFR Parts 800.4(a)(1) and 800.16(d);
- I concur with your determination that the infrastructure of the existing storm drain system is not eligible for listing on the NRHP; and
- I do not object to your finding of No Historic Properties Effected for the proposed undertaking, as described above.

Be advised that under certain circumstances, such as an unanticipated discovery or a change in project description, you may have additional future responsibilities for this undertaking under 36 CFR Part 800. Should you encounter cultural artifacts during ground disturbing activities, please halt all work until a qualified archaeologist can be consulted on the nature and significance of such artifacts.

Thank you for seeking my comments and considering historic properties as part of your project planning. If you have any questions or concerns, please contact the following member of my staff: Tristan Tozer at (916) 445-7027 or via e-mail at Tristan.Tozer@parks.ca.gov.

Sincerely,



Julianne Polanco
State Historic Preservation Officer



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105

August 24, 2016

Julianne Polanco, State Historic Preservation Officer
C/O: Tristan Tozer, State Historian II
Office of Historic Preservation
1725 23rd Street, Suite 100
Sacramento, California 95816

Subject: Section 106 Consultation Regarding the U.S. Environmental Protection Agency
Special Appropriation Act Projects Grant Funding of the City of El Monte's Garvey
Avenue Underpass Drainage Improvement Project

Dear Mr. Tozer:

The City of El Monte, California, was authorized to receive a Special Appropriation Act Project for the Garvey Storm Drain reconstruction project in Fiscal Year 2009. The Garvey Grade Underpass is located in the southeastern area of El Monte, adjacent to the neighboring cities of Baldwin Park and the City of Industry (see Enclosure 1).

Storms regularly flood Garvey Avenue where the street passes under the Southern Pacific Railroad at the Garvey Avenue underpass. The existing stormwater pumps and conveyance pipes that drain the underpass are inadequate to effectively convey stormwater from the street's surface to the intended storm drainage facilities. The existing Garvey Avenue underpass pump station was constructed in 1934, and surrounding land use has changed over the past 82 years. The pumps were replaced within the last 10 years, but the capacity of the pump station is still inadequate to handle the stormwater load at the Garvey Avenue underpass from minor and major storm events. The project will also reduce movement of nonpoint source pollutants and contaminants in the City of El Monte.

This letter initiates the U.S. Environmental Protection Agency's (EPA) consultation with your office for this funding (the undertaking) under Section 106 of the National Historic Preservation Act (NHPA). It also documents the measures that EPA proposes to take to comply with the substantive requirements of Section 106 and its implementing regulations at 36 Code of Federal Regulations (CFR) Part 800. EPA has (1) described the proposed undertaking; (2) defined the Area of Potential Effects (APE) for the undertaking; and (3) provided data on identification of historic properties.

EPA is concurrently completing efforts associated with the National Environmental Policy Act (NEPA). As part of the NEPA process, EPA is preparing a draft environmental information document (EID) to evaluate the impacts of the proposed project.

Description of the Undertaking

The Garvey Avenue underpass is located in the southeastern area of El Monte, adjacent to the neighboring cities of Baldwin Park and the City of Industry, and separates traffic on Garvey Avenue from the Southern Pacific Railroad tracks. Rain storms flood the underpass, showing that the existing drainage facilities are inadequate to effectively convey the volumes of stormwater received.

The existing Garvey Avenue underpass pump station was constructed in 1934, after construction of the Garvey Avenue underpass in 1933. The pumps in the building were replaced within the last 10 years and consist of a 6-foot by 9-foot, 4-inch concrete sump with two submersible pumps. The pumps have a combined capacity of 1,400 gallons per minute (gpm), but the pump station is still inadequate to handle the stormwater load at the Garvey Avenue underpass from minor and major (100-year) storm events. The pumps convey water from the grade separation into a catch basin on the corner of Garvey Avenue and Valley Boulevard, which then drains into a City of El Monte storm drain system along Valley Boulevard that conveys water flow to the Rio Hondo Channel. This configuration has proven deficient and needs to be realigned.

In addition, three existing 24-inch culverts northeast of the Garvey Avenue underpass convey stormwater from Exline Street, under Interstate 10 (the I-10), and to outlets on Maxson Road. Surface drainage from that point is deficient and needs to be intercepted with a new storm drain.

The city’s project will consist of two new storm drain lines and a new storm water pump station at the Garvey Avenue underpass. The city will discontinue using the existing pump housed in the historic-age Garvey Avenue Grade Underpass pump station. The city plans to use a new pump station that includes three 9,000-gpm pumps and one 2,200-gpm pump. A new storm drain line (Line A) will run from the I-10 south on Maxson Road, then east on Garvey Avenue, then south on Durfee Avenue, and finally discharge to the existing storm Durfee storm drain. The second new storm drain line (Line B) will parallel Line A along Durfee Avenue, but will extend beyond Line A to continue along Stoddard Way to the San Gabriel River. No existing storm drain lines will be removed. Anticipated maximum dimensions of excavations for Lines A and B are summarized in Table 1 below.

Table 1. Garvey Avenue Underpass Drainage Improvement Project Storm Drain Excavations

Line Section	Length of Excavation	Width of Excavation	Depth of Excavation
Line A			
Maxson Road and Garvey Avenue	931 feet	28 feet	7 feet
Durfee Avenue	340 feet	28 feet	8 feet
Line B			
Durfee Avenue	540 feet	23 feet	10-13 feet
Stoddard Way	2,300 feet	30 feet	13-16 feet

Staging areas have not yet been identified. The city anticipates that staging areas will be located to avoid public rights-of-way during construction. The city also anticipates that these areas most likely will be in paved parking lots and along the streets involved in the project.

Area of Potential Effect

To comply with the substantive requirements of Section 106 of the NHPA, EPA has defined the archaeological APE as the surfaces and depths that would be disturbed by excavation and storm drain installation, as well as the footprint of the Garvey Avenue underpass pump station building. This APE includes 931 feet of new storm drain pipe excavation along Maxson Road and Garvey Avenue, 540 feet along Durfee Avenue, and 2,300 feet along Stoddard Way (see Table 1) in the City of El Monte. Excavations range from 23 to 30 feet wide and 7 to 16 feet deep.

The historical architectural APE is the pump station and the pipes and culverts that may be replaced that are 50 years or older. These elements, if eligible for the National Register of Historic Places (NRHP), could be impacted with replacement of original materials as well as with introduction of modern construction. It is noted that the railroad bridge adjacent to the Garvey Avenue Grade Underpass pump house and adjacent to the project was constructed more than 50 years ago.

Staging areas would be limited to paved parking lots and areas along the APE and outside of the public right-of-way.

No undertaking-related activities would occur outside of the APE. Enclosure 2 depicts the horizontal APE.

Identification of Historic Properties

EPA conducted a records search of the archaeological APE and surrounding areas via the South Central Coastal Information Center (SCCIC) of the California Historical Resources Information System (CHRIS) (Records Search File No.: 16371.2401). The study area for the records search included a 1-mile buffer centered on the APE of the new storm drains. Enclosure 3 provides the results of the CHRIS records search. No part of the APE has been previously surveyed, and no resources have been recorded within the APE. However, 39 surveys have been conducted within the study area, and 18 resources have been recorded in the same area.

The 39 surveys conducted within the study area were completed between 1969 and 2012. (One of the surveys was undated.) The majority of surveys were conducted adjacent to the eastern extent of the APE, along the San Gabriel River/I-605 corridor. Additional surveys are primarily concentrated along the I-10, at the northern extent of the APE, and at the Southern Pacific Railroad, adjacent to the pump station.

The following 18 resources previously recorded within the study area include one prehistoric archaeological site, 11 historic buildings, one historic district, one historic highway/trail, one historic railroad, and three historic transmission/utility lines, which are detailed below:

- The prehistoric archaeological site (P-19-000136/CA-LAN-000136) is a habitation with burials located approximately 0.8 mile southeast of the APE on the opposite side of the San Gabriel River.
- The historic buildings (P-19-188913, P-19-188914, P-19-188915, P-19-188916, P-19-188917, P-19-188918, P-19-188919, P-19-188921, P-19-188922, P-19-188923, and P-19-188924) are concentrated approximately 0.85 mile northeast of the APE in Baldwin Park, on the opposite side of Interstate I-605 (the I-605) and the San Gabriel River.
- The historic district, consisting of the Woodland Duck Farms and Equestrian Center/Louise A. Ward Residence (P-19-004079/CA-LAN-004079H), is located

approximately 0.35 mile southeast of the APE on the opposite side of the San Gabriel River.

- The historic highway/trail (P-19-187085/The Mojave Road) corresponds with Ramona Boulevard, north of the I-10, and is approximately 0.75 mile north of the APE.
- The historic railroad is the Southern Pacific Railroad/Union Pacific Railroad (P-19-186112) adjacent to the Garvey Avenue underpass pump station.
- The three transmission/utility lines (P-19-188983/Los Angeles Department of Water and Power Boulder Lines North and South, P-19-190504/Southern California Edison Rio Hondo-Amador-Jose-Mesa-Narrows 66kV Transmission Line, and P-19-186876/Southern California Edison Eagle Rock-Pardee and Antelope-Vincent No.1 220kV Transmission Line Corridor) are located along Ramona Boulevard, north of the I-10, and at the eastern extent of the APE, along the I-605/San Gabriel River corridor.

In addition to these previously recorded resources, the Garvey Avenue underpass pump station is of historic age (50 years or older), as it was constructed in 1934, according to the original plans. It was evaluated for eligibility for listing in the NRHP for this project by a qualified Architectural Historian who meets the Secretary of the Interior's Professional Qualifications. The Department of Parks and Recreation (DPR) 523 A and B forms are included as Enclosure 4. It was determined that the pump station is not recommended to be eligible for listing in the NRHP.

The Southern Pacific Railroad/Union Pacific Railroad, P-19-186112, was not formally evaluated but was part of a reconnaissance survey (CRM Tech 2010). Field observations indicated that the rail lines had been upgraded and undergone maintenance as part of their ongoing use and did not demonstrate historical characteristics. The 2010 letter report is Enclosure 5.

Given the proximity of the archeological APE to the San Gabriel River and prehistoric archaeological site P-19-000136/CA-LAN-000136, the archaeological sensitivity of the areas of stormwater pipe excavations is evaluated as moderate at present, in the absence of a more detailed sensitivity study.

The California Native American Heritage Commission (NAHC) was consulted about the Garvey Avenue Underpass Project and responded that sacred sites have been identified by the Gabrielino Band of Mission Indians–Kizh Nation as within the project region. Enclosure 6 provides a copy of the NAHC's response letter. The NAHC recommended that EPA contact the Gabrielino Band of Mission Indians–Kizh Nation to determine if the undertaking will affect this resource.

The only cultural resource survey that has been conducted for the undertaking is the recordation and evaluation of the Garvey Avenue underpass pump station, which the city states must be demolished to accommodate the new pumps.

Discussions with Tribal Representatives

EPA sent letters to the Soboba Band of Luiseno Indians, Gabrieleno Band of Mission Indians–Kizh Nation (as described above), Gabrieleno/Tongva San Gabriel Band of Mission Indians, Gabrieleno/Tongva Nation, Gabrielino Tongva Indians of California Tribal Council, and Gabrieleno/Tongva Tribe on June 8, 2016. The goal of the letters were to identify any issues or concerns regarding this proposed project including information regarding potential impacts on cultural resources or areas of traditional cultural importance. EPA did not receive any responses to the letters send to the tribal representatives. EPA held a phone conversation with Mr. Andy Salas, chairman of the Gabrieleno Band of Mission Indians–Kizh Nation to discuss the proposed project. Mr. Salas recommendation that a Native American monitor from the Gabireleno Band of Mission Indians be present during excavation activities of the proposed

project. Mr. Salas described that his tribe traditionally used the areas. The EPA notes from the phone call can be found in Enclosure 7.

Planned Actions Prior to Finding of Effect

The new pipelines are anticipated to require excavations into undisturbed soils in an area considered moderately sensitive for archaeological resources.

Given the underground nature of the storm water pipeline component of the project and distance to the previously recorded built-environment resources, the new storm pipes are not anticipated to adversely affect any of the previously recorded resources. Construction of the reconstructed pump station building adjacent to the Southern Pacific Railroad (P-19-186112) would place a new, modern element within the viewshed of the resource; however, this impact is not anticipated to be adverse, given the existing developed nature of the viewshed in 2010 and the fact that the rail line was surveyed and observed to be altered.

Based on the 2010 railroad survey findings and other information presented above and pursuant to Section 106 of the NHPA, EPA has made a determination of “no historic properties affected” for this undertaking. EPA is recommending that a Native American monitor be present during all ground disturbing activities. If archaeological resources are identified during excavation, it could result in an adverse effect and consultation with SHPO would resume.

Please provide any comments or concerns that you have regarding the project and EPA’s planned actions within 30 days. EPA will consider any comments or concerns received and provide formal responses to comments. Given the schedule associated with the project, EPA plans to proceed with the planned actions and determination of effect after 30 days from the confirmed receipt of this correspondence, if no objections are received.

If you have questions, or comments, please contact me at:

Howard Kahan, Environmental Scientist
Tribal Water Section
U.S. Environmental Protection Agency, Region 9
75 Hawthorne Street (WTR-3-4)
San Francisco, CA 94105-3901
Phone: (415) 972-3143
E-mail: kahan.howard@epa.gov

Thank you for your time and consideration.

Sincerely,



Howard Kahan
Environmental Scientist, Tribal Water Section

Enclosures:

- Enclosure 1: Regional Project Location Map
- Enclosure 2: APE Map
- Enclosure 3: Results of CHRIS Records Search (Confidential)
- Enclosure 4: Department of Parks and Recreation (DPR) 523 A and B Forms
- Enclosure 5: San Bernardino Line Positive Train Control Project Study (SCCIC LA-10641) (Confidential)

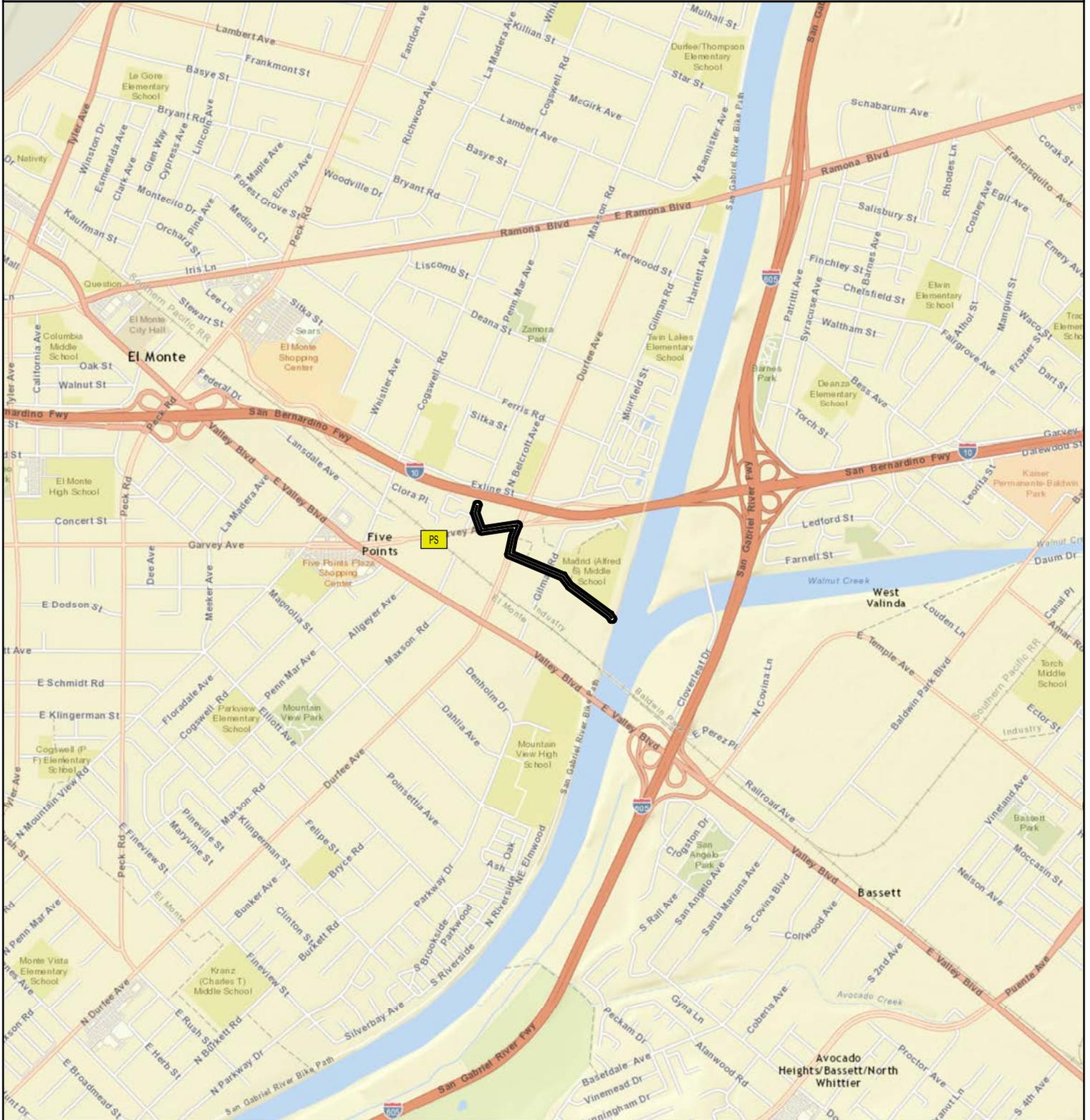
Enclosure 6: Results of NAHC Sacred Lands File Search
Enclosure 7: Native American Consultation and Notification Letters

**The following Enclosures were included with
the letter to the State Historic Preservation
Office**

Enclosure 1: Regional Project Location Map

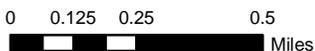
Enclosure 2: APE Map

US EPA SAAP Grant Funding, City of El Monte Garvey Avenue Underpass Drainage Improvement Project Los Angeles County, CA



Enclosure 2
APE (Street)

1:24,000

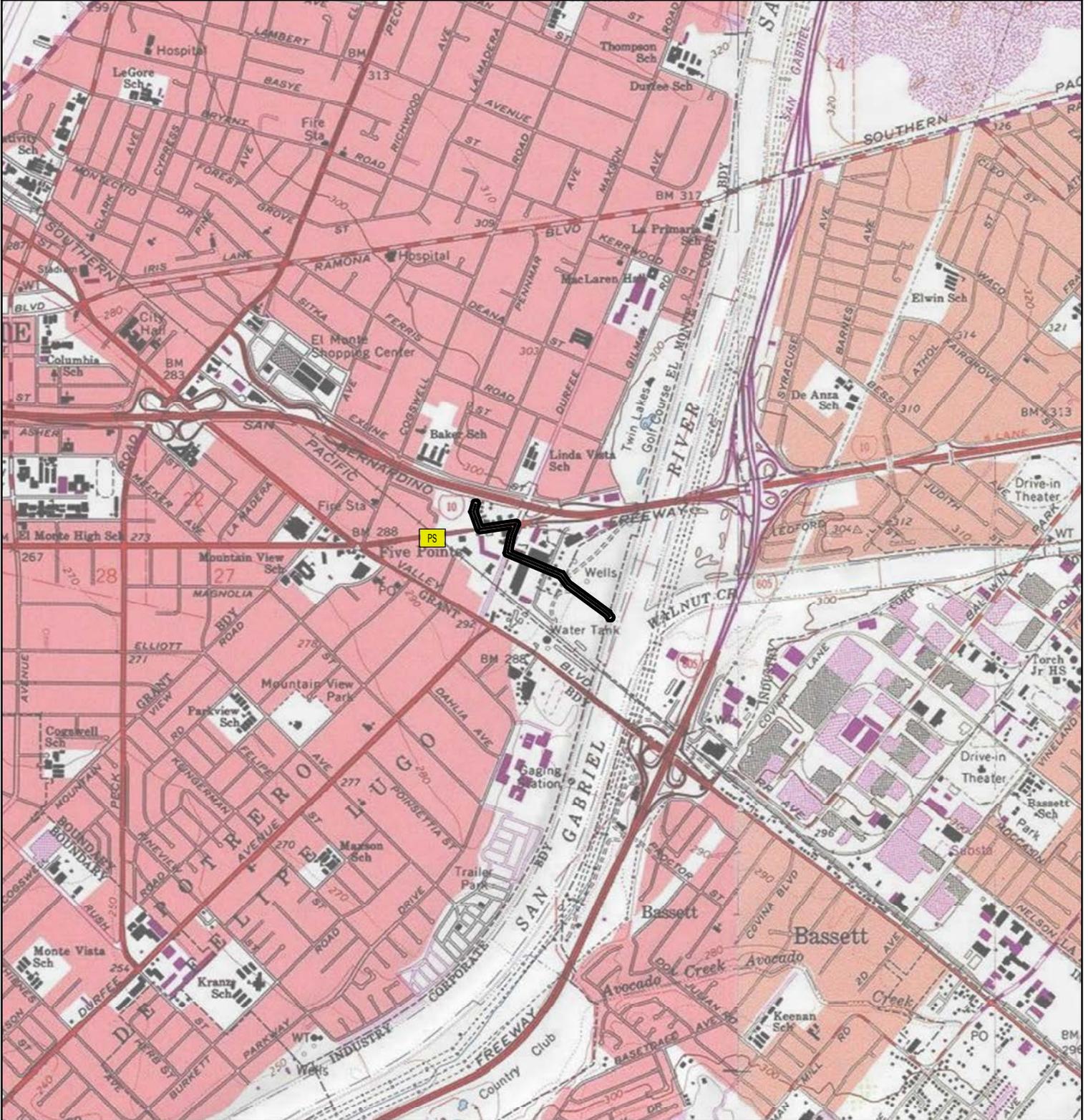


Legend

- APE - Garvey Pump Station
- APE - Proposed Storm Drain

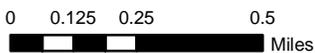


US EPA SAAP Grant Funding, City of El Monte Garvey Avenue Underpass Drainage Improvement Project Los Angeles County, CA



Enclosure 2
APE (Topographic)

1:24,000

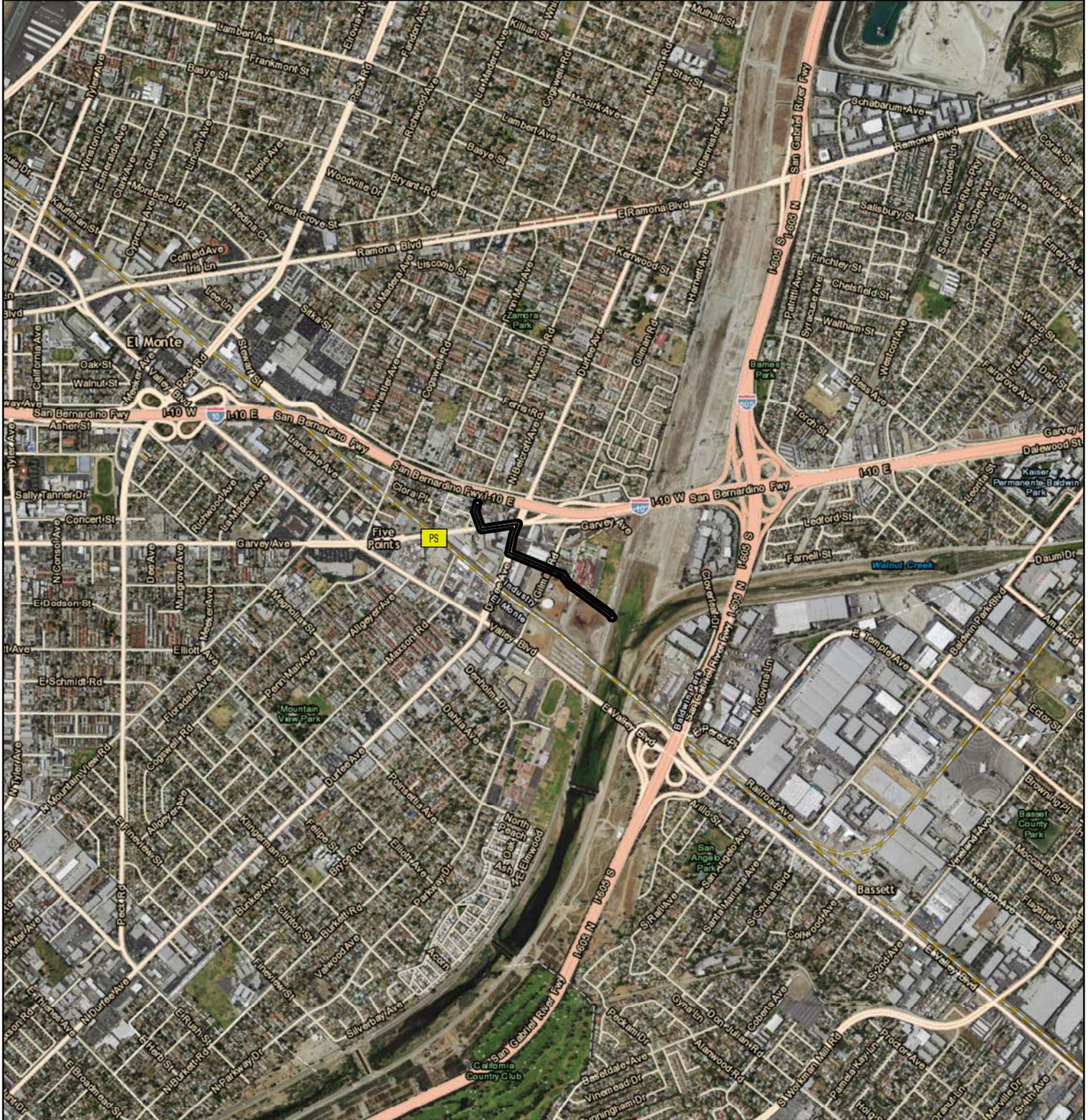


Legend

- APE - Garvey Pump Station
- APE - Proposed Storm Drain



US EPA SAAP Grant Funding, City of El Monte Garvey Avenue Underpass Drainage Improvement Project Los Angeles County, CA



Enclosure 2
APE (Aerial)

1:24,000



Legend

- PS APE - Garvey Pump Station
- APE - Proposed Storm Drain



**Enclosure 3: Results of CHRIS Records Search
(CONFIDENTIAL)**

South Central Coastal Information Center

California State University, Fullerton
Department of Anthropology MH-426
800 North State College Boulevard
Fullerton, CA 92834-6846
657.278.5395 / FAX 657.278.5542
sccic@fullerton.edu

California Historical Resources Information System
Los Angeles, Orange, San Bernardino, and Ventura Counties

4/27/2016

Records Search File No.: 16371.2401

Erin King
TetraTech, Inc
17885 Von Karman Ave
Irvine CA 92614

Re: EPA/El Monte – Garvey Ave Underpass Drainage Improvement Project

The South Central Coastal Information Center received your records search request for the project area referenced above, located on the Baldwin Park, CA and El Monte, CA USGS 7.5' quadrangles. The following reflects the results of the records search for the project area and a 1-mile radius:

As indicated on the data request form, the locations of reports and resources are provided in the following format: custom GIS maps shape files

Resources within project area: 0	None
Resources within 1-mile radius: 18	SEE ATTACHED LIST
Reports within project area: 0	None
Reports within 1-mile radius: 39	SEE ATTACHED LIST

- Resource Database Printout (list):** enclosed not requested nothing listed
- Resource Database Printout (details):** enclosed not requested nothing listed
- Resource Digital Database (spreadsheet):** enclosed not requested nothing listed
- Report Database Printout (list):** enclosed not requested nothing listed
- Report Database Printout (details):** enclosed not requested nothing listed
- Report Digital Database (spreadsheet):** enclosed not requested nothing listed
- Resource Record Copies:** enclosed not requested nothing listed
- Report Copies:** enclosed not requested nothing listed
- OHP Historic Properties Directory:** enclosed not requested nothing listed
- Archaeological Determinations of Eligibility:** enclosed not requested nothing listed

Historical Maps: enclosed not requested nothing listed

Ethnographic Information: not available at SCCIC

Historical Literature: not available at SCCIC

GLO and/or Rancho Plat Maps: not available at SCCIC

Caltrans Bridge Survey: not available at SCCIC; please go to
<http://www.dot.ca.gov/hq/structur/strmaint/historic.htm>

Shipwreck Inventory: not available at SCCIC; please go to
http://shipwrecks.slc.ca.gov/ShipwrecksDatabase/Shipwrecks_Database.asp

Soil Survey Maps: (see below) not available at SCCIC; please go to
<http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx>

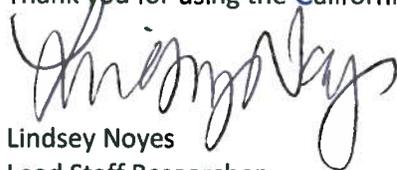
Please forward a copy of any resulting reports from this project to the office as soon as possible. Due to the sensitive nature of archaeological site location data, we ask that you do not include resource location maps and resource location descriptions in your report if the report is for public distribution. If you have any questions regarding the results presented herein, please contact the office at the phone number listed above.

The provision of CHRIS Data via this records search response does not in any way constitute public disclosure of records otherwise exempt from disclosure under the California Public Records Act or any other law, including, but not limited to, records related to archeological site information maintained by or on behalf of, or in the possession of, the State of California, Department of Parks and Recreation, State Historic Preservation Officer, Office of Historic Preservation, or the State Historical Resources Commission.

Due to processing delays and other factors, not all of the historical resource reports and resource records that have been submitted to the Office of Historic Preservation are available via this records search. Additional information may be available through the federal, state, and local agencies that produced or paid for historical resource management work in the search area. Additionally, Native American tribes have historical resource information not in the CHRIS Inventory, and you should contact the California Native American Heritage Commission for information on local/regional tribal contacts.

Should you require any additional information for the above referenced project, reference the record search number listed above when making inquiries. Requests made after initial invoicing will result in the preparation of a separate invoice.

