Appendix A
Air Quality Technical Memorandum

HIGHLAND RESIDENTIAL PROJECT
INITIAL STUDY

Michael Baker INTERNATIONAL

We Make a Difference

MEMORANDUM

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Date: April 23, 2020

Subject: Highland Residential Project – Air Quality Technical Memorandum

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PURPOSE

The purpose of this technical memorandum is to evaluate potential short- and long-term air quality impacts resulting from the construction and operation of the proposed Highland Residential Project (project), located in the City of Fontana (City), California.

PROJECT LOCATION

The project is located at 14973 South Highland Avenue, on the north side of South Highland Avenue between Hemlock Avenue and San Sevaine Road in the City. The City is located in the southwestern portion of San Bernardino County (County). The City is bounded by the San Bernardino National Forest to the north, the City of Rialto to the east, the Jurupa Hills to the south, and unincorporated San Bernardino County and the Cities of Rancho Cucamonga and Ontario to the west. The City's Sphere of Influence extends north to the San Bernardino National Forest and west to the Cities of Rancho Cucamonga and Ontario.

Regional access to the site is available via State Route 210 (SR-210) at the Cherry Avenue exit, which is approximately one-half mile to the west of the site, and via Interstate 15 (I-15) at the Sierra Avenue exit, which is approximately 2.2 miles to the southwest of the site. Local access to the site is provided via South Highland Avenue and San Sevaine Road.

The project includes two parcels (APNs: 0228-021-08 and 0228-021-09) totaling approximately 10.2 acres.

EXISTING SITE CONDITIONS

The proposed project site is located on the gently sloping alluvial plain descending southward from the San Gabriel Mountains within the northern portion of the City. The project site currently consists of vacant land and the site's natural vegetation has been largely removed. The site is unimproved and there are no existing structures onsite. The topography of the site is relatively flat. The site drains to the southwest, the highest elevation is approximately 1,449 feet at the northeast corner of the site, and the lowest elevation is approximately 1,424 feet in the southwest corner of the site, an approximate elevation

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difference of 25 feet. Concrete debris and cobbles and concrete slabs exist onsite, which appear to cover a cistern system.

The project site is surrounded by SR-210 to the north; a church facility to the east; residential development to the south; and vacant land to the west.

PROJECT DESCRIPTION

The project proposes development of a residential community involving construction of 107 multi-family detached units and associated infrastructure and improvements including private roads, sidewalks, landscaping, utilities, infiltration basins/drainage facilities, and parking. The community would be gate guarded and would construct on-site recreational facilities, including a community pool and clubhouse, tot lot, dog park, and exercise area. The dwelling units would be two-stories with two-car attached garages ranging in size from 1,400 square feet to 2,200 square feet. The project would also include General Plan Amendment No. 19-006 (General Commercial to Medium Density Residential) and Zone Change (General Commercial to Medium Density Residential).

Project construction would occur over approximately 14 months, beginning in March 2021. Construction of the project would include the following phases: site preparation, grading, building construction, paving, and architectural coating. It is anticipated that the project would be completed and operational by April 2022.

EXISTING SETTING

Local Ambient Air Quality

California Air Resources Board (CARB) monitors ambient air quality at approximately 250 air monitoring stations across the State. Air quality monitoring stations usually measure pollutant concentrations ten feet above ground level; therefore, air quality is often referred to in terms of ground-level concentrations. The project site is located within Source Receptor Area (SRA) 34, Central San Bernardino Valley. The closest air monitoring station to the project site is the Fontana-Arrow Highway Monitoring Station. Local air quality data from 2016 to 2018 is provided in Table 1, *Summary of Air Quality Data*. This table lists the monitored maximum concentrations and number of exceedances of Federal/State air quality standards for each year.

Table 1
Summary of Air Quality Data

Pollutant	California Standard	Federal Primary Standard	Year	Maximum Concentration[2]	Days (Samples) State/Federal Std. Exceeded
Ozone (O_3)[1] (1-hour)	0.09 ppm for 1 hour	NA[5]	2016 2017 2018	0.139 ppm 0.137 0.141	34/3 33/2 38/7
Ozone (O_3)[1] (8-hour)	0.070 ppm for 8 hours	0.070 ppm for 8 hours	2016 2017 2018	0.105 ppm 0.119 0.111	52/49 51/49 72/69
Carbon Monoxide (CO)[1] (1-hour)	20 ppm for 1 hour	35 ppm for 1 hour	2016 2017 2018	1.660 ppm 1.622 1.916	0/0 0/0 0/0
Nitrogen Dioxide (NO_2)[1]	0.18 ppm for 1 hour	0.100 ppm for 1 hour	2016 2017 2018	0.072 ppm 0.069 0.063	0/0 0/0 0/0
Fine Particulate Matter ($PM_{2.5}$)[1, 4]	No Separate Standard	35 µg/m^3 for 24 hours	2016 2017 2018	58.8 µg/m^3 39.2 29.2	11/1 13/1 13/0
Particulate Matter (PM_{10})[1, 3, 4]	50 µg/m^3 for 24 hours	150 µg/m^3 for 24 hours	2016 2017 2018	94.0 µg/m^3 75.3 64.1	NA/0 NA/0 NA/0

ppm = parts per million; PM_{10} = particulate matter 10 microns in diameter or less; µg/m^3 = micrograms per cubic meter; $PM_{2.5}$ = particulate matter 2.5 microns in diameter or less; NA = not applicable.

Notes:
1. Data collected from the Fontana-Arrow Highway Monitoring Station located at 14360 Arrow Boulevard, Fontana, California 92335.
2. Maximum concentration is measured over the same period as the California Standards.
3. PM_{10} exceedances are based on State thresholds established prior to amendments adopted on June 20, 2002.
4. PM_{10} and $PM_{2.5}$ exceedances are derived from the number of samples exceeded, not days.
5. The Federal standard was revoked in June 2005.

Sources:
California Air Resources Board, *ADAM Air Quality Data Statistics*, http://www.arb.ca.gov/adam/, accessed March 27, 2020.
California Air Resources Board, *AQMIS2: Air Quality Data*, https://www.arb.ca.gov/aqmis2/aqdselect.php, accessed March 27, 2020.

REGULATORY SETTING

South Coast Air Quality Management District

Air Quality Thresholds

Under the CEQA, the South Coast Air Quality Management District (SCAQMD) is an expert commenting agency on air quality within its jurisdiction or impacting its jurisdiction. Under the Federal Clean Air Act (FCAA), the SCAQMD has adopted Federal attainment plans for ozone (O_3) and particulate matter 10 microns in diameter or less (PM_{10}). The SCAQMD reviews projects to ensure that they would not: (1) cause or contribute to any new violation of any air quality standard; (2) increase the frequency or severity of any existing violation of any air quality standard; or (3) delay timely attainment of any air quality standard or any required interim emission reductions or other milestones of any Federal attainment plan.

The *CEQA Air Quality Handbook* also provides significance thresholds for both construction and operation of projects within the SCAQMD jurisdictional boundaries. If the SCAQMD thresholds are exceeded, a

potentially significant impact could result. However, ultimately the lead agency determines the thresholds of significance for impacts. If a project proposes development in excess of the established thresholds, as outlined in Table 2, *South Coast Air Quality Management District Emissions Thresholds*, a significant air quality impact may occur and additional analysis is warranted to fully assess the significance of impacts.

Table 2
South Coast Air Quality Management District Emissions Thresholds

Phase	Pollutant (lbs/day)					
	ROG	NO_X	CO	SO_X	PM_{10}	$PM_{2.5}$
Construction	75	100	550	150	150	55
Operational	55	55	550	150	150	55

ROG = reactive organic gases; NO_X = nitrogen oxides; CO = carbon monoxide; SO_X = sulfur oxides; PM_{10} = particulate matter up to 10 microns; $PM_{2.5}$ = particulate matter up to 2.5 microns; lbs = pounds

Source: South Coast Air Quality Management District, *CEQA Air Quality Handbook*, November 1993.

Localized Significance Thresholds

Localized Significance Thresholds (LSTs) were developed in response to SCAQMD Governing Boards' Environmental Justice Enhancement Initiative (I-4). The SCAQMD provided the *Final Localized Significance Threshold Methodology* (dated July 2008) for guidance. The LST methodology assists lead agencies in analyzing localized impacts associated with project-specific level proposed projects. The SCAQMD provides the LST lookup tables for one-, two-, and five-acre projects emitting carbon monoxide (CO), nitrogen oxides (NO_X), PM_{10}, or particulate matter 2.5 microns in diameter or less ($PM_{2.5}$). The LST methodology and associated mass rates are not designed to evaluate localized impacts from mobile sources traveling over the roadways. The SCAQMD recommends that any project over five acres should perform air quality dispersion modeling to assess impacts to nearby sensitive receptors.

Cumulative Emissions Thresholds

The SCAQMD's *2016 Air Quality Management Plan* (2016 AQMP) was prepared to accommodate growth, meet State and Federal air quality standards, and minimize the fiscal impact that pollution control measures have on the local economy. According to the SCAQMD *CEQA Air Quality Handbook*, project-related emissions that fall below the established construction and operational thresholds should be considered less than significant unless there is pertinent information to the contrary. If a project exceeds these emission thresholds, the SCAQMD *CEQA Air Quality Handbook* states that the significance of a project's contribution to cumulative impacts should be determined based on whether the rate of growth in average daily trips exceeds the rate of growth in population.

City of Fontana

General Plan Update 2015-2035

The City of Fontana adopted the *General Plan Update 2015-2035* (General Plan Update) on November 13, 2018. Chapter 12 Sustainability and Resilience of the General Plan Update[1] identifies goals and policies to pursue sustainability and resilience by making resource-efficient choices to conserve water, energy, and materials, improve air quality, and adjust to changing conditions. The following goals and policies help improve air quality and are applicable to the proposed project:

- **Goal 5:** Green building techniques are used in new development and retrofits.
  - Policy: Promote green building through guidelines, awards and nonfinancial incentives.

- **Goal 6:** Fontana is a leader energy-efficient development and retrofits.
  - Policy 1: Promote energy-efficient development in Fontana.
  - Policy 2: Meet or exceed state goals for energy-efficient new construction.

CALIFORNIA ENVIRONMENTAL QUALITY ACT (CEQA) THRESHOLDS

The environmental analysis in this memorandum is patterned after the Initial Study Checklist recommended by the *CEQA Guidelines*, as amended. The issues presented in the Initial Study Checklist have been utilized as thresholds of significance in this section. Accordingly, a project may create a significant environmental impact if it causes one or more of the following to occur:

- Conflict with or obstruct implementation of the applicable air quality plan (refer to Impact AQ-1);

- Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is in nonattainment under an applicable Federal or State ambient air quality standard (refer to Impact AQ-2);

- Expose sensitive receptors to substantial pollutant concentrations (refer to Impact AQ-3); and

- Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people (refer to Impact AQ-4).

AIR QUALITY IMPACTS

Impact AQ-1: Would the project conflict with or obstruct implementation of the applicable air quality plan?

Less Than Significant Impact. The City is located within the South Coast Air Basin (Basin). The SCAQMD has jurisdiction in the Basin, which has a history of recorded air quality violations and is an area where both State and Federal ambient air quality standards are exceeded. Areas that meet ambient air quality standards are classified as attainment areas, while areas that do not meet these standards are classified

[1] City of Fontana, *General Plan Update 2015-2035, Chapter 12 Sustainability and Resilience*, November 13, 2018, https://www.fontana.org/DocumentCenter/View/26751/Chapter-12---Sustainability-and-Resilience, accessed March 27, 2020.

as nonattainment areas. The SCAQMD is required, pursuant to the Federal Clean Air Act, to reduce emissions of the air pollutants for which the Basin is in nonattainment.

In order to reduce emissions, the SCAQMD adopted the 2016 AQMP which establishes a program of rules and regulations directed at reducing air pollutant emissions and achieving State and Federal air quality standards. The 2016 AQMP is a regional and multi-agency effort including the SCAQMD, CARB, the Southern California Association of Governments (SCAG), and the U.S. Environmental Protection Agency (EPA).

The 2016 AQMP pollutant control strategies are based on the latest scientific and technical information and planning assumptions, including the *2016-2040 Regional Transportation Plan/Sustainable Communities Strategy* (RTP/SCS), updated emission inventory methodologies for various source categories, and SCAG's latest growth forecasts. SCAG's latest growth forecasts were defined in consultation with local governments and with reference to local general plans. The SCAQMD considers projects that are consistent with the AQMP, which is intended to bring the Basin into attainment for all criteria pollutants, to also have less than significant cumulative impacts.