Thank you for using the California Historical Resources Information System,



Lindsey Noyes
Lead Staff Researcher

Enclosures:

- (X) GIS Shapefiles – 57 shapes**
- (X) Resource Database Printout (list) – 4 pdf pages**
- (X) Resource Digital Database (spreadsheet) – 18 lines**
- (X) Report Digital Database (spreadsheet) – 39 lines**
- (X) OHP Historic Properties Directory – 10 pdf pages**
- (X) National Register Status Codes – 1 pdf page**
- (X) Historical Maps – 8 pdf pages**
- (X) Invoice #16371.2401**

Reports List

ReportNum	IsVoided	IsMissing	IDs	Authors	CitYear	CitTitle	CitPublisher	CitPages	ReportType	InventorySize	InventoryDisclosure	InventoryCollections	InventoryNotes	Resources	ResourceCount	HasInformals	Counties	Maps
LA-00208	No	No		Horne, Wiley	1976	Letter Report of Archaeological Survey for a Los Angeles County Sanitation Dist. Project Engineer Report for Tyler Avenue Relief Trunk Sewer Section 2	University of California, Los Angeles Archaeological Survey		Archaeological, Field study						0	No	Los Angeles	EL MONTE
LA-00217	No	No		Hector, Susan M.	1976	Archaeological Record Search for the Proposed Renovation and Addition to Lambert Park Or to Mountain View Park, City of El Mont			Archaeological, Field study						0	No	Los Angeles	EL MONTE
LA-00294	No	No		Adams, Andrea		A Preliminary Archaeological Literature Search for the Community Development Plan	University of California, Los Angeles Archaeological Survey	8	Literature search	Unknown	Unrestricted	Unknown	Mapped to resources listed, removed from unmappable folder. The communities of Lopez, Maravilla Sunshine Acres and Westmont could not be located and may either be on the quads given or others not mentioned.	19-000036, 19-000136, 19-000158, 19-000167, 19-000182, 19-000300, 19-000342, 19-000385	8	No	Los Angeles	BALDWIN PARK, PASADENA, SAN FERNANDO, SOUTH GATE, SUNLAND, WHITTIER
LA-00637	No	No		Zahniser, Jack L.	1979	Final Environmental Impact Report S & S Construction Company Twin Lakes Condominium Project Zone Change 8-78	Chambers Group, Inc.	7	Archaeological, Field study	22 ac	Not for publication	No			0	No	Los Angeles	EL MONTE
LA-01220	No	No		Boxt, Matthew, Richard Aycock, and Susan Colby	1983	An Archaeological Survey and Impact Assessment of the Valley Blvd. Redevelopment Project, Located in the City of Industry, Los Angeles County, California	University of California, Los Angeles Archaeological Survey		Archaeological, Field study	60 ac					0	No	Los Angeles	BALDWIN PARK, EL MONTE
LA-02412	No	No		Singer, Clay A.	1968	Ucla Archaeological Survey Field Project Number Ucas-086.	University of California, Los Angeles Archaeological Survey	4	Archaeological, Field study	5 li mi					0	No	Los Angeles	AZUSA, BALDWIN PARK
LA-02871	No	No		Wlodarski, Robert J. and Dan Larson	1993	Department of Transportation Negative Archaeological Survey Report Dpd-ep-25 (revised 2/83) Interstate 10 (I-10) Between Baldwin Avenue in City of El Monte on the West and the Interchange Between I-10 and I-605	Historical, Environmental, Archaeological, Research, Team		Archaeological, Field study	3 li mi					0	No	Los Angeles	EL MONTE
LA-02894	No	No		De Barros, Phillip	1993	Cultural Resources Survey of Area of Potential Effects of Proposed Dam Near Drop Structure No. 13 Within the San Gabriel River, Los Angeles County, California	Chambers Group, Inc.		Archaeological, Field study	62 ac					0	No	Los Angeles	BALDWIN PARK, EL MONTE
LA-03056	No	No		Wlodarski, Robert J.	1994	Negative Archaeological Survey Report Minor Widening for I-10 Malibu, California.	Historical, Environmental, Archaeological, Research, Team	23	Archaeological, Field study	2 li mi	Not for publication	No			0	No	Los Angeles	BALDWIN PARK
LA-03823	No	No		Wlodarski, Robert J.	1981	Literature Search for Property Located Along the South Side of Valley Boulevard, East of the San Gabriel Freeway, West of Turnbull Canyon Road, in the City of Industry, County of Los Angeles, California	Pence Archaeological Consulting		Literature search	167 ac					0	No	Los Angeles	BALDWIN PARK
LA-03834	No	No		Wlodarski, Robert J.	1997	A Phase 1 Archaeological Study for Proposed Senior Housing Facilities Located at 3843-3849 Maxson Road, El Monte, California	Historical, Environmental, Archaeological, Research, Team		Archaeological, Field study	45330 sq ft					0	No	Los Angeles	EL MONTE
LA-04835	No	No		Ashkar, Shahira	1999	Cultural Resources Inventory Report for Williams Communications, Inc. Proposed Fiber Optic Cable System Installation Project, Los Angeles to Riverside, Los Angeles and Riverside Counties	Jones & Stokes Associates, Inc.	79	Archaeological, Field study	QC				19-186109, 19-186112, 19-187090	3	No	Los Angeles	BALDWIN PARK, EL MONTE, HOLLYWOOD, LA HABRA, LOS ANGELES, ONTARIO, SAN DIMAS, SOUTH GATE, WHITTIER, YORBA LINDA
LA-04880	No	No		Smith, Philomene and Siro, Adam	2000	Pavement Rehabilitation Along Route 605 Within the Cities of Long Beach, Lakewood, Cerritos, Downey, Pico Rivera, Santa Fe Springs, Whittier, City of Industry, Baldwin Park and Irwindale.	Caltrans	8	Literature search	>1 line miles					0	No	Los Angeles	AZUSA, BALDWIN PARK, EL MONTE, LONG BEACH, LOS ALAMITOS, WHITTIER
LA-05468	No	No		Duke, Curt	2000	Cultural Resource Assessment for AT&T Fixed Wireless Services Facility Number La_340_a, County of Los Angeles, California	LSA Associates, Inc.		Literature search	<1 ac					0	No	Los Angeles	EL MONTE
LA-06114	No	No		Conkling, Steven W. and McLean, Deborah K.B.	2002	Monitoring and Inadvertent Discovery Plan for Proposed Wells and Treated Water Pipelines for Treatment Plant B-6 and B-5, Cities of El Monte, Baldwin Park and Industry, Los Angeles County, California	LSA Associates, Inc.		Excavation, Monitoring	5.3 lini and 1 ac-buildin			Only what is shown on 1:24,000 scale provided is mapped	19-000136	1	No	Los Angeles	BALDWIN PARK
LA-06279	No	No		Duke, Curt	2001	Cultural Resource Assessment Cingular Wireless Facility No. Vy 131-03 Los Angeles County, California	LSA Associates, Inc.	10	Literature search	.25 ac	Not for publication	No			0	No	Los Angeles	BALDWIN PARK
LA-06282	No	No		Duke, Curt	2001	Cultural Resource Assessment for at & T Fixed Wireless Services Facility Number La_156_a, County of Los Angeles, California	LSA Associates, Inc.		Archaeological, Field study	.25 ac					0	No	Los Angeles	BALDWIN PARK
LA-06310	No	No		Duke, Curt	2002	Cultural Resource Assessment at & T Wireless Services Facility No. 11015a-01 Los Angeles County, California	LSA Associates, Inc.		Literature search	.25 ac			Union Pacific Railroad (Southern Pacific Railroad) is approx. 750 feet SW of facility		0	No	Los Angeles	EL MONTE
LA-06318	No	No		Duke, Curt	2002	Cultural Resource Assessment Cingular Wireless Facility No. Vy 120-02 Los Angeles County, California	LSA Associates, Inc.		Literature search	.25 ac					0	No	Los Angeles	EL MONTE
LA-07236	No	No		Bonner, Wayne H.	2005	Cultural Resources Records Search Results and Site Visit for Cingular Site Candidate Sv-047-01 (sonoco), 166 North Baldwin Park Boulevard, Industry, Los Angeles County, California	Michael Brandman Associates		Archaeological, Field study, Literature search	< 1 ac				19-000136	1	No	Los Angeles	BALDWIN PARK
LA-08697	No	No		Bonner, Wayne H.	2006	Cultural Resources Records Search and Site Visit Results for Cingular Wireless Candidate Sv-0048-01 (moller Shopping Center) 12010 Ramona Boulevard, El Monte, Los Angeles County, California	Michael Brandman Associates		Archaeological, Field study	< 1 ac					0	No	Los Angeles	EL MONTE
LA-09242	No	No		Bonner, Wayne H.	2007	Cultural Resources Records Search and Site Visit Results for T-Mobile Candidate IE25751A (Rebuilt Engines and Parts Store), 12156 Ramona Boulevard, El Monte, Los Angeles County, California	Michael Brandman Associates	11	Archaeological, Field study						0	No	Los Angeles	EL MONTE

Reports List

ReportNum	IsVoided	IsMissing	IDs	Authors	CitYear	CitTitle	CitPublisher	CitPages	ReportType	InventorySize	InventoryDisclosure	InventoryCollections	InventoryNotes	Resources	ResourceCount	HasInformals	Counties	Maps
LA-09705	No	No		Anonymous	2007	Cultural Resources Inventory of the Southern California Edison Company Tehachapi Renewable Transmission Project, Kern, Los Angeles and San Bernardino Counties, California. ARR #05-01-01046	Pacific Legacy, Inc.	138	Archaeological, Field study	QC			Previously Unmappable, mapped to LA-10175	19-001128, 19-001299, 19-001300, 19-001315, 19-001359, 19-001382, 19-002131, 19-002206, 19-002212, 19-002350, 19-002363, 19-002411, 19-002412, 19-002998, 19-003018, 19-003025, 19-003031, 19-003032, 19-003136, 19-003141, 19-003152, 19-003720, 19-003721, 19-003722, 19-003723, 19-003727, 19-003728, 19-003729, 19-003730, 19-003731, 19-003732, 19-003733, 19-003734, 19-003735, 19-003736, 19-003737, 19-003738, 19-003739, 19-003740, 19-003741, 19-003742, 19-003990, 19-100631, 19-100806, 19-100807, 19-100808	46	No	Los Angeles	ACTON, AZUSA, BALDWIN PARK, CHILAO FLAT, CONDOR PEAK, EL MONTE, MT WILSON, PACIFICO MOUNTAIN, PASADENA
LA-10151	No	No		Cotterman, Cary D. and Evelyn N. Chandler	2008	Cultural Resources Inventory of Proposed Pole Replacement in the City of Baldwin Park, Los Angeles County, CA	ECORP Consulting, Inc.	16	Archaeological, Field study		Not for publication	No			0	No	Los Angeles	BALDWIN PARK
LA-10175	No	No		Unknown	2009	Confidential Cultural Resources Specialist Report for the Tehachapi Transmission Project	Applied Earthworks, Aspen Environmental Group	381	Archaeological, Field study, Other research	QC	Not for publication	No	Also OR 3777	19-000806, 19-001128, 19-001299, 19-001300, 19-001315, 19-001357, 19-001382, 19-001636, 19-001770, 19-001771, 19-001783, 19-001956, 19-001957, 19-002206, 19-002212, 19-002343, 19-002350, 19-002363, 19-002411, 19-002412, 19-003009, 19-003018, 19-003025, 19-003031, 19-003032, 19-003037, 19-003090, 19-003099, 19-003136, 19-003152, 19-003295, 19-003385, 19-003477, 19-003606, 19-003638, 19-003795, 19-003852, 19-003853, 19-003854, 19-100277, 19-100439, 19-100496, 19-100644, 19-120031, 19-120032, 19-120072, 19-120074, 19-180689, 19-186545, 19-186860, 19-186870, 19-186871, 19-186872, 19-186873, 19-186875, 19-186876, 19-186877, 19-186917, 19-186921, 19-186923, 19-186925, 19-187713	62	Yes	Los Angeles	ACTON, AZUSA, BALDWIN PARK, CHILAO FLAT, CONDOR PEAK, DEL SUR, EL MONTE, FAIRMONT BUTTE, LA HABRA, LAKE HUGHES, LANCASTER WEST, LITTLE BUTTES, LOS ANGELES, MT WILSON, PACIFICO MOUNTAIN, PALMDALE, PASADENA, RITTER RIDGE, SLEEPY VALLEY, WATERMAN MTN, WHITTIER, YORBA LINDA
LA-10189	No	No	Paleo -	Gust, Sherri and Sara Alarcon	2003	Archaeological and Paleontological Evaluation Report and Mitigation Plan for the Interstate 605 Soundwall Project, from Whittier to Baldwin Park, Los Angeles County, CA	Cogstone Resource Management Inc.	37	Archaeological, Field study		Unrestricted	No		19-000136, 19-000182, 19-178611, 19-186112, 19-186571, 19-186804	6	No	Los Angeles	BALDWIN PARK, EL MONTE, WHITTIER
LA-10190	No	No		Harbert, Claudia	2002	Supplemental Historic Property Survey Report for the I-10 HOV Lane Between I-605 and the SR-57/SR-71/I-210 Interchange in the Cities of Los Angeles, Baldwin Park, West Covina, Covina, San Dimas, and Pomona in Los Angeles County, CA	Caltrans	82	Archaeological, Field study	QC	Not for publication	No		19-188913, 19-188914, 19-188915, 19-188916, 19-188917, 19-188918, 19-188919, 19-188920, 19-188921, 19-188922, 19-188923, 19-188924, 19-188925, 19-188926, 19-188927, 19-188928, 19-188929, 19-188930, 19-188931, 19-188932, 19-188933, 19-188934, 19-188935, 19-188936, 19-188937, 19-188938, 19-188939, 19-188940, 19-188941, 19-188942, 19-188943, 19-188944, 19-188945, 19-188946, 19-188947, 19-188948, 19-188949, 19-188950, 19-188951, 19-188952, 19-188953, 19-188954, 19-188955, 19-188956, 19-188957, 19-188958, 19-188959, 19-188960, 19-188961, 19-188962, 19-188963, 19-188964, 19-188965, 19-188966, 19-188967, 19-188968, 19-188969, 19-188970, 19-188971, 19-188972, 19-188973, 19-188974, 19-188975, 19-188976, 19-188977, 19-188978, 19-188979, 19-188980, 19-188981, 19-188982	70	No	Los Angeles	BALDWIN PARK, SAN DIMAS
LA-10501	No	No		Toren, George A.	1994	Cultural Resource Survey of Three Segments of the Proposed San Gabriel Valley Water Reclamation Project, Los Angeles County, California	Greenwood and Associates	17	Archaeological, Field study		Not for publication	No		19-002207	1	No	Los Angeles	AZUSA, BALDWIN PARK, EL MONTE
LA-10502	No	No		Wroblewski, David E. and Richard A. Krautkramer	2001	A Class III Archaeological Investigation for Proposed Wells and Treated Water Pipelines Adjoining the Plant B-6 and B-5 Treatment Facility Project, Los Angeles County, California	Express Archaeological Solutions	52	Archaeological, Excavation, Field study		Not for publication	No		19-000136	1	No	Los Angeles	BALDWIN PARK, EL MONTE
LA-10532	No	No		Landis, Daniel G.	1993	A Preliminary Cultural Resources Overview for the Proposed San Gabriel Valley Reclamation Program, Los Angeles County, California	Greenwood & Associates	13	Archaeological, Other research						0	No	Los Angeles	AZUSA, BALDWIN PARK, EL MONTE
LA-10600	No	No		Strauss, Monica	2007	Draft - Cultural Resources Assessment for the Proposed Woodland Duck Farm Project, Avocado Heights, Los Angeles County, California	EDAW, Inc.	71	Archaeological, Field study		Not for publication	No		19-004079	1	No	Los Angeles	EL MONTE
LA-10641	No	No		Tang, Bai "Tom"	2010	Preliminary Historical/Archaeological Resources Study, San Bernardino Line Positive Train Control Project, Southern California Regional Rail Authority, Counties of Los Angeles and San Bernardino	CRM Tech	30	Archaeological, Field study	QC	Not for publication	No			0	No	Los Angeles	BALDWIN PARK, EL MONTE, LOS ANGELES, ONTARIO, SAN DIMAS
LA-10883	No	No		Stewart, Noah M.	2008	Finding of no adverse effect - Interstate Route 10-605 Interchange Improvement 07-LA-10/605 PM 31.2/20.9 EA:245400	California Department of Transportation, District 7	85	Architectural/historical, Evaluation		Not for publication	No		19-188983	1	No	Los Angeles	BALDWIN PARK, EL MONTE
LA-11784	No	No		Stewart, Noah	2012	Supplemental Finding of No Adverse Effect, Interstate Route 10-605 Interchange Improvement	California Department of Transportation	29	Archaeological, Field study						0	No	Los Angeles	BALDWIN PARK, EL MONTE
LA-11887	No	No		Billat, Lorna	2012	New Tower Submission Packet, Garvey Shopping Center	EarthTouch	47	Archaeological, Field study						0	No	Los Angeles	EL MONTE
LA-11989	No	No		Panich, Lee and Holson, John	2010	Supplemental Archaeological Survey Report, 66KV Transmission Lines Access Roads, Tehachapi Renewable Transmission Project Segments 7 and 8, Los Angeles and San Bernardino Counties, California	Pacific Legacy	52	Archaeological, Field study					19-000858, 19-001009, 19-001311, 19-002583, 19-003121, 19-003551, 19-003813, 19-003814, 19-186112, 19-186889	10	No	Los Angeles	BALDWIN PARK, EL MONTE, LOS ANGELES
LA-11990	No	No		Wetherbee, Matthew, Jackson, Thomas, and Tinsley-Becker, Wendy	2010	Supplemental Cultural Resources Survey Report for the Southern California Edison Tehachapi Renewable Transmission Project Segment 7 Rio Hondo-Amamador-Jose-Mesa 66kv Line Relocation, Los Angeles County, California	Pacific Legacy & Urbana Preservation and Planning	30	Archaeological, Field study					19-003814, 19-004079, 19-004117, 19-004118	4	No	Los Angeles	BALDWIN PARK, EL MONTE
LA-11991	No	No		Schneider, Tsim and Holson, John	2010	Supplemental Archaeological Survey Report #2, Tehachapi Renewable Transmission Project Segment 7, Los Angeles County, California	Pacific Legacy	51	Archaeological, Field study					19-003813, 19-186917	2	No	Los Angeles	BALDWIN PARK, EL MONTE

Reports List

ReportNum	IsVoided	IsMissing	IDs	Authors	CitYear	CitTitle	CitPublisher	CitPages	ReportType	InventorySize	InventoryDisclosure	InventoryCollections	InventoryNotes	Resources	ResourceCount	HasInformals	Counties	Maps
LA-12558	No	No	Paleo -	Maxon, Patrick	2012	Cultural Resources Study for the Proposed Interstate 605/Valley Boulevard Interchange Improvement Project, City of Industry, Los Angeles County, California	BonTerra Consulting	14	Archaeological, Field study		Not for publication			19-000136, 19-004079, 19-186112	3	No	Los Angeles	EL MONTE

Resource List

Primary No.	Trinomial	Other IDs	Type	Age	Attribute codes	Recorded by	Reports
P-19-000136	CA-LAN-000136		Site, Other	Prehistoric	AP09 (Burials); AP15 (Habitation debris); AP16 (Other)	1967 (C. King)	LA-00069, LA-00294, LA-00331, LA-01440, LA-03070, LA-03583, LA-06114, LA-07236, LA-08669, LA-10189, LA-10502, LA-12558
P-19-004079	CA-LAN-004079H	Resource Name - Woodland Duck Farms & Equestrian Center, Louise A. Ward Residence; Other - Woodland Farm; Other - Duck Farm; Other - Louise A. Ward Residence	Building, Structure, Site, District	Historic	AH02 (Foundations/structure pads); HP02 (Single family property); HP06 (1-3 story commercial building); HP31 (Urban open space); HP33 (Farm/ranch); HP37 (Highway/trail); HP39 (Other) - Barn / Equestrian Ring	2010 (Wendy L. Tinsley Becker, AICP); 2010 (Lee Panich, Pacific Legacy, Inc.)	LA-10600, LA-11990, LA-12558

Resource List

Primary No.	Trinomial	Other IDs	Type	Age	Attribute codes	Recorded by	Reports
P-19-186112		Resource Name - Union Pacific RR, Southern Pacific R R Los Angeles Division; Other - C-Los Angeles-A-1; Other - MetroLink Riverside Line; Other - SPRR Los Angeles Division; Other - SPRR Sunset Line; Other - Map Reference #2-35	Structure	Historic	AH07 (Roads/trails/railroad grades); HP11 (Engineering structure); HP39 (Other) - railroad grade	1999 (S. Ashkar, Jones & Stokes); 2002 (Rand F. Herbert, JPR Historical Consulting Services); 2009 (R. Ramirez and F. Smith, SWCA Environmental Consultants); 2009 (F. Smith and J. Steely, SWCA Environmental Consultants)	LA-04835, LA-05125, LA-05501, LA-05643, LA-07528, LA-07834, LA-07943, LA-07954, LA-08231, LA-08249, LA-08298, LA-08299, LA-08517, LA-08635, LA-08667, LA-08671, LA-08701, LA-08703, LA-08733, LA-08744, LA-08821, LA-08822, LA-08826, LA-08827, LA-08911, LA-09156, LA-09199, LA-09236, LA-09271, LA-09441, LA-09660, LA-09795, LA-09880, LA-09894, LA-10189, LA-10284, LA-10299, LA-10323, LA-10340, LA-10394, LA-10513, LA-10638, LA-10698, LA-10911, LA-10937, LA-10940, LA-10942, LA-10997, LA-10998, LA-11048, LA-11060, LA-11065, LA-11077, LA-11180, LA-11253, LA-11293, LA-11405, LA-11537, LA-11590, LA-11775, LA-11808, LA-11821, LA-11988, LA-11989, LA-12133, LA-12211, LA-12212, LA-12349, LA-12499,

Resource List

Primary No.	Trinomial	Other IDs	Type	Age	Attribute codes	Recorded by	Reports
							LA-12526, LA-12552, LA-12558, LA-12697, VN-03153
P-19-186876		Resource Name - SCE Eagle Rock-Pardee & Antelope-Vincent No.1 220kV Transmission Line Corridor; USFS - 05-01-55-186; Other - Vincent 220 kV transmission Line; Other - SRI-1302; Other - SCE Big Creek Hydroelectric System Company Vincent 220kv; Other - Big Creek #2-Springville, Magunden-Springville #1, Antelope-Magunden #2; Other - Antelope Vincent; Other - Antelope-Eagle Rock, Pardee-Vincent, Eagle Rock-Pardee 220kV Transmission Lines; Other - Antelope-Mesa 220 kV Transmission Line; Other - Magunden-Mesa 220 kV Transmission Line	Structure, Element of district	Historic	AH16 (Other); HP11 (Engineering structure); HP39 (Other)	2003 (James J. Schmidt and June A. Schmidt, Compass Rose); 2006 (Koral Ahmet and Sara Bholat, ECORP Consulting); 2010 (Wendy L. Tinsley Becker, Urbana Preservation & Planning); 2010 (Wendy L. Tinsley Becker, Urban Preservation & Planning); 2011 (Wendy L. Tinsley Becker, Urbana Preservation & Planning); 2011 (Patrick Stanton, SRI); 2012 (Wendy L. Tinsley Becker, Urbana Preservation & Planning); 2014 (Daniel Leonard, BCR Consulting)	LA-03705, LA-08179, LA-09758, LA-09762, LA-10175, LA-10470, LA-11872, LA-11873, LA-11986, LA-11987, LA-12273, LA-12503, LA-12528, LA-12789, OR-03777
P-19-187085		Resource Name - The Mojave Rd; CHL - 963	Other	Historic	HP37 (Highway/trail)	1989 (S. Elder)	LA-12788, LA-12808
P-19-188913		OHP Property Number - 136375	Building	Historic	HP03 (Multiple family property)	2002 (Claudia A. Harbert, Caltrans)	LA-10190
P-19-188914		OHP Property Number - 136376	Building	Historic	HP03 (Multiple family property)	2002 (Claudia A. Harbert, Caltrans)	LA-10190
P-19-188915		OHP Property Number - 136377	Building	Historic	HP02 (Single family property)	2002 (Claudia A. Harbert, Caltrans)	LA-10190
P-19-188916		OHP Property Number - 136378	Building	Historic	HP03 (Multiple family property)	2002 (Claudia A. Harbert, Caltrans)	LA-10190
P-19-188917		OHP Property Number - 136379	Building	Historic	HP03 (Multiple family property)	2002 (Claudia A. Harbert, Caltrans)	LA-10190

Resource List

Primary No.	Trinomial	Other IDs	Type	Age	Attribute codes	Recorded by	Reports
P-19-188918		OHP Property Number - 136380	Building		HP02 (Single family property); HP06 (1-3 story commercial building)	2002 (Kelly F. Ewing, Caltrans)	LA-10190
P-19-188919		OHP Property Number - 136381	Building		HP03 (Multiple family property)	2002 (Kelly F. Ewing, Caltrans)	LA-10190
P-19-188921		OHP Property Number - 136383; OHP Property Number - 095025; OHP Property Number - 136386	Building		HP03 (Multiple family property)	2001 (Kelly F. Ewing, Caltrans)	LA-10190
P-19-188922		OHP Property Number - 136384	Building	Historic	HP03 (Multiple family property)	2001 (Kelly F. Ewing, Caltrans)	LA-10190
P-19-188923		OHP Property Number - 136385	Building		HP03 (Multiple family property)	2001 (Kelly F. Ewing, Caltrans)	LA-10190
P-19-188924		OHP Property Number - 136387	Building		HP03 (Multiple family property)	2001 (Kelly F. Ewing, Caltrans)	LA-10190
P-19-188983		Resource Name - L A Dept of Water & Power Boulder Lines North & South; Other - LADWP Boulder Lines 1 & 2; Other - Boulder Dam-Los Angeles 287.5 kV Transmission Line	Element of district	Historic	HP09 (Public utility building); HP11 (Engineering structure)	1999 (Stephen Van Wormer, KEA); 2008 (Noah M. Stewart, Caltrans District 7)	LA-10883, LA-11400, LA-11746, LA-12041, LA-12096, LA-12103, LA-12133, LA-12296, LA-12306, LA-12465, LA-12756
P-19-190504		Resource Name - SCE Rio Hondo-Amador-Jose-Mesa-Narrows 66kV Transmission Line	Structure	Historic	HP11 (Engineering structure)	2010 (Wendy L. Tinsley Becker, Urbana Preservation & Planning)	LA-12552

OFFICE OF HISTORIC PRESERVATION * * * Directory of Properties in the Historic Property Data File for LOS ANGELES County.										Page 35	04-05-12
PROPERTY-NUMBER	PRIMARY-#	STREET-ADDRESS	NAMES	CITY-NAME	OWN	YR-C	OHP-PROG.	PRG-REFERENCE-NUMBER	STAT-DAT	NRS	CRIT
153167		217 S CERRITOS AVE		AZUSA		1952	PROJ.REVW.	HUD030710C	11/14/03	6U	
114020		124 SANTA FE AVE		AZUSA	P		HIST.RES.	DOE-19-98-0014-0000	01/22/98	6Y	
							PROJ.REVW.	HUD971211Z	01/22/98	6Y	
120022		120 W 3RD ST		AZUSA	U	1915	HIST.RES.	DOE-19-97-0166-0000	10/15/97	6U	
							PROJ.REVW.	HUD980109K	10/15/97	6U	
125537		529 W 5TH ST		AZUSA	U	1926	HIST.RES.	DOE-19-97-0257-0000	10/06/97	6Y	
							PROJ.REVW.	HUD971006G	10/06/97	6Y	
127669		1003 W HOLLYVALE ST		AZUSA		1947	HIST.RES.	DOE-19-00-0370-0000	02/19/01	6Y	
							PROJ.REVW.	HUD010227G	02/19/01	6Y	
116019			SAN GABRIEL DAM BLDG FC 22	(VIC) AZUSA	F	1929	CHRIS	19-150038	07/20/95	7	
069342			BALDWIN PARK CITY HALL	BALDWIN PARK	U		PROJ.REVW.		10/28/77	2S	
153181		3570 AHERN DR		BALDWIN PARK	P	1953	PROJ.REVW.	HUD050324B	04/19/05	6Y	
130642		14126 ANADA ST		BALDWIN PARK	P	1952	HIST.RES.	DOE-19-02-0031-0000	03/20/02	6Y	
							PROJ.REVW.	HUD020313F	03/20/02	6Y	
152778		4951 ASUZA CANYON RD		BALDWIN PARK	P	1953	HIST.RES.	DOE-19-05-0035-0000	02/04/05	6Y	
							PROJ.REVW.	HUD050128A	02/04/05	6Y	
186372		4853 AZUSA CANYON RD		BALDWIN PARK	P		PROJ.REVW.	HUD100315N	04/08/10	6Y	
142984		4337 BALDWIN PARK BLVD		BALDWIN PARK	P	1949	HIST.RES.	DOE-19-03-0226-0000	08/29/03	6Y	
							PROJ.REVW.	HUD030813C	08/29/03	6Y	
154776		6321 BALDWIN PARK BLVD		BALDWIN PARK	P	1948	PROJ.REVW.	HUD050701A	07/18/05	6Y	
079907		14103 BALENTINE PL		BALDWIN PARK	U	1942	PROJ.REVW.	HUD921201C	01/25/93	6Y	
153881		13325 BELGATE ST		BALDWIN PARK	P	1952	PROJ.REVW.	HUD050428C	04/29/05	6Y	
162007		4219 BENHAM AVE		BALDWIN PARK	P	1954	PROJ.REVW.	HUD060508H	05/10/06	6Y	
152776		1629 BIG DALTON AVE		BALDWIN PARK	P	1953	HIST.RES.	DOE-19-05-0033-0000	02/04/05	6Y	
							PROJ.REVW.	HUD050126A	02/04/05	6Y	
152777		1707 BIG DALTON AVE		BALDWIN PARK	P	1949	HIST.RES.	DOE-19-05-0034-0000	02/04/05	6Y	
							PROJ.REVW.	HUD050126B	02/04/05	6Y	
095016		1741 BIG DALTON AVE		BALDWIN PARK	P	1926	HIST.RES.	DOE-19-02-1161-0000	09/06/02	6Y	
							PROJ.REVW.	FHWA020703A	09/06/02	6Y	
							HIST.RES.	DOE-19-95-0375-0000	03/13/95	6Y	
							PROJ.REVW.	FHWA950113A	03/13/95	6Y	
136395		1747 BIG DALTON AVE		BALDWIN PARK	P	1927	HIST.RES.	DOE-19-02-1162-0000	09/06/02	6Y	
							PROJ.REVW.	FHWA020703A	09/06/02	6Y	
179090		4085 BRESEE AVE		BALDWIN PARK	P	1949	PROJ.REVW.	HUD100429F	05/05/10	6Y	
153227		1880 CALINO AVE		BALDWIN PARK	P	1954	PROJ.REVW.	HUD050103K	01/07/05	6Y	
153883		4019 CENTER ST		BALDWIN PARK	P	1947	PROJ.REVW.	HUD050428D	04/29/05	6Y	
094202		14709 CLARK ST		BALDWIN PARK	P	1920	PROJ.REVW.	HUD941027S	01/05/95	6Y	
094498		14733 CLARK ST		BALDWIN PARK	P	1912	PROJ.REVW.	HUD950127A	02/17/95	6Y	
146859		3632 COSBEY AVE		BALDWIN PARK	P	1951	HIST.RES.	DOE-19-04-0046-0000	05/13/04	6Y	
							PROJ.REVW.	HUD040503B	05/13/04	6Y	
136375		12836 DALEWOOD ST		BALDWIN PARK	P	1938	PROJ.REVW.	FHWA020703A	09/06/02	6Y	
							HIST.RES.	DOE-19-02-1140-0000	09/06/02	6Y	
136376		12901 DALEWOOD ST		BALDWIN PARK	P	1948	PROJ.REVW.	FHWA020703A	09/06/02	6Y	
							HIST.RES.	DOE-19-02-1141-0000	09/06/02	6Y	
							PROJ.REVW.	FHWA020703A	09/06/02	6Y	
185104		13413 DUNIA ST		BALDWIN PARK	P	1956	PROJ.REVW.	HUD110902E	09/14/11	6Y	
095013		1532 E GARVEY AVE		BALDWIN PARK		1912	HIST.RES.	DOE-19-95-0373-0000	03/13/95	6Y	
							PROJ.REVW.	FHWA950113A	03/13/95	6Y	
095014		2340 E GARVEY AVE		BALDWIN PARK		1937	HIST.RES.	DOE-19-95-0374-0000	03/13/95	6Y	
							PROJ.REVW.	FHWA950113A	03/13/95	6Y	
149813		4861 ELTON ST		BALDWIN PARK	P	1953	HIST.RES.	DOE-19-04-0142-0000	07/15/04	6Y	
							PROJ.REVW.	HUD040610A	07/15/04	6Y	
146818		4308 FILHURST AVE		BALDWIN PARK	P	1948	HIST.RES.	DOE-19-04-0031-0000	01/12/04	6Y	
							PROJ.REVW.	HUD031222C	01/12/04	6Y	