Criteria for determining consistency with the AQMP are defined by the following indicators:

Criterion 1:

With respect to the first criterion, SCAQMD methodologies require that an air quality analysis for a project include forecasts of project emissions in relation to contributing to air quality violations and delay of attainment.

a) *Would the project result in an increase in the frequency or severity of existing air quality violations?*

   Since the consistency criteria identified under the first criterion pertains to pollutant concentrations, rather than to total regional emissions, an analysis of the project's pollutant emissions relative to localized pollutant concentrations is used as the basis for evaluating project consistency. As discussed in Impact AQ-3 below, localized concentrations of CO, NO_X, and particulate matter (PM_{10} and $PM_{2.5}$) would be less than significant. Therefore, the proposed project would not result in an increase in the frequency or severity of existing air quality violations. Because reactive organic gasses (ROGs) are not a criteria pollutant, there is no ambient standard or localized threshold for ROGs. Due to the role ROGs play in ozone formation, it is classified as a precursor pollutant and only a regional emissions threshold has been established.

b) *Would the project cause or contribute to new air quality violations?*

   As discussed below in Impacts AQ-2 and AQ-3, the proposed project would result in emissions that would be below the SCAQMD's thresholds for regional and localized emissions. Therefore, the proposed project would not have the potential to cause or affect a violation of the ambient air quality standards.

c) *Would the project delay timely attainment of air quality standards or the interim emissions reductions specified in the AQMP?*

The proposed project would result in less than significant impacts with regard to localized concentrations during project construction. As such, the proposed project would not delay the timely attainment of air quality standards or 2016 AQMP emissions reductions.

Criterion 2:

With respect to the second criterion for determining consistency with SCAQMD and SCAG air quality policies, it is important to recognize that air quality planning within the Basin focuses on attainment of ambient air quality standards at the earliest feasible date. Projections for achieving air quality goals are based on assumptions regarding population, housing, and growth trends. Thus, the SCAQMD's second criterion for determining project consistency focuses on whether or not the proposed project exceeds the assumptions utilized in preparing the forecasts presented in the 2016 AQMP. Determining whether or not a project exceeds the assumptions reflected in the 2016 AQMP involves the evaluation of the three criteria outlined below. The following discussion provides an analysis of each of these criteria.

a) *Would the project be consistent with the population, housing, and employment growth projections utilized in the preparation of the AQMP?*

A project is consistent with the 2016 AQMP in part if it is consistent with the population, housing, and employment assumptions that were used in the development of the 2016 AQMP. In the case of the 2016 AQMP, three sources of data form the basis for the projections of air pollutant emissions: The City's General Plan Update, SCAG's regional growth forecast, and the SCAG RTP/SCS. The RTP/SCS also provides socioeconomic forecast projections of regional population growth.

The project proposes the construction of 107 multi-family residential units with on-site recreational facilities on a 10.2-acre site. The project would also include General Plan Amendment No. 19-006 and Zone Change to change designation of the project site from General Commercial to Medium Density Residential. The project would not differ from the General Plan Amendment or the Zone Change Land Use Designation. Therefore, the proposed project is considered consistent with the General Plan Update, and is consistent with the types, intensity, and patterns of land use envisioned for the site vicinity.

The City's population estimate as of January 1, 2019 is 212,078 persons.[2] The project would induce population growth directly through the construction of 107 residential units. Assuming 100 percent occupancy and 4.12 persons per household, the maximum population growth associated with project implementation would be approximately 441 persons.[3] This growth would not cause SCAG's 2035 population forecast of 266,300 to be exceeded.[4] As the project would not cause SCAG's 2035 population forecast to be exceeded, the project would not cause the City's General Plan buildout population forecast to be exceeded. The population, housing, and employment forecasts, which are adopted by SCAG's Regional Council, are based on the local plans and policies applicable to the City. Additionally, as the SCAQMD has incorporated these

[2] California Department of Finance, *Population and Housing Estimates for Cities, Counties, and the State, 2011-2019 with 2010 Census Benchmark*, http://www.dof.ca.gov/Forecasting/Demographics/Estimates/E-5/, accessed April 16, 2020.

[3] Ibid.

[4] Southern California Association of Governments, *2016-2040 RTP/SCS Final Growth Forecast by Jurisdiction*, http://www.scag.ca.gov/Documents/2016_2040RTPSCS_FinalGrowthForecastbyJurisdiction.pdf, accessed April 16, 2020.

same projections into the 2016 AQMP, it can be concluded that the proposed project would be consistent with the projections.

b) *Would the project implement all feasible air quality mitigation measures?*

The proposed project would not require mitigation and would result in less than significant air quality impacts; refer to Impacts AQ-2 and AQ-3. In addition, the project would comply with all applicable SCAQMD rules and regulations, including Rule 403 that requires excessive fugitive dust emissions controlled by regular watering or other dust prevention measures and Rule 1113 that regulates the ROG content of paint. As such, the proposed project meets this AQMP consistency criterion.

c) *Would the project be consistent with the land use planning strategies set forth in the AQMP?*

As discussed above, the project would be consistent with the land use envisioned in the General Plan Amendment and the Zone Change. Furthermore, the project would not cause SCAG's 2040 population forecast to be exceeded. The population, housing, and employment forecasts, which are adopted by SCAG's Regional Council, are based on the local plans and policies applicable to the City. Additionally, SCAQMD has incorporated these same projections into the 2016 AQMP. As such, the proposed project meets this AQMP consistency criterion.

In conclusion, the determination of 2016 AQMP consistency is primarily concerned with the long-term influence of a project on air quality in the Basin. The proposed project would not result in a long-term impact on the region's ability to meet State and Federal air quality standards. Also, the proposed project would be consistent with the goals and policies of the 2016 AQMP for control of fugitive dust. As discussed above, the proposed project's long-term influence would also be consistent with the SCAQMD and SCAG's goals and policies and is, therefore, considered consistent with the 2016 AQMP.

Mitigation Measures: No mitigation is required.

Impact AQ-2: Would the project 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?

Less Than Significant Impact.

Short-Term Construction

The project involves construction activities associated with site preparation, grading, building construction, paving, and architectural coating applications. The project would be constructed over approximately 14 months. Exhaust emission factors for typical diesel-powered heavy equipment are based on the program defaults of the most recent version of the California Emissions Estimator Model (CalEEMod), version 2016.3.2. Variables factored into estimating the total construction emissions include the level of activity, length of construction period, number of pieces and types of equipment in use, site characteristics, weather conditions, number of construction personnel, and the amount of materials to be transported on- or off-site. The analysis of daily construction emissions has been prepared using CalEEMod. Refer to Appendix A, *Air Quality Emissions Data*, for the CalEEMod outputs and results. Table 3, *Short-Term Construction Emissions*, presents the anticipated daily short-term construction emissions.

Table 3
Short-Term Construction Emissions

Emissions Source	Pollutant (pounds/day)[1]					
	ROG	NO_X	CO	SO_2	PM_{10}	$PM_{2.5}$
Year 1						
Construction Related Emissions[2]	7.40	79.54	53.18	0.12	8.90	5.62
Year 2						
Construction Related Emissions[2]	42.94	37.51	33.15	0.08	2.59	1.86
SCAQMD Thresholds	*75*	*100*	*550*	*150*	*150*	*55*
Is Threshold Exceeded?	***No***	***No***	***No***	***No***	***No***	***No***

Notes:
1. Emissions were calculated using CalEEMod, version 2016.3.2.
2. Modeling assumptions include compliance with SCAQMD Rule 403 which requires: properly maintain mobile and other construction equipment; replace ground cover in disturbed areas quickly; water exposed surfaces three times daily; cover stock piles with tarps; water all haul roads twice daily; and limit speeds on unpaved roads to 15 miles per hour.

Source: Refer to Appendix A, for detailed model input/output data.

Fugitive Dust Emissions

Construction activities are a source of fugitive dust emissions that may have a substantial, temporary impact on local air quality. In addition, fugitive dust may be a nuisance to those living and working in the project area. Fugitive dust emissions are associated with land clearing, ground excavation, cut-and-fill, and truck travel on unpaved roadways. Fugitive dust emissions vary substantially from day to day, depending on the level of activity, specific operations, and weather conditions. Fugitive dust from site preparation, grading, and construction is expected to be short-term and would cease upon project completion. It should be noted that most of this material is inert silicates, rather than the complex organic particulates released from combustion sources, which are more harmful to health.

Dust (larger than 10 microns) generated by such activities usually becomes more of a local nuisance than a serious health problem. Of particular health concern is the amount of PM_{10} (particulate matter smaller than 10 microns) generated as a part of fugitive dust emissions. PM_{10} poses a serious health hazard alone or in combination with other pollutants. $PM_{2.5}$ is mostly produced by mechanical processes. These include automobile tire wear, industrial processes such as cutting and grinding, and re-suspension of particles from the ground or road surfaces by wind and human activities such as construction or agriculture. $PM_{2.5}$ is mostly derived from combustion sources, such as automobiles, trucks, and other vehicle exhaust, as well as from stationary sources. These particles are either directly emitted or are formed in the atmosphere from the combustion of gases such as NO_X and sulfur oxides (SO_X) combining with ammonia. $PM_{2.5}$ components from material in the earth's crust, such as dust, are also present, with the amount varying in different locations.

Construction activities would comply with SCAQMD Rule 403, which requires that excessive fugitive dust emissions be controlled by regular watering or other dust prevention measures. Adherence to SCAQMD Rule 403 would greatly reduce PM_{10} and $PM_{2.5}$ concentrations. It should be noted that these reductions were applied in CalEEMod. As depicted in Table 3, total PM_{10} and $PM_{2.5}$ emissions would not exceed the SCAQMD thresholds during construction. Thus, construction-related air quality impacts from fugitive dust emissions would be less than significant.

Construction Equipment and Worker Vehicle Exhaust

Exhaust emissions (e.g., NO_x and CO) from construction activities include emissions associated with the transport of machinery and supplies to and from the project site, emissions produced on-site as the equipment is used, and emissions from trucks transporting materials to/from the site. As presented in Table 3, construction equipment and worker vehicle exhaust emissions would be below the established SCAQMD thresholds. Therefore, air quality impacts from equipment and vehicle exhaust emission would be less than significant.

ROG Emissions

In addition to gaseous and particulate emissions, the application of asphalt and surface coatings creates ROG emissions, which are O_3 precursors. As required, all architectural coatings for the proposed project structures would comply with SCAQMD *Regulation XI, Rule 1113 – Architectural Coating*. Rule 1113 provides specifications on painting practices as well as regulates the ROG content of paint. ROG emissions associated with the proposed project would be less than significant; refer to Table 3.

Total Daily Construction Emissions

In accordance with the SCAQMD Guidelines, CalEEMod was utilized to model construction emissions for ROG, NO_X, CO, SO_X, PM_{10}, and $PM_{2.5}$. As indicated in Table 3, criteria pollutant emissions during construction of the proposed project would not exceed the SCAQMD significance thresholds. Thus, total construction related air emissions would be less than significant.

Asbestos

Asbestos is a term used for several types of naturally occurring fibrous minerals that are a human health hazard when airborne. The most common type of asbestos is chrysotile, but other types such as tremolite and actinolite are also found in California. Asbestos is classified as a known human carcinogen by State, Federal, and international agencies and was identified as a toxic air contaminant by the CARB in 1986.

Asbestos can be released from serpentinite and ultramafic rocks when the rock is broken or crushed. At the point of release, the asbestos fibers may become airborne, causing air quality and human health hazards. These rocks have been commonly used for unpaved gravel roads, landscaping, fill projects, and other improvement projects in some localities. Asbestos may be released to the atmosphere due to vehicular traffic on unpaved roads, during grading for development projects, and at quarry operations. All of these activities may have the effect of releasing potentially harmful asbestos into the air. Natural weathering and erosion processes can act on asbestos bearing rock and make it easier for asbestos fibers to become airborne if such rock is disturbed. According to the Department of Conservation Division of Mines and Geology, *A General Location Guide for Ultramafic Rocks in California – Areas More Likely to Contain Naturally Occurring Asbestos Report*[5], serpentinite and ultramafic rocks are not known to occur within the project area. Thus, there would be no impact in this regard.

[5] Department of Conservation Division of Mines and Geology, *A General Location Guide for Ultramafic Rocks in California – Areas More Likely to Contain Naturally Occurring Asbestos Report*, August 2000, https://ww3.arb.ca.gov/toxics/asbestos/ofr_2000-019.pdf, accessed March 27, 2020.

Long-Term (Operational) Emissions

CalEEMod was used to calculate the long-term emissions from the operation of the proposed project. Emissions from each source are discussed in more detail below.

Mobile Source Emissions

Mobile sources are emissions from motor vehicles, including tailpipe and evaporative emissions. Depending upon the pollutant being discussed, the potential air quality impact may be of either regional or local concern. For example, ROG, NO_X, SO_X, PM_{10}, and $PM_{2.5}$ are all pollutants of regional concern (NO_X and ROG react with sunlight to form O_3 [photochemical smog], and wind currents readily transport SO_X, PM_{10}, and $PM_{2.5}$); however, CO tends to be a localized pollutant, dispersing rapidly at the source. Based on the *Highland Residential Focused Traffic Impact Analysis* (Traffic Impact Analysis) developed by Urban Crossroads (dated March 10, 2020)[6], typical daily activities are forecast to generate 1,010 average daily trips, including 80 trips during the a.m. peak hour and 106 trips during the p.m. peak hour. Table 4, *Long-Term Operational Air Emissions*, presents the anticipated mobile source emissions. As shown in Table 4, emissions generated by vehicle traffic associated with the project would not exceed established SCAQMD thresholds. Impacts from mobile source air emissions would be less than significant.

Table 4
Long-Term Operational Air Emissions

Emissions Source	Pollutant (lbs/day)[1]					
	ROG	NO_X	CO	SO_X	PM_{10}	$PM_{2.5}$
Proposed Project Summer Emissions						
Area Source Emissions	4.93	1.70	9.53	0.01	0.18	0.18
Energy Emissions	0.10	0.83	0.35	<0.01	0.07	0.07
Mobile Emissions[2]	1.76	9.00	23.51	0.09	7.41	2.03
Total Emissions[3]	**6.79**	**11.53**	**33.39**	**0.11**	**7.65**	**2.27**
SCAQMD Threshold	*55*	*55*	*550*	*150*	*150*	*55*
Is Threshold Exceeded?	***No***	***No***	***No***	***No***	***No***	***No***
Proposed Project Winter Emissions						
Area Source Emissions	4.93	1.70	9.53	0.01	0.18	0.18
Energy Emissions	0.10	0.83	0.35	<0.01	0.07	0.07
Mobile Emissions[2]	1.67	9.18	21.95	0.08	7.41	2.03
Total Emissions[3]	**6.70**	**11.70**	**31.83**	**0.10**	**7.65**	**2.27**
SCAQMD Threshold	*55*	*55*	*550*	*150*	*150*	*55*
Is Threshold Exceeded?	***No***	***No***	***No***	***No***	***No***	***No***

Notes:
1. Emissions were calculated using CalEEMod, version 2016.3.2.
2. The mobile source emissions were calculated using the trip generation data provided in the Urban Crossroads, *Highland Residential Focused Traffic Impact Analysis*, dated March 10, 2020.
3. The numbers may be slightly off due to rounding.

Source: Refer to Appendix A, for detailed model input/output data.

[6] Urban Crossroads, *Highland Residential Focused Traffic Impact Analysis*, dated March 10, 2020.

Area Source Emissions

Area source emissions would be generated from consumer products, architectural coating, and landscaping. As shown in Table 4, area source emissions from the proposed project would not exceed SCAQMD thresholds for ROG, NO_X, CO, SO_X, PM_{10}, or $PM_{2.5}$.

Energy Source Emissions

Energy source emissions would be generated as a result of electricity and natural gas (non-hearth) usage associated with the proposed project. The primary use of electricity and natural gas by the project would be for space heating and cooling, water heating, ventilation, lighting, appliances, and electronics. As shown in Table 4, energy source emissions from the proposed project would not exceed SCAQMD thresholds for ROG, NO_X, CO, SO_X, PM_{10}, or $PM_{2.5}$.

Air Quality Health Impacts

Adverse health effects induced by criteria pollutant emissions are highly dependent on a multitude of interconnected variables (e.g., cumulative concentrations, local meteorology and atmospheric conditions, and the number and character of exposed individual [e.g., age, gender]). In particular, ozone precursors ROGs and NO_x affect air quality on a regional scale. Health effects related to ozone are therefore the product of emissions generated by numerous sources throughout a region. Existing models have limited sensitivity to small changes in criteria pollutant concentrations, and, as such, translating project-generated criteria pollutants to specific health effects or additional days of nonattainment would produce meaningless results. In other words, the project's less than significant increases in regional air pollution from criteria air pollutants would have nominal or negligible impacts on human health.

As noted in the Brief of Amicus Curiae by the SCAQMD,[7] the SCAQMD acknowledged that it would be extremely difficult, if not impossible to quantify health impacts of criteria pollutants for various reasons including modeling limitations as well as where in the atmosphere air pollutants interact and form. Further, as noted in the Brief of Amicus Curiae by the San Joaquin Valley Air Pollution Control District (SJVAPCD),[8] SJVAPCD has acknowledged that currently available modeling tools are not equipped to provide a meaningful analysis of the correlation between an individual development project's air emissions and specific human health impacts.

The SCAQMD acknowledges that health effects quantification from ozone, as an example is correlated with the increases in ambient level of ozone in the air (concentration) that an individual person breathes. SCAQMD's Brief of Amicus Curiae states that it would take a large amount of additional emissions to cause a modeled increase in ambient ozone levels over the entire region. The SCAQMD states that based on their own modeling in the SCAQMD's *2012 Air Quality Management Plan*, a reduction of 432 tons (864,000 pounds) per day of NO_X and a reduction of 187 tons (374,000 pounds) per day of VOCs would reduce ozone levels at highest monitored site by only nine parts per billion. As such, the SCAQMD concludes that it is not currently possible to accurately quantify ozone-related health impacts caused by NO_X or VOC

[7] South Coast Air Quality Management District, *Application of the South Coast Air Quality Management District for Leave to File Brief of Amicus Curiae in Support of Neither Party and Brief of Amicus Curiae. In the Supreme Court of California. Sierra Club, Revive the San Joaquin, and League of Women Voters of Fresno v. County of Fresno*, 2014.

[8] San Joaquin Valley Air Pollution Control District, *Application for Leave to File Brief of Amicus Curiae Brief of San Joaquin Valley Unified Air Pollution Control District in Support of Defendant and Respondent, County of Fresno and Real Party In Interest and Respondent, Friant Ranch, L.P. In the Supreme Court of California. Sierra Club, Revive the San Joaquin, and League of Women Voters of Fresno v. County of Fresno*, 2014.

emissions from relatively small projects (defined as projects with regional scope) due to photochemistry and regional model limitations. As such, for the purpose of this analysis, since the project would not exceed SCAQMD thresholds for construction and operational air emissions, the project would have a less than significant impact for air quality health impacts as well.

Cumulative Conclusion

With respect to the proposed project's construction-related air quality emissions and cumulative Basin-wide conditions, the SCAQMD has developed strategies to reduce criteria pollutant emissions outlined in the 2016 AQMP pursuant to FCAA mandates. As such, the proposed project would comply with SCAQMD Rule 403 requirements and the adopted 2016 AQMP emissions control measures. Rule 403 requires that fugitive dust be controlled with the best available control measures in order to reduce dust so that it does not remain visible in the atmosphere beyond the property line of the proposed project. Per SCAQMD rules and mandates, as well as the CEQA requirement that significant impacts be mitigated to the extent feasible, these same requirements (i.e., Rule 403 compliance, the implementation of all feasible mitigation measures, and compliance with adopted 2016 AQMP emissions control measures) would also be imposed on construction projects throughout the Basin, which would include related projects.

As discussed previously, the proposed project would not result in short- or long-term air quality impacts, as emissions would not exceed the SCAQMD adopted construction or operational thresholds. Additionally, adherence to SCAQMD rules and regulations would alleviate potential impacts related to cumulative conditions on a project-by-project basis. Emission reduction technology, strategies, and plans are constantly being developed. As a result, the proposed project would not contribute a cumulatively considerable net increase of any nonattainment criteria pollutant. Therefore, the project's incremental operational impacts would be less than cumulatively considerable, and impacts in this regard are less than significant.

Mitigation Measures: No mitigation is required.

Impact AQ-3: Would the project expose sensitive receptors to substantial pollutant concentrations?

Less Than Significant Impact. Sensitive receptors are defined as facilities or land uses that include members of the population that are particularly sensitive to the effects of air pollutants, such as children, the elderly, and people with illnesses. Examples of these sensitive receptors are residences, schools, hospitals, and daycare centers. CARB has identified the following groups of individuals as the most likely to be affected by air pollution: the elderly over 65, children under 14, athletes, and persons with cardiovascular and chronic respiratory diseases such as asthma, emphysema, and bronchitis.

For the purpose of LST analysis, SCAQMD considers a sensitive receptor to be a receptor where it is possible that an individual could remain for 24 hours. Following this definition, the closest sensitive receptor for the LST analysis is the residences located approximately 80 feet to the south of the project site. In order to identify impacts to sensitive receptors, the SCAQMD recommends addressing LSTs for construction and operations impacts (area sources only). The CO hotspot analysis, following the LST analysis, addresses localized mobile source impacts.

Localized Significance Thresholds

LSTs were developed in response to SCAQMD Governing Boards' Environmental Justice Enhancement Initiative (I-4). The SCAQMD provided the Final Localized Significance Threshold Methodology (dated June 2003 [revised 2008])[9] for guidance. The LST methodology assists lead agencies in analyzing localized air quality impacts. The SCAQMD provides the LST screening lookup tables for one-, two-, and five-acre projects emitting CO, NO_X, $PM_{2.5}$, or PM_{10}. The LST methodology and associated mass rates are not designed to evaluate localized impacts from mobile sources traveling over the roadways. The SCAQMD recommends that any project over five acres should perform air quality dispersion modeling to assess impacts to nearby sensitive receptors. The project is in SRA 34 (Central San Bernardino Valley).

Construction

Because CalEEMod calculates construction emissions based on the number of equipment hours and the maximum daily soil disturbance activity possible for each piece of equipment, Table 5, *Grading Equipment Rates*, is used to determine the maximum daily disturbed acreage for comparison to LSTs.

Table 5
Grading Equipment Rates

Construction Phase	Equipment Type	Equipment Quantity	Acres Disturbed per 8-Hour Day	Operating Hours per Day	Acres Disturbed per Day
Grading	Tractors	2	0.5	8	1
	Scrapers	4	1	8	4
				Total Acres Disturbed per Day	**5**[1]

Notes:
1. Although the site is approximately 10.2 acres, the total acres disturbed per day is based on the number of equipment hours and the maximum daily soil disturbance activity possible for each piece of equipment.

Source: South Coast Air Quality Management District, *Final Localized Significance Threshold Methodology*, July 2008.

Based on the equipment list provided by the project applicant, the project during the site preparation phase would disturb up to five acres per day. Therefore, the LST thresholds for five acres is used for the construction LST analysis. The nearest sensitive uses are approximately 24 meters (i.e. 80 feet) to the south of the project site. According to SCAQMD LST Methodology, projects with boundaries located closer than 25 meters to the nearest receptor should use the LSTs for receptors located at 25 meters. Therefore, the LST value for 5 acres and 25 meters was adopted. Table 6, *Localized Significance of Construction Emissions*, shows the localized construction-related emissions. It is noted that the localized emissions presented in Table 6 are less than those in Table 3 because localized emissions include only on-site grading emissions (i.e., from construction equipment and fugitive dust). As seen in Table 6, emissions would not exceed the LSTs for SRA 34. Construction LST impacts would be less than significant in this regard.

[9] South Coast Air Quality Management District, *Final Localized Significance Threshold Methodology*, July 2008.

Table 6
Localized Significance of Construction Emissions

Maximum Emissions	Pollutant (pounds/day)			
	NO_X	CO	PM_{10}	$PM_{2.5}$
Maximum Daily Emissions (on-site)[1, 2]	78.33	52.10	8.76	5.58
Localized Significance Threshold[3]	270	1,720	14	8
Thresholds Exceeded?	***No***	***No***	***No***	***No***

Note:
1. Maximum on-site daily emissions occur during Grading phase for NOx and CO and Site Preparation phase for PM_{10} and $PM_{2.5}$.
2. Modeling assumptions include compliance with SCAQMD Rule 403 which requires: properly maintain mobile and other construction equipment; replace ground cover in disturbed areas quickly; water exposed surfaces three times daily; cover stock piles with tarps; water all haul roads twice daily; and limit speeds on unpaved roads to 15 miles per hour.
3. The Localized Significance Threshold was determined using Appendix C of the SCAQMD *Final Localized Significant Threshold Methodology* guidance document for pollutants NO_X, CO, PM_{10}, and $PM_{2.5}$. The Localized Significance Threshold was based on the anticipated daily acreage disturbance for construction (the thresholds for 5 acres was used), the distance to sensitive receptors (25 meters), and the source receptor area (SRA 34).

Operations

According to SCAQMD localized significance threshold methodology, LSTs would apply to the operational phase of a proposed project if the project includes stationary sources or attracts mobile sources that may spend extended periods queuing and idling at the site (e.g., warehouse or transfer facilities). The proposed project does not include such uses. Thus, due to the lack of such emissions, no long-term localized significance threshold analysis is necessary. Operational LST impacts would be less than significant in this regard.

Carbon Monoxide Hotspots

CO emissions are a function of vehicle idling time, meteorological conditions, and traffic flow. Under certain extreme meteorological conditions, CO concentrations near a congested roadway or intersection may reach unhealthful levels (i.e., adversely affecting residents, school children, hospital patients, the elderly, etc.).