PROPERTY-NUMBER	PRIMARY-#	STREET ADDRESS	NAMES	CITY NAME	OWN	YR-C	OHP-PROG	PRG-REFERENCE-NUMBER	STAT-DAT	NRS	CRIT
139214		3749 FOSTER AVE		BALDWIN PARK	P	1926	HIST.RES.	DOE-19-03-0096-0000	04/08/03	6Y	
							PROJ.REVW.	HUD030403C	04/08/03	6Y	
139216		13106 FRANCISQUITO AVE		BALDWIN PARK	P	1947	HIST.RES.	DOE-19-03-0098-0000	04/08/03	6Y	
							PROJ.REVW.	HUD030403D	04/08/03	6Y	
136379		805 FRAZIER ST		BALDWIN PARK	P	1947	HIST.RES.	DOE-19-02-1144-0000	09/06/02	6Y	
							PROJ.REVW.	FHWA020703A	09/06/02	6Y	
136378		807 FRAZIER ST		BALDWIN PARK	P	1948	HIST.RES.	DOE-19-02-1143-0000	09/06/02	6Y	
							PROJ.REVW.	FHWA020703A	09/06/02	6Y	
136377		819 FRAZIER ST		BALDWIN PARK	P	1948	HIST.RES.	DOE-19-02-1142-0000	09/06/02	6Y	
							PROJ.REVW.	FHWA020703A	09/06/02	6Y	
136386		856 FRAZIER ST		BALDWIN PARK	P		HIST.RES.	DOE-19-02-1152-0000	09/06/02	6Y	
							PROJ.REVW.	FHWA020703A	09/06/02	6Y	
182986		3451 FRAZIER ST		BALDWIN PARK	P	1948	HIST.RES.	HUD100706E	07/26/10	6Y	
147598		13730 FRAZIER ST		BALDWIN PARK	P	1946	HIST.RES.	DOE-19-04-0100-0000	06/18/04	6Y	
							PROJ.REVW.	HUD040520A	06/18/04	6Y	
095017		12793 GARVEY AVE		BALDWIN PARK		1940	HIST.RES.	DOE-19-95-0376-0000	03/13/95	6Y	
							PROJ.REVW.	FHWA950113A	03/13/95	6Y	
136380		12957 GARVEY AVE		BALDWIN PARK	P	1938	HIST.RES.	DOE-19-02-1145-0000	09/06/02	6Y	
							PROJ.REVW.	FHWA020703A	09/06/02	6Y	
136381		12961 GARVEY AVE		BALDWIN PARK	P	1948	HIST.RES.	DOE-19-02-1146-0000	09/06/02	6Y	
							PROJ.REVW.	FHWA020703A	09/06/02	6Y	
136382		13057 GARVEY AVE		BALDWIN PARK	P	1953	HIST.RES.	DOE-19-02-1147-0000	09/06/02	6Y	
							PROJ.REVW.	FHWA020703A	09/06/02	6Y	
136388		13079 GARVEY AVE		BALDWIN PARK	P	1948	HIST.RES.	DOE-19-02-1154-0000	09/06/02	6Y	
							PROJ.REVW.	FHWA020703A	09/06/02	6Y	
136389		13109 GARVEY AVE		BALDWIN PARK	P	1948	HIST.RES.	DOE-19-02-1155-0000	09/06/02	6Y	
							PROJ.REVW.	FHWA020703A	09/06/02	6Y	
136390		13127 GARVEY AVE		BALDWIN PARK	P	1946	HIST.RES.	DOE-19-02-1156-0000	09/06/02	6Y	
							PROJ.REVW.	FHWA020703A	09/06/02	6Y	
136391		13247 GARVEY AVE		BALDWIN PARK	P	1946	HIST.RES.	DOE-19-02-1157-0000	09/06/02	6Y	
							PROJ.REVW.	FHWA020703A	09/06/02	6Y	
136394		14133 GARVEY AVE		BALDWIN PARK	P	1955	HIST.RES.	DOE-19-02-1160-0000	09/06/02	6Y	
							PROJ.REVW.	FHWA020703A	09/06/02	6Y	
095018		14145 GARVEY AVE		BALDWIN PARK			HIST.RES.	DOE-19-95-0377-0000	03/13/95	6Y	
							PROJ.REVW.	FHWA950113A	03/13/95	6Y	
095019		14173 GARVEY AVE		BALDWIN PARK		1930	HIST.RES.	DOE-19-95-0378-0000	03/13/95	6Y	
							PROJ.REVW.	FHWA950113A	03/13/95	6Y	
095020		14227 GARVEY AVE		BALDWIN PARK		1939	HIST.RES.	DOE-19-95-0379-0000	03/13/95	6Y	
							PROJ.REVW.	FHWA950113A	03/13/95	6Y	
095021		14237 GARVEY AVE		BALDWIN PARK			HIST.RES.	DOE-19-95-0380-0000	03/13/95	6Y	
							PROJ.REVW.	FHWA950113A	03/13/95	6Y	
095022		14257 GARVEY AVE		BALDWIN PARK		1938	HIST.RES.	DOE-19-95-0381-0000	03/13/95	6Y	
							PROJ.REVW.	FHWA950113A	03/13/95	6Y	
095023		14265 GARVEY AVE		BALDWIN PARK		1940	HIST.RES.	DOE-19-95-0382-0000	03/13/95	6Y	
							PROJ.REVW.	FHWA950113A	03/13/95	6Y	
094997		14277 GARVEY AVE		BALDWIN PARK		1935	HIST.RES.	DOE-19-95-0358-0000	03/13/95	6Y	
							PROJ.REVW.	FHWA950113A	03/13/95	6Y	
095024		14277 GARVEY AVE		BALDWIN PARK		1940	HIST.RES.	DOE-19-95-0383-0000	03/13/95	6Y	
							PROJ.REVW.	FHWA950113A	03/13/95	6Y	
136396		14345 GARVEY AVE		BALDWIN PARK	P	1936	HIST.RES.	DOE-19-02-1163-0000	09/06/02	6Y	
							PROJ.REVW.	FHWA020703A	09/06/02	6Y	
094998		15325 GARVEY AVE		BALDWIN PARK		1937	HIST.RES.	DOE-19-95-0359-0000	03/13/95	6Y	
							PROJ.REVW.	FHWA950113A	03/13/95	6Y	

PROPERTY-NUMBER	PRIMARY-#	STREET-ADDRESS	NAMES	CITY-NAME	OWN	YR-C	OHP-PROG	PRG-REFERENCE-NUMBER	STAT-DAT	NRS	CRIT
100358		31616 N RIDGE RTE RD	CASTAIC UNION SCHOOL DIST-ORIGINAL	CASTAIC	D	1928	PROJ.REVW. HIST.RES. PROJ.REVW.	HRG940202Z DOE-19-95-0111-0000 HRG940202Z	07/13/95 07/13/95 07/13/95	6Y 6Y 6Y	
183358 163875		16717 NORWALK BLVD 23000 STUDEBAKER RD	ROYAL STREET COMM. LLC LA0583A	CERRITOS CERRITOS	Y P		PROJ.REVW. PROJ.REVW.	FCC100405B FCC060928C	04/05/10 11/18/06	6Y 6Y	
089529 075182 021173	19-176735	CHATSWORTH PARK S CHATSWORTH PARK S	CHATSWORTH CALERA SITE MINNIE HILL PALMER HOUSE PALMER, MINNIE HILL HOUSE	CHATSWORTH CHATSWORTH CHATSWORTH	M M M	1911 1911	HIST.RES. HIST.RES. HIST.RES.	SHL-0911-0000 NPS-79000480-0000 DOE-19-94-0352-0000	06/27/77 09/04/79 08/08/94	1CL 1S 2S2	A
124522 135582		21601 DEVONSHIRE ST MASON AVE	PACIFIC BELL MOBILE SERVICES FACIL MONTALVO CUTOFF/ ALAMEDA CORRIDOR	CHATSWORTH CHATSWORTH	P P	1904	PROJ.REVW. HIST.RES. PROJ.REVW.	FCC990916B DOE-19-02-1094-0000 FHWA020813D	09/23/99 10/01/02 10/01/02	6Y 6Y 6Y	
075161		STAGECOACH TRAIL	OLD SANTA SUSANA STAGECOACH ROAD /	(VIC) CHATSWORTH	P	1859	HIST.RES. HIST.SURV. HIST.SURV.	NPS-74000517-0000 1311-0001-0000 3063-0001-0000	01/10/74 01/10/74 01/01/74	1S 1S 1S	A A
183290 183798 090787 034728		13300 AMAR RD 15415 E DON JULIAN RD 15415 E DON JULIAN RD	SOUTHERN PACIFIC R.R./UNION PACIFI TEMPLE HALL EL CAMPO SANTO CEMETERY & MAUSOLEU	CITY OF INDUSTRY CITY OF INDUSTRY CITY OF INDUSTRY	P P M M	1905 1956 1923	PROJ.REVW. PROJ.REVW. HIST.RES. HIST.SURV.	FHWA100422A FCC100125D SPHI-LAN-019 1744-0005-0000	05/24/10 03/29/10 07/12/74 11/20/74	6Y 6Y 7L 1S	
034727		15415 E DON JULIAN RD	WORKMAN ADOBE/WORKMAN FAMILY CEMET	CITY OF INDUSTRY	M	1842	HIST.RES. HIST.SURV.	NPS-74000519-0000 1744-0004-0000	11/20/74 11/20/74	1S 1S	
034726		15415 E DON JULIAN RD	TEMPLE MANSION	CITY OF INDUSTRY	P	1919	HIST.RES. HIST.SURV. HIST.RES.	NPS-74000518-0000 1744-0003-0000 SHL-0874-0001	12/02/74 12/02/74 11/18/74	1S 1S 1CL	
034725		16021 E GALE AVE	JOHN A. ROWLAND HOUSE/JOHN REED HO	CITY OF INDUSTRY	P	1855	HIST.SURV. HIST.RES. HIST.SURV. HIST.RES.	1744-0002-0000 NPS-76002311-0000 1744-0002-0000 NPS-73000403-0000	01/01/92 03/29/76 09/01/75 07/16/73	3S 1S 3S 1R	AC
034724 187621 179915 165278		16021 E GALE AVE 18645 E GALE AVE 166 N BALDWIN PARK BLVD 613 TURNBULL CANYON RD	JOHN REED HOUSE GBC INTERNATIONAL BANK BRANCH OFFI SONOCO-SV0047	CITY OF INDUSTRY CITY OF INDUSTRY CITY OF INDUSTRY	P P P	1865	HIST.SURV. PROJ.REVW. PROJ.REVW.	1744-0001-0000 FDIC120314A FCC100804C	09/01/75 03/16/12 08/30/10	7S 6Y 6Y	
180867		16333 GALE AVE	SCE MESA-WALNUT 220KV TRANSMISSION	(VIC) CITY OF IND	P	1956	PROJ.REVW.	USFS101209C	01/13/11	6Y	
034627	19-186053	10TH ST	BALCH HALL	CLAREMONT	P	1929	HIST.RES. HIST.SURV.	NPS-84000887-0006 1711-0169-0095	09/20/84	1D 3D	AC
034698 034631	19-186124 19-186057	12TH ST 12TH ST	SUSAN MILLER DORSEY HALL ROSE GARDEN	CLAREMONT CLAREMONT	P P	1930 1940	HIST.RES. HIST.RES.	NPS-84000887-0004 NPS-84000887-0011	09/20/84 09/20/84	1D 1D	AC AC
034628	19-186054	12TH ST	BROWNING/DORSEY HALL	CLAREMONT	P	1929	HIST.RES. HIST.SURV.	NPS-84000887-0003 1711-0169-0099	09/20/84	1D 3D	AC
034626	19-186052	12TH ST	GRACE SCRIPPS HALL / ELEANOR TOLL	CLAREMONT	P	1928	HIST.RES. HIST.SURV.	NPS-84000887-0001 1711-0169-0094	09/20/84	1D 7N	AC
076498 034668 034677 034681 034682	19-186147 19-186094 19-186103 19-186107 19-186108	12TH ST 1ST ST 135 1ST ST 211 1ST ST 217 1ST ST	GRACE SCRIPPS HALL CRAFT DESIGNS THE VILLAGE IDIOT MEADS GROCERY, BUDS BIKE SHOP	CLAREMONT CLAREMONT CLAREMONT CLAREMONT CLAREMONT	P P P P P	1928 1912 1951 1887 1909	HIST.RES. HIST.SURV. HIST.SURV. HIST.SURV. HIST.SURV.	NPS-84000887-0002 1711-0170-0036 1711-0170-0045 1711-0170-0049 1711-0170-0050	09/20/84	1D 5D2 5D2 5D2 7N	AC

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PROPERTY-NUMBER	PRIMARY-#	STREET-ADDRESS	NAMES	CITY-NAME	OWN	YR-C	OHP-PROG..	PRG-REFERENCE-NUMBER	STAT-DAT	NRS	CRIT
118760			BUILDING #516 / WATER TOWER	EDWARDS AF	F	1955	HIST.RES.	ADOE-19-98-013-06	10/02/98	2D2	AC
118773			BUILDING #545	EDWARDS AF	F	1959	HIST.RES.	ADOE-19-98-013-10	10/02/98	2D2	AC
							PROJ.REVW.	USAF980814A	10/02/98	2D2	AC
							PROJ.REVW.	USAF980814A	10/02/98	2D2	AC
130589		2258 ALLGEYER AVE		EL MONTE	P	1951	HIST.RES.	DOE-19-02-0029-0000	03/18/02	6Y	
							PROJ.REVW.	HUD020221F	03/18/02	6Y	
138433		2264 ALLGEYER AVE		EL MONTE	P	1951	HIST.RES.	DOE-19-03-0091-0000	03/27/03	6Y	
							PROJ.REVW.	HUD030321F	03/27/03	6Y	
153187		2309 ALLGEYER AVE		EL MONTE	P	1952	PROJ.REVW.	HUD050324E	04/19/05	6Y	
144954		2333 ALLGEYER AVE		EL MONTE	P	1951	HIST.RES.	DOE-19-03-0321-0000	11/19/03	6Y	
							PROJ.REVW.	HUD031029A	11/19/03	6Y	
133022		10811 AMADOR ST		EL MONTE	P	1924	HIST.RES.	DOE-19-02-0981-0000	08/12/02	6Y	
							PROJ.REVW.	HUD020808B	08/12/02	6Y	
169944		3825 ARDEN DR		EL MONTE	P	1937	PROJ.REVW.	HUD080109A	01/11/08	6Y	
149812		3843 ARDEN DR		EL MONTE	P	1926	HIST.RES.	DOE-19-04-0141-0000	07/14/04	6Y	
							PROJ.REVW.	HUD040621A	07/14/04	6Y	
174857		3315 ASHER ST		EL MONTE	P	1956	PROJ.REVW.	HUD090112D	02/09/09	6Y	
101440		10311 ASHER ST		EL MONTE	P	1944	PROJ.REVW.	HUD960229B	03/29/96	6Y	
156004		11524 ASHER ST		EL MONTE	P	1948	PROJ.REVW.	HUD051011C	10/17/05	6Y	
156947		11525 ASHER ST		EL MONTE	P	1939	PROJ.REVW.	HUD070523A	05/30/07	6Y	
							PROJ.REVW.	HUD051128E	12/07/05	6Y	
088023		11646 AZUSA RD		EL MONTE	P	1935	PROJ.REVW.	HUD940125N	03/08/94	6Y	
165181		4116 BALDWIN AVE		EL MONTE	P	1935	PROJ.REVW.	FHWA010809A	10/30/01	6Y	
165163		4117 BALDWIN AVE		EL MONTE	P	1931	PROJ.REVW.	FHWA010809A	10/30/01	6Y	
165180		4122 BALDWIN AVE		EL MONTE	P	1948	PROJ.REVW.	FHWA010809A	10/30/01	6Y	
165165		4123 BALDWIN AVE		EL MONTE	P	1946	PROJ.REVW.	FHWA010809A	10/30/01	6Y	
165179		4126 BALDWIN AVE		EL MONTE	P	1940	PROJ.REVW.	FHWA010809A	10/30/01	6Y	
165170		4127 BALDWIN AVE		EL MONTE	P	1944	PROJ.REVW.	FHWA010809A	10/30/01	6Y	
165178		4132 BALDWIN AVE		EL MONTE	P	1947	PROJ.REVW.	FHWA010809A	10/30/01	6Y	
165171		4135 BALDWIN AVE		EL MONTE	P	1950	PROJ.REVW.	FHWA010809A	10/30/01	6Y	
165172		4139 BALDWIN AVE		EL MONTE	P	1936	PROJ.REVW.	FHWA010809A	10/30/01	6Y	
165173		4143 BALDWIN AVE		EL MONTE	P	1938	PROJ.REVW.	FHWA010809A	10/30/01	6Y	
165177		4144 BALDWIN AVE		EL MONTE	P	1927	PROJ.REVW.	FHWA010809A	10/30/01	6Y	
165174		4147 BALDWIN AVE		EL MONTE	P	1946	PROJ.REVW.	FHWA010809A	10/30/01	6Y	
165176		4237 BALDWIN AVE	TEX'S GLASS AND MIRROR	EL MONTE	P	1931	PROJ.REVW.	FHWA010809A	10/30/01	6Y	
174858		4158 BANNISTER AVE		EL MONTE	P	1947	PROJ.REVW.	HUD090112E	02/09/09	6Y	
079943		4344 BANNISTER AVE		EL MONTE	U	1938	PROJ.REVW.	HUD930104Q	02/03/93	6Y	
139229		11338 BASYE AVE		EL MONTE	P	1940	HIST.RES.	DOE-19-03-0111-0000	04/15/03	6Y	
							PROJ.REVW.	HUD030411F	04/15/03	6Y	
164390		11124 BASYE ST		EL MONTE	P	1947	PROJ.REVW.	HUD061215B	12/15/06	6Y	
165175		9960 BESSIE AVE		EL MONTE	P	1924	PROJ.REVW.	FHWA010809A	10/30/01	6Y	
132829		10508 BISBY ST		EL MONTE	P	1946	PROJ.REVW.	HUD061002H	10/02/06	6Y	
							HIST.RES.	DOE-19-02-0975-0000	08/05/02	6Y	
							PROJ.REVW.	HUD020729F	08/05/02	6Y	
173499		11952 BONWOOD RD		EL MONTE	P	1953	PROJ.REVW.	HUD081008F	10/21/08	6Y	
167430		12136 BONWOOD RD		EL MONTE	P	1951	PROJ.REVW.	HUD070817B	08/31/07	6Y	
169709		12143 BONWOOD RD		EL MONTE	P	1952	PROJ.REVW.	HUD071213C	12/18/07	6Y	
129199		12147 BONWOOD RD		EL MONTE	P	1951	PROJ.REVW.	HUD070914C	09/19/07	6Y	
							HIST.RES.	DOE-19-01-0248-0000	11/20/01	6Y	
							PROJ.REVW.	HUD011010D	11/20/01	6Y	
162944		12150 BONWOOD RD		EL MONTE	P	1951	PROJ.REVW.	HUD060824A	08/28/06	6Y	
175115		9540 BROCKWAY ST		EL MONTE	P	1958	PROJ.REVW.	HUD090319C	04/10/09	6Y	
162720		10155 BROCKWAY ST		EL MONTE	P	1956	PROJ.REVW.	HUD060713C	07/14/06	6Y	
132324		10825 BROCKWAY ST		EL MONTE	P	1952	HIST.RES.	DOE-19-02-0955-0000	07/18/02	6Y	
							PROJ.REVW.	HUD020710B	07/18/02	6Y	

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PROPERTY-NUMBER	PRIMARY-#	STREET-ADDRESS.....	NAMES.....	CITY-NAME.....	OWN	YR-C	OHP-PROG.,	PRG-REFERENCE-NUMBER	STAT-DAT	NRS	CRIT
166159		11148 BRYANT RD		EL MONTE	P	1947	PROJ. REVW.	HUD070525B	05/30/07	6Y	
141945		11169 BRYANT RD		EL MONTE	P	1952	HIST. RES.	DOE-19-03-0207-0000	07/29/03	6Y	
							PROJ. REVW.	HUD030717I	07/29/03	6Y	
150663		11505 BRYANT RD		EL MONTE	P	1947	HIST. RES.	DOE-19-04-0336-0000	03/23/04	6Y	
							PROJ. REVW.	HUD040266A	03/23/04	6Y	
169949		11660 BRYANT RD		EL MONTE	P	1948	PROJ. REVW.	HUD080114F	01/18/08	6Y	
131272		11831 BRYANT RD		EL MONTE	P	1949	HIST. RES.	DOE-19-02-0313-0000	03/28/02	6Y	
							PROJ. REVW.	HUD020325A	03/28/02	6Y	
087630		2221 BRYCE RD		EL MONTE	P	1930	PROJ. REVW.	HUD940107D	02/18/94	6Y	
154966		2426 BRYCE RD		EL MONTE	P	1947	PROJ. REVW.	HUD050808I	08/12/05	6Y	
157055		2436 BRYCE RD		EL MONTE	P	1946	PROJ. REVW.	HUD051212F	12/16/05	6Y	
066114		5244 BUFFINGTON RD		EL MONTE	U		PROJ. REVW.	HUD890818H	09/14/89	6Y	
167429		2236 CAMINAR AVE		EL MONTE	P	1942	PROJ. REVW.	HUD070817C	08/31/07	6Y	
094583		3905 CEDAR AVE		EL MONTE	P	1937	PROJ. REVW.	HUD941020J	02/02/95	6Y	
131378		4105 CEDAR AVE		EL MONTE	P	1947	HIST. RES.	DOE-19-02-0326-0000	06/05/02	6Y	
							PROJ. REVW.	HUD020530A	06/05/02	6Y	
101439		4144 CEDAR AVE		EL MONTE	P	1940	PROJ. REVW.	HUD960301A	03/29/96	6Y	
131204		4403 CEDAR AVE		EL MONTE	P	1920	HIST. RES.	DOE-19-02-0312-0000	03/28/02	6Y	
							PROJ. REVW.	HUD020313D	03/28/02	6Y	
							HIST. RES.	DOE-19-02-0248-0000	05/02/02	6Y	
							PROJ. REVW.	HUD020425G	05/02/02	6Y	
169946		4716 CEDAR AVE		EL MONTE	P	1941	PROJ. REVW.	HUD080109C	01/11/08	6Y	
146821		12202 CHOSEN ST		EL MONTE	P	1942	HIST. RES.	DOE-19-04-0032-0000	01/12/04	6Y	
							PROJ. REVW.	HUD031203E	01/12/04	6Y	
179076		3824 CLARK AVE		EL MONTE	P	1949	PROJ. REVW.	HUD100510J	05/26/10	6Y	
152801		3833 CLARK AVE		EL MONTE	P	1930	HIST. RES.	DOE-19-05-0042-0000	02/02/05	6Y	
							PROJ. REVW.	HUD041117B	02/02/05	6Y	
101963		3824 CLARK ST		EL MONTE	P	1945	PROJ. REVW.	HUD960328M	04/25/96	6Y	
169948		12004 CLARK ST		EL MONTE	P	1955	PROJ. REVW.	HUD080114G	01/18/08	6Y	
146006		11322 COFFIELD AVE		EL MONTE	P	1909	HIST. RES.	DOE-19-04-0001-0000	01/30/04	6Y	
							PROJ. REVW.	HUD040112A	01/30/04	6Y	
132293		2277 COGSWELL RD		EL MONTE	P	1951	HIST. RES.	DOE-19-02-0954-0000	07/18/02	6Y	
							PROJ. REVW.	HUD020710A	07/18/02	6Y	
150350		2315 COGSWELL RD		EL MONTE	P	1951	HIST. RES.	DOE-19-04-0259-0000	10/06/04	6Y	
							PROJ. REVW.	HUD040910J	10/06/04	6Y	
077430		3430 COGSWELL RD	ALFRED C DRAKE HOUSE	EL MONTE	U	1904	PROJ. REVW.	HUD920629P	07/29/92	6Y	
156950		4404 COGSWELL RD		EL MONTE	P	1951	PROJ. REVW.	HUD051128H	12/07/05	6Y	
152804		4427 COGSWELL RD		EL MONTE	P	1936	HIST. RES.	DOE-19-05-0045-0000	02/03/05	6Y	
							PROJ. REVW.	HUD041227C	02/03/05	6Y	
084788		4832 COGSWELL RD		EL MONTE	P	1937	PROJ. REVW.	HUD930930A	11/22/93	6Y	
130580		5026 COGSWELL RD		EL MONTE	P	1951	HIST. RES.	DOE-19-02-0028-0000	03/18/02	6Y	
							PROJ. REVW.	HUD020225I	03/18/02	6Y	
163609		5226 COGSWELL RD		EL MONTE	P	1936	PROJ. REVW.	HUD061016D	10/17/06	6Y	
149811		5516 COGSWELL RD		EL MONTE	P	1951	HIST. RES.	DOE-19-04-0140-0000	07/13/04	6Y	
							PROJ. REVW.	HUD040614C	07/13/04	6Y	
139228		9745 CORTADA ST		EL MONTE	P	1938	HIST. RES.	DOE-19-03-0110-0000	04/15/03	6Y	
							PROJ. REVW.	HUD030411G	04/15/03	6Y	
130565		4714 CROSSVALE AVE		EL MONTE	P	1950	HIST. RES.	DOE-19-02-0024-0000	03/07/02	6Y	
							PROJ. REVW.	HUD020228E	03/07/02	6Y	
149814		3720 CYPRESS AVE		EL MONTE	P	1925	HIST. RES.	DOE-19-04-0143-0000	07/13/04	6Y	
							PROJ. REVW.	HUD040614A	07/13/04	6Y	
139447		3726 CYPRESS AVE		EL MONTE	P	1920	HIST. RES.	DOE-19-03-0126-0000	05/05/03	6Y	
							PROJ. REVW.	HUD021220G	05/05/03	6Y	
087629		3751 CYPRESS AVE		EL MONTE	P	1937	PROJ. REVW.	HUD940107C	02/18/94	6Y	
073089		3756 CYPRESS AVE		EL MONTE	U	1925	PROJ. REVW.	HUD930416C	05/26/93	6Y	
							PROJ. REVW.	HUD910722B	09/11/91	6Y	

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PROPERTY-NUMBER	PRIMARY-#	STREET ADDRESS	NAMES	CITY NAME	OWN	YR-C	OHP-PROG..	PRG-REFERENCE-NUMBER	STAT-DAT	NRS	CRIT
139225		4163 EUNICE AVE		EL MONTE	P	1938	HIST.RES.	DOE-19-03-0107-0000	04/14/03	6Y	
							PROJ.REVW.	HUD030410C	04/14/03	6Y	
084100	12043	EXLINE ST	BAKER SCHOOL	EL MONTE	U	1940	HIST.RES.	DOE-19-93-0019-0000	09/07/93	6Y	
							PROJ.REVW.	FEMA930825A	09/07/93	6Y	
166158	4411	FANDON AVE		EL MONTE	P	1941	PROJ.REVW.	HUD070518S	05/30/07	6Y	
162726	4419	FANDON AVE		EL MONTE	P	1938	PROJ.REVW.	HUD060726C	07/28/06	6Y	
129197	12143	FELIPE ST		EL MONTE	P	1951	HIST.RES.	DOE-19-01-0246-0000	11/20/01	6Y	
							PROJ.REVW.	HUD011010B	11/20/01	6Y	
084101	12380	FELIPE ST	MAXSON SCHOOL	EL MONTE	U	1940	HIST.RES.	DOE-19-93-0018-0000	09/07/93	6Y	
							PROJ.REVW.	FEMA930825B	09/07/93	6Y	
129089	11517	FENNEL ST		EL MONTE	P	1946	HIST.RES.	DOE-19-01-0230-0000	11/02/01	6Y	
							PROJ.REVW.	HUD011004D	11/02/01	6Y	
167947	11908	FERRIS RD		EL MONTE	P	1939	PROJ.REVW.	HUD071010A	10/22/07	6Y	
082992	12210	FERRIS RD		EL MONTE	P	1934	PROJ.REVW.	HUD051107A	11/14/05	6Y	
							PROJ.REVW.	HUD930609D	07/22/93	6Y	
141055	12354	FERRIS RD		EL MONTE	P	1938	HIST.RES.	DOE-19-03-0193-0000	07/07/03	6Y	
							PROJ.REVW.	HUD030605E	07/07/03	6Y	
163300	10554	FIELDCREST ST		EL MONTE	P	1951	PROJ.REVW.	HUD060901B	09/05/06	6Y	
154789	12119	FINEVIEW ST		EL MONTE	P	1951	PROJ.REVW.	HUD050711L	07/21/05	6Y	
171347	12336	FINEVIEW ST		EL MONTE	P	1944	PROJ.REVW.	HUD080512N	05/15/08	6Y	
172992	9300	FLAIR DR		EL MONTE	P	1981	PROJ.REVW.	FDIC080306A	05/29/08	6Y	
172997	9650	FLAIR DR		EL MONTE	P	1970	PROJ.REVW.	FDIC080418A	05/28/08	6Y	
088090	11258	FOREST GROVE ST		EL MONTE	P	1926	PROJ.REVW.	HUD940804A	09/08/94	6Y	
							PROJ.REVW.	HUD940131M	03/09/94	6Y	
084147	11312	FOREST GROVE ST		EL MONTE	P	1934	PROJ.REVW.	HUD930809A	09/15/93	6Y	
156948	11736	FOREST GROVE ST		EL MONTE	P	1937	PROJ.REVW.	HUD051128F	12/07/05	6Y	
156623	10518	FRANKMONT ST		EL MONTE	P	1950	PROJ.REVW.	HUD051109C	11/16/05	6Y	
163301	10568	FRANKMONT ST		EL MONTE	P	1950	PROJ.REVW.	HUD060901C	09/05/06	6Y	
140024	2616	GAGE AVE		EL MONTE	P	1947	HIST.RES.	DOE-19-03-0177-0000	05/23/03	6Y	
							PROJ.REVW.	HUD030516C	05/23/03	6Y	
150613	2702	GAGE AVE		EL MONTE	P	1946	HIST.RES.	DOE-19-04-0319-0000	06/18/04	6Y	
							PROJ.REVW.	HUD040521D	06/18/04	6Y	
067029	2709	GAGE AVE		EL MONTE	U		PROJ.REVW.	HUD891211D	12/29/89	6Y	
069729	2713	GAGE AVE		EL MONTE	U	1928	PROJ.REVW.	HUD901105H	12/06/90	6Y	
150577	3024	GAGE AVE		EL MONTE	P	1929	PROJ.REVW.	HUD071005F	10/15/07	6Y	
							HIST.RES.	DOE-19-04-0303-0000	06/18/04	6Y	
							PROJ.REVW.	HUD040520D	06/18/04	6Y	
081333	3028	GAGE AVE		EL MONTE	U	1938	PROJ.REVW.	HUD930329C	05/06/93	6Y	
082993	3034	GAGE AVE		EL MONTE	P	1929	PROJ.REVW.	HUD930609E	07/22/93	6Y	
066957	3113	GAGE AVE		EL MONTE	U		PROJ.REVW.	HUD891026B	11/28/89	6Y	
096202	3642	GIBSON RD		EL MONTE	P	1928	PROJ.REVW.	HUD950510U	06/07/95	6Y	
086659	4133	GIBSON RD		EL MONTE	P	1932	PROJ.REVW.	HUD931201D	01/12/94	6Y	
131385	3036	GRANADA AVE		EL MONTE	P	1929	HIST.RES.	DOE-19-02-0333-0000	06/06/02	6Y	
							PROJ.REVW.	HUD020523D	06/06/02	6Y	
065897	3202	GRANADA AVE		EL MONTE	U		PROJ.REVW.	HUD890516C	06/15/89	6Y	
097198	3343	GRANADA AVE		EL MONTE	P	1923	PROJ.REVW.	HUD950621B	08/21/95	6Y	
135884	3417	GRANADA AVE		EL MONTE	P	1924	HIST.RES.	DOE-19-02-1132-0000	12/02/02	6Y	
							PROJ.REVW.	HUD021119A	12/02/02	6Y	
129088	11305	HALLWOOD DR		EL MONTE	P	1939	HIST.RES.	DOE-19-01-0229-0000	11/02/01	6Y	
							PROJ.REVW.	HUD011004C	11/02/01	6Y	
100784	11725	HALLWOOD DR		EL MONTE	P	1935	PROJ.REVW.	HUD960117B	02/07/96	6Y	
141944	5235	HAMMILL RD		EL MONTE	P	1935	HIST.RES.	DOE-19-03-0206-0000	07/29/03	6Y	
							PROJ.REVW.	HUD030717H	07/29/03	6Y	
162814	3183	HAVENPARK AVE		EL MONTE	P	1951	PROJ.REVW.	HUD060809G	08/11/06	6Y	
156949	11716	HEMLOCK ST		EL MONTE	P	1939	PROJ.REVW.	HUD051128G	12/07/05	6Y	
162811	11847	HEMLOCK ST		EL MONTE	P	1947	PROJ.REVW.	HUD060809D	08/11/06	6Y	

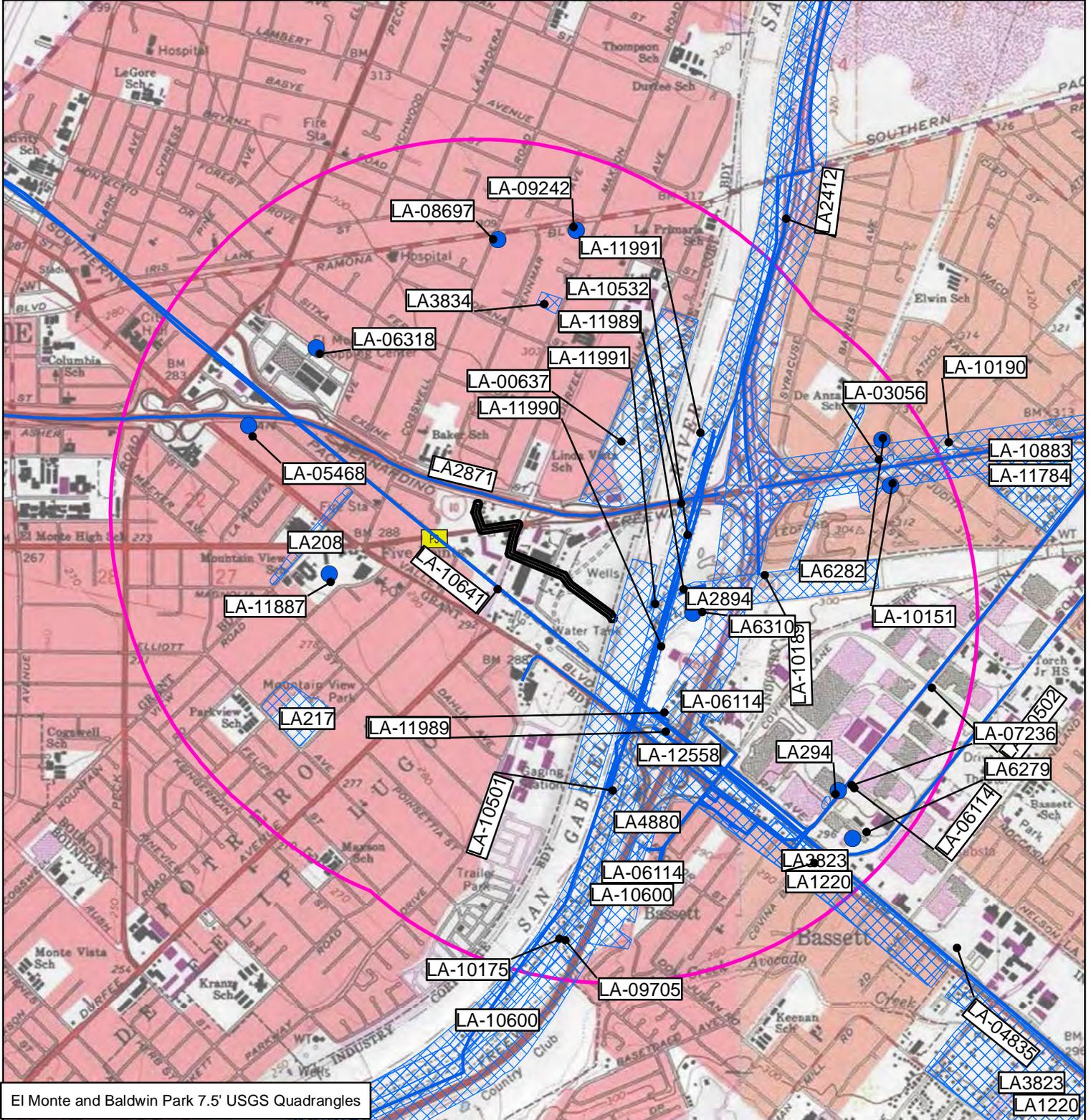
PROPERTY-NUMBER	PRIMARY-#	STREET ADDRESS	NAMES	CITY NAME	OWN	YR-C	OHP-PROG	PRG-REFERENCE-NUMBER	STAT-DAT	NRS	CRIT
084789		10427 HICKSON ST		EL MONTE	P	1932	PROJ. REVW.	HUD050324G	04/19/05	6Y	
							PROJ. REVW.	HUD930930B	11/22/93	6Y	
150683		10339 HOYT PARK PL		EL MONTE	P	1946	HIST. RES.	DOE-19-04-0345-0000	09/08/04	6Y	
							PROJ. REVW.	HUD040827A	09/08/04	6Y	
135379		4536 HUDDART AVE		EL MONTE	P	1947	HIST. RES.	DOE-19-02-1088-0000	11/22/02	6Y	
							PROJ. REVW.	HUD021106H	11/22/02	6Y	
065667		0 KALE ST		EL MONTE	U		PROJ. REVW.	HUD890120B	02/21/89	6Y	
135886		11048 KAUFFMAN ST		EL MONTE	P	1912	HIST. RES.	DOE-19-02-1133-0000	12/02/02	6Y	
							PROJ. REVW.	HUD021108D	12/02/02	6Y	
089388		11140 KAUFFMAN ST		EL MONTE	P	1944	PROJ. REVW.	HUD940504C	06/02/94	6Y	
133253		11657 KILLIAN ST		EL MONTE	P	1938	HIST. RES.	DOE-19-02-1001-0000	09/11/02	6Y	
							PROJ. REVW.	HUD020909E	09/11/02	6Y	
079930		11733 KILLIAN ST		EL MONTE	U	1940	PROJ. REVW.	HUD930104L	02/03/93	6Y	
079934		12057 KILLIAN ST		EL MONTE	U	1937	PROJ. REVW.	HUD930104N	02/03/93	6Y	
132833		12025 KINGERMAN ST		EL MONTE	P	1948	HIST. RES.	DOE-19-02-0976-0000	08/05/02	6Y	
							PROJ. REVW.	HUD020729G	08/05/02	6Y	
065825		11933 KLINGERMAN	HOUSING REHABILITATION	EL MONTE	U		PROJ. REVW.	HUD890424J	05/25/89	6Y	
169708		12141 KLINGERMAN		EL MONTE	P	1937	PROJ. REVW.	HUD071213B	12/18/07	6Y	
173092		11912 KLINGERMAN ST		EL MONTE	P	1954	PROJ. REVW.	HUD080725A	08/11/08	6Y	
156550		11940 KLINGERMAN ST		EL MONTE	P	1954	PROJ. REVW.	HUD051026B	11/07/05	6Y	
130850		12039 KLINGERMAN ST		EL MONTE	P	1948	HIST. RES.	DOE-19-02-0121-0000	03/28/02	6Y	
							PROJ. REVW.	HUD020213C	03/28/02	6Y	
150581		12043 KLINGERMAN ST		EL MONTE	P	1948	HIST. RES.	DOE-19-04-0306-0000	06/18/04	6Y	
							PROJ. REVW.	HUD040521B	06/18/04	6Y	
133254		12046 KLINGERMAN ST		EL MONTE	P	1951	HIST. RES.	DOE-19-02-1002-0000	09/11/02	6Y	
							PROJ. REVW.	HUD020906D	09/11/02	6Y	
157058		12445 KLINGERMAN ST		EL MONTE	P	1947	PROJ. REVW.	HUD051212J	12/16/05	6Y	
098417		12521 KLINGERMAN ST		EL MONTE	P	1938	PROJ. REVW.	HUD950825F	11/27/95	6Y	
161542		4202 LA MADERA AVE		EL MONTE	P	1939	PROJ. REVW.	HUD060215C	02/24/06	6Y	
080493		4320 LA MADERA AVE		EL MONTE	U	1942	PROJ. REVW.	HUD930209F	02/22/93	6Y	
147250		4513 LA MADERA AVE		EL MONTE	P	1937	HIST. RES.	DOE-19-04-0092-0000	04/22/04	6Y	
							PROJ. REVW.	HUD040405G	04/22/04	6Y	
145080		4719 LA MADERA AVE		EL MONTE	P	1947	HIST. RES.	DOE-19-03-0323-0000	11/26/03	6Y	
							PROJ. REVW.	HUD031113C	11/26/03	6Y	
147244		4924 LA MADERA AVE		EL MONTE	P	1941	HIST. RES.	DOE-19-04-0089-0000	04/22/04	6Y	
							PROJ. REVW.	HUD040405D	04/22/04	6Y	
150358		12107 LAMBERT		EL MONTE	P	1912	HIST. RES.	DOE-19-04-0265-0000	10/05/04	6Y	
							PROJ. REVW.	HUD040910I	10/05/04	6Y	
167384		11037 LAMBERT AVE		EL MONTE	P	1934	PROJ. REVW.	HUD070813J	08/27/07	6Y	
156549		11519 LAMBERT AVE		EL MONTE	P	1952	PROJ. REVW.	HUD051026C	11/07/05	6Y	
147564		12143 LAMBERT AVE		EL MONTE	P	1949	HIST. RES.	DOE-19-04-0097-0000	02/04/04	6Y	
							PROJ. REVW.	HUD040126A	02/04/04	6Y	
153137		11720 LANSDALE AVE		EL MONTE	P	1936	PROJ. REVW.	HUD050413A	04/15/05	6Y	
067028		2742 LEXINGTON AVE		EL MONTE	U		PROJ. REVW.	HUD891211C	12/28/89	6Y	
136827		3103 LEXINGTON AVE		EL MONTE	P	1947	HIST. RES.	DOE-19-03-0040-0000	02/05/03	6Y	
							PROJ. REVW.	HUD030130A	02/05/03	6Y	
131203		3113 LEXINGTON AVE		EL MONTE	P	1947	HIST. RES.	DOE-19-02-0247-0000	05/02/02	6Y	
							PROJ. REVW.	HUD020425H	05/02/02	6Y	
150579		3154 LEXINGTON AVE		EL MONTE	P	1939	PROJ. REVW.	HUD060214A	02/16/06	6Y	
							HIST. RES.	DOE-19-04-0305-0000	06/18/04	6Y	
							PROJ. REVW.	HUD040521A	06/18/04	6Y	
080381		3233 LEXINGTON AVE		EL MONTE	U	1930	PROJ. REVW.	HUD930129C	02/16/93	6Y	
069924		3327 LEXINGTON AVE		EL MONTE	U	1921	PROJ. REVW.	HUD910104B	01/25/91	6Y	
140345		3364 LEXINGTON AVE		EL MONTE	P	1941	HIST. RES.	DOE-19-02-1199-0000	10/16/02	6Y	
							PROJ. REVW.	HUD021009L	10/16/02	6Y	
150578		3818 LINCOLN AVE		EL MONTE	P	1952	HIST. RES.	DOE-19-04-0304-0000	06/18/04	6Y	

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PROPERTY-NUMBER	PRIMARY-#	STREET ADDRESS	NAMES	CITY NAME	OWN	YR-C	OHP-PROG	PRG-REFERENCE-NUMBER	STAT-DAT	NRS	CRIT
165560		3830 LINCOLN AVE		EL MONTE	P	1963	PROJ.REVW.	HUD040520E	06/18/04	6Y	
167219		11817 LOWER AZUSA RD		EL MONTE	P	1937	PROJ.REVW.	HUD070312L	03/19/07	6Y	
147248		2703 LUDER AVE		EL MONTE	P	1950	HIST.RES.	DOE-19-04-0091-0000	04/22/04	6Y	
169947		2707 LUDER AVE		EL MONTE	P	1950	PROJ.REVW.	HUD040405F	04/22/04	6Y	
131270		12102 MAGNOLIA ST		EL MONTE	P	1946	HIST.RES.	HUD080109B	01/11/08	6Y	
146824		4015 MAPLE AVE		EL MONTE	P	1946	PROJ.REVW.	HUD020304M	03/28/02	6Y	
167953		11218 MARYVINE ST		EL MONTE	P	1935	HIST.RES.	DOE-19-04-0034-0000	01/12/04	6Y	
147154		12149 MARYVINE ST		EL MONTE	P	1935	PROJ.REVW.	HUD031203B	01/12/04	6Y	
140023		2413 MAXSON RD		EL MONTE	P	1957	HIST.RES.	DOE-19-04-0069-0000	09/12/07	6Y	
152802		2742 MAXSON RD		EL MONTE	P	1951	PROJ.REVW.	HUD040419D	05/18/04	6Y	
156476		4279 MAXSON RD		EL MONTE	P	1949	PROJ.REVW.	HUD090213D	02/26/09	6Y	
147231		4312 MAXSON RD		EL MONTE	P	1949	HIST.RES.	DOE-19-03-0174-0000	05/23/03	6Y	
166242		4357 MAXSON RD		EL MONTE	P	1945	PROJ.REVW.	HUD030516B	05/23/03	6Y	
079937		4413 MAXSON RD		EL MONTE	P	1945	HIST.RES.	DOE-19-05-0043-0000	02/03/05	6Y	
102801		4417 MAXSON RD		EL MONTE	P	1910	PROJ.REVW.	HUD050929E	11/02/05	6Y	
162812		4427 MAXSON RD		EL MONTE	P	1940	HIST.RES.	DOE-19-04-0081-0000	04/21/04	6Y	
084094		12143 MCGIRK AVE		EL MONTE	P	1940	PROJ.REVW.	HUD040401H	04/21/04	6Y	
126054		11423 MEDINA CT		EL MONTE	P	1953	PROJ.REVW.	HUD070702I	07/06/07	6Y	
140026		3537 MEEKER AVE		EL MONTE	P	1938	PROJ.REVW.	HUD051109D	11/16/05	6Y	
083911		3100 MERCED AVE		EL MONTE	P	1938	HIST.RES.	DOE-19-04-0081-0000	04/21/04	6Y	
149828		3129 MERCED AVE		EL MONTE	P	1940	PROJ.REVW.	HUD040401H	04/21/04	6Y	
129094		10735 MILDRED ST		EL MONTE	P	1938	PROJ.REVW.	HUD930104O	02/03/93	6Y	
169945		10916 MONTECITO DR		EL MONTE	P	1938	PROJ.REVW.	HUD960628C	07/29/96	6Y	
168885		11340 MONTECITO DRIVE		EL MONTE	P	1943	PROJ.REVW.	HUD060809E	08/11/06	6Y	
159272		10524 MULHALL ST		EL MONTE	P	1940	PROJ.REVW.	HUD060901E	09/05/06	6Y	
163302		10679 MULHALL ST		EL MONTE	P	1940	PROJ.REVW.	HUD930715A	09/02/93	6Y	
155429		11653 MULHALL ST		EL MONTE	P	1924	PROJ.REVW.	HUD080512J	05/15/08	6Y	
079940		2834 MUSGROVE AVE		EL MONTE	P	1924	HIST.RES.	DOE-19-00-0218-0000	08/28/00	6Y	
074297		2840 MUSGROVE AVE		EL MONTE	P	1938	PROJ.REVW.	HUD000731A	08/28/00	6Y	
172319		2437 N BURKETT RD		EL MONTE	P	1938	HIST.RES.	DOE-19-03-0175-0000	05/23/03	6Y	
100360		3400 N CALIFORNIA AVE	COLUMBIA SCHOOL	EL MONTE	P	1941	PROJ.REVW.	HUD030516D	05/23/03	6Y	
166340		3614 N CENTER AVE		EL MONTE	P	1944	HIST.RES.	DOE-19-04-0154-0000	08/05/04	6Y	
088024		4427 N COGSWELL RD		EL MONTE	P	1944	PROJ.REVW.	HUD930602Z	08/25/93	6Y	
165182		3615 N CYPRESS AVE	EL MONTE UNION HIGH SCHOOL DISTRICT	EL MONTE	P	1930	HIST.RES.	DOE-19-01-0232-0000	11/02/01	6Y	
150892		3834 N GLEN WY		EL MONTE	P	1930	PROJ.REVW.	HUD011009A	11/02/01	6Y	
120168		3237 N GRANADA AVE		EL MONTE	P	1946	PROJ.REVW.	HUD080109D	01/11/08	6Y	
				EL MONTE	P	1924	PROJ.REVW.	HUD071119B	11/21/07	6Y	
				EL MONTE	P	1954	PROJ.REVW.	HUD060112BB	01/17/06	6Y	
				EL MONTE	P	1954	PROJ.REVW.	HUD060901D	09/05/06	6Y	
				EL MONTE	P	1938	PROJ.REVW.	HUD050826B	09/21/05	6Y	
				EL MONTE	U	1939	PROJ.REVW.	HUD930104P	02/03/93	6Y	
				EL MONTE	U	1940	PROJ.REVW.	HUD920106E	01/16/92	6Y	
				EL MONTE	P	1938	PROJ.REVW.	HUD080612H	07/01/08	6Y	
				EL MONTE	D	1923	HIST.RES.	DOE-19-95-0113-0000	02/08/95	6Y	
				EL MONTE	P	1937	PROJ.REVW.	HRG940202Z	02/08/95	6Y	
				EL MONTE	P	1936	PROJ.REVW.	FCC061023B	10/23/06	6Y	
				EL MONTE	P	1927	PROJ.REVW.	HUD940125O	03/08/94	6Y	
				EL MONTE	P	1946	HIST.RES.	FHWA010809A	10/30/01	6Y	
				EL MONTE	P	1946	HIST.RES.	DOE-19-04-0357-0000	07/29/04	6Y	
				EL MONTE	P	1946	PROJ.REVW.	HUD040716C	07/29/04	6Y	
				EL MONTE	U	1930	HIST.RES.	DOE-19-99-0084-0000	03/31/99	6Y	
				EL MONTE	P	1930	PROJ.REVW.	FHWA990311A	03/31/99	6Y	

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PROPERTY-NUMBER	PRIMARY-#	STREET ADDRESS.....	NAMES.....	CITY NAME.....	OWN	YR-C	OHP-PROG..	PRG-REFERENCE-NUMBER	STAT-DAT	NRS	CRIT
150889		3331 NEVADA AVE		EL MONTE	P	1924	PROJ.REVW.	HUD920113J	01/27/92	6Y	
							HIST.RES.	DOE-19-04-0356-0000	07/29/04	6Y	
135857		3410 NEVADA AVE		EL MONTE	P	1927	PROJ.REVW.	HUD040716C	07/29/04	6Y	
							HIST.RES.	DOE-19-02-1124-0000	12/16/02	6Y	
							PROJ.REVW.	HUD021125F	12/16/02	6Y	
100779		3037 NEVADA ST		EL MONTE	P	1941	PROJ.REVW.	HUD960112C	02/06/96	6Y	
068074		3358 NEVADA ST		EL MONTE	U		PROJ.REVW.	HUD890120C	02/21/89	6Y	
089091		11206 OAK ST		EL MONTE	P	1940	PROJ.REVW.	HUD940328K	04/15/94	6Y	
153663		11224 OAK ST		EL MONTE		1928	PROJ.REVW.	HUD050425C	04/26/05	6Y	
150574		10233 OLNEY ST		EL MONTE	P	1950	HIST.RES.	DOE-19-04-0302-0000	06/18/04	6Y	
							PROJ.REVW.	HUD040520C	06/18/04	6Y	
150615		10234 OLNEY ST		EL MONTE	P	1948	HIST.RES.	DOE-19-04-0320-0000	06/18/04	6Y	
							PROJ.REVW.	HUD040521E	06/18/04	6Y	
162813		4724 PAL MAL AVE		EL MONTE	P	1951	PROJ.REVW.	HUD060809F	08/11/06	6Y	
154777		3567 PALM DR		EL MONTE	P	1930	PROJ.REVW.	HUD050701B	07/18/05	6Y	
146825		2168 PECK RD		EL MONTE	P	1950	PROJ.REVW.	HUD080512H	05/15/08	6Y	
							HIST.RES.	DOE-19-04-0035-0000	01/12/04	6Y	
							PROJ.REVW.	HUD031203D	01/12/04	6Y	
155430		2254 PECK RD		EL MONTE	P	1951	PROJ.REVW.	HUD050826C	09/21/05	6Y	
157056		2277 PENN MAR AVE		EL MONTE	P	1951	PROJ.REVW.	HUD051212H	12/16/05	6Y	
147155		2304 PENN MAR AVE		EL MONTE	P	1951	HIST.RES.	DOE-19-04-0070-0000	05/18/04	6Y	
							PROJ.REVW.	HUD040419E	05/18/04	6Y	
154790		3616 PENN MAR AVE		EL MONTE	P	1941	PROJ.REVW.	HUD050711M	07/21/05	6Y	
154856		3800 PENN MAR AVE		EL MONTE	P		PROJ.REVW.	HUD050720B	07/26/05	6Y	
150357		12150 PINEVILLE		EL MONTE	P	1951	HIST.RES.	DOE-19-04-0264-0000	10/05/04	6Y	
							PROJ.REVW.	HUD040910H	10/05/04	6Y	
174833		12134 PINEVILLE ST		EL MONTE	P	1955	PROJ.REVW.	HUD090107D	01/23/09	6Y	
169950		12154 PINEVILLE ST		EL MONTE	P	1954	PROJ.REVW.	HUD070114F	01/18/08	6Y	
172317		12208 PINEVILLE ST		EL MONTE	P	1954	PROJ.REVW.	HUD080612G	07/01/08	6Y	
081332		12424 POINSETTIA AVE		EL MONTE	U	1936	PROJ.REVW.	HUD930329B	05/06/93	6Y	
163243		12536 POINSETTIA AVE		EL MONTE	P	1958	PROJ.REVW.	HUD060915D	09/15/06	6Y	
155428		2534 POTRERO AVE		EL MONTE	P	1949	PROJ.REVW.	HUD050826A	09/21/05	6Y	
165185		RAMONA BLVD	BEHIND 11248 RAMONA BLVD	EL MONTE	P		PROJ.REVW.	FHWA010809A	10/30/01	6Y	
165183		11240 RAMONA BLVD		EL MONTE	P	1946	PROJ.REVW.	FHWA010809A	10/30/01	6Y	
165184		11248 RAMONA BLVD	SUPER UNIQUE AUTO REPAIR	EL MONTE	P	1950	PROJ.REVW.	FHWA010809A	10/30/01	6Y	
165186		11306 RAMONA BLVD	CUSTOM UNIQUE BODY SHOP	EL MONTE	P	1940	PROJ.REVW.	FHWA010809A	10/30/01	6Y	
131452		11241 RANCHITO ST		EL MONTE	P	1939	HIST.RES.	DOE-19-02-0339-0000	06/17/02	6Y	
							PROJ.REVW.	HUD020613A	06/17/02	6Y	
140022		11835 RANCHITO ST		EL MONTE	P	1934	HIST.RES.	DOE-19-03-0173-0000	05/23/03	6Y	
							PROJ.REVW.	HUD030514B	05/23/03	6Y	
089387		12045 RANCHITO ST		EL MONTE	P	1936	PROJ.REVW.	HUD940504B	06/02/94	6Y	
133021		12102 REDBERRY ST		EL MONTE	P	1951	HIST.RES.	DOE-19-02-0980-0000	08/12/02	6Y	
							PROJ.REVW.	HUD020808C	08/12/02	6Y	
156946		4249 RICHWOOD AVE		EL MONTE	P	1936	PROJ.REVW.	HUD051128D	12/07/05	6Y	
156836		4351 RICHWOOD AVE		EL MONTE	P	1938	PROJ.REVW.	HUD051028A	11/23/05	6Y	
150355		4402 RICHWOOD AVE		EL MONTE	P	1949	HIST.RES.	DOE-19-04-0262-0000	10/05/04	6Y	
							PROJ.REVW.	HUD040910F	10/05/04	6Y	
154454		9878 RIO HONDO PARKWAY		EL MONTE	P	1954	PROJ.REVW.	HUD050527D	06/13/05	6Y	
150356		11761 RIO HONDO PARKWAY		EL MONTE	P	1931	HIST.RES.	DOE-19-04-0263-0000	10/05/04	6Y	
							PROJ.REVW.	HUD040910G	10/05/04	6Y	
153185		12050 RIO HONDO PKWY		EL MONTE	P	1950	PROJ.REVW.	HUD050324D	04/19/05	6Y	
163304		3847 RIVERVIEW AVE		EL MONTE	P	1956	PROJ.REVW.	HUD060901F	09/05/06	6Y	
102142		10205 ROSE ST		EL MONTE	P		PROJ.REVW.	HUD960308G	05/01/96	6Y	
100783		11719 ROSEGLEN ST		EL MONTE	P	1935	PROJ.REVW.	HUD960117A	02/07/96	6Y	
147601		10203 ROXIE ST		EL MONTE	P	1940	HIST.RES.	DOE-19-04-0101-0000	06/18/04	6Y	

PROPERTY-NUMBER	PRIMARY-#	STREET-ADDRESS	NAMES	CITY-NAME	OWN	YR-C	OHP-PROG.	PRG-REFERENCE-NUMBER	STAT-DAT	NRS	CRIT
126298		3053 SAN IGNACIO		EL MONTE	P	1940	PROJ. REVW.	HUD040521C	06/18/04	6Y	
							HIST. RES.	DOE-19-00-0347-0000	06/21/00	6Y	
074232		3048 SAN IGNACIO DR		EL MONTE	U	1939	PROJ. REVW.	HUD000524D	06/21/00	6Y	
136826		3153 SAN LEON DR		EL MONTE	P	1940	PROJ. REVW.	HUD911210B	01/07/92	6Y	
							HIST. RES.	DOE-19-03-0039-0000	02/05/03	6Y	
							PROJ. REVW.	HUD030203C	02/05/03	6Y	
169710		3125 SAN PIERRE DR		EL MONTE	P	1941	PROJ. REVW.	HUD071213A	12/18/07	6Y	
072954		3535 SANTA ANITA AVE	OLD EL MONTE JAIL	EL MONTE	U	1880	HIST. RES.	SPHI-LAN-047	06/12/89	7L	
							ST. PT. INT.	19-0017	05/26/89	7L	
065861		11102 SCHMIDT RD	PROPERTY REHABILITATION	EL MONTE	U		PROJ. REVW.	HUD890501E	06/02/89	6Y	
147153		11243 SCHMIDT RD		EL MONTE	P	1940	HIST. RES.	DOE-19-04-0068-0000	05/18/04	6Y	
							PROJ. REVW.	HUD040419C	05/18/04	6Y	
150314		12238 SCHMIDT RD	RESIDENCE	EL MONTE	P	1932	HIST. RES.	DOE-19-04-0235-0000	12/17/04	6Y	
							PROJ. REVW.	HUD041117C	12/17/04	6Y	
156539		4426 SHASTA PL		EL MONTE	P	1954	PROJ. REVW.	HUD051028B	11/09/05	6Y	
169959		4540 SHASTA PL		EL MONTE	P	1957	PROJ. REVW.	HUD080206C	02/20/08	6Y	
146724		4402 SHATA PL		EL MONTE	P	1954	HIST. RES.	DOE-19-04-0027-0000	05/06/04	6Y	
							PROJ. REVW.	HUD040409D	05/06/04	6Y	
150685		4013 SHIRLEY AVE		EL MONTE	P	1947	HIST. RES.	DOE-19-04-0346-0000	09/08/04	6Y	
							PROJ. REVW.	HUD040827B	09/08/04	6Y	
165187		11319 STEWART ST		EL MONTE	P	1946	PROJ. REVW.	FHWA010809A	10/30/01	6Y	
166241		1901 STOCKHAM PL		EL MONTE	P	1952	PROJ. REVW.	HUD070702J	07/06/07	6Y	
156624		3740 TYLER AVE		EL MONTE	P	1954	PROJ. REVW.	HUD051109E	11/16/05	6Y	
089569		VALLEY BLVD	EL MONTE--1ST SOUTHERN CALIFORNIA	EL MONTE	S		HIST. RES.	SHL-0975-0000	08/13/87	1CL	
128028		9617 VALLEY BLVD		EL MONTE	P		HIST. RES.	DOE-19-01-0178-0000	07/09/01	6Y	
							PROJ. REVW.	FCC010511J	07/09/01	6Y	
142464		11040 WALNUT ST		EL MONTE	P	1951	HIST. RES.	DOE-19-03-0218-0000	08/12/03	6Y	
							PROJ. REVW.	HUD030806C	08/12/03	6Y	
161506		11114 WALNUT ST		EL MONTE	P	1937	PROJ. REVW.	HUD060327F	03/30/06	6Y	
101390		11214 WALNUT ST		EL MONTE	P	1946	PROJ. REVW.	HUD960215L	03/21/96	6Y	
155880		12145 WANDA ST		EL MONTE	P	1943	PROJ. REVW.	HUD050929D	10/17/05	6Y	
150369		2719 WASHINGTON AVE		EL MONTE	P	1938	HIST. RES.	DOE-19-04-0270-0000	11/29/04	6Y	
							PROJ. REVW.	HUD041101B	11/29/04	6Y	
147247		3020 WASHINGTON AVE		EL MONTE	P	1951	HIST. RES.	DOE-19-04-0090-0000	04/22/04	6Y	
							PROJ. REVW.	HUD040405E	04/22/04	6Y	
146007		3104 WASHINGTON AVE		EL MONTE	P	1946	HIST. RES.	DOE-19-04-0002-0000	01/30/04	6Y	
							PROJ. REVW.	HUD040115B	01/30/04	6Y	
133252		3114 WASHINGTON AVE		EL MONTE	P	1930	HIST. RES.	DOE-19-02-1000-0000	09/11/02	6Y	
							PROJ. REVW.	HUD020909D	09/11/02	6Y	
157059		3167 WASHINGTON AVE		EL MONTE	P	1927	PROJ. REVW.	HUD051212G	12/16/05	6Y	
163390		4005 WHISTLER AVE		EL MONTE	P	1940	PROJ. REVW.	HUD060901G	09/05/06	6Y	
167396		4614 WHITNEY DR		EL MONTE	P	1956	PROJ. REVW.	HUD070820H	08/30/07	6Y	
168051		4619 WHITNEY DR		EL MONTE	P	1954	PROJ. REVW.	HUD070920A	09/21/07	6Y	
077342		3752 WINSTON DR		EL MONTE	U	1940	PROJ. REVW.	HUD920609B	07/06/92	6Y	
133183		4000 WINSTON DR		EL MONTE	P	1948	HIST. RES.	DOE-19-02-0997-0000	09/06/02	6Y	
							PROJ. REVW.	HUD020723B	09/06/02	6Y	
156003		4004 WINSTON DR		EL MONTE	P	1948	PROJ. REVW.	HUD051011B	10/17/05	6Y	
136172		11668 WOODVILLE DR		EL MONTE	P	1938	HIST. RES.	DOE-19-03-0012-0000	01/08/03	6Y	
							PROJ. REVW.	HUD021220H	01/08/03	6Y	
166703			LAAF B AREA A / BUILDING# 120	EL SEGUNDO	F		PROJ. REVW.	USAF020226A	09/26/02	6Y	
166700			LAAF B AREA A / BUILDING #105	EL SEGUNDO	F		PROJ. REVW.	USAF020226A	09/26/02	6Y	
166704			LAAF B AREA A / BUILDING #125	EL SEGUNDO	F		PROJ. REVW.	USAF020226A	09/26/02	6Y	
166699			LAAF B AREA A / BUILDING #100	EL SEGUNDO	F		PROJ. REVW.	USAF020226A	09/26/02	6Y	
166701			LAAF B AREA A / BUILDING #110	EL SEGUNDO	F		PROJ. REVW.	USAF020226A	09/26/02	6Y	

US EPA SAAP Grant Funding, City of El Monte Garvey Avenue Underpass Drainage Improvement Project Los Angeles County, CA