The SCAQMD requires a quantified assessment of CO hotspots when a project increases the volume-to-capacity ratio (also called the intersection capacity utilization) by 0.02 (two percent) for any intersection with an existing level of service LOS D or worse. Because traffic congestion is highest at intersections where vehicles queue and are subject to reduced speeds, these hot spots are typically produced at intersections.

The Basin is designated as an attainment/maintenance area for the Federal CO standards and an attainment area for State standards. There has been a decline in CO emissions even though vehicle miles traveled on U.S. urban and rural roads have increased. Nationwide estimated anthropogenic CO emissions have decreased 68 percent between 1990 and 2014. In 2014, mobile sources accounted for 82 percent of the nation's total anthropogenic CO emissions.[10] CO emissions have continued to decline since this time. The Basin was re-designated as attainment in 2007, and is no longer addressed in the SCAQMD's

[10] United States Environmental Protection Agency, *Carbon Monoxide Emissions*, https://cfpub.epa.gov/roe/indicator_pdf.cfm?i=10, accessed March 27, 2020.

AQMP. Three major control programs have contributed to the reduced per-vehicle CO emissions: exhaust standards, cleaner burning fuels, and motor vehicle inspection/maintenance programs.

A detailed CO analysis was conducted in the Federal Attainment Plan for Carbon Monoxide (CO Plan) for the SCAQMD's *2003 Air Quality Management Plan*, which is the most recent AQMP that addresses CO concentrations. The locations selected for microscale modeling in the CO Plan are worst-case intersections in the Basin, and would likely experience the highest CO concentrations. Thus, CO analysis within the CO Plan is utilized in a comparison to the proposed project, since it represents a worst-case scenario with heavy traffic volumes within the Basin.

Of these locations, the Wilshire Boulevard/Veteran Avenue intersection in Los Angeles County experienced the highest CO concentration (4.6 parts per million [ppm]), which is well below the 35-ppm 1-hr CO Federal standard. The Wilshire Boulevard/Veteran Avenue intersection is one of the most congested intersections in Southern California with an ADT volume of approximately 100,000 vehicles per day. As the CO hotspots were not experienced at the Wilshire Boulevard/Veteran Avenue intersection, it can be reasonably inferred that CO hotspots would not be experienced at any intersections within the City of Fontana near the project site due to the comparatively low volume of traffic (a maximum of 1,010 average daily trips, including 80 trips during the a.m. peak hour and 106 trips during the p.m. peak hour) that would occur as a result of project implementation. Therefore, impacts would be less than significant in this regard.

Mitigation Measures: No mitigation is required.

Impact AQ-4: Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?

Less Than Significant Impact. According to the SCAQMD *CEQA Air Quality Handbook*, land uses associated with odor complaints typically include agricultural uses, wastewater treatment plants, food processing plants, chemical plants, composting, refineries, landfills, dairies, and fiberglass molding. The proposed project does not include any uses identified by the SCAQMD as being associated with odors.

Construction activities associated with the project may generate detectable odors from heavy-duty equipment exhaust and architectural coatings. However, construction-related odors would be short-term in nature and cease upon project completion. In addition, the project would be required to comply with the California Code of Regulations, Title 13, Sections 2449(d)(3) and 2485, which minimizes the idling time of construction equipment either by shutting it off when not in use or by reducing the time of idling to no more than five minutes. This would further reduce the detectable odors from heavy-duty equipment exhaust. The project would also comply with the SCAQMD Regulation XI, *Rule 1113 – Architectural Coating*, which would minimize odor impacts from ROG emissions during architectural coating. Any impacts to existing adjacent land uses would be short-term and are less than significant.

Mitigation Measures: No mitigation is required.

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7. San Joaquin Valley Air Pollution Control District, *Application for Leave to File Brief of Amicus Curiae Brief of San Joaquin Valley Unified Air Pollution Control District in Support of Defendant and Respondent, County of Fresno and Real Party In Interest and Respondent, Friant Ranch, L.P. In the Supreme Court of California. Sierra Club, Revive the San Joaquin, and League of Women Voters of Fresno v. County of Fresno, 2014.*

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9. Southern California Association of Governments, 2016-2040 RTP/SCS Final Growth Forecast by Jurisdiction, http://www.scag.ca.gov/Documents/2016_2040RTPSCS_FinalGrowthForecastbyJurisdiction.pdf, accessed April 16, 2020.

10. South Coast Air Quality Management District, *Final 2016 Air Quality Management Plan*, March 2017.

11. South Coast Air Quality Management District, *CEQA Air Quality Handbook,* November 1993.

12. South Coast Air Quality Management District, *SCAQMD Air Quality Significance Thresholds*, March 2015.

13. South Coast Air Quality Management District, *Final Localized Significance Threshold Methodology*, July 2008.

14. United States Environmental Protection Agency¸ *Carbon Monoxide Emissions*, https://cfpub.epa.gov/roe/indicator_pdf.cfm?i=10, accessed March 27, 2020.

15. United States Environmental Protection Agency¸ *Revisions to the General Conformity Regulations*, March 24, 2010, https://www.epa.gov/sites/production/files/2016-03/documents/20100324rule.pdf, accessed March 27, 2020.

16. Urban Crossroads, *Highland Residential Focused Traffic Impact Analysis*, dated March 10, 2020.

Websites / Programs

1. Google Earth, 2020.

2. South Coast Air Quality Management District, California Emissions Estimator Model (CalEEMod), version 2016.3.2.

Appendix A

Air Quality Emissions Data

Highland Residential

South Coast AQMD Air District, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Parking Lot	107.00	Space	0.96	42,800.00	0
City Park	0.38	Acre	0.38	16,552.80	0
Single Family Housing	107.00	Dwelling Unit	8.88	192,600.00	306

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	31
Climate Zone	10			**Operational Year**	2022
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	702.44	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - 107 open guest parking spaces; park+recreation center area estimated from site plan; total site area 10.22 acres

Construction Phase - construction schedule provided by project applicant

Off-road Equipment -

Off-road Equipment - equipment list provided by project applicant

Off-road Equipment - equipment list provided by project applicant

Off-road Equipment - equipment list provided by project applicant

Off-road Equipment - equipment list provided by project applicant

Trips and VMT - project applicant estimated 10 cubic yards/truck, 5-mile roundtrip distance during site preparation and 1-mile roundtrip distance during grading

Grading - total site area 10.22

Architectural Coating - SCAQMD Rule 1113 - low VOC painting

Vehicle Trips - trip generation rate from TIA Table 4-1 dated March 10, 2020

Area Coating - SCAQMD Rule 1113 - low VOC painting

Construction Off-road Equipment Mitigation - SCAQMD Rule 403

Area Mitigation - SCAQMD Rule 445 - no wood-burning devices in new development

Table Name	Column Name	Default Value	New Value
tblArchitecturalCoating	EF_Nonresidential_Exterior	100.00	50.00
tblArchitecturalCoating	EF_Nonresidential_Interior	100.00	50.00
tblArchitecturalCoating	EF_Parking	100.00	50.00
tblAreaCoating	Area_EF_Nonresidential_Exterior	100	50
tblAreaCoating	Area_EF_Nonresidential_Interior	100	50
tblAreaCoating	Area_EF_Parking	100	50
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstructionPhase	NumDays	10.00	15.00
tblConstructionPhase	NumDays	30.00	45.00
tblConstructionPhase	NumDays	300.00	180.00
tblConstructionPhase	NumDays	20.00	30.00
tblConstructionPhase	NumDays	20.00	30.00
tblGrading	AcresOfGrading	202.50	10.22
tblGrading	MaterialExported	0.00	2.00
tblGrading	MaterialImported	0.00	5,000.00
tblLandUse	LotAcreage	34.74	8.88
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	4.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	1.00
tblTripsAndVMT	HaulingTripLength	20.00	5.00
tblTripsAndVMT	HaulingTripLength	20.00	1.00
tblTripsAndVMT	HaulingTripNumber	0.00	75.00

tblTripsAndVMT	HaulingTripNumber	625.00	500.00
tblTripsAndVMT	WorkerTripNumber	18.00	10.00
tblTripsAndVMT	WorkerTripNumber	30.00	25.00
tblVehicleTrips	ST_TR	22.75	0.00
tblVehicleTrips	ST_TR	9.91	9.44
tblVehicleTrips	SU_TR	16.74	0.00
tblVehicleTrips	SU_TR	8.62	9.44
tblVehicleTrips	WD_TR	1.89	0.00
tblVehicleTrips	WD_TR	9.52	9.44

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2021	7.3884	79.5417	53.1800	0.1231	18.2000	3.2071	20.2732	9.9663	2.9505	11.8737	0.0000	11,948.8102	11,948.8102	3.7486	0.0000	12,042.5241
2022	42.9434	37.5059	33.1454	0.0814	0.8386	1.7548	2.5934	0.2254	1.6314	1.8569	0.0000	7,897.5756	7,897.5756	1.9894	0.0000	7,947.3095
Maximum	**42.9434**	**79.5417**	**53.1800**	**0.1231**	**18.2000**	**3.2071**	**20.2732**	**9.9663**	**2.9505**	**11.8737**	**0.0000**	**11,948.8102**	**11,948.8102**	**3.7486**	**0.0000**	**12,042.5241**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					

2021	7.3884	79.5417	53.1800	0.1231	6.8273	3.2071	8.9004	3.7150	2.9505	5.6224	0.0000	11,948.8102	11,948.8102	3.7486	0.0000	12,042.5241
2022	42.9434	37.5059	33.1454	0.0814	0.8386	1.7548	2.5934	0.2254	1.6314	1.8569	0.0000	7,897.5756	7,897.5756	1.9894	0.0000	7,947.3095
Maximum	**42.9434**	**79.5417**	**53.1800**	**0.1231**	**6.8273**	**3.2071**	**8.9004**	**3.7150**	**2.9505**	**5.6224**	**0.0000**	**11,948.8102**	**11,948.8102**	**3.7486**	**0.0000**	**12,042.5241**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**59.74**	**0.00**	**49.74**	**61.34**	**0.00**	**45.53**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	32.7824	2.3221	63.2632	0.1393		8.2224	8.2224		8.2224	8.2224	1,002.2603	1,941.9186	2,944.1789	3.0043	0.0680	3,039.5590
Energy	0.0967	0.8266	0.3517	5.2800e-003		0.0668	0.0668		0.0668	0.0668		1,055.2097	1,055.2097	0.0202	0.0194	1,061.4803
Mobile	1.7583	8.9994	23.5078	0.0894	7.3393	0.0679	7.4072	1.9637	0.0633	2.0270		9,099.5151	9,099.5151	0.4185		9,109.9785
Total	**34.6374**	**12.1481**	**87.1227**	**0.2339**	**7.3393**	**8.3571**	**15.6964**	**1.9637**	**8.3526**	**10.3163**	**1,002.2603**	**12,096.6434**	**13,098.9037**	**3.4431**	**0.0874**	**13,211.0177**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	4.9315	1.6995	9.5279	0.0107		0.1780	0.1780		0.1780	0.1780	0.0000	2,055.2127	2,055.2127	0.0545	0.0374	2,067.7162
Energy	0.0967	0.8266	0.3517	5.2800e-003		0.0668	0.0668		0.0668	0.0668		1,055.2097	1,055.2097	0.0202	0.0194	1,061.4803

Mobile	1.7583	8.9994	23.5078	0.0894	7.3393	0.0679	7.4072	1.9637	0.0633	2.0270		9,099.5151	9,099.5151	0.4185		9,109.9785
Total	**6.7865**	**11.5254**	**33.3874**	**0.1053**	**7.3393**	**0.3127**	**7.6520**	**1.9637**	**0.3082**	**2.2719**	**0.0000**	**12,209.9375**	**12,209.9375**	**0.4932**	**0.0567**	**12,239.1749**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**80.41**	**5.13**	**61.68**	**54.98**	**0.00**	**96.26**	**51.25**	**0.00**	**96.31**	**77.98**	**100.00**	**-0.94**	**6.79**	**85.67**	**35.07**	**7.36**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	3/1/2021	3/21/2021	5	15	
2	Grading	Grading	3/22/2021	5/21/2021	5	45	
3	Building Construction	Building Construction	5/22/2021	1/28/2022	5	180	
4	Paving	Paving	1/29/2022	3/11/2022	5	30	
5	Architectural Coating	Architectural Coating	3/12/2022	4/22/2022	5	30	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 10.22

Acres of Paving: 0.96

Residential Indoor: 390,015; Residential Outdoor: 130,005; Non-Residential Indoor: 22,500; Non-Residential Outdoor: 7,500; Striped

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Excavators	1	8.00	158	0.38
Site Preparation	Rubber Tired Loaders	2	8.00	203	0.36
Site Preparation	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Grading	Excavators	2	8.00	158	0.38
Grading	Off-Highway Trucks	2	8.00	402	0.38
Grading	Scrapers	4	8.00	367	0.48
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37

Building Construction	Off-Highway Trucks	2	7.00	402	0.38
Building Construction	Rubber Tired Loaders	2	8.00	203	0.36
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction	Trenchers	2	8.00	78	0.50
Paving	Graders	1	8.00	187	0.41
Paving	Pavers	1	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	1	8.00	80	0.38
Paving	Rubber Tired Loaders	1	8.00	203	0.36
Architectural Coating	Air Compressors	1	6.00	78	0.48
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Building Construction	Welders	1	8.00	46	0.45

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	7	10.00	0.00	75.00	14.70	6.90	5.00	LD_Mix	HDT_Mix	HHDT
Grading	12	25.00	0.00	500.00	14.70	6.90	1.00	LD_Mix	HDT_Mix	HHDT
Building Construction	15	63.00	21.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	13.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Replace Ground Cover

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

3.2 Site Preparation - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					18.0663	0.0000	18.0663	9.9307	0.0000	9.9307			0.0000			0.0000
Off-Road	4.2416	44.6906	20.8427	0.0464		2.0713	2.0713		1.9056	1.9056		4,493.6011	4,493.6011	1.4533		4,529.9341
Total	**4.2416**	**44.6906**	**20.8427**	**0.0464**	**18.0663**	**2.0713**	**20.1375**	**9.9307**	**1.9056**	**11.8362**		**4,493.6011**	**4,493.6011**	**1.4533**		**4,529.9341**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0151	0.6717	0.1067	1.3700e-003	0.0219	1.1100e-003	0.0230	6.0100e-003	1.0600e-003	7.0800e-003		148.4419	148.4419	0.0136		148.7812
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0422	0.0274	0.3767	1.1100e-003	0.1118	8.2000e-004	0.1126	0.0296	7.6000e-004	0.0304		110.7403	110.7403	2.9800e-003		110.8148
Total	**0.0573**	**0.6991**	**0.4834**	**2.4800e-003**	**0.1337**	**1.9300e-003**	**0.1356**	**0.0357**	**1.8200e-003**	**0.0375**		**259.1822**	**259.1822**	**0.0166**		**259.5960**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	lb/day										lb/day					
Fugitive Dust					6.6936	0.0000	6.6936	3.6793	0.0000	3.6793			0.0000			0.0000
Off-Road	4.2416	44.6906	20.8427	0.0464		2.0713	2.0713		1.9056	1.9056	0.0000	4,493.6011	4,493.6011	1.4533		4,529.9341
Total	**4.2416**	**44.6906**	**20.8427**	**0.0464**	**6.6936**	**2.0713**	**8.7648**	**3.6793**	**1.9056**	**5.5849**	**0.0000**	**4,493.6011**	**4,493.6011**	**1.4533**		**4,529.9341**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0151	0.6717	0.1067	1.3700e-003	0.0219	1.1100e-003	0.0230	6.0100e-003	1.0600e-003	7.0800e-003		148.4419	148.4419	0.0136		148.7812
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0422	0.0274	0.3767	1.1100e-003	0.1118	8.2000e-004	0.1126	0.0296	7.6000e-004	0.0304		110.7403	110.7403	2.9800e-003		110.8148
Total	**0.0573**	**0.6991**	**0.4834**	**2.4800e-003**	**0.1337**	**1.9300e-003**	**0.1356**	**0.0357**	**1.8200e-003**	**0.0375**		**259.1822**	**259.1822**	**0.0166**		**259.5960**

3.3 Grading - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					6.2755	0.0000	6.2755	3.3381	0.0000	3.3381			0.0000			0.0000
Off-Road	7.2619	78.3321	52.0966	0.1188		3.2042	3.2042		2.9479	2.9479		11,499.9125	11,499.9125	3.7193		11,592.8951
Total	**7.2619**	**78.3321**	**52.0966**	**0.1188**	**6.2755**	**3.2042**	**9.4797**	**3.3381**	**2.9479**	**6.2860**		**11,499.9125**	**11,499.9125**	**3.7193**		**11,592.8951**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0210	1.1411	0.1416	1.5900e-003	9.9300e-003	8.0000e-004	0.0107	2.7400e-003	7.7000e-004	3.5100e-003		172.0469	172.0469	0.0218		172.5921
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1055	0.0684	0.9418	2.7800e-003	0.2794	2.0600e-003	0.2815	0.0741	1.8900e-003	0.0760		276.8508	276.8508	7.4400e-003		277.0370
Total	**0.1265**	**1.2096**	**1.0834**	**4.3700e-003**	**0.2894**	**2.8600e-003**	**0.2922**	**0.0769**	**2.6600e-003**	**0.0795**		**448.8977**	**448.8977**	**0.0293**		**449.6290**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					2.3251	0.0000	2.3251	1.2368	0.0000	1.2368			0.0000			0.0000
Off-Road	7.2619	78.3321	52.0966	0.1188		3.2042	3.2042		2.9479	2.9479	0.0000	11,499.9125	11,499.9125	3.7193		11,592.8951
Total	**7.2619**	**78.3321**	**52.0966**	**0.1188**	**2.3251**	**3.2042**	**5.5293**	**1.2368**	**2.9479**	**4.1847**	**0.0000**	**11,499.9125**	**11,499.9125**	**3.7193**		**11,592.8951**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	lb/day										lb/day					
Hauling	0.0210	1.1411	0.1416	1.5900e-003	9.9300e-003	8.0000e-004	0.0107	2.7400e-003	7.7000e-004	3.5100e-003		172.0469	172.0469	0.0218		172.5921
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1055	0.0684	0.9418	2.7800e-003	0.2794	2.0600e-003	0.2815	0.0741	1.8900e-003	0.0760		276.8508	276.8508	7.4400e-003		277.0370
Total	**0.1265**	**1.2096**	**1.0834**	**4.3700e-003**	**0.2894**	**2.8600e-003**	**0.2922**	**0.0769**	**2.6600e-003**	**0.0795**		**448.8977**	**448.8977**	**0.0293**		**449.6290**

3.4 Building Construction - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	4.4122	41.3947	31.2928	0.0693		2.0642	2.0642		1.9184	1.9184		6,655.0766	6,655.0766	1.9426		6,703.6414
Total	**4.4122**	**41.3947**	**31.2928**	**0.0693**		**2.0642**	**2.0642**		**1.9184**	**1.9184**		**6,655.0766**	**6,655.0766**	**1.9426**		**6,703.6414**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0584	2.0029	0.4753	5.3600e-003	0.1344	4.0300e-003	0.1384	0.0387	3.8600e-003	0.0426		572.1208	572.1208	0.0346		572.9860
Worker	0.2659	0.1725	2.3734	7.0000e-003	0.7042	5.1800e-003	0.7094	0.1868	4.7700e-003	0.1915		697.6641	697.6641	0.0188		698.1331

Total	**0.3244**	**2.1754**	**2.8487**	**0.0124**	**0.8386**	**9.2100e-003**	**0.8478**	**0.2254**	**8.6300e-003**	**0.2341**		**1,269.7849**	**1,269.7849**	**0.0534**		**1,271.1191**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	4.4122	41.3947	31.2928	0.0693		2.0642	2.0642		1.9184	1.9184	0.0000	6,655.0766	6,655.0766	1.9426		6,703.6414
Total	**4.4122**	**41.3947**	**31.2928**	**0.0693**		**2.0642**	**2.0642**		**1.9184**	**1.9184**	**0.0000**	**6,655.0766**	**6,655.0766**	**1.9426**		**6,703.6414**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0584	2.0029	0.4753	5.3600e-003	0.1344	4.0300e-003	0.1384	0.0387	3.8600e-003	0.0426		572.1208	572.1208	0.0346		572.9860
Worker	0.2659	0.1725	2.3734	7.0000e-003	0.7042	5.1800e-003	0.7094	0.1868	4.7700e-003	0.1915		697.6641	697.6641	0.0188		698.1331
Total	**0.3244**	**2.1754**	**2.8487**	**0.0124**	**0.8386**	**9.2100e-003**	**0.8478**	**0.2254**	**8.6300e-003**	**0.2341**		**1,269.7849**	**1,269.7849**	**0.0534**		**1,271.1191**

3.4 Building Construction - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	3.9414	35.4490	30.5016	0.0693		1.7463	1.7463		1.6235	1.6235		6,657.7853	6,657.7853	1.9391		6,706.2624
Total	**3.9414**	**35.4490**	**30.5016**	**0.0693**		**1.7463**	**1.7463**		**1.6235**	**1.6235**		**6,657.7853**	**6,657.7853**	**1.9391**		**6,706.2624**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0548	1.9012	0.4492	5.3100e-003	0.1344	3.4900e-003	0.1379	0.0387	3.3400e-003	0.0420		567.1242	567.1242	0.0333		567.9571
Worker	0.2495	0.1558	2.1946	6.7500e-003	0.7042	5.0400e-003	0.7092	0.1868	4.6400e-003	0.1914		672.6661	672.6661	0.0170		673.0900
Total	**0.3043**	**2.0570**	**2.6438**	**0.0121**	**0.8386**	**8.5300e-003**	**0.8471**	**0.2254**	**7.9800e-003**	**0.2334**		**1,239.7902**	**1,239.7902**	**0.0503**		**1,241.0471**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	3.9414	35.4490	30.5016	0.0693		1.7463	1.7463		1.6235	1.6235	0.0000	6,657.7853	6,657.7853	1.9391		6,706.2624
Total	**3.9414**	**35.4490**	**30.5016**	**0.0693**		**1.7463**	**1.7463**		**1.6235**	**1.6235**	**0.0000**	**6,657.7853**	**6,657.7853**	**1.9391**		**6,706.2624**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0548	1.9012	0.4492	5.3100e-003	0.1344	3.4900e-003	0.1379	0.0387	3.3400e-003	0.0420		567.1242	567.1242	0.0333		567.9571
Worker	0.2495	0.1558	2.1946	6.7500e-003	0.7042	5.0400e-003	0.7092	0.1868	4.6400e-003	0.1914		672.6661	672.6661	0.0170		673.0900
Total	**0.3043**	**2.0570**	**2.6438**	**0.0121**	**0.8386**	**8.5300e-003**	**0.8471**	**0.2254**	**7.9800e-003**	**0.2334**		**1,239.7902**	**1,239.7902**	**0.0503**		**1,241.0471**

3.5 Paving - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.4360	15.5827	13.0892	0.0284		0.6374	0.6374		0.5864	0.5864		2,745.2418	2,745.2418	0.8879		2,767.4385
Paving	0.0838					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.5198**	**15.5827**	**13.0892**	**0.0284**		**0.6374**	**0.6374**		**0.5864**	**0.5864**		**2,745.2418**	**2,745.2418**	**0.8879**		**2,767.4385**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0594	0.0371	0.5225	1.6100e-003	0.1677	1.2000e-003	0.1689	0.0445	1.1000e-003	0.0456		160.1586	160.1586	4.0400e-003		160.2595
Total	**0.0594**	**0.0371**	**0.5225**	**1.6100e-003**	**0.1677**	**1.2000e-003**	**0.1689**	**0.0445**	**1.1000e-003**	**0.0456**		**160.1586**	**160.1586**	**4.0400e-003**		**160.2595**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.4360	15.5827	13.0892	0.0284		0.6374	0.6374		0.5864	0.5864	0.0000	2,745.2418	2,745.2418	0.8879		2,767.4385
Paving	0.0838					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.5198**	**15.5827**	**13.0892**	**0.0284**		**0.6374**	**0.6374**		**0.5864**	**0.5864**	**0.0000**	**2,745.2418**	**2,745.2418**	**0.8879**		**2,767.4385**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000

Worker	0.0594	0.0371	0.5225	1.6100e-003	0.1677	1.2000e-003	0.1689	0.0445	1.1000e-003	0.0456		160.1586	160.1586	4.0400e-003		160.2595
Total	**0.0594**	**0.0371**	**0.5225**	**1.6100e-003**	**0.1677**	**1.2000e-003**	**0.1689**	**0.0445**	**1.1000e-003**	**0.0456**		**160.1586**	**160.1586**	**4.0400e-003**		**160.2595**