El Monte and Baldwin Park 7.5' USGS Quadrangles

Enclosure 3
APE and Previously Conducted Surveys

1:24,000

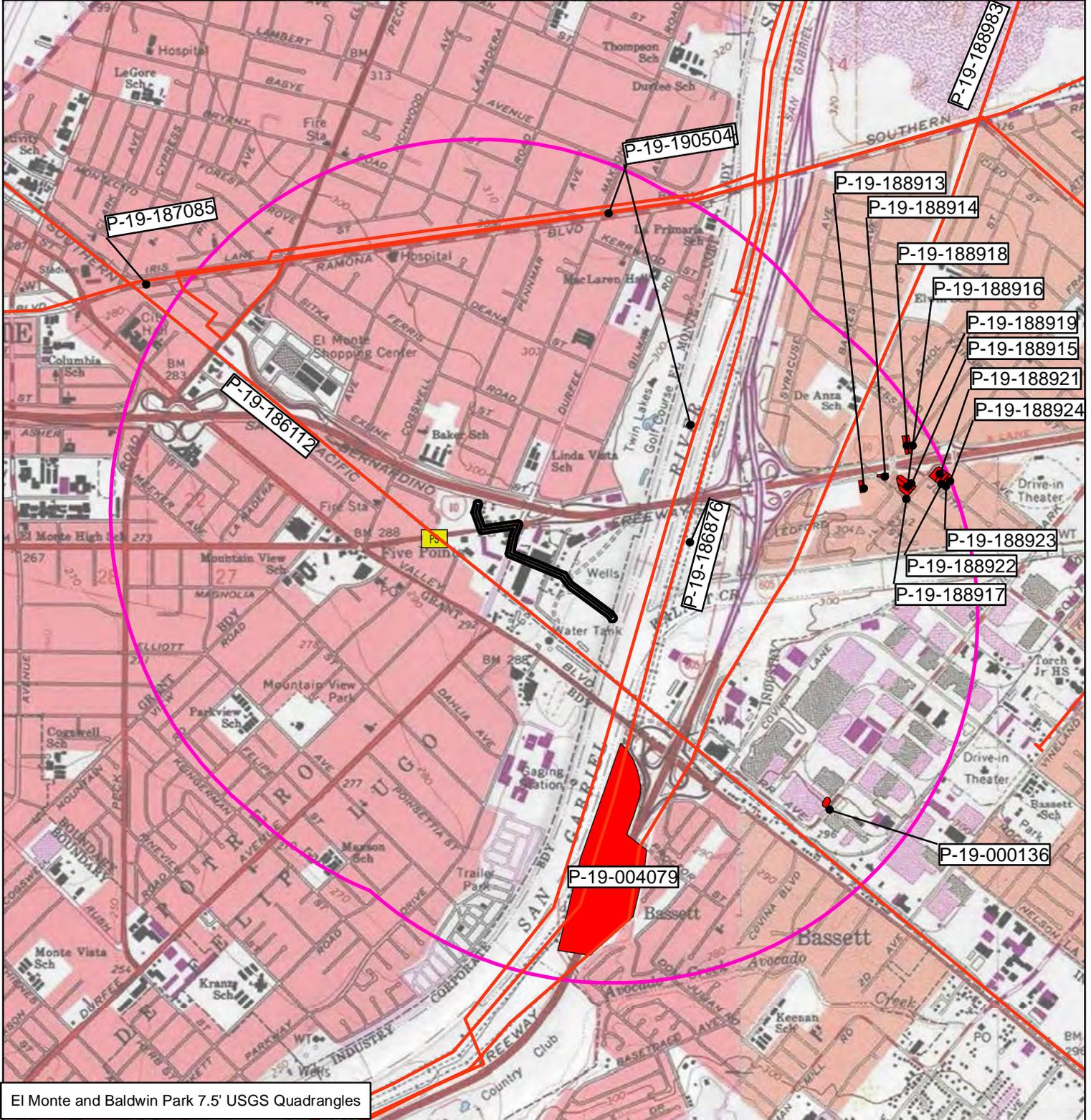
0 0.125 0.25 0.5 Miles

Legend

- APE - Garvey Pump Station
- APE - Proposed Storm Drain
- Study Area
- Survey - Point
- Survey - Linear
- Survey - Block

TETRA TECH

US EPA SAAP Grant Funding, City of El Monte Garvey Avenue Underpass Drainage Improvement Project Los Angeles County, CA



El Monte and Baldwin Park 7.5' USGS Quadrangles

Enclosure 3
APE and Previously Recorded Resources
1:24,000

0 0.125 0.25 0.5
Miles

Legend

- APE - Garvey Pump Station
- APE - Proposed Storm Drain
- Study Area
- Resource - Linear
- Resource - Site

TETRA TECH

**Enclosure 4: Department of Parks and
Recreation (DPR) 523 A and B Forms**

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

Primary #

HRI #

Trinomial

NRHP Status Code 6Z

Other Listings
Review Code

Reviewer

Date

Page 1 of 6 *Resource Name or #: (Assigned by recorder) Garvey Avenue Pump Station

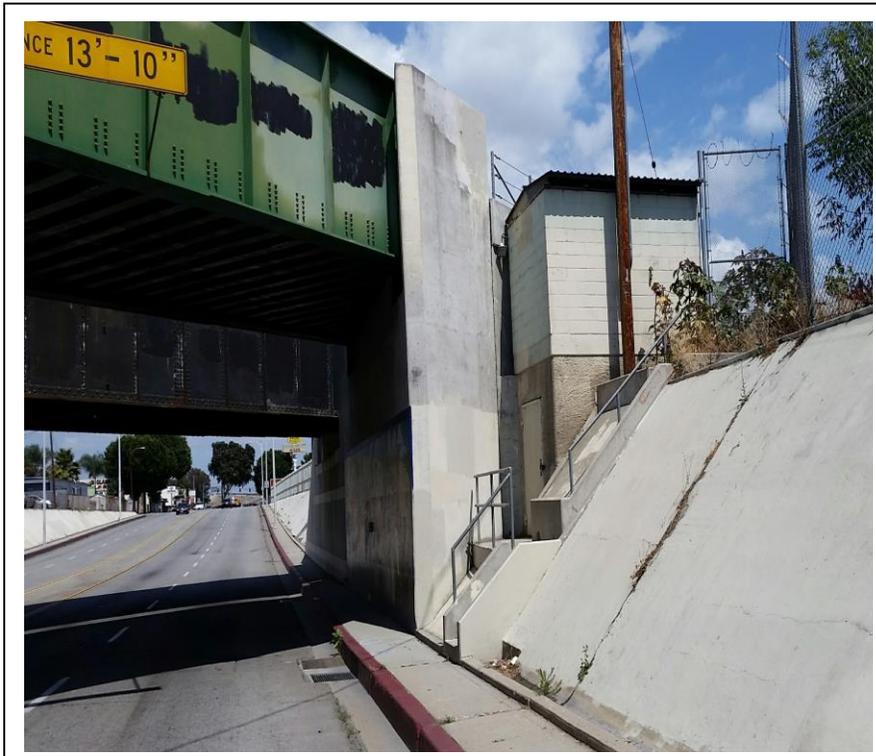
P1. Other Identifier: _____

P2. Location: Not for Publication Unrestricted*a. County Los Angeles and (P2c, P2e, and P2b or P2d. Attach a Location Map as necessary.)*b. USGS 7.5' Quad El Monte Date 1999 T ; R ; of of Sec ; B.M.c. Address _____ City El Monte Zip 91731d. UTM: (Give more than one for large and/or linear resources) Zone 11, 406281.81 mE/ 3769614.33 mN

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

South side of Garvey Avenue, under the Garvey Avenue Grade Underpass

*P3a. **Description:** (Describe resource and its major elements. Include design, materials, condition, alterations, size, setting, and boundaries)
 The pump station is at the south side of Garvey Avenue, adjacent to a railroad bridge. It is situated on a steep concrete slope and rests on a tall, concrete foundation approximately eight feet above the sidewalk (Photographs 1 and 2). The station is approximately four feet by eight feet in length with exterior walls made of concrete masonry units. It is topped with a low gabled roof covered in corrugated metal. It is accessed by a door at street level set into the concrete foundation; a second metal door is located at the south side of the building's upper level (See Continuation Sheet).

*P3b. **Resource Attributes:** (List attributes and codes) HP9, Public Utility Building*P4. **Resources Present:** Building
 Structure Object Site District
 Element of District Other (Isolates, etc.)P5b. Description of Photo: (view, date, accession #) **Photograph 1: View of Pump Station, camera facing east, 5/23/16***P6. **Date Constructed/Age and Source:** Historic Prehistoric Both
1933; as-built plans*P7. **Owner and Address:**City of El Monte
11333 Valley Boulevard
El Monte, CA 91731*P8. **Recorded by:** (Name, affiliation, and address)Julia Mates, Tetra Tech, Inc.
1999 Harrison St., Suite 500
Oakland, CA 94612*P9. **Date Recorded:** 4/13/16*P10. **Survey Type:** (Describe)Intensive*P11. **Report Citation:** (Cite survey report and other sources, or enter "none.")

None; this document is included as Enclosure 6 for the Section 106 State Historic Preservation Office (SHPO) Consultation Letter dated July 26, 2016, Regarding U.S. Environmental Protection Agency Special Appropriation Act Projects Grant Funding of the City of El Monte's Garvey Avenue Underpass Drainage Improvement Project.

*Attachments: NONE Location 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 Primary #
 DEPARTMENT OF PARKS AND RECREATION HRI#
BUILDING, STRUCTURE, AND OBJECT RECORD

*Resource Name or # (Assigned by recorder) Garvey Avenue Pump Station *NRHP Status Code 6Z
 Page 2 of 6

B1. Historic Name: Garvey Avenue Pump House
 B2. Common Name: Garvey Avenue Pump Station
 B3. Original Use: Pump Station B4. Present Use: Pump Station *B5. Architectural Style: Utilitarian *B6.
Construction History: (Construction date, alterations, and date of alterations)

The pump station was constructed in 1934; pumps have been replaced over time; most recent pump replacement in 2006.

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

B9a. Architect: State of California Division of Highways b. Builder: Unknown
 *B10. Significance: Theme N/A Area N/A

Period of Significance N/A Property Type N/A Applicable Criteria N/A
 (Discuss importance in terms of historical or architectural context as defined by theme, period, and geographic scope. Also address integrity.)

The Garvey Avenue Pump Station does not appear to meet the criteria for listing in the National Register of Historic Places (NRHP) (See Continuation Sheet).

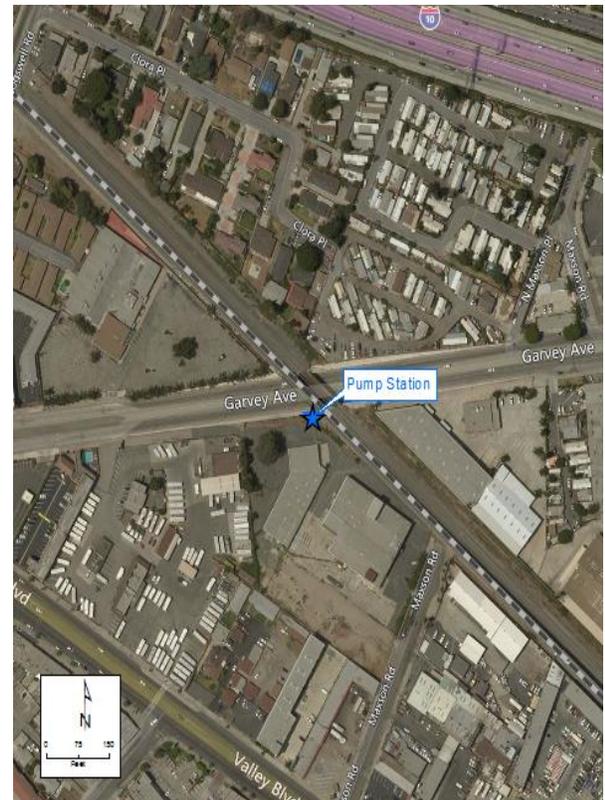
B11. Additional Resource Attributes: (List attributes and codes)

*B12. **References:** The Regional Planning Commission, County of Los Angeles, Highway Traffic Survey Average Daily Load Downtown Los Angeles Area, 1937; State of California, Department of Public Works, Division of Highways, Garvey Avenue, El Monte Underpass, Additional Pump Installation, Detail of Float, 1934; U.S. Environmental Protection Agency, Region 9, Draft Environmental Information Document for the City of El Monte, California Stormwater System Improvement Project, San Francisco, California, May 2016; and see footnotes.

B13. Remarks:

*B14. Evaluator: Julia Mates
 *Date of Evaluation: June 8, 2016

(This space reserved for official comments.)



CONTINUATION SHEET

Property Name: Garvey Avenue Pump Station
Page 3 of 6

P3a. Description (Continued)

A concrete staircase with metal rail leads up the slope to the south elevation of the building. At the top of the slope, on the south side of the pump station is an approximately three-foot tall concrete masonry unit structure attached to the pump station. It has three wood beams covering its top and several metal pipes at the south elevation (Photograph 3). The station has a six-foot by nine-foot concrete sump with two submersible pumps. The pumps have a capacity of 1,400 gallons per minute each and pump water from the underpass into a catch basin on the corner of Garvey Avenue and Valley Boulevard. The stormwater then flows to the City of El Monte storm drain system along Valley Boulevard and discharges to the Rio Hondo Channel.^A

B10. Significance (Continued)

Historic Context—Brief History of the City of El Monte

The pump station is in the City of El Monte, which was incorporated in 1912. The area was first inhabited by Native American settlers, the Gabrielino (Tongva) people, who lived near the Rio Hondo River banks. During the Mission period, the Spanish established Mission San Gabriel in 1771 and called the area El Monte, *the wooded place*. Wagon trains came to the township known as Camp El Monte in the 1850s, as it was located at the end of the Santa Fe Trail, a commercial highway that connected Missouri with Santa Fe, New Mexico. During the Gold Rush, many people on their way to Northern California from the eastern portion of the country, hoping to strike it rich in the El Dorado foothills, stopped in Camp El Monte to rest and some returned after their stint in the gold country. El Monte's trees, meadows, Rio Hondo and San Gabriel Rivers, made it a desirable location for farming and agriculture. In 1853, 6,000 acres were set aside for the township by the Los Angeles County Board of Supervisors.^B

By the 1930s, El Monte was experiencing an increase in settlement by people interested in establishing small subsistence farms on which to live. A 1934 Los Angeles Times article reported that approximately 3,000 residents had settled in El Monte on small plots of land prior to 1933, and at least six hundred El Monte families were growing their own fruits and vegetables on small farm plots.^C Orchards abounded in the area. Also in 1933, El Monte was chosen as one of the cities for the New Deals' Federal Subsistence Homestead Project, a Resettlement Administration Program that provide single-family ranch style houses to applicants who qualified. One hundred residential units were constructed in El Monte under this program.^D Agriculture remained the center of El Monte's economy through the early twentieth century with walnut, citrus, other fruit orchards, and vegetable fields in abundance.

^A State of California, Department of Public Works, Division of Highways, Garvey Avenue, El Monte Underpass, Additional Pump Installation, Detail of Float, 1934; U.S. Environmental Protection Agency, Region 9, Draft Environmental Information Document for the City of El Monte, California Stormwater System Improvement Project, San Francisco, California, May 2016.

^B Maritza Velasquez, "El Monte's Wild West Days Recalled by Local Historians," San Gabriel Valley Tribune, April 7, 2012.

^C Ryan Reft, KCET, "From Small Farming to Urban Agriculture: El Monte and Subsistence Homesteading," Departures Columns, April 14, 2015. Website: <https://www.kcet.org/departures-columns/from-small-farming-to-urban-agriculture-el-monte-and-subsistence-homesteading>.

^D National New Deal Preservation Association, New Deal Towns, website: http://www.newdeallegacy.org/new_deal_towns.html.

CONTINUATION SHEET

Property Name: Garvey Avenue Pump Station
Page 4 of 6

B10. Significance (Continued)

In the early 1870s, the Southern Pacific Railroad constructed tracks through El Monte. Population began to increase in the 1930s and exploded with the start of World War II, when aircraft factories opened in town. The number of farms decreased as residents turned from agriculture to industrial jobs.^E After World War II, El Monte continued to experience a shift from agriculture to manufacturing and technology as suburbanization took hold in the region. The area also responded to Cold War industry demands. During this period, large-scale Asian American and Mexican American residents settled in El Monte and the general San Gabriel Valley, vastly expanding the existing small populations of these groups.

Garvey Avenue was constructed sometime between 1933 and 1937 as a major east-west route through El Monte. In 1937, shortly after Garvey Avenue opened, the daily traffic load was 10,000 vehicles per day. Garvey Avenue was constructed to reduce the traffic loads on other east-west routes in the area, as well as other roads experiencing heavy traffic due to increasing population and travel to and from the suburbs of the San Gabriel Valley to downtown Los Angeles.^F

History of Water and Flooding in El Monte

El Monte is bounded by the Rio Hondo and San Gabriel Rivers, which meet at the Whittier Narrows, a gap in the mountains of the southern edge of the San Gabriel Valley where bedrock below the ground forces groundwater up to the surface. This natural water supply, in addition to torrential rains and storms that occur in Southern California, has historically provided the El Monte area with an abundance of water and created an ideal agricultural environment. During the 1910s through the 1930s, destructive torrential storms hit Southern California, including El Monte, and caused extensive flooding that resulted in the need for flood control infrastructure in the Los Angeles basin. The destruction caused by a flood in 1914 strengthened the demand for flood control. The State Legislature adopted The Los Angeles County Flood Control Act in 1915, which created a flood control district that began a series of measures to curb the San Gabriel River's overflow into channels that would move large quantities of water out to the sea. Steep mountains that surround the region also add to the flooding problem. The winter of 1933 brought heavy rainfall for two weeks in the Los Angeles area in which approximately 14 feet of rain fell within 50 hours. The normal rainfall for the entire season in that period was 15 inches.^G A timber bridge over Garvey Avenue was washed out during this storm. The director of Public Works at the time, Earl Lee Kelly, was put in charge of the state's flood relief and of local rehabilitation. The public was concerned that storms would severely damage the state's important transportation infrastructure, particularly highways. Even after channels were constructed to divert water, Southern California, including the City of El Monte, continued to experience flooding when large storms that brought vast quantities of rain.

^E Town Square Publications, *El Monte/South El Monte*, Chamber of Commerce, Website: <http://local.townsquarepublications.com/california/elmonte/history.html>

^F The Regional Planning Commission, County of Los Angeles, *Highway Traffic Survey Average Daily Load Downtown Los Angeles Area*, 1937, 15.

^G R.C. Myers, California Highways and Public Works, *State Highways Defy Worst Flood in 50 Years--\$270,000 Damage in 1070 Miles*, Official Journal of the Department of Public Works, 1933, 2.

CONTINUATION SHEET

Property Name: Garvey Avenue Pump Station
Page 5 of 6

B10. Significance (Continued)

The Garvey Avenue pump station, and the stormwater pipeline system adjacent to it, were constructed in 1934 by the Department of Public Works, Division of Highways, in an effort to reduce flooding in El Monte and the surrounding area. At approximately the same time the Garvey Avenue pump station was constructed, a railroad grade at Garvey Avenue was built as part of the California Division of Highway's plan to improve transportation by constructing grade separations. A reinforced concrete girder and deck bridge was constructed across the San Gabriel River as a railroad crossing for the Southern Pacific Railroad. Traffic proceeded under the bridge along Garvey Avenue.^H The bridge over Garvey Avenue and adjacent to the pump station remains in use. These improvements of the highway and roadway in creating grade separations for railroad and street and interstate highway intersections were part of large contracts and were well-publicized by the California Highways and Public Works for improving safety at busy intersections throughout the state. The Garvey Avenue pump station and its related pump and channel system was constructed during this period of improvement for highways and roads to address the flooding that occurred along this roadway during severe storms. Plans for the underpass pump station show it was designed by the Department of Public Works, Division of Highways, the same agency that constructed the Southern Pacific Railroad bridge underpass.^I

Evaluation

The pump station is not recommended eligible for listing in the NRHP under Criterion A because it is not associated with events significant to national, state, and local history. Although the construction of the pump station is associated with the period of construction of infrastructure to control flooding in Southern California and the San Gabriel Valley, the historic record does not indicate that it was importantly associated with the events during that period.

The pump station is not associated with important individuals significant to our past (Criterion B). No important individual significant to local, state, or national history is associated with the pump station; therefore, it is not recommended eligible for listing in the NRHP under Criterion B.

The pump station is not significant as an important example of a type, period, or method of construction, does not represent the work of a master, nor does it possess high artistic values. It is an example of an unadorned, utilitarian building that houses pumps and equipment for water conveyance, similar to many pump stations constructed in Southern California during this period. It is not recommended eligible for listing in the NRHP under Criterion C.

In rare instances, buildings themselves can serve as sources of important information; however, this building is not a principal source of important information in this regard and is not recommended eligible for listing under Criterion D.

While the pump station retains historic integrity of location, setting, design, materials, workmanship, feeling, and association, it lacks historic significance, and as such, does not appear to meet any of the four criteria for listing in the NRHP.

^H S.V. Cortelyou, California Highways and Public Works, , *Official Journal of the Department of Public Works*, 1934,

^I State of California Department of Public Works Division of Highways, *Garvey Avenue, El Monte Underpass Additional Pump Installation*, as-built plans, 1934.

CONTINUATION SHEET

Property Name: Garvey Avenue Pump Station
Page 6 of 6

Photographs (Continued)



Photograph 2: View of railroad bridge and pump station, camera facing southeast, May 23, 2016



Photograph 3: View of south elevation of pump station, camera facing east, May 23, 2016

**Enclosure 5: San Bernardino Line Positive Train
Control Project Study (SCCIC LA-10641)
(CONFIDENTIAL)**

REPORT NUMBER:

AUTHOR(S):

Bai "Tom" Tang

DATE: 08/06/10

TITLE: Preliminary Historical/Archaeological Resources Study
 San Bernardino Line Positive Train Control Project
 Southern California Regional Rail Authority,
 Counties of Los Angeles and San Bernardino

TYPE: 1) Arch Survey

AREA:

QUADRANGLE AND #:

Los Angeles 1103
 El Monte 1104
 Baldwin Park 1093
 San Dimas 1094
 Ontario 1083

DEVELOPMENT TYPE: 1) General Public Works (Railroad)

AGENCY: Tom Podson and Associates

FIRM: CRM TECH

OF PAGES: 30

RESOURCES: (List all primary and trinomial numbers, or temporary resource numbers or resource "names"--
 if it has a primary or trinomial #, you do not need to list the others).

None

 Continuation space (use a separate blank sheet if more space is needed)



August 6, 2010

Shawn Gatchel-Evans
Tom Dodson and Associates
2150 North Arrowhead Avenue
San Bernardino, CA 92405

Re: Preliminary Historical / Archaeological Resources Study
San Bernardino Line Positive Train Control Project
Southern California Regional Rail Authority
Counties of Los Angeles and San Bernardino
CRM TECH Contract No. 2446

Dear Ms. Gatchel-Evans:

At your request, CRM TECH has completed a preliminary historical / archaeological resources study for the Southern California Regional Rail Authority's (SCRRA) proposed San Bernardino Line Positive Train Control (PTC) Project. The project's Area of Potential Effects (APE) consists of 56.2 miles of railroad right-of-way beginning at Los Angeles Union Station [Mile Post 0] in the City of Los Angeles and extending eastwards through the San Gabriel and San Bernardino Valleys before terminating at the former Santa Fe Depot [Mile Post 56.2] in the City of San Bernardino (Figs. 1a, 1b).

The study is a part of the environmental review process for the project, as required by the lead agency, namely the SCRRA, and was conducted in preparation for future project review under Section 106 of the National Historic Preservation Act and the California Environmental Quality Act (CEQA). The purpose of the study is to review past survey coverage of the APE, inventory previously recorded historical / archaeological sites located within or partially within the APE for future statutory / regulatory compliance considerations, and assess the APE's potential for as-yet undocumented historical / archaeological resources.

The scope of the study included a historical / archaeological records search, a preliminary historical background research, a field reconnaissance along the entire length of the project route, and contacts with Native American representatives. A brief summary of the methods and results of these research procedures is presented below.

RECORDS SEARCH

CRM TECH archaeologist Nina Gallardo (see App. 1 for qualifications) conducted the historical / archaeological resources records search at the South Central Coastal Information Center (SCCIC) at California State University, Fullerton, on May 5, 2010, and at the Archaeological Information Center (AIC), San Bernardino County Museum, Redlands, on May 10.

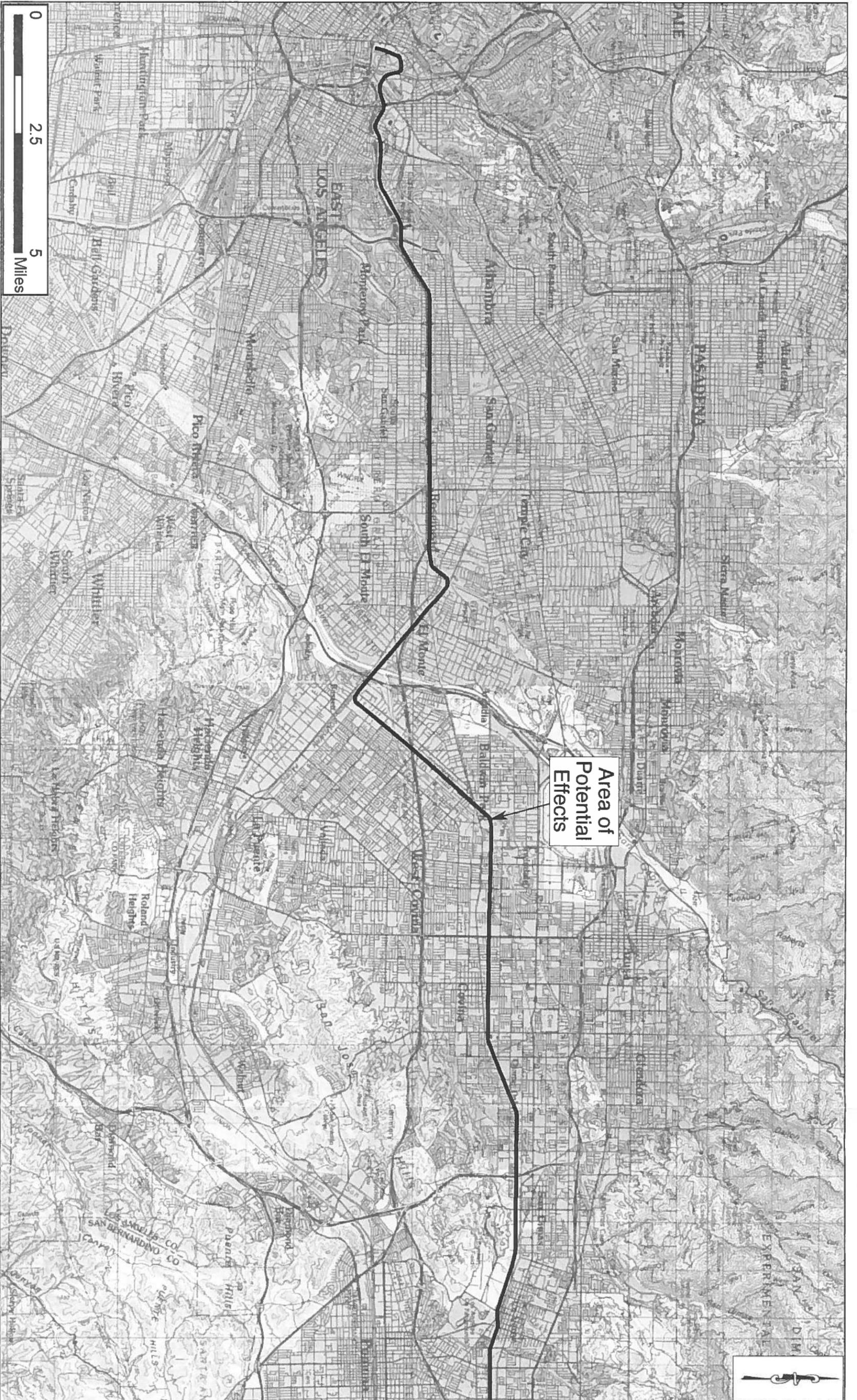


Figure 1a. Location of the APE (western portion).

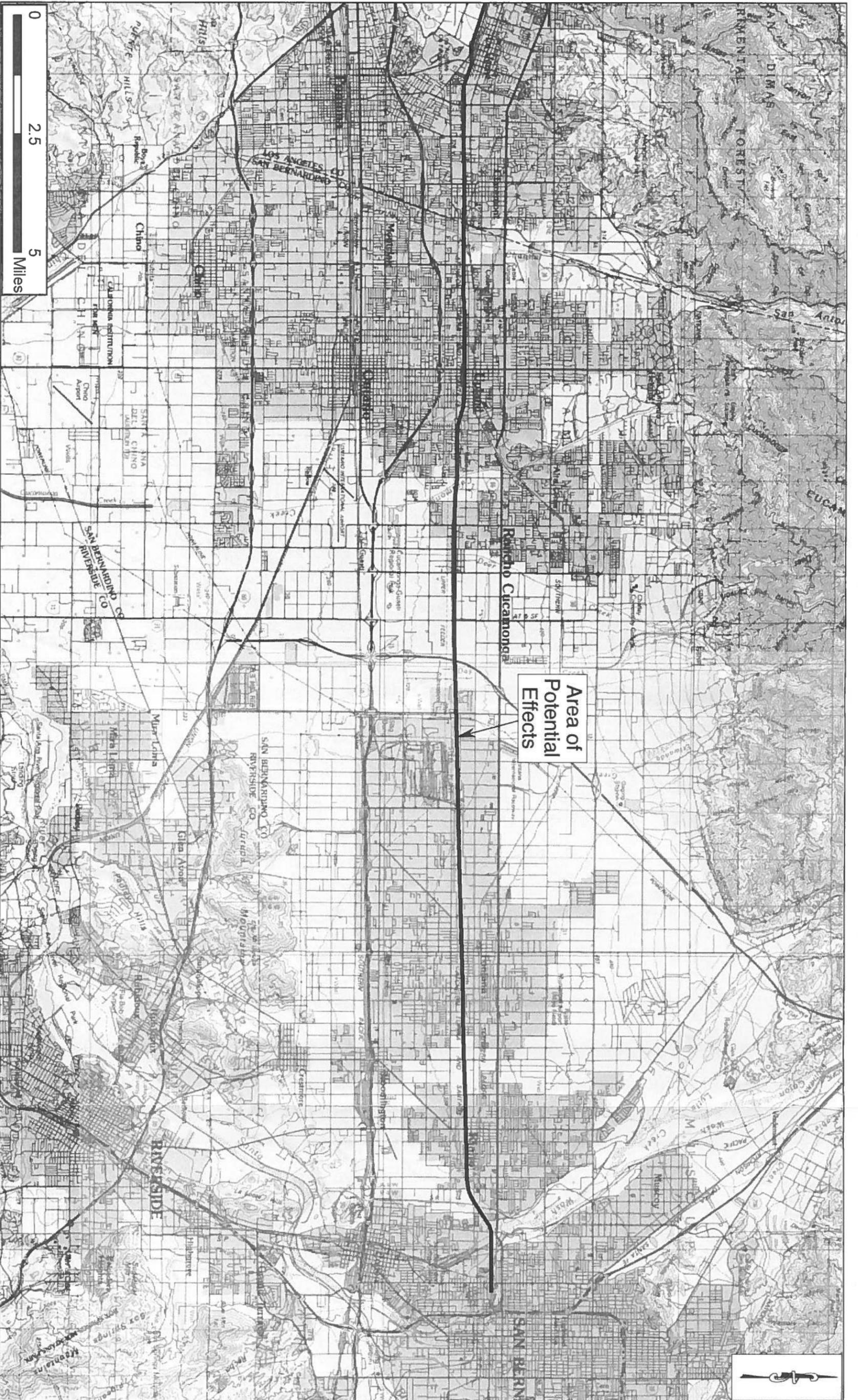


Figure 1b. Location of the APE (eastern portion).

During the records search, Gallardo checked files and maps on record at the AIC and the SCCIC for previously identified historical / archaeological resources and existing cultural resources studies in the project vicinity. Previously identified cultural resources include properties designated as California Historical Landmarks or Points of Historical Interest as well as those listed in the National Register of Historic Places, the California Register of Historical Resources, or the California Historical Resources Inventory. The scope of the records searches encompassed the area within a quarter-mile radius of the APE.

According to AIC and SCCIC records, more than 50 previous cultural resources studies included portions of the APE. These surveys were carried out in support of an assortment of projects including transmission lines, water and gas pipelines, city-sponsored redevelopment, telecommunications infrastructure, roadway improvements, and commercial developments. A careful review of the record search results indicates that two historic-period sites, 36-006847 and 36-010316, and three "pending" historic-period sites, P1074-61H, P1074-88H, and P1074-121H, have been identified as lying partially within the APE (see App. 2 for locations).