3.6 Architectural Coating - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	42.6874					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2045	1.4085	1.8136	2.9700e-003		0.0817	0.0817		0.0817	0.0817		281.4481	281.4481	0.0183		281.9062
Total	**42.8920**	**1.4085**	**1.8136**	**2.9700e-003**		**0.0817**	**0.0817**		**0.0817**	**0.0817**		**281.4481**	**281.4481**	**0.0183**		**281.9062**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0515	0.0322	0.4529	1.3900e-003	0.1453	1.0400e-003	0.1464	0.0385	9.6000e-004	0.0395		138.8041	138.8041	3.5000e-003		138.8916
Total	**0.0515**	**0.0322**	**0.4529**	**1.3900e-003**	**0.1453**	**1.0400e-003**	**0.1464**	**0.0385**	**9.6000e-004**	**0.0395**		**138.8041**	**138.8041**	**3.5000e-003**		**138.8916**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	42.6874					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2045	1.4085	1.8136	2.9700e-003		0.0817	0.0817		0.0817	0.0817	0.0000	281.4481	281.4481	0.0183		281.9062
Total	**42.8920**	**1.4085**	**1.8136**	**2.9700e-003**		**0.0817**	**0.0817**		**0.0817**	**0.0817**	**0.0000**	**281.4481**	**281.4481**	**0.0183**		**281.9062**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0515	0.0322	0.4529	1.3900e-003	0.1453	1.0400e-003	0.1464	0.0385	9.6000e-004	0.0395		138.8041	138.8041	3.5000e-003		138.8916
Total	**0.0515**	**0.0322**	**0.4529**	**1.3900e-003**	**0.1453**	**1.0400e-003**	**0.1464**	**0.0385**	**9.6000e-004**	**0.0395**		**138.8041**	**138.8041**	**3.5000e-003**		**138.8916**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	1.7583	8.9994	23.5078	0.0894	7.3393	0.0679	7.4072	1.9637	0.0633	2.0270		9,099.5151	9,099.5151	0.4185		9,109.9785
Unmitigated	1.7583	8.9994	23.5078	0.0894	7.3393	0.0679	7.4072	1.9637	0.0633	2.0270		9,099.5151	9,099.5151	0.4185		9,109.9785

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
City Park	0.00	0.00	0.00		
Single Family Housing	1,010.08	1,010.08	1010.08	3,451,597	3,451,597
Parking Lot	0.00	0.00	0.00		
Total	1,010.08	1,010.08	1,010.08	3,451,597	3,451,597

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
City Park	16.60	8.40	6.90	33.00	48.00	19.00	66	28	6
Single Family Housing	14.70	5.90	8.70	40.20	19.20	40.60	86	11	3
Parking Lot	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
City Park	0.549559	0.042893	0.201564	0.118533	0.015569	0.005846	0.021394	0.034255	0.002099	0.001828	0.004855	0.000709	0.000896
Single Family Housing	0.549559	0.042893	0.201564	0.118533	0.015569	0.005846	0.021394	0.034255	0.002099	0.001828	0.004855	0.000709	0.000896
Parking Lot	0.549559	0.042893	0.201564	0.118533	0.015569	0.005846	0.021394	0.034255	0.002099	0.001828	0.004855	0.000709	0.000896

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.0967	0.8266	0.3517	5.2800e-003		0.0668	0.0668		0.0668	0.0668		1,055.2097	1,055.2097	0.0202	0.0194	1,061.4803
NaturalGas Unmitigated	0.0967	0.8266	0.3517	5.2800e-003		0.0668	0.0668		0.0668	0.0668		1,055.2097	1,055.2097	0.0202	0.0194	1,061.4803

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
City Park	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Single Family Housing	8969.28	0.0967	0.8266	0.3517	5.2800e-003		0.0668	0.0668		0.0668	0.0668		1,055.2097	1,055.2097	0.0202	0.0194	1,061.4803
Total		**0.0967**	**0.8266**	**0.3517**	**5.2800e-003**		**0.0668**	**0.0668**		**0.0668**	**0.0668**		**1,055.2097**	**1,055.2097**	**0.0202**	**0.0194**	**1,061.4803**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					

City Park	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Single Family Housing	8.96928	0.0967	0.8266	0.3517	5.2800e-003		0.0668	0.0668		0.0668	0.0668		1,055.2097	1,055.2097	0.0202	0.0194	1,061.4803
Total		**0.0967**	**0.8266**	**0.3517**	**5.2800e-003**		**0.0668**	**0.0668**		**0.0668**	**0.0668**		**1,055.2097**	**1,055.2097**	**0.0202**	**0.0194**	**1,061.4803**

6.0 Area Detail

6.1 Mitigation Measures Area

Use only Natural Gas Hearths

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	4.9315	1.6995	9.5279	0.0107		0.1780	0.1780		0.1780	0.1780	0.0000	2,055.2127	2,055.2127	0.0545	0.0374	2,067.7162
Unmitigated	32.7824	2.3221	63.2632	0.1393		8.2224	8.2224		8.2224	8.2224	1,002.2603	1,941.9186	2,944.1789	3.0043	0.0680	3,039.5590

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.3509					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	4.1257					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000

Hearth	28.0379	2.2201	54.4151	0.1388		8.1736	8.1736		8.1736	8.1736	1,002.2603	1,926.0000	2,928.2603	2.9889	0.0680	3,023.2555
Landscaping	0.2679	0.1020	8.8481	4.7000e-004		0.0489	0.0489		0.0489	0.0489		15.9186	15.9186	0.0154		16.3035
Total	**32.7824**	**2.3221**	**63.2632**	**0.1393**		**8.2224**	**8.2224**		**8.2224**	**8.2224**	**1,002.2603**	**1,941.9186**	**2,944.1789**	**3.0043**	**0.0680**	**3,039.5590**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.3509					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	4.1257					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	0.1869	1.5975	0.6798	0.0102		0.1292	0.1292		0.1292	0.1292	0.0000	2,039.2941	2,039.2941	0.0391	0.0374	2,051.4126
Landscaping	0.2679	0.1020	8.8481	4.7000e-004		0.0489	0.0489		0.0489	0.0489		15.9186	15.9186	0.0154		16.3035
Total	**4.9315**	**1.6995**	**9.5279**	**0.0107**		**0.1780**	**0.1780**		**0.1780**	**0.1780**	**0.0000**	**2,055.2127**	**2,055.2127**	**0.0545**	**0.0374**	**2,067.7161**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Highland Residential

South Coast AQMD Air District, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Parking Lot	107.00	Space	0.96	42,800.00	0
City Park	0.38	Acre	0.38	16,552.80	0
Single Family Housing	107.00	Dwelling Unit	8.88	192,600.00	306

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	31
Climate Zone	10			**Operational Year**	2022
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	702.44	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - 107 open guest parking spaces; park+recreation center area estimated from site plan; total site area 10.22 acres

Construction Phase - construction schedule provided by project applicant

Off-road Equipment -

Off-road Equipment - equipment list provided by project applicant

Off-road Equipment - equipment list provided by project applicant

Off-road Equipment - equipment list provided by project applicant

Off-road Equipment - equipment list provided by project applicant

Trips and VMT - project applicant estimated 10 cubic yards/truck, 5-mile roundtrip distance during site preparation and 1-mile roundtrip distance during grading

Grading - total site area 10.22

Architectural Coating - SCAQMD Rule 1113 - low VOC painting

Vehicle Trips - trip generation rate from TIA Table 4-1 dated March 10, 2020

Area Coating - SCAQMD Rule 1113 - low VOC painting

Construction Off-road Equipment Mitigation - SCAQMD Rule 403

Area Mitigation - SCAQMD Rule 445 - no wood-burning devices in new development

Table Name	Column Name	Default Value	New Value
tblArchitecturalCoating	EF_Nonresidential_Exterior	100.00	50.00
tblArchitecturalCoating	EF_Nonresidential_Interior	100.00	50.00
tblArchitecturalCoating	EF_Parking	100.00	50.00
tblAreaCoating	Area_EF_Nonresidential_Exterior	100	50
tblAreaCoating	Area_EF_Nonresidential_Interior	100	50
tblAreaCoating	Area_EF_Parking	100	50
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstructionPhase	NumDays	10.00	15.00
tblConstructionPhase	NumDays	30.00	45.00
tblConstructionPhase	NumDays	300.00	180.00
tblConstructionPhase	NumDays	20.00	30.00
tblConstructionPhase	NumDays	20.00	30.00
tblGrading	AcresOfGrading	202.50	10.22
tblGrading	MaterialExported	0.00	2.00
tblGrading	MaterialImported	0.00	5,000.00
tblLandUse	LotAcreage	34.74	8.88
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	4.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	1.00
tblTripsAndVMT	HaulingTripLength	20.00	5.00
tblTripsAndVMT	HaulingTripLength	20.00	1.00
tblTripsAndVMT	HaulingTripNumber	0.00	75.00

tblTripsAndVMT	HaulingTripNumber	625.00	500.00
tblTripsAndVMT	WorkerTripNumber	18.00	10.00
tblTripsAndVMT	WorkerTripNumber	30.00	25.00
tblVehicleTrips	ST_TR	22.75	0.00
tblVehicleTrips	ST_TR	9.91	9.44
tblVehicleTrips	SU_TR	16.74	0.00
tblVehicleTrips	SU_TR	8.62	9.44
tblVehicleTrips	WD_TR	1.89	0.00
tblVehicleTrips	WD_TR	9.52	9.44

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2021	7.4005	79.5112	53.1311	0.1228	18.2000	3.2072	20.2732	9.9663	2.9507	11.8738	0.0000	11,913.8272	11,913.8272	3.7507	0.0000	12,007.5938
2022	42.9483	37.5131	32.9731	0.0808	0.8386	1.7549	2.5935	0.2254	1.6315	1.8570	0.0000	7,837.4712	7,837.4712	1.9906	0.0000	7,887.2371
Maximum	**42.9483**	**79.5112**	**53.1311**	**0.1228**	**18.2000**	**3.2072**	**20.2732**	**9.9663**	**2.9507**	**11.8738**	**0.0000**	**11,913.8272**	**11,913.8272**	**3.7507**	**0.0000**	**12,007.5938**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					

2021	7.4005	79.5112	53.1311	0.1228	6.8273	3.2072	8.9005	3.7150	2.9507	5.6224	0.0000	11,913.8272	11,913.8272	3.7507	0.0000	12,007.5938
2022	42.9483	37.5131	32.9731	0.0808	0.8386	1.7549	2.5935	0.2254	1.6315	1.8570	0.0000	7,837.4712	7,837.4712	1.9906	0.0000	7,887.2371
Maximum	**42.9483**	**79.5112**	**53.1311**	**0.1228**	**6.8273**	**3.2072**	**8.9005**	**3.7150**	**2.9507**	**5.6224**	**0.0000**	**11,913.8272**	**11,913.8272**	**3.7507**	**0.0000**	**12,007.5938**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**59.74**	**0.00**	**49.73**	**61.34**	**0.00**	**45.53**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	32.7824	2.3221	63.2632	0.1393		8.2224	8.2224		8.2224	8.2224	1,002.2603	1,941.9186	2,944.1789	3.0043	0.0680	3,039.5590
Energy	0.0967	0.8266	0.3517	5.2800e-003		0.0668	0.0668		0.0668	0.0668		1,055.2097	1,055.2097	0.0202	0.0194	1,061.4803
Mobile	1.6706	9.1758	21.9461	0.0846	7.3393	0.0682	7.4076	1.9637	0.0637	2.0274		8,619.2609	8,619.2609	0.4182		8,629.7158
Total	**34.5497**	**12.3244**	**85.5610**	**0.2292**	**7.3393**	**8.3575**	**15.6968**	**1.9637**	**8.3529**	**10.3167**	**1,002.2603**	**11,616.3892**	**12,618.6494**	**3.4428**	**0.0874**	**12,730.7550**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	4.9315	1.6995	9.5279	0.0107		0.1780	0.1780		0.1780	0.1780	0.0000	2,055.2127	2,055.2127	0.0545	0.0374	2,067.7162
Energy	0.0967	0.8266	0.3517	5.2800e-003		0.0668	0.0668		0.0668	0.0668		1,055.2097	1,055.2097	0.0202	0.0194	1,061.4803

Mobile	1.6706	9.1758	21.9461	0.0846	7.3393	0.0682	7.4076	1.9637	0.0637	2.0274		8,619.2609	8,619.2609	0.4182		8,629.7158
Total	**6.6987**	**11.7018**	**31.8257**	**0.1005**	**7.3393**	**0.3131**	**7.6524**	**1.9637**	**0.3085**	**2.2723**	**0.0000**	**11,729.6833**	**11,729.6833**	**0.4929**	**0.0567**	**11,758.9122**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**80.61**	**5.05**	**62.80**	**56.13**	**0.00**	**96.25**	**51.25**	**0.00**	**96.31**	**77.97**	**100.00**	**-0.98**	**7.04**	**85.68**	**35.07**	**7.63**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	3/1/2021	3/21/2021	5	15	
2	Grading	Grading	3/22/2021	5/21/2021	5	45	
3	Building Construction	Building Construction	5/22/2021	1/28/2022	5	180	
4	Paving	Paving	1/29/2022	3/11/2022	5	30	
5	Architectural Coating	Architectural Coating	3/12/2022	4/22/2022	5	30	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 10.22

Acres of Paving: 0.96

Residential Indoor: 390,015; Residential Outdoor: 130,005; Non-Residential Indoor: 22,500; Non-Residential Outdoor: 7,500; Striped