The eastern half of the APE coincides with Site 36-006847, consisting of the portion of the former Atchison, Topeka and Santa Fe Railway Company's famed Kite-Shaped Track located in San Bernardino County. The Kite-Shaped Track, a popular late 19th to early 20th century railroad excursion route extending from Los Angeles to Redlands and Highland, was constructed in phases between 1880 and 1892 through various Santa Fe subsidiaries, and the segment within the APE was a part of the San Bernardino and Los Angeles Railway, which was completed from present-day San Dimas to San Bernardino in 1886-1887 (Bryant 1974:102-103; Serpico 1988:23).

As an important link in the second transcontinental railroad system to reach California, the Kite-Shaped Track once played a crucial role in the growth of southern California. As a working component of the modern transportation infrastructure, however, Site 36-006847 was previously determined not to be historically significant due to the loss of integrity (Horne 1998:6).

Site 36-010316 represents the Kramer-Victorville 115kv transmission line, part of the former Southern Sierra Power Company's San Bernardino 140kv Transmission Line. Built between 1911 and 1913, the original transmission line featured small lattice steel towers; however, these have been upgraded over time with larger lattice steel towers and concrete footings. The transmission line remains in use today and is maintained regularly.

P1074-61H represents the course of a historic-period road located in the present-day Rialto area of San Bernardino County. It reportedly predates the railroad and at one time connected with the Los Angeles-San Bernardino Road to the north. P1074-88H is identified as the Rancheria Ditch, which was built in 1843 to bring water from nearby Lytle Creek south to a settlement in present-day Colton. It supplied a small number of settlers with water for crops and livestock for most of the second half of the 19th century. The exact locations where the road and the ditch crossed the APE are unclear and could not be precisely identified with the records search results. However, with the construction of the railroad line and the subsequent urban development of the

surrounding area since then, it is likely that these features no longer exist, at least within the APE.

P1074-121H, known as the Santa Fe Viaduct, was constructed by the Santa Fe Railway around 1918 to help traffic navigate across the massive rail yard at the Santa Fe depot in San Bernardino (SANBAG n.d.). The viaduct was originally about 20 feet wide, with a sharp and often lethal turn at its midpoint leading to Third Street (*ibid.*; *Profiles* 1960:10). By the early 1930s, redesign plans were drawn up for a diagonal route from Mount Vernon Avenue in order to address this safety issue (*San Bernardino Sun* 1931; 1932).

In addition to these five recorded or "pending" sites, the western half of the APE coincides with a segment of the former Southern Pacific Railway, originally a part of the Pacific Electric Railway's interurban rail system. Constructed between 1906 and 1914, it eventually linked Los Angeles with San Bernardino. Although this segment of the rail line has not been formally recorded, another segment of the Pacific Electric Railway's San Bernardino Line in San Bernardino County was previously recorded as Site 36-020137. Therefore, the rail line in the western portion of the APE should be considered an extension of Site 36-020137 that has yet to be formally documented in the California Historical Resources Information System.

Outside the APE but within the quarter-mile radius, AIC and SCCIC records show some 150 previous cultural resources studies covering various tracts of land and linear features. As a result of these and other similar studies, at least 65 historical/archaeological sites and prehistoric isolates—i.e., localities with fewer than three Native American artifacts—have been identified within the scope of the records search.

A large percentage of recorded sites within the quarter-mile radius represent single-family residences dating to the first half of the 20th century and other built environmental features, including a number of commercial or public buildings, such as those occupied by the University of LaVerne, Claremont College, El Monte High School, and the Cucamonga Pioneer Winery, as well as the Russian Village District and the Sinclair Commercial Block. Prehistoric sites in the scope of the records search included a few habitation sites with groundstone and chipped-stone tools, lithic quarries, and midden deposits, and prehistoric isolates typically consisted of chipped-stone or groundstone tools found near the foothills. Other than the five sites discussed above, none of the site or isolates was found in the immediate vicinity of the APE, and thus none of them requires further consideration in connection with this study.

HISTORICAL BACKGROUND REVIEW

In the mid-1800s, cattle raising on vast ranchos carved from former mission land holdings was the most prevalent economic activity throughout southern California, until the influx of American settlers eventually brought an end to this now-romanticized lifestyle during the second half of the 19th century. In the 1880s, spurred by the completion of the competing Southern Pacific and the Santa Fe Railways, a land boom swept through much of southern California, creating an immediate and significant boost to the growth of the region, in a pattern often repeated in the history of the American West.

A large number of towns, surrounded by irrigated agricultural land, were laid out in the inland valleys before the end of the 19th century, including many established along the rail lines in the APE. For the remainder of the 19th century and well into the 20th, the region along the APE remained agrarian in character, dominated particularly by citrus growing after the successful introduction of the naval orange in the mid-1870s. As the region prospered, the different communities developed distinctive economic and social characteristics. Communities in the Chino Basin area, for example, became known as the dairy capital of southern California, especially after World War II, while the present-day Rancho Cucamonga area established a different identity through vineyard cultivation and winemaking. San Bernardino became an important transportation hub, largely predicated on the selection of the city by the Santa Fe Railway as its regional headquarters in the early 20th century.

By the mid- and late 20th century, however, the forces of industrialization and urbanization dramatically altered the agrarian landscape as urban expansion and residential development increasingly assumed a dominant role. Settlement, though still dense along the railroad, shifted to a more contemporary urban landscape, as industries in need of rail transport remained focused along the railroad and residential areas and new urban cores developed away from the rail lines. Today, continued development has essentially merged the cities along the APE into one metropolitan area.

NATIVE AMERICAN SCOPING

On May 3, 2010, CRM TECH submitted a written request to the State of California's Native American Heritage Commission (NAHC) for a records search in the commission's sacred lands file. In response to CRM TECH's inquiry, the NAHC reports in a letter dated May 6, 2010, that the record search indicated the presence of Native American cultural resources within a half-mile radius of the APE, and recommends that local Native American groups be contacted for further information. For that purpose, the commission provided a list of potential contacts in the region.

Upon receiving the commission's response, CRM TECH initiated correspondence with all 17 individuals on the referral list and the organizations they represent both in writing and by telephone between May 26 and August 3 to solicit local Native American input regarding any possible cultural resources concerns over the proposed project. In addition, John Gomez, Jr., Cultural Resources Coordinator for the Ramona Band of Cahuilla Mission Indians, and Anna Hoover, Cultural Analyst for the Pechanga Band of Louseño Indians, were also contacted. The correspondences between CRM TECH and the Native American representatives are attached to this report in Appendix 3. As of this time, five written and three verbal responses have been received (see App. 3).

Ernest Siva, a Tribal Elder with the Morongo Band of Mission Indians, responded by telephone and stated that he did not have any specific concerns regarding the APE. John Tommy Rosas, Tribal Administrator of the Tongva Ancestral Territorial Tribal Nation, stated that he objected to the proposed project and would send a formal letter at a later date.

Anthony Morales, Chairperson of the Gabrieleño/Tongva San Gabriel Band of Mission Indians, stated that the APE is in an extremely sensitive area for Native American

cultural resources. He explained that not only was the village of *Puvungna* in the vicinity of the APE, but that railroad lines, which followed major Native American trade routes, were often good indications that Native American burials might be encountered during ground-disturbing activities. Mr. Morales recommended that a Native American monitor from the Gabrielino/Tongva San Gabriel Band and an archaeologist be present during such activities associated with the project. Furthermore, he requested to be contacted prior to the commencement of the project to set up a monitoring agreement.

In two written correspondences dated May 26 and June 12, Andy Salas, Chairman of the Gabrieleño Band of Mission Indians, also states that the APE is extremely sensitive for Native American cultural resources. Tribal elders have related that their ancestors walked along a trail from San Bernardino to San Gabriel and have identified several named Gabrieleño village sites along the project route. Mr. Salas requests that CRM TECH recommend a Native American monitoring component for the project and that monitors from the Gabrieleño Band of Mission Indians be on site for all ground-disturbing activities.

In a letter dated June 9, Joseph Ontiveros, Cultural Resources Director for the Soboba Band of Luiseño Indians, states that the project location lies within the tribe's Traditional Use Area, and is extremely sensitive to the Soboba Band as it is in close proximity to known village sites. He requests that a Native American monitor from the Soboba Band be present during for future surveys earth-moving activities in the APE, and that the Soboba Band continue to be included in future government-to-government consultation with the lead agency.

In a letter dated June 11, Anna Hoover, Cultural Analyst for the Pechanga Band of Luiseño Indians states: "the project area is not within reservation lands and it is not within our ancestral territory." Ms. Hoover requests that other tribes located closer to the APE, such as the San Manuel Band of Mission Indians be contacted for further consultation. However, she requests copies of all pertinent archaeological documentation for tribal review. In the event that subsurface cultural resources are identified within the APE and a closer Native American tribe cannot be identified or contacted, the Pechanga Band requests to be contacted by the lead agency regarding the treatment and disposition of all artifacts.

In an e-mail dated June 27, Sam Dunlap, Tribal Chairman of the Gabrielino Tongva Nation, recommends archaeological monitoring be required during ground-disturbing activities based on the possibility of encountering historic archaeological materials. If any prehistoric cultural resources are discovered, Mr. Dunlap requests that the Gabrielino Tongva Nation be contacted for further consultation.

FIELD SURVEY

On May 17, 2010, CRM TECH archaeologist Daniel Ballester (see App. 1 for qualifications) completed the field reconnaissance of the APE. The survey was accomplished by driving along the project route in a motor vehicle, as close to the railroad tracks as proper access would permit. When features of potential historical/

archaeological interest were encountered, they were inspected briefly on foot and photographed, and their locations were noted on project maps for future references.

During the field reconnaissance, the former Southern Pacific Railway line in the western portion of the APE, the former Atchison, Topeka and Santa Fe Railway in the eastern portion (Site 36-006847), and the Kramer-Victorville 115kv transmission line (36-010316) that crosses the project route near the Lytle Creek channel were the only potential cultural resources observed within or partially within the APE. Field observations confirmed that many physical components of the transmission line have been altered or replaced over the years, as stated in the existing site record. Furthermore, the only components of the powerline located in the APE are the overhead wires, and the proposed project has no potential to affect its current configuration and appearance.

The rail lines also remain under use and, because of repeated upgrading and constant maintenance, do not demonstrate any particular historical characteristics through their physical components. In addition, the ground surface along the rail lines has been extensively disturbed in the past, leaving it rather unlikely for any subsurface archaeological deposits, especially those of prehistoric origin, to survive intact within the APE. No features associated with the three "pending" sites identified by the records searches were observed during the field reconnaissance, nor were any other potential cultural resources, either historic or prehistoric in age, found within the APE.

SUMMARY OF FINDINGS

Based on the results of the records search, the reconnaissance survey, and a historical background review, CRM TECH concludes that no "historic properties" or "historical resources," as defined by pertinent federal and state statutes and regulations, are known to be present within or adjacent to the APE. Furthermore, the APE appears to be relatively low in sensitivity for "historic properties" or "historical resources" yet to be recorded.

The results of this study indicate that the only potential cultural resources known to be located within the APE are features associated with the railroad operations. Some of these features may need to be formally recorded and evaluated because of their age, especially those associated with the former Pacific Electric/Southern Pacific Railway line in the western portion of the APE, which has not been recorded previously. However, the rail lines themselves and their associated features are generally unlikely to be considered eligible for listing in the National Register of Historic Places or the California Register of Historical Resources due to the lack of the necessary integrity to relate to their potential period of significance. In fact, another segment of the former Atchison, Topeka and Santa Fe line, as a part of Site 36-006847, was previously determined not to be historically significant for that reason, as mentioned earlier.

Due to limitation in the existing documentation and in the scope of this study, the historical background and current conditions of the three "pending" sites previously identified in the APE, P1074-61H (historic-period road), P1074-88H (Rancheria Ditch), and P1074-121H (Santa Fe Viaduct), remain unclear at this time. If ground-disturbing activities will occur at or near the reported locations of these "pending" sites, CRM TECH recommends that further studies, including focused historical research and

intensive-level field inspections, be completed to ascertain their current conditions and, if any of their features remain in existence in the APE, their qualifications as "historic properties," as defined by Section 106, or "historical resources," as defined by CEQA.

Thank you for this opportunity to be of service. If you need any further information, please feel free to contact our office at (909) 824-6400.

Sincerely,

Bai "Tom" Tang, M.A.
Principal Investigator, CRM TECH

REFERENCES

Bryant, Keith L., Jr.

1974 *History of the Atchison, Topeka and Santa Fe Railway*. University of Nebraska Press, Lincoln and London.

Horne, Melinda C.

1998 California Historical Resource Information System site record, 36-006847. On file, Archaeological Information Center, San Bernardino County Museum, Redlands.

Profiles

1960 Reminiscences by E.Q. Sullivan, Former District Engineer, Route through San Bernardino; Chapter XII. July.

San Bernardino Sun, The

1931 Viaduct Meet to Result in New Drawings. September 16.

1932 New Plan for Viaduct Gets City Approval. November 22.

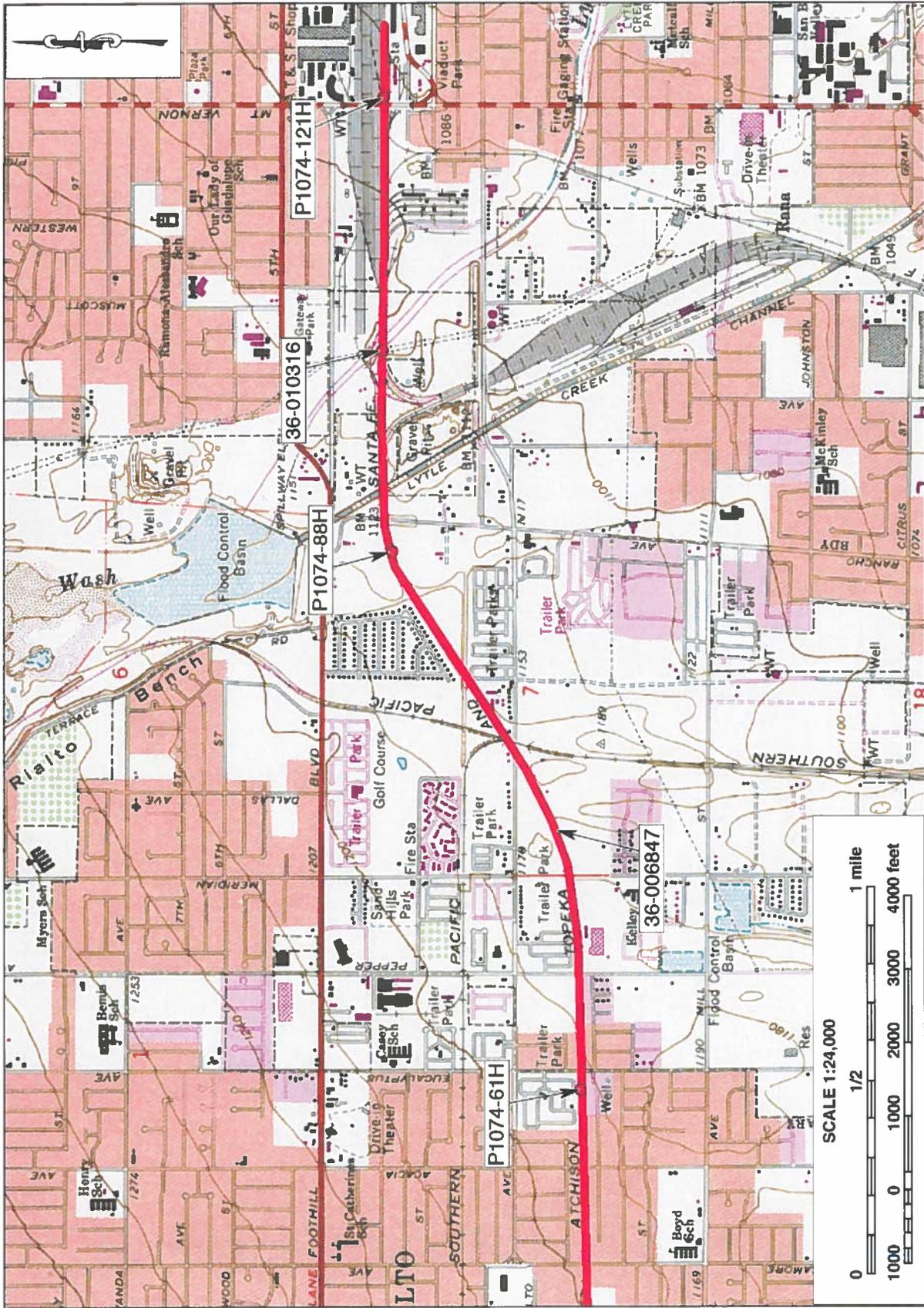
SANBAG (San Bernardino Associated Governments)

n.d. A Brief History of the Santa Fe Depot. [Http://www.sanbag.ca.gov/about/santa-fe_depot.html](http://www.sanbag.ca.gov/about/santa-fe_depot.html).

Serpico, Philip C.

1988 *Santa Fe Route to the Pacific*. Omni Publications, Palmdale.

APPENDIX 2
LOCATIONS OF KNOWN SITES WITHIN THE APE
(CONFIDENTIAL)



Approximate locations of previously identified sites within or partially within the APE. (Site 36-006847 extends through the eastern portion of the APE.)

APPENDIX 3

**CORRESPONDENCE WITH
NATIVE AMERICAN REPRESENTATIVES***

* A total of 19 local Native American representatives were contacted; a sample letter is included in this report.

From: Daniel Ballester <dballester@crmtech.us>
Sent: Monday, May 03, 2010 12:03 PM
To: Dave Singleton <ds_nahc@pacbell.net>
Cc: Laura Shaker <lshaker@crmtech.us>
Subject: Sacred Land RS
Attachments: Dave1.pdf; LA Vic.jpg

Dave:

This is to request a Sacred Lands records search

Name of project:
The SCRRA San Gabriel Subdivision Positive Train Control
CRM TECH # 2446 (SB-LA PTC)

Project size:
Approximately 57 miles

Location:
Cities of L.A., El Monte, Baldwin Park, and Covina, Los Angeles County
Cities of Upland, Ontario, Fontana, Rialto, and San Bernardino, San Bernardino County

USGS 7.5' quad sheet data:
Los Angeles, El Monte, Baldwin Park, San Dimas, Ontario, Guasti, Fontana, and San
Bernardino North
T1S R4-13W, SBBM

Map attached.

Please call if you need more information or have any questions. Results may be faxed to the number below.

I appreciate your assistance in this matter.

Daniel Ballester
CRM TECH
1016 E. Cooley Drive, Suite A/B
Colton, CA 92324

office: (909) 824-6400
fax: (909) 824-6405
cell: (909) 376-7842
dballester@crmtech.us

STATE OF CALIFORNIAArnold Schwarzenegger, Governor**NATIVE AMERICAN HERITAGE COMMISSION**

915 CAPITOL MALL, ROOM 384
 SACRAMENTO, CA 95814
 (916) 653-6251
 Fax (916) 657-5390
 Web Site www.nahc.ca.gov
 ds_nahc@pacbell.net



May 6, 2010

Mr. Daniel Ballester, RPA

CRM TECH

1016 E. Cooley Drive, Suite A/B
 Colton, CA 92324

Sent by FAX to: 909-824-6405

No. of Pages: 5

Re: Request for a Sacred Lands File Search and Native American Contacts List for the proposed "The SCRRA San Gabriel Subdivision Positive Train Control Project (CRM TECH #2446) " located (linear 57 miles) in or near the cities of Los Angeles, El Monte, Baldwin Park and Covina in Los Angeles County; and in or near the cities of Upland, Ontario, Fontana, Rialto and San Bernardino in San Bernardino County, California

Dear Mr. Ballester:

The Native American Heritage Commission (NAHC), the State of California 'Trustee Agency' for the protection and preservation of Native American cultural resources (c.f. CA Public Resources Code §21070; also c.f. *Environmental Protection Information Center v. Johnson* [198] 170 Cal App. 3^d 604), was able to perform a record search of its Sacred Lands File (SLF) for the affected project area (APE) requested. The California Environmental Quality Act (CEQA; CA Public Resources Code Section 21000 – 21177) requires that any project that causes a substantial adverse change in the significance of an historical resource, that includes archaeological resources, is a 'significant effect' requiring the preparation of an Environmental Impact Report (EIR) per the California Code of Regulations §15064.5(b)(c)(f) CEQA guidelines). Section 15382 of the 2007 CEQA Guidelines defines a significant impact on the environment as "a substantial, or potentially substantial, adverse change in any of physical conditions within an area affected by the proposed project, including ... objects of historic or aesthetic significance." The NAHC SLF search did indicate the presence of Native American cultural resources within one-half mile of the proposed project site (APE).

Also, this letter includes state and federal statutes relating to Native American historic properties of religious and cultural significance to American Indian tribes and interested Native American individuals as 'consulting parties' under both state and federal law.

Early consultation with Native American tribes in your area is the best way to avoid unanticipated discoveries once a project is underway. Culturally-affiliated tribes and individuals may have knowledge of the religious and cultural significance of the historic properties in the project area (e.g. APE). We recommend that you contact persons on the attached list of Native American contacts. Furthermore we suggest that you contact the California Historic Resources Information System (CHRIS) at the Office of Historic Preservation Coordinator's office (at (916) 653-7278, for referral to the nearest Information Center of which there are 10.

Consultation with tribes and interested Native American consulting parties, on the NAHC list, should be conducted in compliance with the requirements of federal NEPA (42 U.S.C. 4321-43351) and Section 106 and 4(f) of federal NHPA (16 U.S.C. 470 [f] *et seq.*), 36 CFR Part 800.3 (f) (2), the President's Council on Environmental Quality (CSQ; 42 U.S.C. 4371 *et seq.*) and NAGPRA (25 U.S.C. 3001-3013), as appropriate. . The 1992 *Secretary of the Interior's Standards for the Treatment of Historic Properties* were revised so that they could be applied to all historic resource types included in the National Register of Historic Places and including *cultural landscapes*.

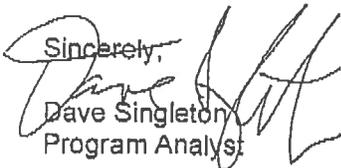
Lead agencies should consider avoidance, as defined in Section 15370 of the California Environmental Quality Act (CEQA) when significant cultural resources could be affected by a project. Also, Public Resources Code Section 5097.98 and Health & Safety Code Section 7050.5 provide for provisions for accidentally discovered archeological resources during construction and mandate the processes to be followed in the event of an accidental discovery of any human remains in a project location other than a 'dedicated cemetery.

Although tribal consultation under the California Environmental Quality Act (CEQA; CA Public Resources Code Section 21000 – 21177) is 'advisory' rather than mandated, the NAHC does request 'lead agencies' to work with tribes and interested Native American individuals as 'consulting parties.' However, the 2006 SB 1059 the state enabling legislation to the Federal Energy Policy Act of 2005, does mandate tribal consultation for the 'electric transmission corridors. This is codified in the California Public Resources Code, Chapter 4.3, and §25330 to Division 15, requires consultation with California Native American tribes, and identifies both federally recognized and non-federally recognized on a list maintained by the NAHC. Consultation on specific projects must be the result of an on-going relationship between Native American tribes and lead agencies, project proponents and their contractors, in the opinion of the NAHC. Regarding tribal consultation, a relationship built around regular meetings and informal involvement with local tribes will lead to more qualitative consultation tribal input on specific projects.

The response to this search for Native American cultural resources is conducted in the NAHC Sacred Lands Inventory, established by the California Legislature (CA Public Resources Code §5097.94(a) and is exempt from the CA Public Records Act (c.f. California Government Code §6254.10) although Native Americans on the attached contact list may wish to reveal the nature of identified cultural resources/historic properties. Confidentiality of "historic properties of religious and cultural significance' may also be protected the under Section 304 of the NHPA or at the Secretary of the Interior' discretion if not eligible for listing on the National Register of Historic Places. The Secretary may also be advised by the federal Indian Religious Freedom Act (cf. 42 U.S.C, 1996) in issuing a decision on whether or not to disclose items of religious and/or cultural significance identified in or near the APE and possibly threatened by proposed project activity.

If you have any questions about this response to your request, please do not hesitate to contact me at (916) 653-6251.

Sincerely,


Dave Singleton
Program Analyst

Native American Contacts
 May 6, 2010
 Los Angeles and San Bernardino Counties

Pechanga Band of Mission Indians
 Paul Macarro, Cultural Resource Center
 P.O. Box 1477 Luiseno
 Temecula , CA 92593
 pmacarro@pechanga-nsn.
 (951) 308-9295 Ext 8106
 (951) 676-2768
 (951) 506-9491 Fax

Tongva Ancestral Territorial Tribal Nation
 John Tommy Rosas, Tribal Admin.
 Gabrielino Tongva
 tattnlaw@gmail.com
 310-570-6567

Ramona Band of Cahuilla Mission Indians
 Joseph Hamilton, Chairman
 P.O. Box 391670 Cahuilla
 Anza , CA 92539
 admin@ramonatribe.com
 (951) 763-4105
 (951) 763-4325 Fax

Gabrielino/Tongva San Gabriel Band of Mission
 Anthony Morales, Chairperson
 PO Box 693 Gabrielino Tongva
 San Gabriel , CA 91778
 (626) 286-1262 -FAX
 (626) 286-1632
 (626) 286-1758 - Home
 (626) 286-1262 Fax

San Manuel Band of Mission Indians
 James Ramos, Chairperson
 26669 Community Center Drive Serrano
 Highland , CA 92346
 (909) 864-8933
 (909) 864-3724 - FAX
 (909) 864-3370 Fax

Gabrielino Tongva Nation
 Sam Dunlap, Chairperson
 P.O. Box 86908 Gabrielino Tongva
 Los Angeles , CA 90088
 samdunlap@earthlink.net
 (909) 262-9351 - cell

Ti'At Society
 Cindi Alvitre
 6515 E. Seaside Walk, #C Gabrielino
 Long Beach , CA 90803
 calvitre@yahoo.com
 (714) 504-2468 Cell

Morongo Band of Mission Indians
 Michael Contreras, Cultural Heritage Prog.
 12700 Pumarra Road Cahuilla
 Banning , CA 92220 Serrano
 mcontreras@monongo-nsn.
 (951) 755-5025
 (951) 201-1866 - cell
 (951) 922-0105 Fax

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. Also, federal National Environmental Policy Act (NEPA), National Historic Preservation Act, Section 106 and federal NAGPRA. And 36 CFR Part 800.3.

This list is only applicable for contacting local Native Americans with regard to cultural resources for the proposed The SCRRA San Gabriel Subdivision Positive Train Control Project (CRM TECH #2446) located in the or near the cities of Los Angeles, El Monte, Baldwin Park and Covina in Los Angeles County; and in or near the cities of Upland, Ontario,

Native American Contacts
 May 6, 2010
 Los Angeles and San Bernardino Counties

San Manuel Band of Mission Indians
 Ann Brierty, Policy/Cultural Resources Department
 26569 Community Center Drive Serrano
 Highland, CA 92346
 abrierty@sanmanuel-nsn.
 (909) 864-8933 EXT-3250
 (909) 649-1585 - cell
 (909) 862-5152 Fax

Ernest H. Siva
 Morongo Band of Mission Indians Tribal Elder
 9570 Mias Canyon Road Serrano
 Banning, CA 92220 Cahuilla
 siva@dishmail.com
 (951) 849-4676

Gabrielino Tongva Indians of California Tribal Council
 Robert F. Doramae, Tribal Chair/Cultural
 P.O. Box 490 Gabrielino Tongva
 Bellflower, CA 90707
 gtongva@verizon.net
 562-761-6417 - voice
 562-925-7989 - fax

Joseph Ontiveros, Cultural Resource Department
 SOBOBA BAND OF LUISENO INDIANS
 P.O. BOX 487 Luiseno
 San Jacinto, CA 92581
 (951) 654-5544, ext 4137
 (951) 663-5279
 jontiveros@soboba-msn.gov

Pechanga Band of Mission Indians
 Mark Macarro, Chairperson
 P.O. Box 1477 Luiseno
 Temecula, CA 92593
 tbrown@pechanga-nsn.gov
 (951) 676-2768
 (951) 695-1778 Fax

Serrano Nation of Indians
 Goldie Walker
 6588 Valaria Drive Serrano
 Highland, CA 92346
 (909) 862-9883

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. Also, federal National Environmental Policy Act (NEPA), National Historic Preservation Act, Section 106 and federal NAGPRA. And 36 CFR Part 800.3.

This list is only applicable for contacting local Native Americans with regard to cultural resources for the proposed The SCRRA San Gabriel Subdivision Positive Train Control Project (CRM TECH #2446) located in the or near the cities of Los Angeles, El Monte, Baldwin Park and Covina in Los Angeles County; and in or near the cities of Upland, Ontario,

Native American Contacts
May 6, 2010
Los Angeles and San Bernardino Counties

Gabrielino-Tongva Tribe
Bernie Acuna
1875 Century Pk East #1500 Gabrielino
Los Angeles , CA 90067
(310) 587-2203
(310) 428-7720 - cell
(310) 587-2281

Shoshoneon Gabrieleno Band of Mission Indians
Andy Salas, Chairperson
PO Box 393 Gabrieleno
Covina , CA 91723
gabrielenoindians@yahoo.
626-926-4131
(213) 688-0181 - FAX

Gabrielino-Tongva Tribe
Linda Candelaria, Chairwoman
1875 Century Park East, Suite 1500
Los Angeles , CA 90067 Gabrielino
(310) 587-2203
310-428-5767- cell
(310) 587-2281
lcandelaria1@gabriellnoTribe.org

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. Also, federal National Environmental Policy Act (NEPA), National Historic Preservation Act, Section 106 and federal NAGPRA. And 36 CFR Part 800.3.

This list is only applicable for contacting local Native Americans with regard to cultural resources for the proposed The SCRRA San Gabriel Subdivision Positive Train Control Project (CRM TECH #2446) located in the or near the cities of Los Angeles, El Monte, Baldwin Park and Covina in Los Angeles County; and in or near the cities of Upland, Ontario,



May 26, 2010

Bernie Acuna
Gabrielino-Tongva Tribe
1875 Century Park East, Suite1500
Los Angeles, CA 90067

RE: The Southern California Regional Rail Authority San Gabriel Subdivision Positive
Train Control Project
San Bernardino to Los Angeles, San Bernardino and Los Angeles Counties
CRM TECH Contract #2446

Dear Mr. Acuna:

As part of a cultural resources study for the undertaking referenced above, I am writing to request your input on potential Native American cultural resources in or near the Area of Potential Effects (APE). Please respond at your earliest convenience if you have any specific knowledge of sacred /religious sites or other sites of Native American traditional cultural value within or near the APE. The lead agencies for this project are the Federal Railroad Administration and Caltrans for Section 106-compliance purposes.

The proposed undertaking involves positive train control (PTC) improvements to be made along 56 miles of existing rail line. These improvements include the installation of electronic sensors and automatic stopping devices for the purpose of implementing safety measures that will reduce the number of accidents at grade crossings. The accompanying map, based on the USGS Los Angeles and San Bernardino, Calif., 1:250,000 quadrangles, depicts this 56-mile railroad track running through and near the Cities of San Bernardino, Rialto, Fontana, Ontario, Upland, Claremont, Covina, Baldwin Park, El Monte, San Gabriel, Rosemead, San Gabriel, Monterey Park, and Los Angeles, in San Bernardino and Los Angeles Counties.

Any information, concerns, or recommendations regarding cultural resources in the vicinity of the APE may be forwarded to CRM TECH by telephone, e-mail, facsimile or standard mail. Requests for documentation or information we cannot provide will be forwarded to our client and /or the lead agencies. We would also like to clarify that CRM TECH, as the cultural resources consultant for the project, is not the appropriate entity to initiate government-to-government consultations. Thank you for the time and effort in addressing this important matter.

Respectfully,

Laura Hensley Shaker
CRM TECH

From: Gabrieleno Band of Mission Indians <gabrielenoindians@yahoo.com>
Date: Wed, 26 May 2010 20:39:22 -0400
To: Laura Shaker <lshaker@crmtech.us>
Cc: Andy Salas <andysalas07@yahoo.com>
Subject: Re: Scoping letter for CRM TECH project #2446

Dear Ms. Shaker,

We are responding to the attached CRM TECH scoping letter in regards to the Southern California Regional Rail Authority San Gabriel Subdivision Positive Train Control Project, San Bernardino to Los Angeles County CRM TECH Contract #2446. Please be advised that our ancestral lands included all of what is now Los Angeles County, including but not limited to the San Gabriel Mountains, to the coast, to the northern part of Orange County, and clear across to the islands of San Clemente, San Nicolas, and Santa Catalina. Hundreds of our historic villages covered these territories and it is my duty as Chairman to protect our culture.

The villages known as Aleupkingna, Asuksangna, Kukamongna and Waatngna were all along the foothills of the San Gabriel Mountains. This project would run through these historic village sites. Therefore, we recommend one of our NA monitors to be on site during any ground disturbances/excavation. We take no exceptions.

Please contact our office prior to any construction to coordinate an NA monitor.

Sincerely,

Andy Salas
Gabrieleno Band of Mission Indians
626-926-4131

June 9, 2010
CRM TECH
Attn: Laura Hensley Shaker
1016 E. Cooley Drive, Suite A/B
Colton, CA 92324

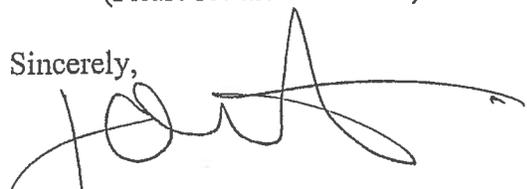
**Re: THE SOUTHERN CALIFORNIA REGIONAL RAIL AUTHORITY SHORT
WAY SUBDIVISION POSITIVE
TRAIN CONTROL PROJECT
SAN BERNARDINO TO LOS ANGELES, SAN BERNARDINO TO LOS ANGELES
COUNTY
CRM TECH CONTRACT # 2446**

The Soboba Band of Luiseño Indians appreciates your observance of Tribal Cultural Resources and their preservation in your project. The information provided to us on said project has been assessed through our Cultural Resource Department, where it was concluded that although it is outside the existing reservation, the project area does fall within the bounds of our Tribal Traditional Use Areas. This project location is in close proximity to known village sites and is a shared use area that was used in ongoing trade between the Luiseno and Cahuilla tribes. Therefore it is regarded as highly sensitive to the people of Soboba.

Soboba Band of Luiseño Indians is requesting the following:

1. **Government to Government** consultation in accordance to Section 106. Including the transfer of information to the Soboba Band of Luiseno Indians regarding the progress of this project should be done as soon as new developments occur.
2. Soboba Band of Luiseño Indians continue to be a lead consulting tribal entity for this project.
3. Working in and around traditional use areas intensifies the possibility of encountering cultural resources during the construction/excavation phase. For this reason the Soboba Band of Luiseño Indians requests that Native American Monitor(s) from the Soboba Band of Luiseño Indians Cultural Resource Department to be present during any ground disturbing proceedings. Including surveys and archaeological testing.
4. Request that proper procedures be taken and requests of the tribe be honored (Please see the attachment)

Sincerely,



Joseph Ontiveros
Soboba Cultural Resource Department
P.O. Box 487
San Jacinto, CA 92581

RECEIVED JUN 16 2010

Phone (951) 654-5544 ext. 4137
Cell (951) 663-5279
jontiveros@soboba-nsn.gov

Cultural Items (Artifacts). Ceremonial items and items of cultural patrimony reflect traditional religious beliefs and practices of the Soboba Band. The Developer should agree to return all Native American ceremonial items and items of cultural patrimony that may be found on the project site to the Soboba Band for appropriate treatment. In addition, the Soboba Band requests the return of all other cultural items (artifacts) that are recovered during the course of archaeological investigations. Where appropriate and agreed upon in advance, Developer's archeologist may conduct analyses of certain artifact classes if required by CEQA, Section 106 of NHPA, the mitigation measures or conditions of approval for the Project. This may include but is not limited or restricted to include shell, bone, ceramic, stone or other artifacts.

The Developer should waive any and all claims to ownership of Native American ceremonial and cultural artifacts that may be found on the Project site. Upon completion of authorized and mandatory archeological analysis, the Developer should return said artifacts to the Soboba Band within a reasonable time period agreed to by the Parties and not to exceed (30) days from the initial recovery of the items.

Treatment and Disposition of Remains

- A. The Soboba Band shall be allowed, under California Public Resources Code § 5097.98 (a), to (1) inspect the site of the discovery and (2) make determinations as to how the human remains and grave goods shall be treated and disposed of with appropriate dignity.
- B. The Soboba Band, as MLD, shall complete its inspection within twenty-four (24) hours of receiving notification from either the Developer or the NAHC, as required by California Public Resources Code § 5097.98 (a). The Parties agree to discuss in good faith what constitutes "appropriate dignity" as that term is used in the applicable statutes.
- C. Reburial of human remains shall be accomplished in compliance with the California Public Resources Code § 5097.98 (a) and (b). The Soboba Band, as the MLD in consultation with the Developer, shall make the final discretionary determination regarding the appropriate disposition and treatment of human remains.
- D. All parties are aware that the Soboba Band may wish to rebury the human remains and associated ceremonial and cultural items (artifacts) on or near, the site of their discovery, in an area that shall not be subject to future subsurface

disturbances. The Developer should accommodate on-site reburial in a location mutually agreed upon by the Parties.

E. The term "human remains" encompasses more than human bones because the Soboba Band's traditions periodically necessitated the ceremonial burning of human remains. Grave goods are those artifacts associated with any human remains. These items, and other funerary remnants and their ashes are to be treated in the same manner as human bone fragments or bones that remain intact

Coordination with County Coroner's Office. The Lead Agencies and the Developer should immediately contact both the Coroner and the Soboba Band in the event that any human remains are discovered during implementation of the Project. If the Coroner recognizes the human remains to be those of a Native American, or has reason to believe that they are those of a Native American, the Coroner shall ensure that notification is provided to the NAHC within twenty-four (24) hours of the determination, as required by California Health and Safety Code § 7050.5 (c).

Non-Disclosure of Location Reburials. It is understood by all parties that unless otherwise required by law, the site of any reburial of Native American human remains or cultural artifacts shall not be disclosed and shall not be governed by public disclosure requirements of the California Public Records Act. The Coroner, parties, and Lead Agencies, will be asked to withhold public disclosure information related to such reburial, pursuant to the specific exemption set forth in California Government Code § 6254 (r).

Ceremonial items and items of cultural patrimony reflect traditional religious beliefs and practices of the Soboba Band. The Developer agrees to return all Native American ceremonial items and items of cultural patrimony that may be found on the project site to the Soboba Band for appropriate treatment. In addition, the Soboba Band requests the return of all other cultural items (artifacts) that are recovered during the course of archaeological investigations. Where appropriate and agreed upon in advance, Developer's archeologist may conduct analyses of certain artifact classes if required by CEQA, Section 106 of NHPA, the mitigation measures or conditions of approval for the Project. This may include but is not limited or restricted to include shell, bone, ceramic, stone or other artifacts.



PECHANGA CULTURAL RESOURCES
Temecula Band of Luiseño Mission Indians

Post Office, Box 2183 • Temecula, CA 92593
Telephone (951) 308-9295 • Fax (951) 506-9491

LA-10641

Chairperson:
Germaine Arenas

Vice Chairperson:
Mary Bear Magee

Committee Members:
Evie Gerber
Darlene Miranda
Bridgett Barcello Maxwell
Aurelia Marruffo
Richard B. Scarce, III

Director:
Gary DuBois

Coordinator:
Paul Macarro

Cultural Analyst:
Anna Hoover

Monitor Supervisor:
Jim McPherson

June 11, 2010

VIA E-Mail and USPS

**RE: Request for Information for The Southern California Regional Rail Authority
San Gabriel Subdivision Positive Train Control Project, CRM Tech Project No 2446
(CRM Tech)**

Dear Ms. Shaker;

The Pechanga Band of Luiseño Indians ("the Tribe") appreciates your request for information regarding the above referenced project. After reviewing the provided maps and internal documents, we have determined that the project area is not within reservation lands and it is not within our ancestral territory. At this time, we have no further information regarding this project and suggest contacting a closer tribe, such as the San Manuel Band of Mission Indians or the Morongo Band of Mission Indians, to continue consultation.

However, the Tribe requests the following:

- 1) Copies of all applicable archaeological reports and site records for the Project; and
- 2) In the event that subsurface cultural resources are identified and a closer Tribe cannot be identified/contacted, the Tribe requests consultation with the project proponent and Lead Agency regarding the treatment and disposition of all artifacts.

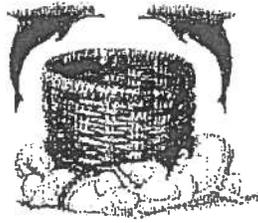
As a sovereign governmental entity, the Tribe is entitled to appropriate and adequate government-to-government consultation regarding the proposed project. We would like you and your client to know that the Tribe does not consider initial inquiry letters from project consultants to constitute appropriate government-to-government consultation, but rather tools to obtain further information about the project area. Therefore, the Tribe reserves its rights to participate in the formal environmental review process, including government-to-government consultation with the Lead Agency, and requests to be included in all correspondence regarding this project.

Please note that we are interested in participating in surveys within Luiseño ancestral territory. Prior to conducting any surveys, please contact the Cultural Department to schedule specifics. If you have any additional questions or comments, please contact me at ahover@pechanga-nsn.gov or 951-308-9295.

Sincerely,

Anna M. Hoover
Cultural Analyst

Andrew Salas
Chairman
Nadine Salas
Vice-Chairman
Felicia Sheerman-Garcia
Treasurer
Christina Swindall-Martinez
Secretary
Martha Gonzalez-Lemos
Council Member



GABRIELEÑO BAND OF MISSION INDIANS
Historically known as The San Gabriel Band of Mission Indians
recognized by the State of California as the aboriginal tribe of the Los Angeles basin

June 12, 2010

CRM TECH
1016 E. Cooley Drive, Suite A/B
Colton, CA 92324

Re: The Southern California Regional Rail Authority
San Gabriel Subdivision Control Project
CRM TECH Contract #2446

Dear Ms. Shaker;

This letter is in response to your letter dated May 26, 2010 in regards to the above referenced project. Please be advised that the entire project lies within sensitive cultural areas. Often archaeologists feel they know our history better than our elders. We have found too many times many village sites and sensitive cultural areas have been overlooked. Our Council of Elders has the knowledge to determine what areas of future development are of concern and they can accurately identify specific villages and their names throughout Los Angeles and Orange counties. We, as the future generations, must protect the remains and artifacts of our people that may be unearthed by development. The following historic village sites lie along the entire project:

Saxangna – San Bernardino

Winingna – Covina

Sibangna – San Gabriel

Houtgna – El Monte

Yangna – Los Angeles

Toybipet – Fontana, La Verne, Ontario,

Diamond Bar & Claremont

Our elders state that our ancestors walked along a trail from San Bernardino to San Gabriel. The village of Toybipet covered a vast area as this village had hundreds of Indians and was eventually referred to as "Indian Hill."

We're hereby requesting that CRM TECH recommend an NA monitor on this project, so we may assist with the proper identification of our cultural resources. It is our recommendation that our monitors be on the construction site during all ground disturbances.

Prior to construction, please contact our office to coordinate with our staff. We can be reached at 626-926-4131.

Sincerely,



Andy Salas
Chairman

JS

From: Sam Dunlap <samdunlap@earthlink.net>
Date: Sun, 27 Jun 2010 17:43:44 -0400
To: Laura Shaker <lshaker@crmtech.us>
Subject: Re: Scoping letter for CRM TECH project #2446

Laura,

My recommendation for the proposed project is that an archaeological monitoring component be implemented during sub-surface construction activity. There is the possibility for the presence of historic archaeological material.

In the event that pre-historic cultural material is encountered, I would recommend that notification be given to our tribal group (Gabrielino Tongva Nation) for consultation on the disposition of any discoveries.

Thank you.

Sam Dunlap
Tribal Chairman
Gabrielino Tongva Nation

TELEPHONE LOG

Name	Tribe/Affiliation	Telephone Contacts	Comments
Cindi Alvitre	Ti'At Society	4:23 pm, July 20, 2010 4:14 pm, July 21, 2010	Left messages; no response to date.
Robert Dorame, Chairperson	Gabrielino Tongva Indians of California Tribal Council	9:30 am, July 6, 2010 3:20 pm, July 22, 2010 4:00 pm, July 22, 2010	Mr. Dorame will review the information regarding the proposed project again and send a formal response at a later date.
Sam Dunlap, Tribal Secretary	Gabrielino Tongva Nation	None	Sam Dunlap responded in an e-mail dated June 27, 2010 (copy attached).
Anthony Morales, Chairperson	Gabrielino/Tongva San Gabriel Band of Mission Indians	4:27 pm, July 20, 2010 4:21 pm, July 21, 2010	The APE is in an area that is extremely sensitive for Native American cultural resources. The railroads often mark major travel and trade routes used by the Native people throughout history, and are indicative of Native American burials in the vicinity. Mr. Morales recommends that an archaeologist and a Native American monitor from the Gabrielino/Tongva San Gabriel Band be present during future ground-disturbing activities associated with the project, and requests to be contacted prior to any ground disturbance to set up a monitoring agreement.
Bernie Acuna	Gabrielino Tongva Tribe	4:32 pm, July 20, 2010 4:10 pm, July 21, 2010	No answer.
Linda Candelaria, Chairwoman	Gabrielino Tongva Tribe	4:38 pm, July 20, 2010 4:12 pm, July 21, 2010	No answer.
Michael Contreras, Cultural Heritage Program Coordinator	Morongo Band of Mission Indians	4:36 pm, July 20, 2010 1:30 pm, August 3, 2010	Left messages; no response to date.
Ernest Siva, Tribal Elder	Morongo Band of Mission Indians	4:40 pm, July 20, 2010 1:32 pm, August 3, 2010	Mr. Siva had no specific concerns.
Mark Macarro, Chairperson	Pechanga (Temecula) Band of Luiseño Indians	None	Anna Hoover responded on behalf of the tribe (see below).
Paul Macarro, Cultural Resources Center	Pechanga (Temecula) Band of Luiseño Indians	None	Anna Hoover responded on behalf of the tribe (see below).
Anna Hoover, Cultural Analyst	Pechanga (Temecula) Band of Luiseño Indians	None	Ms. Hoover responded in a letter dated June 11, 2010 (copy attached).

TELEPHONE LOG (CONT.)

Name	Tribe/Affiliation	Telephone Contacts	Comments
Joseph Hamilton, Chairman	Ramona Band of Mission Indians	None	John Gomez, Jr., is the designated spokesperson for the tribe (see below).
John Gomez, Jr., Cultural Resources Coordinator	Ramona Band of Mission Indians	4:34 pm, July 20, 2010 4:10 pm, July 21, 2010	Left messages; no response to date.
Ann Brierty, Cultural Resources Field Manager	San Manuel Band of Mission Indians	4:42 pm, July 20, 2010 1:37 pm, August 3, 2010	Left messages; no response to date.
James Ramos, Chairperson	San Manuel Band of Mission Indians	None	Ann Brierty is the designated spokesperson for the tribe (see above).
Andy Salas, Chairperson	Shoshone Gabrieleno Band of Mission Indians	None	Mr. Salas responded in an e-mail dated May 26 and in a letter dated June 12, 2010 (copy attached).
Goldie Walker	Serrano Nation of Indians	4:50 pm, July 20, 2010 1:40 pm, August 3, 2010	No answer.
Joseph Ontiveros, Cultural Resources Director	Soboba Band of Luiseño Indians	None	Mr. Ontiveros responded in a letter dated June 9, 2010 (copy attached).
John Tommy Rosas, Tribal Administrator	Tongva Ancestral Territorial Tribal Nation	4:25 pm, July 20, 2010	Mr. Rosas objects to the proposed project and will send a formal letter at a later date.

**Enclosure 6: Results of NAHC Sacred Lands
File Search**

NATIVE AMERICAN HERITAGE COMMISSION

1550 Harbor Blvd., ROOM 100
West SACRAMENTO, CA 95691
(916) 373-3710
Fax (916) 373-5471



April 27, 2016

Erin King
TetraTech

Sent by Email: erin.king@tetrattech.com
Number of Pages: 2

RE: Proposed EPA Grant Funding for City of El Monte – Garvey Ave. Underpass Drainage Improvement Project, City of El Monte, El Monte USGS Quadrangle, Los Angeles County, California

Dear Ms. King:

A record search of the Native American Heritage Commission (NAHC) *Sacred Lands File* (SLF) was completed for the area of potential project effect (APE) for the above referenced project. Sites have been located in the El Monte Quadrangle of the APE you provided that may be impacted by the project. Please contact the Gabrielino Band of Mission Indians – Kizh Nation at (626) 926-4131 for more information about these sites. Please contact the culturally affiliated Tribes directly for more information about other potential sites within your APE. Their contact information is on the attached "Native American Heritage Commission Tribal Consultation List."

The absence or presence site information in the *Sacred Lands File* **does not indicate** the absence of Native American cultural resources in any APE. Other sources of cultural resources information should be contacted regarding known and recorded sites. Please contact all of the people on the attached list. The list should provide a starting place to locate areas of potential adverse impact within the APE. I suggest you contact all of those listed, if they cannot supply information, they might recommend others with specific knowledge. By contacting all those on the list, your organization will be better able to respond to claims of failure to consult under applicable laws. If a response has not been received within two weeks of notification, the NAHC requests that you follow-up with a telephone call to ensure that the project information has been received.

If you receive notification of change of addresses and phone numbers from any of these individuals or groups, please notify me. With your assistance we are able to assure that our lists contain current information. If you have any questions or need additional information, please contact me at my email address: gayle.totton@nahc.ca.gov.

Sincerely,

Handwritten signature of Gayle Totton in cursive script.

Gayle Totton, M.A., PhD.
Associate Governmental Program Analyst

CONFIDENTIALITY NOTICE: This communication with its contents may contain confidential and/or legally privileged information. It is solely for the use of the intended recipient(s). Unauthorized interception, review, use or disclosure is prohibited and may violate applicable laws including the Electronic Communications Privacy Act. If you are not the intended recipient, please contact the sender and destroy all copies of the communication.

**Native American Contact List
Los Angeles County
April 27, 2016**

Soboba Band of Luiseno Indians
Carrie Garcia, Cultural Resources Manager
P.O. Box 487 Luiseno
San Jacinto , CA 92581 Cahuilla
carrieg@soboba-nsn.gov
(951) 654-2765

(951) 654-4198 Fax

Gabrieleno/Tongva San Gabriel Band of Mission Indians
Anthony Morales, Chairperson
P.O. Box 693 Gabrielino Tongva
San Gabriel , CA 91778
GTTribalcouncil@aol.com
(626) 483-3564 Cell

(626) 286-1262 Fax

Gabrielino /Tongva Nation
Sandonne Goad, Chairperson
106 1/2 Judge John Aiso St., #231 Gabrielino Tongva
Los Angeles , CA 90012
sgoad@gabrielino-tongva.com
(951) 807-0479

Gabrielino Tongva Indians of California Tribal Council
Robert F. Dorame, Tribal Chair/Cultural Resources
P.O. Box 490 Gabrielino Tongva
Bellflower , CA 90707
gtongva@verizon.net
(562) 761-6417 Voice/Fax

Gabrielino-Tongva Tribe
Bernie Acuna, Co-Chairperson
1999 Avenue of the Stars, Suite 1100 Gabrielino
Los Angeles , CA 90067
(310) 428-5690 Cell

Gabrielino-Tongva Tribe
Linda Candelaria, Co-Chairperson
1999 Avenue of the Stars, Suite 1100 Gabrielino
Los Angeles , CA 90067
(626) 676-1184 Cell

Soboba Band of Luiseno Indians
Joseph Ontiveros, Cultural Resource Department
P.O. BOX 487 Luiseno
San Jacinto , CA 92581 Cahuilla
jontiveros@soboba-nsn.gov
(951) 663-5279
(951) 654-5544, ext 4137
(951) 654-4198 Fax

Gabrieleno Band of Mission Indians - Kizh Nation
Andrew Salas, Chairperson
P.O. Box 393 Gabrielino
Covina , CA 91723
gabrielenoindians@yahoo.com
(626) 926-4131

Gabrielino-Tongva Tribe
Conrad Acuna
1999 Avenue of the Stars, Suite 1100 Gabrielino
Los Angeles , CA 90067

Gabrielino /Tongva Nation
Sam Dunlap, Cultural Resources Director
P.O. Box 86908 Gabrielino Tongva
Los Angeles , CA 90086
samdunlap@earthlink.net
(909) 262-9351

This list is current only as of the date of this document and is based on the information available to the Commission on the date it was produced.

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 only applicable for contacting local Native Americans with regard to cultural resources for the proposed EPA Grant Funding for City of El Monte - Garvey Ave. Underpass Drainage Improvement Project, City of El Monte, El Monte USGS Quadrangle, Los Angeles County, California.

Enclosure 7: Native American Consultation and Notification Letters

Kahan, Howard

To: gabrielenoindians@yahoo.com
Subject: EPA -project City of El Monte Garey Avenue Storm drain reconstruction

Hi Andy,

Based off of our phone conversation a few weeks ago, here are my notes from the conversation.

The tribe formally requests that a Native American monitor from the Gabrieleno tribe work with an archaeologist to monitor the project site during construction activities.

Mr. Salas gave a description of some of the historic villages that were located in the area of the project location. (Note: the below descriptions are from the EPA notes of the conversation. These notes should not be considered to be an accurate description of cultural resources, but an attempt to recap the information presented by Mr. Salas).

The historic villages includes the Sibagna village and Sheevanga village (likely not accurate spelling) that were in the Savannah area, in the location of where the Rio Hondo and Alhambra River meet.

The location of the San Gabriel Mission was an area that was highly utilized by the Gabrielino Tribe's ancestors.

The railroad tracks are the end of the Santa Fe Trail from Sonora Mexico. These are on original trading routes.

There are surface artifacts in the area around Garvey Avenue.

Marrano (pig) beach was also in the area.

Howard Kahan
Environmental Scientist
Phone : 415-972-3143
Fax : 415-947-3537
kahan.howard@epa.gov

US Environmental Protection Agency Region IX
Tribal Water Section
75 Hawthorne St.
San Francisco, CA 94105
Mail Code Water 3-4



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105

June 8, 2016

Ms. Carrie Garcia
Cultural Resources Manager
Soboba Band of Luiseno Indians
PO Box 487
San Jacinto, CA 92581

Subject: Section 106 Consultation Regarding the U.S. Environmental Protection Agency
Special Appropriation Act Projects Grant Funding of the City of El Monte's Garvey
Avenue Underpass Drainage Improvement Project
EPA Region 9 Tracking number: 09-164

Dear Ms. Garcia:

The National Environmental Policy Act of 1969 and the National Historic Preservation Act of 1966, as well as other laws and regulations, direct the U.S. Environmental Protection Agency (EPA) to consult with Native Americans when a federal undertaking has the potential to affect their interests or concerns. EPA would like to initiate consultation regarding grant funding for the City of El Monte's (City) Garvey Avenue Underpass Drainage Improvement Project.

The City of El Monte (City), California was authorized to receive a Special Appropriation Act Project for the Garvey Storm Drain reconstruction project in Fiscal Year 2009. The Garvey Grade Underpass is located in the southeastern area of El Monte adjacent to the neighboring cities of Baldwin Park and the City of Industry (see Enclosure 1).

Storms regularly flood Garvey Avenue where the street passes under the Southern Pacific Railroad at the Garvey Avenue underpass. The existing stormwater pumps and conveyance pipes draining the underpass are insufficient to effectively convey stormwater from the street's surface to the intended storm drainage facilities. The existing Garvey Avenue underpass pump station was constructed in 1934, and land use surrounding it has changed over the past 82 years. The pumps were replaced within the last 10 years, but the pump station is still insufficient to handle the stormwater load at the Garvey Avenue underpass from minor and major events. The project will reduce the movement of nonpoint source pollutants and contaminants in the City of El Monte.

The City's project will consist of two new storm drain lines and a new storm water pump station at the Garvey Avenue underpass. The City will discontinue using the existing pump housed in the historic Garvey Avenue Grade Underpass pump station. The City plans to use a new pump station that includes three 9,000 gallons per minute (gpm) pumps and one 2,200 gpm pump. A new storm drain line ("Line A") will run from I-10 south on Maxson Road, then east on Garvey Avenue, and then south on Durfee Avenue. The second new storm drain line ("Line B") will parallel Line A along Durfee Avenue, and extend beyond Line A to continue along Stoddard Way to the San Gabriel River. No existing storm drain lines will be removed. Anticipated maximum dimensions of excavations for Lines A and B are summarized in Table 1 below.

Table 1. Garvey Avenue Underpass Drainage Improvement Project Storm Drain Excavations

Line Section	Length of Excavation	Width of Excavation	Depth of Excavation
Line A			
Maxson Road and Garvey Avenue	931 feet	28 feet	7 feet
Durfee Avenue	340 feet	28 feet	8 feet
Line B			
Durfee Avenue	540 feet	23 feet	10-13 feet
Stoddard Way	2,300 feet	30 feet	13-16 feet

The overall project area is depicted on the attached maps (see Enclosure 2). Staging areas have not yet been identified. The City anticipates that during construction, staging areas will be located to avoid public rights of way. The City anticipates that these areas most likely will be in paved parking lots and areas along the streets involved in the project.

The California Native American Heritage Commission (NAHC) was consulted about the Garvey Avenue Underpass Project and responded that sacred sites have been identified by the Gabrielino Band of Mission Indians – Kizh Nation as within the project region. The California NAHC recommended that EPA contact the Gabrielino Band of Mission Indians – Kizh Nation to determine if the undertaking will affect this resource.

A records search was conducted through the South Central Coastal Information Center and no resources were identified within the Project area; however, 18 resources were recorded within 1 mile of the project area. The 18 previously recorded resources include 1 prehistoric archaeological site, 11 historic buildings, 1 historic district, 1 historic highway/trail, 1 historic railroad, and 3 historic transmission/utility lines. None of the resources will be affected by the project. The prehistoric archaeological site (P-19-000136/CA-LAN-000136) is a habitation site with burials located approximately 0.8-mile southeast of the APE on the opposite side of the San Gabriel River.

In addition to the above previously recorded resources, the Garvey Avenue underpass pump house is historic. According to the City, the building was constructed in 1933. The records search indicates that it has not been previously recorded or evaluated for National Register of Historic Places (NRHP) eligibility. Therefore, EPA and the City are coordinating recording and evaluating the building by a Professional Architectural Historian.

Given the proximity of the project to the San Gabriel River and prehistoric archaeological site P-19-000136/CA-LAN-000136, the archaeological sensitivity of the areas of storm water pipe excavations is evaluated as moderate at present, in the absence of a more detailed sensitivity study.

EPA would value the participation of the tribe in identifying any issues or concerns that you may have regarding this proposed project. We particularly invite your comments regarding potential impacts on cultural resources or areas of traditional cultural importance within the area of the above project. I may be contacted at:

Howard Kahan, Environmental Scientist
Tribal Water Section
U.S. Environmental Protection Agency, Region 9
75 Hawthorne Street (WTR-3-4)
San Francisco, CA 94105-3901
Phone: (415) 972-3143
E-mail: kahan.howard@epa.gov

Written comments may be sent to the above address or via e-mail by July 11, 2016. Thank you for your consideration of these matters.

Sincerely,

Howard Kahan
Environmental Scientist, Tribal Water Section

Enclosures

Enclosures:

- Enclosure 1: Regional Project Location Map
- Enclosure 2: APE Map



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105

June 8, 2016

Ms. Sandonne Goad
Chairperson
Gabrieleno/Tongva Nation
106 ½ Judge John Aiso Street, #231
Los Angeles, CA 90012

Subject: U.S. Environmental Protection Agency's Special Appropriation Act Projects Grant
Funding of the City of El Monte's Garvey Avenue Underpass Drainage Improvement
Project
EPA Region 9 Tracking number: 09-164

Dear Chairperson Goad:

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Howard Kahan, Environmental Scientist
Tribal Water Section
U.S. Environmental Protection Agency, Region 9
75 Hawthorne Street (WTR-3-4)
San Francisco, CA 94105-3901
Phone: (415) 972-3143
E-mail: kahan.howard@epa.gov

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Sincerely,

Howard Kahan
Environmental Scientist, Tribal Water Section

Enclosures:

- Enclosure 1: Regional Project Location Map
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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105

June 8, 2016

Mr. Anthony Morales
Chairperson
Gabrieleno/Tongva San Gabriel Band of Mission Indians
PO Box 693
San Gabriel, CA 91778

Subject: U.S. Environmental Protection Agency's Special Appropriation Act Projects Grant
Funding of the City of El Monte's Garvey Avenue Underpass Drainage Improvement
Project
EPA Region 9 Tracking number: 09-164

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Given the proximity of the project to the San Gabriel River and prehistoric archaeological site P-19-000136/CA-LAN-000136, the archaeological sensitivity of the areas of storm water pipe excavations is evaluated as moderate at present, in the absence of a more detailed sensitivity study.

EPA would value the participation of the tribe in identifying any issues or concerns that you may have regarding this proposed project. We particularly invite your comments regarding potential impacts on cultural resources or areas of traditional cultural importance within the area of the above project. I may be contacted at:

Howard Kahan, Environmental Scientist
Tribal Water Section
U.S. Environmental Protection Agency, Region 9
75 Hawthorne Street (WTR-3-4)
San Francisco, CA 94105-3901
Phone: (415) 972-3143
E-mail: kahan.howard@epa.gov

Written comments may be sent to the above address or via e-mail by July 11, 2016. Thank you for your consideration of these matters.

Sincerely,

Howard Kahan
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Enclosures:

- Enclosure 1: Regional Project Location Map
- Enclosure 2: APE Map



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105

June 8, 2016

Mr. Sam Dunlap
Cultural Resources Director
Gabrielino/Tongva Nation
P.O. Box 86908
Los Angeles, CA 90086

Subject: U.S. Environmental Protection Agency's Special Appropriation Act Projects Grant
Funding of the City of El Monte's Garvey Avenue Underpass Drainage Improvement
Project
EPA Region 9 Tracking number: 09-164

Dear Mr. Dunlap:

The City of El Monte (City), California was authorized to receive a Special Appropriation Act Project for the Garvey Storm Drain reconstruction project in Fiscal Year 2009. The Garvey Grade underpass is located in the southeastern area of El Monte adjacent to the neighboring cities of Baldwin Park and the City of Industry (see Enclosure 1).

Storms regularly flood Garvey Avenue where the street passes under the Southern Pacific Railroad at the Garvey Avenue underpass. The existing stormwater pumps and conveyance pipes draining the underpass are insufficient to effectively convey stormwater from the street's surface to the intended storm drainage facilities. The existing Garvey Avenue underpass pump station was constructed in 1934, and land use surrounding it has changed over the past 82 years. The pumps were replaced within the last 10 years, but the pump station is still insufficient to handle the stormwater load at the Garvey Avenue underpass from minor and major events. The project will reduce the movement of nonpoint source pollutants and contaminants in the City of El Monte.

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Table 1. Garvey Avenue Underpass Drainage Improvement Project Storm Drain Excavations

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75 Hawthorne Street (WTR-3-4)
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Phone: (415) 972-3143
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Sincerely,

Howard Kahan
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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105

June 8, 2016

Mr. Conrad Acuna
Gabrieleno/Tongva Tribe
1999 Avenue of the Stars, Suite 1100
Los Angeles, CA 90067

Subject: U.S. Environmental Protection Agency's Special Appropriation Act Projects Grant
Funding of the City of El Monte's Garvey Avenue Underpass Drainage Improvement
Project
EPA Region 9 Tracking number: 09-164

Dear Mr. Acuna:

The City of El Monte (City), California was authorized to receive a Special Appropriation Act Project for the Garvey Storm Drain reconstruction project in Fiscal Year 2009. The Garvey Grade underpass is located in the southeastern area of El Monte adjacent to the neighboring cities of Baldwin Park and the City of Industry (see Enclosure 1).