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Excavators	1	8.00	158	0.38
Site Preparation	Rubber Tired Loaders	2	8.00	203	0.36
Site Preparation	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Grading	Excavators	2	8.00	158	0.38
Grading	Off-Highway Trucks	2	8.00	402	0.38
Grading	Scrapers	4	8.00	367	0.48
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37

Building Construction	Off-Highway Trucks	2	7.00	402	0.38
Building Construction	Rubber Tired Loaders	2	8.00	203	0.36
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction	Trenchers	2	8.00	78	0.50
Paving	Graders	1	8.00	187	0.41
Paving	Pavers	1	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	1	8.00	80	0.38
Paving	Rubber Tired Loaders	1	8.00	203	0.36
Architectural Coating	Air Compressors	1	6.00	78	0.48
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Building Construction	Welders	1	8.00	46	0.45

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	7	10.00	0.00	75.00	14.70	6.90	5.00	LD_Mix	HDT_Mix	HHDT
Grading	12	25.00	0.00	500.00	14.70	6.90	1.00	LD_Mix	HDT_Mix	HHDT
Building Construction	15	63.00	21.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	13.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Replace Ground Cover

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

3.2 Site Preparation - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					18.0663	0.0000	18.0663	9.9307	0.0000	9.9307			0.0000			0.0000
Off-Road	4.2416	44.6906	20.8427	0.0464		2.0713	2.0713		1.9056	1.9056		4,493.6011	4,493.6011	1.4533		4,529.9341
Total	**4.2416**	**44.6906**	**20.8427**	**0.0464**	**18.0663**	**2.0713**	**20.1375**	**9.9307**	**1.9056**	**11.8362**		**4,493.6011**	**4,493.6011**	**1.4533**		**4,529.9341**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0161	0.6617	0.1274	1.3000e-003	0.0219	1.1700e-003	0.0231	6.0100e-003	1.1200e-003	7.1300e-003		140.7698	140.7698	0.0148		141.1384
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0461	0.0300	0.3385	1.0400e-003	0.1118	8.2000e-004	0.1126	0.0296	7.6000e-004	0.0304		103.5668	103.5668	2.7800e-003		103.6362
Total	**0.0623**	**0.6917**	**0.4659**	**2.3400e-003**	**0.1337**	**1.9900e-003**	**0.1357**	**0.0357**	**1.8800e-003**	**0.0375**		**244.3366**	**244.3366**	**0.0175**		**244.7746**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	lb/day										lb/day					
Fugitive Dust					6.6936	0.0000	6.6936	3.6793	0.0000	3.6793			0.0000			0.0000
Off-Road	4.2416	44.6906	20.8427	0.0464		2.0713	2.0713		1.9056	1.9056	0.0000	4,493.6011	4,493.6011	1.4533		4,529.9341
Total	**4.2416**	**44.6906**	**20.8427**	**0.0464**	**6.6936**	**2.0713**	**8.7648**	**3.6793**	**1.9056**	**5.5849**	**0.0000**	**4,493.6011**	**4,493.6011**	**1.4533**		**4,529.9341**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0161	0.6617	0.1274	1.3000e-003	0.0219	1.1700e-003	0.0231	6.0100e-003	1.1200e-003	7.1300e-003		140.7698	140.7698	0.0148		141.1384
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0461	0.0300	0.3385	1.0400e-003	0.1118	8.2000e-004	0.1126	0.0296	7.6000e-004	0.0304		103.5668	103.5668	2.7800e-003		103.6362
Total	**0.0623**	**0.6917**	**0.4659**	**2.3400e-003**	**0.1337**	**1.9900e-003**	**0.1357**	**0.0357**	**1.8800e-003**	**0.0375**		**244.3366**	**244.3366**	**0.0175**		**244.7746**

3.3 Grading - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					6.2755	0.0000	6.2755	3.3381	0.0000	3.3381			0.0000			0.0000
Off-Road	7.2619	78.3321	52.0966	0.1188		3.2042	3.2042		2.9479	2.9479		11,499.9125	11,499.9125	3.7193		11,592.8951
Total	**7.2619**	**78.3321**	**52.0966**	**0.1188**	**6.2755**	**3.2042**	**9.4797**	**3.3381**	**2.9479**	**6.2860**		**11,499.9125**	**11,499.9125**	**3.7193**		**11,592.8951**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0233	1.1042	0.1882	1.4400e-003	9.9300e-003	9.4000e-004	0.0109	2.7400e-003	9.0000e-004	3.6400e-003		154.9978	154.9978	0.0244		155.6082
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1153	0.0749	0.8464	2.6000e-003	0.2794	2.0600e-003	0.2815	0.0741	1.8900e-003	0.0760		258.9170	258.9170	6.9400e-003		259.0904
Total	**0.1386**	**1.1791**	**1.0346**	**4.0400e-003**	**0.2894**	**3.0000e-003**	**0.2924**	**0.0769**	**2.7900e-003**	**0.0796**		**413.9147**	**413.9147**	**0.0314**		**414.6987**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					2.3251	0.0000	2.3251	1.2368	0.0000	1.2368			0.0000			0.0000
Off-Road	7.2619	78.3321	52.0966	0.1188		3.2042	3.2042		2.9479	2.9479	0.0000	11,499.9125	11,499.9125	3.7193		11,592.8951
Total	**7.2619**	**78.3321**	**52.0966**	**0.1188**	**2.3251**	**3.2042**	**5.5293**	**1.2368**	**2.9479**	**4.1847**	**0.0000**	**11,499.9125**	**11,499.9125**	**3.7193**		**11,592.8951**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	lb/day										lb/day					
Hauling	0.0233	1.1042	0.1882	1.4400e-003	9.9300e-003	9.4000e-004	0.0109	2.7400e-003	9.0000e-004	3.6400e-003		154.9978	154.9978	0.0244		155.6082
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1153	0.0749	0.8464	2.6000e-003	0.2794	2.0600e-003	0.2815	0.0741	1.8900e-003	0.0760		258.9170	258.9170	6.9400e-003		259.0904
Total	**0.1386**	**1.1791**	**1.0346**	**4.0400e-003**	**0.2894**	**3.0000e-003**	**0.2924**	**0.0769**	**2.7900e-003**	**0.0796**		**413.9147**	**413.9147**	**0.0314**		**414.6987**

3.4 Building Construction - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	4.4122	41.3947	31.2928	0.0693		2.0642	2.0642		1.9184	1.9184		6,655.0766	6,655.0766	1.9426		6,703.6414
Total	**4.4122**	**41.3947**	**31.2928**	**0.0693**		**2.0642**	**2.0642**		**1.9184**	**1.9184**		**6,655.0766**	**6,655.0766**	**1.9426**		**6,703.6414**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0615	1.9965	0.5319	5.2100e-003	0.1344	4.1600e-003	0.1386	0.0387	3.9800e-003	0.0427		555.5554	555.5554	0.0372		556.4847
Worker	0.2906	0.1888	2.1328	6.5500e-003	0.7042	5.1800e-003	0.7094	0.1868	4.7700e-003	0.1915		652.4708	652.4708	0.0175		652.9079

Total	**0.3521**	**2.1853**	**2.6647**	**0.0118**	**0.8386**	**9.3400e-003**	**0.8479**	**0.2254**	**8.7500e-003**	**0.2342**		**1,208.0262**	**1,208.0262**	**0.0547**		**1,209.3926**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	4.4122	41.3947	31.2928	0.0693		2.0642	2.0642		1.9184	1.9184	0.0000	6,655.0766	6,655.0766	1.9426		6,703.6414
Total	**4.4122**	**41.3947**	**31.2928**	**0.0693**		**2.0642**	**2.0642**		**1.9184**	**1.9184**	**0.0000**	**6,655.0766**	**6,655.0766**	**1.9426**		**6,703.6414**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0615	1.9965	0.5319	5.2100e-003	0.1344	4.1600e-003	0.1386	0.0387	3.9800e-003	0.0427		555.5554	555.5554	0.0372		556.4847
Worker	0.2906	0.1888	2.1328	6.5500e-003	0.7042	5.1800e-003	0.7094	0.1868	4.7700e-003	0.1915		652.4708	652.4708	0.0175		652.9079
Total	**0.3521**	**2.1853**	**2.6647**	**0.0118**	**0.8386**	**9.3400e-003**	**0.8479**	**0.2254**	**8.7500e-003**	**0.2342**		**1,208.0262**	**1,208.0262**	**0.0547**		**1,209.3926**

3.4 Building Construction - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	3.9414	35.4490	30.5016	0.0693		1.7463	1.7463		1.6235	1.6235		6,657.7853	6,657.7853	1.9391		6,706.2624
Total	**3.9414**	**35.4490**	**30.5016**	**0.0693**		**1.7463**	**1.7463**		**1.6235**	**1.6235**		**6,657.7853**	**6,657.7853**	**1.9391**		**6,706.2624**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0577	1.8936	0.5029	5.1600e-003	0.1344	3.6100e-003	0.1380	0.0387	3.4500e-003	0.0421		550.6079	550.6079	0.0358		551.5018
Worker	0.2733	0.1705	1.9686	6.3100e-003	0.7042	5.0400e-003	0.7092	0.1868	4.6400e-003	0.1914		629.0780	629.0780	0.0158		629.4728
Total	**0.3310**	**2.0641**	**2.4715**	**0.0115**	**0.8386**	**8.6500e-003**	**0.8472**	**0.2254**	**8.0900e-003**	**0.2335**		**1,179.6859**	**1,179.6859**	**0.0516**		**1,180.9746**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	3.9414	35.4490	30.5016	0.0693		1.7463	1.7463		1.6235	1.6235	0.0000	6,657.7853	6,657.7853	1.9391		6,706.2624
Total	**3.9414**	**35.4490**	**30.5016**	**0.0693**		**1.7463**	**1.7463**		**1.6235**	**1.6235**	**0.0000**	**6,657.7853**	**6,657.7853**	**1.9391**		**6,706.2624**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0577	1.8936	0.5029	5.1600e-003	0.1344	3.6100e-003	0.1380	0.0387	3.4500e-003	0.0421		550.6079	550.6079	0.0358		551.5018
Worker	0.2733	0.1705	1.9686	6.3100e-003	0.7042	5.0400e-003	0.7092	0.1868	4.6400e-003	0.1914		629.0780	629.0780	0.0158		629.4728
Total	**0.3310**	**2.0641**	**2.4715**	**0.0115**	**0.8386**	**8.6500e-003**	**0.8472**	**0.2254**	**8.0900e-003**	**0.2335**		**1,179.6859**	**1,179.6859**	**0.0516**		**1,180.9746**

3.5 Paving - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.4360	15.5827	13.0892	0.0284		0.6374	0.6374		0.5864	0.5864		2,745.2418	2,745.2418	0.8879		2,767.4385
Paving	0.0838					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.5198**	**15.5827**	**13.0892**	**0.0284**		**0.6374**	**0.6374**		**0.5864**	**0.5864**		**2,745.2418**	**2,745.2418**	**0.8879**		**2,767.4385**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0651	0.0406	0.4687	1.5000e-003	0.1677	1.2000e-003	0.1689	0.0445	1.1000e-003	0.0456		149.7805	149.7805	3.7600e-003		149.8745
Total	**0.0651**	**0.0406**	**0.4687**	**1.5000e-003**	**0.1677**	**1.2000e-003**	**0.1689**	**0.0445**	**1.1000e-003**	**0.0456**		**149.7805**	**149.7805**	**3.7600e-003**		**149.8745**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.4360	15.5827	13.0892	0.0284		0.6374	0.6374		0.5864	0.5864	0.0000	2,745.2418	2,745.2418	0.8879		2,767.4385
Paving	0.0838					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.5198**	**15.5827**	**13.0892**	**0.0284**		**0.6374**	**0.6374**		**0.5864**	**0.5864**	**0.0000**	**2,745.2418**	**2,745.2418**	**0.8879**		**2,767.4385**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000

Worker	0.0651	0.0406	0.4687	1.5000e-003	0.1677	1.2000e-003	0.1689	0.0445	1.1000e-003	0.0456		149.7805	149.7805	3.7600e-003		149.8745
Total	**0.0651**	**0.0406**	**0.4687**	**1.5000e-003**	**0.1677**	**1.2000e-003**	**0.1689**	**0.0445**	**1.1000e-003**	**0.0456**		**149.7805**	**149.7805**	**3.7600e-003**		**149.8745**