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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105

June 8, 2016

Mr. Robert F. Dorame
Tribal Chair/Cultural Resources
Gabrielino Tongva Indians of California Tribal Council
PO Box 490
Bellflower, CA 90707

Subject: U.S. Environmental Protection Agency's Special Appropriation Act Projects Grant
Funding of the City of El Monte's Garvey Avenue Underpass Drainage Improvement
Project
EPA Region 9 Tracking number: 09-164

Dear Chairman Dorame:

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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105

June 8, 2016

Mr. Andrew Salas
Chairperson
Gabrieleno Band of Mission Indians – Kizh Nation
PO Box 393
Covina, CA 91723

Subject: U.S. Environmental Protection Agency's Special Appropriation Act Projects Grant
Funding of the City of El Monte's Garvey Avenue Underpass Drainage Improvement
Project
EPA Region 9 Tracking number: 09-164

Dear Chairperson Salas:

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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105

June 8, 2016

Ms. Linda Candelaria
Co-Chairperson
Gabrieleno/Tongva Tribe
1999 Avenue of the Stars, Suite 1100
Los Angeles, CA 90067

Subject: U.S. Environmental Protection Agency's Special Appropriation Act Projects Grant
Funding of the City of El Monte's Garvey Avenue Underpass Drainage Improvement
Project
EPA Region 9 Tracking number: 09-164

Dear Chairperson Candelaria:

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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105

June 8, 2016

Mr. Joseph Ontiveros
Soboba Band of Luiseno Indians
Cultural Resource Department
PO Box 487
San Jacinto, CA 92581

Subject: Section 106 Consultation Regarding the U.S. Environmental Protection Agency
Special Appropriation Act Projects Grant Funding of the City of El Monte's Garvey
Avenue Underpass Drainage Improvement Project
EPA Region 9 Tracking number: 09-164

Dear Mr. Ontiveros,

The National Environmental Policy Act of 1969 and the National Historic Preservation Act of 1966, as well as other laws and regulations, direct the U.S. Environmental Protection Agency (EPA) to consult with Native Americans when a federal undertaking has the potential to affect their interests or concerns. EPA would like to initiate consultation regarding grant funding for the City of El Monte's (City) Garvey Avenue Underpass Drainage Improvement Project.

The City of El Monte (City), California was authorized to receive a Special Appropriation Act Project for the Garvey Storm Drain reconstruction project in Fiscal Year 2009. The Garvey Grade Underpass is located in the southeastern area of El Monte adjacent to the neighboring cities of Baldwin Park and the City of Industry (see Enclosure 1).

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The overall project area is depicted on the attached maps (see Enclosure 2). Staging areas have not yet been identified. The City anticipates that during construction, staging areas will be located to avoid public rights of way. The City anticipates that these areas most likely will be in paved parking lots and areas along the streets involved in the project.

The California Native American Heritage Commission (NAHC) was consulted about the Garvey Avenue Underpass Project and responded that sacred sites have been identified by the Gabrielino Band of Mission Indians – Kizh Nation as within the project region. The California NAHC recommended that EPA contact the Gabrielino Band of Mission Indians – Kizh Nation to determine if the undertaking will affect this resource.

A records search was conducted through the South Central Coastal Information Center and no resources were identified within the Project area; however, 18 resources were recorded within 1 mile of the project area. The 18 previously recorded resources include 1 prehistoric archaeological site, 11 historic buildings, 1 historic district, 1 historic highway/trail, 1 historic railroad, and 3 historic transmission/utility lines. None of the resources will be affected by the project. The prehistoric archaeological site (P-19-000136/CA-LAN-000136) is a habitation site with burials located approximately 0.8-mile southeast of the APE on the opposite side of the San Gabriel River.

In addition to the above previously recorded resources, the Garvey Avenue underpass pump house is historic. According to the City, the building was constructed in 1933. The records search indicates that it has not been previously recorded or evaluated for National Register of Historic Places (NRHP) eligibility. Therefore, EPA and the City are coordinating recording and evaluating the building by a Professional Architectural Historian.

Given the proximity of the project to the San Gabriel River and prehistoric archaeological site P-19-000136/CA-LAN-000136, the archaeological sensitivity of the areas of storm water pipe excavations is evaluated as moderate at present, in the absence of a more detailed sensitivity study.

EPA would value the participation of the tribe in identifying any issues or concerns that you may have regarding this proposed project. We particularly invite your comments regarding potential impacts on cultural resources or areas of traditional cultural importance within the area of the above project. I may be contacted at:

Howard Kahan, Environmental Scientist
Tribal Water Section
U.S. Environmental Protection Agency, Region 9
75 Hawthorne Street (WTR-3-4)
San Francisco, CA 94105-3901
Phone: (415) 972-3143
E-mail: kahan.howard@epa.gov

Written comments may be sent to the above address or via e-mail by July 11, 2016. Thank you for your consideration of these matters.

Sincerely,

Howard Kahan
Environmental Scientist, Tribal Water Section

Enclosures

Enclosures:

- Enclosure 1: Regional Project Location Map
- Enclosure 2: APE Map

APPENDIX C

**U.S. Fish and Wildlife Service
IPaC Search Results and Species List**

Garvey Avenue Underpass Drainage Improvement Project

IPaC Trust Resources Report

Generated April 21, 2016 10:00 AM MDT, IPaC v3.0.2

This report is for informational purposes only and should not be used for planning or analyzing project level impacts. For project reviews that require U.S. Fish & Wildlife Service review or concurrence, please return to the IPaC website and request an official species list from the Regulatory Documents page.



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Wetlands	8

U.S. Fish & Wildlife Service

IPaC Trust Resources Report



NAME

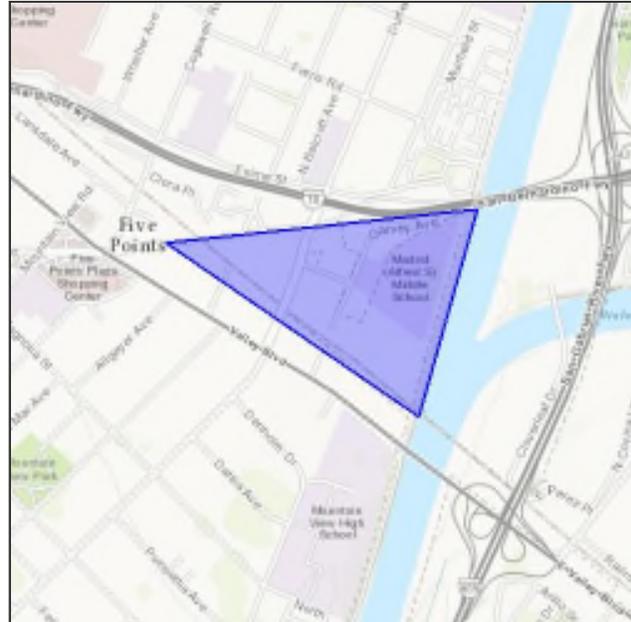
Garvey Avenue Underpass Drainage Improvement Project

LOCATION

Los Angeles County, California

IPAC LINK

<https://ecos.fws.gov/ipac/project/HDMVN-7XOEF-FNDNT-VQJ27-2AGUPA>



U.S. Fish & Wildlife Service Contact Information

Trust resources in this location are managed by:

Carlsbad Fish And Wildlife Office

2177 Salk Avenue - Suite 250

Carlsbad, CA 92008-7385

(760) 431-9440

Endangered Species

Proposed, candidate, threatened, and endangered species are managed by the [Endangered Species Program](#) of the U.S. Fish & Wildlife Service.

This USFWS trust resource report is for informational purposes only and should not be used for planning or analyzing project level impacts.

For project evaluations that require USFWS concurrence/review, please return to the IPaC website and request an official species list from the Regulatory Documents section.

[Section 7](#) of the Endangered Species Act **requires** Federal agencies to "request of the Secretary information whether any species which is listed or proposed to be listed may be present in the area of such proposed action" for any project that is conducted, permitted, funded, or licensed by any Federal agency.

A letter from the local office and a species list which fulfills this requirement can only be obtained by requesting an official species list either from the Regulatory Documents section in IPaC or from the local field office directly.

The list of species below are those that may occur or could potentially be affected by activities in this location:

Birds

Coastal California Gnatcatcher *Poliophtila californica californica* Threatened

CRITICAL HABITAT

There is **final** critical habitat designated for this species.

http://ecos.fws.gov/tess_public/profile/speciesProfile.action?sPCODE=B08X

Least Bell's Vireo *Vireo bellii pusillus* Endangered

CRITICAL HABITAT

There is **final** critical habitat designated for this species.

http://ecos.fws.gov/tess_public/profile/speciesProfile.action?sPCODE=B067

Flowering Plants

Nevin's Barberry *Berberis nevinii* Endangered

CRITICAL HABITAT

There is **final** critical habitat designated for this species.

http://ecos.fws.gov/tess_public/profile/speciesProfile.action?sPCODE=Q08G

Critical Habitats

There are no critical habitats in this location

Migratory Birds

Birds are protected by the [Migratory Bird Treaty Act](#) and the [Bald and Golden Eagle Protection Act](#).

Any activity that results in the take of migratory birds or eagles is prohibited unless authorized by the U.S. Fish & Wildlife Service.^[1] There are no provisions for allowing the take of migratory birds that are unintentionally killed or injured.

Any person or organization who plans or conducts activities that may result in the take of migratory birds is responsible for complying with the appropriate regulations and implementing appropriate conservation measures.

1. 50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)

Additional information can be found using the following links:

- Birds of Conservation Concern
<http://www.fws.gov/birds/management/managed-species/birds-of-conservation-concern.php>
- Conservation measures for birds
<http://www.fws.gov/birds/management/project-assessment-tools-and-guidance/conservation-measures.php>
- Year-round bird occurrence data
<http://www.fws.gov/birds/management/project-assessment-tools-and-guidance/akn-histogram-tools.php>

The following species of migratory birds could potentially be affected by activities in this location:

Bald Eagle <i>Haliaeetus leucocephalus</i>	Bird of conservation concern
Season: Wintering http://ecos.fws.gov/tess_public/profile/speciesProfile.action?sPCODE=B008	
Bell's Vireo <i>Vireo bellii</i>	Bird of conservation concern
Season: Breeding http://ecos.fws.gov/tess_public/profile/speciesProfile.action?sPCODE=B0JX	
Brewer's Sparrow <i>Spizella breweri</i>	Bird of conservation concern
Year-round http://ecos.fws.gov/tess_public/profile/speciesProfile.action?sPCODE=B0HA	
Burrowing Owl <i>Athene cunicularia</i>	Bird of conservation concern
Year-round http://ecos.fws.gov/tess_public/profile/speciesProfile.action?sPCODE=B0NC	

Cactus Wren <i>Campylorhynchus brunneicapillus</i> Year-round http://ecos.fws.gov/tess_public/profile/speciesProfile.action?spcode=B0FZ	Bird of conservation concern
California Spotted Owl <i>Strix occidentalis occidentalis</i> Year-round http://ecos.fws.gov/tess_public/profile/speciesProfile.action?spcode=B08L	Bird of conservation concern
Costa's Hummingbird <i>Calypte costae</i> Season: Breeding http://ecos.fws.gov/tess_public/profile/speciesProfile.action?spcode=B0JE	Bird of conservation concern
Fox Sparrow <i>Passerella iliaca</i> Season: Wintering	Bird of conservation concern
Green-tailed Towhee <i>Pipilo chlorurus</i> Season: Breeding http://ecos.fws.gov/tess_public/profile/speciesProfile.action?spcode=B0IO	Bird of conservation concern
Lawrence's Goldfinch <i>Carduelis lawrencei</i> Year-round http://ecos.fws.gov/tess_public/profile/speciesProfile.action?spcode=B0J8	Bird of conservation concern
Least Bittern <i>Ixobrychus exilis</i> Year-round http://ecos.fws.gov/tess_public/profile/speciesProfile.action?spcode=B092	
Lesser Yellowlegs <i>Tringa flavipes</i> Season: Wintering http://ecos.fws.gov/tess_public/profile/speciesProfile.action?spcode=B0MD	Bird of conservation concern
Lewis's Woodpecker <i>Melanerpes lewis</i> Season: Wintering http://ecos.fws.gov/tess_public/profile/speciesProfile.action?spcode=B0HQ	Bird of conservation concern
Loggerhead Shrike <i>Lanius ludovicianus</i> Year-round http://ecos.fws.gov/tess_public/profile/speciesProfile.action?spcode=B0FY	Bird of conservation concern
Long-billed Curlew <i>Numenius americanus</i> Season: Wintering http://ecos.fws.gov/tess_public/profile/speciesProfile.action?spcode=B06S	Bird of conservation concern
Marbled Godwit <i>Limosa fedoa</i> Season: Wintering http://ecos.fws.gov/tess_public/profile/speciesProfile.action?spcode=B0JL	Bird of conservation concern
Mountain Plover <i>Charadrius montanus</i> Season: Wintering http://ecos.fws.gov/tess_public/profile/speciesProfile.action?spcode=B078	Bird of conservation concern

Nuttall's Woodpecker <i>Picoides nuttallii</i> Year-round http://ecos.fws.gov/tess_public/profile/speciesProfile.action?spcode=B0HT	Bird of conservation concern
Oak Titmouse <i>Baeolophus inornatus</i> Year-round http://ecos.fws.gov/tess_public/profile/speciesProfile.action?spcode=B0MJ	Bird of conservation concern
Olive-sided Flycatcher <i>Contopus cooperi</i> Season: Breeding http://ecos.fws.gov/tess_public/profile/speciesProfile.action?spcode=B0AN	Bird of conservation concern
Peregrine Falcon <i>Falco peregrinus</i> Season: Wintering http://ecos.fws.gov/tess_public/profile/speciesProfile.action?spcode=B0FU	Bird of conservation concern
Red-crowned Parrot <i>Amazona viridigenalis</i> Year-round http://ecos.fws.gov/tess_public/profile/speciesProfile.action?spcode=B0GO	Bird of conservation concern
Rufous-crowned Sparrow <i>Aimophila ruficeps</i> Year-round http://ecos.fws.gov/tess_public/profile/speciesProfile.action?spcode=B0MX	Bird of conservation concern
Short-eared Owl <i>Asio flammeus</i> Season: Wintering http://ecos.fws.gov/tess_public/profile/speciesProfile.action?spcode=B0HD	Bird of conservation concern
Tricolored Blackbird <i>Agelaius tricolor</i> Year-round http://ecos.fws.gov/tess_public/profile/speciesProfile.action?spcode=B06P	Bird of conservation concern
Western Grebe <i>aechmophorus occidentalis</i> Season: Wintering http://ecos.fws.gov/tess_public/profile/speciesProfile.action?spcode=B0EA	Bird of conservation concern
Williamson's Sapsucker <i>Sphyrapicus thyroideus</i> Season: Wintering http://ecos.fws.gov/tess_public/profile/speciesProfile.action?spcode=B0FX	Bird of conservation concern
Red Knot <i>Calidris canutus ssp. roselaari</i> Season: Wintering http://ecos.fws.gov/tess_public/profile/speciesProfile.action?spcode=B0G6	Bird of conservation concern

Wildlife refuges and fish hatcheries

There are no refuges or fish hatcheries in this location

Wetlands in the National Wetlands Inventory

Impacts to [NWI wetlands](#) and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local [U.S. Army Corps of Engineers District](#).

DATA LIMITATIONS

The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

The accuracy of image interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground truth verification work conducted. Metadata should be consulted to determine the date of the source imagery used and any mapping problems.

Wetlands or other mapped features may have changed since the date of the imagery or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site.

DATA EXCLUSIONS

Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and nearshore coastal waters. Some deepwater reef communities (coral or tubercid worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

DATA PRECAUTIONS

Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.

This location overlaps all or part of the following wetlands:

Freshwater Forested/shrub Wetland

[PSSAx](#)

1.57 acres

Riverine

[R4SBAx](#)

181.0 acres

A full description for each wetland code can be found at the National Wetlands Inventory website: <http://107.20.228.18/decoders/wetlands.aspx>



United States Department of the Interior



FISH AND WILDLIFE SERVICE

Carlsbad Fish and Wildlife Office
2177 SALK AVENUE - SUITE 250
CARLSBAD, CA 92008

PHONE: (760)431-9440 FAX: (760)431-5901

URL: www.fws.gov/carlsbad/

Consultation Code: 08ECAR00-2016-SLI-0811

July 26, 2016

Event Code: 08ECAR00-2016-E-01254

Project Name: El Monte Storm Sewer Improvement

Subject: List of threatened and endangered species that may occur in your proposed project location, and/or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, and proposed species, designated critical habitat, and candidate species that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*).

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 *et seq.*), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)(c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

<http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF>

Please be aware that bald and golden eagles are protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668 *et seq.*), and projects affecting these species may require development of an eagle conservation plan (http://www.fws.gov/windenergy/eagle_guidance.html). Additionally, wind energy projects should follow the wind energy guidelines (<http://www.fws.gov/windenergy/>) for minimizing impacts to migratory birds and bats.

Guidance for minimizing impacts to migratory birds for projects including communications towers (e.g., cellular, digital television, radio, and emergency broadcast) can be found at: <http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/towers.htm>; <http://www.towerkill.com>; and <http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/comtow.html>.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Tracking Number in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment



United States Department of Interior
Fish and Wildlife Service

Project name: El Monte Storm Sewer Improvement

Official Species List

Provided by:

Carlsbad Fish and Wildlife Office
2177 SALK AVENUE - SUITE 250
CARLSBAD, CA 92008
(760) 431-9440
<http://www.fws.gov/carlsbad/>

Consultation Code: 08ECAR00-2016-SLI-0811

Event Code: 08ECAR00-2016-E-01254

Project Type: WASTEWATER PIPELINE

Project Name: El Monte Storm Sewer Improvement

Project Description: Install new storm sewer lines to reduce flooding

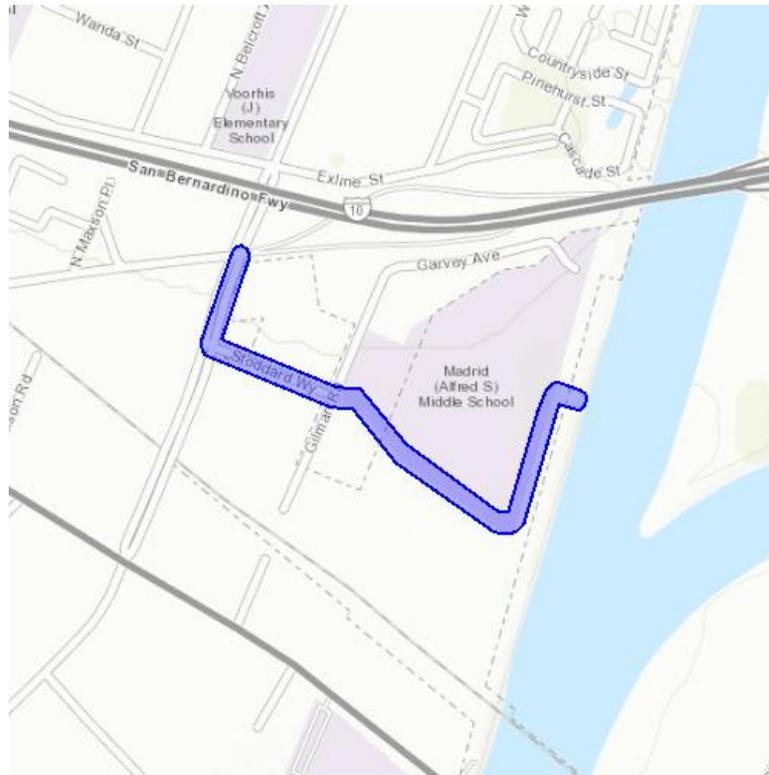
Please Note: The FWS office may have modified the Project Name and/or Project Description, so it may be different from what was submitted in your previous request. If the Consultation Code matches, the FWS considers this to be the same project. Contact the office in the 'Provided by' section of your previous Official Species list if you have any questions or concerns.



United States Department of Interior
Fish and Wildlife Service

Project name: El Monte Storm Sewer Improvement

Project Location Map:



Project Coordinates: The coordinates are too numerous to display here.

Project Counties: Los Angeles, CA



United States Department of Interior
Fish and Wildlife Service

Project name: El Monte Storm Sewer Improvement

Endangered Species Act Species List

There are a total of 3 threatened or endangered species on your species list. Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species. Critical habitats listed under the **Has Critical Habitat** column may or may not lie within your project area. See the **Critical habitats within your project area** section further below for critical habitat that lies within your project. Please contact the designated FWS office if you have questions.

Birds	Status	Has Critical Habitat	Condition(s)
Coastal California gnatcatcher (<i>Polioptila californica californica</i>) Population: Entire	Threatened	Final designated	
Least Bell's vireo (<i>Vireo bellii pusillus</i>) Population: Entire	Endangered	Final designated	
Flowering Plants			
Nevin's barberry (<i>Berberis nevinii</i>)	Endangered	Final designated	



United States Department of Interior
Fish and Wildlife Service

Project name: El Monte Storm Sewer Improvement

Critical habitats that lie within your project area

There are no critical habitats within your project area.

APPENDIX D
Air Quality Modeling

Table D-1. Construction Equipment Use

Equipment Type	Number of Units	Days on Site	Hours Per Day	Operating Hours
Excavators	2	260	4	2,080
Plate Compactors	2	260	4	2,080
Trenchers	2	260	8	4,160
Cement Mixers	2	260	4	2,080
Generator Sets	1	260	4	1,040
Loaders/Backhoes	2	260	7	3,640
Pavers	1	58	8	464
Paving Equipment	1	58	8	464

Table D-2. Construction Equipment Emission Factors (lbs/hour)

Equipment	CO	NOx	VOC	SOx	PM10	PM2.5	CO2
Excavators	0.5828	1.3249	0.1695	0.0013	0.0727	0.0727	119.6
Plate Compactors	0.0263	0.0328	0.0052	0.0001	0.0021	0.0021	4.3
Trenchers	0.508	0.8237	0.1851	0.0007	0.0688	0.0688	58.7
Cement Mixers	0.0447	0.0658	0.0113	0.0001	0.0044	0.0044	7.2
Generator Sets	0.3461	0.698	0.1075	0.0007	0.043	0.043	61
Loaders/Backhoes	0.4063	0.7746	0.1204	0.0008	0.0599	0.0599	66.8
Pavers	0.5874	1.0796	0.1963	0.0009	0.0769	0.0769	77.9
Paving Equipment	0.0532	0.1061	0.0166	0.0002	0.0063	0.0063	12.6

Table D-3. Construction Equipment Emissions (tons)

Equipment	CO	NOx	VOC	SOx	PM10	PM2.5	CO2
Excavators	0.606112	1.377896	0.17628	0.001352	0.075608	0.075608	124.384
Plate Compactors	0.027352	0.034112	0.005408	0.000104	0.002184	0.002184	4.472
Trenchers	1.05664	1.713296	0.385008	0.001456	0.143104	0.143104	122.096
Cement Mixers	0.046488	0.068432	0.011752	0.000104	0.004576	0.004576	7.488
Generator Sets	0.211276	0.402792	0.062608	0.000416	0.031148	0.031148	34.736
Loaders/Backhoes	0.739466	1.409772	0.219128	0.001456	0.109018	0.109018	121.576
Pavers	0.1362768	0.2504672	0.0455416	0.0002088	0.0178408	0.0178408	18.0728
Paving Equipment	0.0123424	0.0246152	0.0038512	0.0000464	0.0014616	0.0014616	2.9232
Total	2.8359532	5.2813824	0.9095768	0.0051432	0.3849404	0.3849404	435.748

Table D-4. Emissions from Delivery of Equipment and Supplies

Number of Deliveries (per day)	4						
Number of Trips (per delivery)	2						
Miles Per Trip	50						
Days of Construction	260						
Total Miles	104,000						
Pollutant	CO	NOx	VOC	SOx	PM10	PM2.5	CO2
Emission Factor (lbs/mile)	2.20E-02	2.40E-02	3.00E-03	2.60E-05	8.60E-04	7.40E-04	2.70E+00
Total Emissions (lbs)	2,288.00	2,496.00	312.00	2.70	89.44	76.96	280,800.00
Total Emissions (tons)	1.144	1.248	0.156	0.001352	0.04472	0.03848	140.4

Table D-5. Particulates from Surface Disturbance

TSP Emissions	37.4 lb/acre					
PM10/TSP	0.45					
PM2.5/PM10	0.15					
Period of Disturbance	260 days					
Capture Fraction	0.5					
Building/Facility	Area [acres]	TSP [lbs]	PM10 [lbs]	PM10 [tons]	PM2.5 [lbs]	PM2.5 [tons]
All Facilities	2.3	11,183	5,032	2.516085	1,677	0.838695
Total	2.3	11182.6	5032.17	2.516085	1677.39	0.838695

Table D-6. Emissions from Construction Worker Commutes

Number of Workers	30						
Number of Trips (per worker per day)	2						
Miles Per Trip	50						
Days of Construction	260						
Total Miles	780,000						
Pollutant	CO	NOx	VOC	SOx	PM10	PM2.5	CO2
Emission Factor (lbs/mile)	1.10E-02	1.10E-03	1.10E-03	1.10E-05	8.50E-05	5.30E-05	1.10E+00
Total Emissions (lbs)	8,580	858	858	9	66	41	858,000
Total Emissions (tons)	4.29	0.429	0.429	0.00429	0.03315	0.02067	429

Table D-7. Total Construction Emissions (tons)

Activity/Source	CO	NOx	VOC	SOx	PM10	PM2.5	CO2
Heavy Equipment	2.8359532	5.2813824	0.9095768	0.0051432	0.3849404	0.3849404	435.748
Delivery of Equipment	1.144	1.248	0.156	0.001352	0.04472	0.03848	140.4
Surface Disturbance	0	0	0	0	2.516085	0.838695	0
Worker Commutes	4.29	0.429	0.429	0.00429	0.03315	0.02067	429
Total Emissions	8.2699532	6.9583824	1.4945768	0.0107852	2.9788954	1.2827854	1005.148
de minimis (tons per year) (attainment/non-attainment or maintenance)	100/50	100/50	100/50	100/50	100/50	100/50	27,563
Exceeds de minimis threshold?	No	No	No	No	No	No	No
Years of construction to exceed de minimis threshold	12.09196686	14.37115615	66.90857238	9271.965286	33.56949	77.9553618	27.421832



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105

FINDING OF NO SIGNIFICANT IMPACT
City of El Monte
Stormwater System Improvement Project
December 2016

The U.S. Environmental Protection Agency (EPA) Region 9 intends to award a grant in the amount of \$485,000 to the City of El Monte. The City of El Monte proposes to construct two new storm drain lines and upgrade the existing pump station to minimize flooding at the Garvey Avenue underpass.

EPA Region 9's intention to award a grant for the proposed project is a federal action requiring compliance with the National Environmental Policy Act (NEPA), 42 USC §§4321-4370f. In accordance with NEPA, Council of Environmental Quality Regulations at 40 CFR §§1500.1-1508.28, and EPA NEPA regulations at 40 CFR Part 6, EPA Region 9 has prepared an environmental assessment (EA) describing the potential environmental impacts associated with, and the alternatives to, the proposed project. This finding of no significant impact (FONSI) documents EPA Region 9's decision that the proposed project will not have a significant effect on the environment.

Project Description

The City of El Monte proposes to construct two new storm drain lines and upgrade the existing pump station to minimize flooding at the Garvey Avenue underpass. The new storm drain lines would convey the outflow from the new pump station to a new outfall on the San Gabriel River, divert some stormwater away from the underpass, and connect to an existing Los Angeles County Flood Control District (LACFCD) storm drain (Durfee storm drain). The existing pump station and pumps would be replaced with a larger capacity pump station and pumps.

Project Location

The proposed project would occur in the City of El Monte, Los Angeles County, California. The City of El Monte is the eastern part of Los Angeles County, between Alhambra to the west and Baldwin Park to the east. The project site is located near Interstate 10 (I-10) and Garvey Avenue and is generally bounded by the triangular area formed by the San Gabriel River, the Southern Pacific Railroad, I-10, and Valley Boulevard.

Purpose and Need for Proposed Project

Storms regularly flood Garvey Avenue, where the street passes under the Southern Pacific Railroad at the Garvey Avenue underpass. The existing stormwater pumps and conveyance pipes draining the underpass are insufficient to effectively convey stormwater from the street's surface to the intended storm drainage facilities. The purpose of this project is to improve the storm drain lines and pump station, and it is needed to address the system's insufficient ability to remove stormwater from Garvey Avenue.

Environmental Consequences

The EA examines the potential environmental impacts of the proposed project. In addition, the EA examines the impacts of a no-action alternative.

On August 24, 2016, EPA Region 9 submitted a letter to the State Historic Preservation Office (SHPO) requesting concurrence with a determination of "no historic properties effected," pursuant to Section 106 of the National Historic Preservation Act. SHPO concurred with this finding on September 21, 2016.

A report for the project area was generated through the U.S. Fish and Wildlife Services (USFWS) Information for Planning and Conservation (IPaC) online system. The system provides background information on listed species in an area of interest. A USFWS list of threatened and endangered species also was generated for the project area. Three Federally listed species have the potential to occur in the area. Because the project location is a developed, highly urbanized area, no suitable habitat exists for any of these species. Therefore, the project would have "no effect" on listed species, and formal consultation with the USFWS under Section 7 of the Endangered Species Act is not required.

Mitigation measures would be implemented to address potential adverse impacts associated with the project to minimize or avoid those effects. These measure would include the following:

- Compliance with applicable construction activity controls (e.g., dust control during construction/demolition activities, construction equipment maintained to minimize emissions) included in the State Implementation Plans and Maintenance Plans for the South Coast Air Quality Management District is required to minimize air quality issues. South Coast Air Quality Management District Rule 403 (Fugitive Dust) is intended to reduce the amount of particulate matter entrained in the ambient air as a result of anthropogenic (man-made) fugitive dust sources by requiring actions to prevent, reduce or mitigate fugitive dust emissions. Under the rule, dust suppression is to be applied in sufficient quantity and frequency to maintain a stabilized surface. Any areas which cannot be stabilized, as evidenced by wind driven fugitive dust must have an application of water at least twice per day to at least 80 percent of the unstabilized area.
- The California Code of Regulations requires that construction equipment idling time be minimized either by shutting equipment off when not in use or reducing the time of idling to 5 minutes (Title 13 Sections 2449(d)(3), 2485). All construction equipment should be maintained in proper working condition according to manufacturer's specifications. The equipment must be checked by a certified mechanic and determine to be running in proper condition before it is operated.

- To avoid impacts on subsurface cultural resources, a Native American monitor and archaeological monitor would be present during ground-disturbing activities. Each monitor would be empowered to halt project activities to avoid or minimize disturbance of Native American or archaeological resources.
- Should any known or potential cultural materials be encountered during ground-disturbing activities, all work that may affect those materials would be halted until a qualified archaeologist can be consulted on the nature and significance of those materials.

After carefully considering the regulatory, environmental (both natural and human) and socio-economic factors as described in the EA, EPA Region 9 has not identified any significant impacts to the environment that would result from implementation of the proposed project.

Public Review

EPA Region 9 made the EA and unsigned FONSI available for public review through December 21, 2016 on the internet at <https://www.epa.gov/ca/city-el-monte-stormwater-system-improvement-project> and at the offices of EPA Region 9 (75 Hawthorne Street, San Francisco, CA 94015-3901). Notice of the public comment period was published in the El Monte Examiner on November 21, 2016.

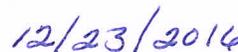
EPA did not receive any comments on the EA and unsigned FONSI prior to the close of the public comment period on December 21, 2016.

Finding

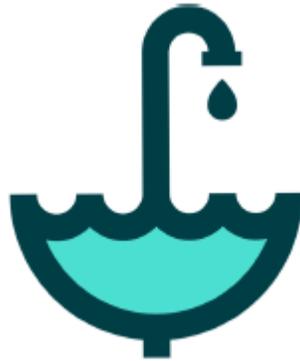
Based on the information contained in the EA, and after opportunity for public comment, EPA has determined the proposed project will not result in significant impacts to the environment and an environmental impact statement is not required.



Tomás Torres
Director, Water Division



Date



ATTACHMENTS FOR SECTION 8.7:

OTHER