3.6 Architectural Coating - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	42.6874					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2045	1.4085	1.8136	2.9700e-003		0.0817	0.0817		0.0817	0.0817		281.4481	281.4481	0.0183		281.9062
Total	**42.8920**	**1.4085**	**1.8136**	**2.9700e-003**		**0.0817**	**0.0817**		**0.0817**	**0.0817**		**281.4481**	**281.4481**	**0.0183**		**281.9062**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0564	0.0352	0.4062	1.3000e-003	0.1453	1.0400e-003	0.1464	0.0385	9.6000e-004	0.0395		129.8098	129.8098	3.2600e-003		129.8912
Total	**0.0564**	**0.0352**	**0.4062**	**1.3000e-003**	**0.1453**	**1.0400e-003**	**0.1464**	**0.0385**	**9.6000e-004**	**0.0395**		**129.8098**	**129.8098**	**3.2600e-003**		**129.8912**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	42.6874					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2045	1.4085	1.8136	2.9700e-003		0.0817	0.0817		0.0817	0.0817	0.0000	281.4481	281.4481	0.0183		281.9062
Total	**42.8920**	**1.4085**	**1.8136**	**2.9700e-003**		**0.0817**	**0.0817**		**0.0817**	**0.0817**	**0.0000**	**281.4481**	**281.4481**	**0.0183**		**281.9062**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0564	0.0352	0.4062	1.3000e-003	0.1453	1.0400e-003	0.1464	0.0385	9.6000e-004	0.0395		129.8098	129.8098	3.2600e-003		129.8912
Total	**0.0564**	**0.0352**	**0.4062**	**1.3000e-003**	**0.1453**	**1.0400e-003**	**0.1464**	**0.0385**	**9.6000e-004**	**0.0395**		**129.8098**	**129.8098**	**3.2600e-003**		**129.8912**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	1.6706	9.1758	21.9461	0.0846	7.3393	0.0682	7.4076	1.9637	0.0637	2.0274		8,619.2609	8,619.2609	0.4182		8,629.7158
Unmitigated	1.6706	9.1758	21.9461	0.0846	7.3393	0.0682	7.4076	1.9637	0.0637	2.0274		8,619.2609	8,619.2609	0.4182		8,629.7158

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
City Park	0.00	0.00	0.00		
Single Family Housing	1,010.08	1,010.08	1010.08	3,451,597	3,451,597
Parking Lot	0.00	0.00	0.00		
Total	1,010.08	1,010.08	1,010.08	3,451,597	3,451,597

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
City Park	16.60	8.40	6.90	33.00	48.00	19.00	66	28	6
Single Family Housing	14.70	5.90	8.70	40.20	19.20	40.60	86	11	3
Parking Lot	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
City Park	0.549559	0.042893	0.201564	0.118533	0.015569	0.005846	0.021394	0.034255	0.002099	0.001828	0.004855	0.000709	0.000896
Single Family Housing	0.549559	0.042893	0.201564	0.118533	0.015569	0.005846	0.021394	0.034255	0.002099	0.001828	0.004855	0.000709	0.000896
Parking Lot	0.549559	0.042893	0.201564	0.118533	0.015569	0.005846	0.021394	0.034255	0.002099	0.001828	0.004855	0.000709	0.000896

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.0967	0.8266	0.3517	5.2800e-003		0.0668	0.0668		0.0668	0.0668		1,055.2097	1,055.2097	0.0202	0.0194	1,061.4803
NaturalGas Unmitigated	0.0967	0.8266	0.3517	5.2800e-003		0.0668	0.0668		0.0668	0.0668		1,055.2097	1,055.2097	0.0202	0.0194	1,061.4803

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
City Park	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Single Family Housing	8969.28	0.0967	0.8266	0.3517	5.2800e-003		0.0668	0.0668		0.0668	0.0668		1,055.2097	1,055.2097	0.0202	0.0194	1,061.4803
Total		**0.0967**	**0.8266**	**0.3517**	**5.2800e-003**		**0.0668**	**0.0668**		**0.0668**	**0.0668**		**1,055.2097**	**1,055.2097**	**0.0202**	**0.0194**	**1,061.4803**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					

City Park	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Single Family Housing	8.96928	0.0967	0.8266	0.3517	5.2800e-003		0.0668	0.0668		0.0668	0.0668		1,055.2097	1,055.2097	0.0202	0.0194	1,061.4803
Total		**0.0967**	**0.8266**	**0.3517**	**5.2800e-003**		**0.0668**	**0.0668**		**0.0668**	**0.0668**		**1,055.2097**	**1,055.2097**	**0.0202**	**0.0194**	**1,061.4803**

6.0 Area Detail

6.1 Mitigation Measures Area

Use only Natural Gas Hearths

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	4.9315	1.6995	9.5279	0.0107		0.1780	0.1780		0.1780	0.1780	0.0000	2,055.2127	2,055.2127	0.0545	0.0374	2,067.7162
Unmitigated	32.7824	2.3221	63.2632	0.1393		8.2224	8.2224		8.2224	8.2224	1,002.2603	1,941.9186	2,944.1789	3.0043	0.0680	3,039.5590

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.3509					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	4.1257					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000

Hearth	28.0379	2.2201	54.4151	0.1388		8.1736	8.1736		8.1736	8.1736	1,002.2603	1,926.0000	2,928.2603	2.9889	0.0680	3,023.2555
Landscaping	0.2679	0.1020	8.8481	4.7000e-004		0.0489	0.0489		0.0489	0.0489		15.9186	15.9186	0.0154		16.3035
Total	**32.7824**	**2.3221**	**63.2632**	**0.1393**		**8.2224**	**8.2224**		**8.2224**	**8.2224**	**1,002.2603**	**1,941.9186**	**2,944.1789**	**3.0043**	**0.0680**	**3,039.5590**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.3509					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	4.1257					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	0.1869	1.5975	0.6798	0.0102		0.1292	0.1292		0.1292	0.1292	0.0000	2,039.2941	2,039.2941	0.0391	0.0374	2,051.4126
Landscaping	0.2679	0.1020	8.8481	4.7000e-004		0.0489	0.0489		0.0489	0.0489		15.9186	15.9186	0.0154		16.3035
Total	**4.9315**	**1.6995**	**9.5279**	**0.0107**		**0.1780**	**0.1780**		**0.1780**	**0.1780**	**0.0000**	**2,055.2127**	**2,055.2127**	**0.0545**	**0.0374**	**2,067.7161**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Appendix B
Arborist Report

HIGHLAND RESIDENTIAL PROJECT
INITIAL STUDY

Tree Survey and Arborist Report

For a 10.6 Acre Site on the NE c/o Highland Avenue and Hemlock Road in the City of Fontana, County of San Bernardino, California

Prepared for:

City of Fontana
Planning Department
Attn: Jon Dille, Associate Planner
8353 Sierra Avenue
Fontana, California 92335

Prepared by:

Golden State Land & Tree Assessment
George J Wirtes, MS, ISA Certified Arborist

Report Date: March 13, 2020

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SECTION 1: EXECUTIVE SUMMARY

This arborist survey has been performed at the request of Michael Baker International for a proposed project that includes the development of an approximate 10.6-acre site on the NW corner of Highland and Hemlock Avenues in the City Fontana, California. The field survey associated with this report was performed on January 24, 2020. In all, 26 trees were assessed onsite involving three distinct species.

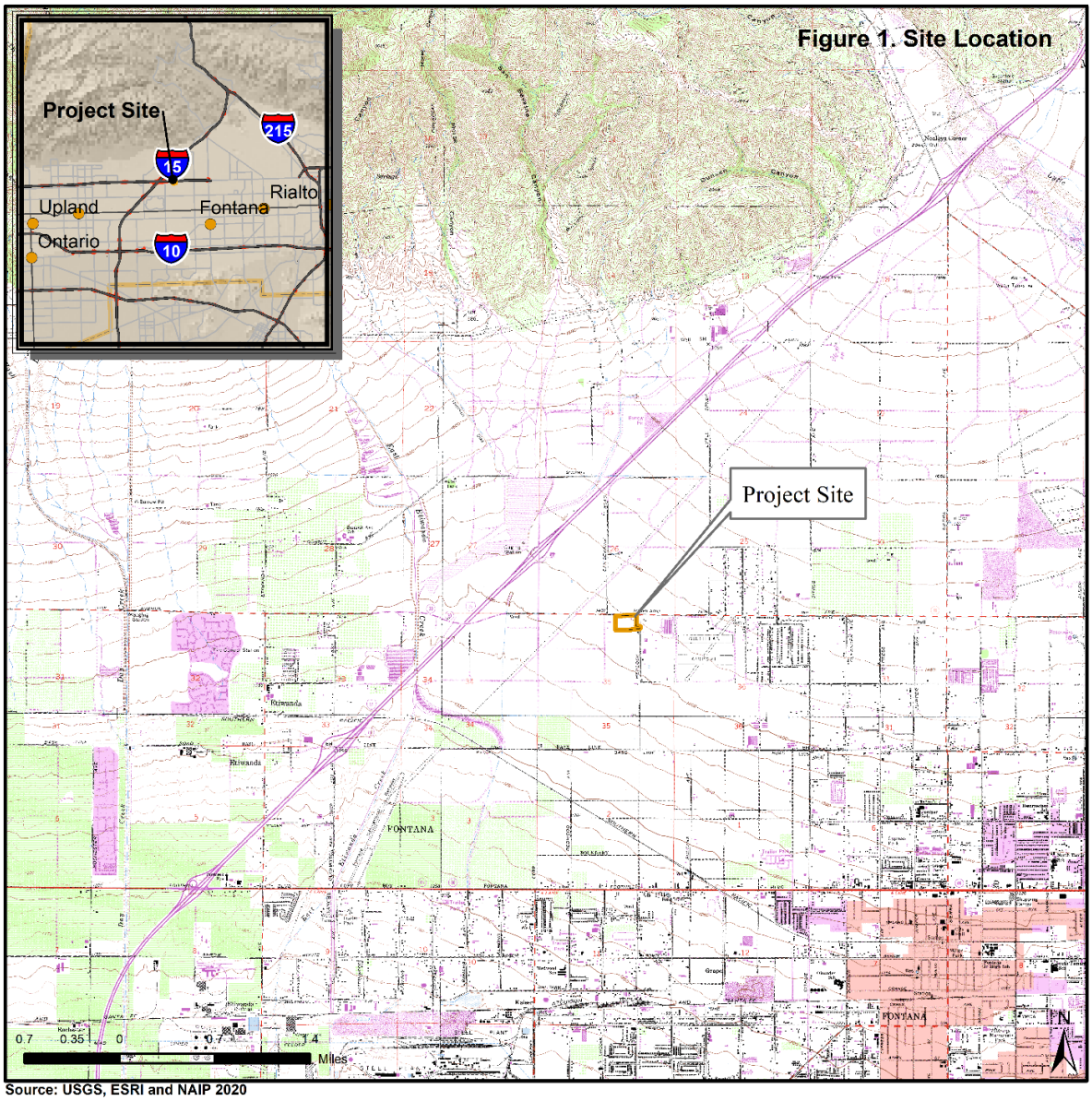
As part of this survey, details of each tree were recorded documenting their species, stature, health, local environment as well as conditions in which they occur. The subject trees were tagged with an aluminum tag containing a unique number. The most represented tree species onsite were the red river gum (*Eucalyptus camaldulensis)*, and Peruvian pepper (*Schinus molle*). Due to inadequate maintenance, growth form, disease, and other conditions, 25 of the 26 trees should be considered for removal. The location of the gum trees within the site suggest a relic windrow, but the remaining trees present do not qualify as Heritage, significant, or any other special designation as described within the City of Fontana's (City) Municipal Code (Code). In addition, no native tree species were observed during this survey.

The City's Code outlines provisions and guidelines for tree removal, installation, preservation, and maintenance within the City. According to the grading and site plan, none of the trees assessed will be preserved. All trees that are intended for removal as part of a project require a removal permit and must be approved by the Planning Director. The size, number, and species of all replacement trees must be in compliance with City's Code.

SECTION 2: BACKGROUND

2.1 - Project Location and Description

The project site is roughly located east of Interstate 15 and directly south of Interstate 210, on the NW corner of Highland and Hemlock Avenues, in the City of Fontana (City), County of San Bernardino (refer to Figure 1, Site Location below). The proposed project includes the development of approximately 10.6 acres, with the implementation of an apartment complex with parking with associate infrastructure and landscaping.



Source: USGS, ESRI and NAIP 2020

2.2 - Site and Vicinity Characteristics

The elevation of the site is approximately 1,440 feet above mean sea level and slopes gently to the southwest. For the vicinity, the Sunset Zone is 19, and the USDA Hardiness zone is 10a. As indicated in Table 1 below, two distinct soil series occurs within the site boundary. This soil series is described as alluvium derived from granite by the Natural Resource Conservation Service (see Table 1 below).

Table 1. Soils on Site

Map Unit Symbol	Map Unit Name	Acres	Percent
TvB	**Tujunga gravelly loamy sand, 0 to 9 percent slopes** **Setting** • *Landform:* Alluvial fans • *Landform position (two-dimensional):* Backslope • *Landform position (three-dimensional):* Tread • *Down-slope shape:* Linear • *Across-slope shape:* Linear • *Parent material:* Alluvium derived from granite **Typical profile** • *H1 - 0 to 36 inches:* gravelly loamy sand • *H2 - 36 to 60 inches:* gravelly sand	10.6	100.0%
Totals for Area of Interest		**10.6**	**100.0%**

The vegetation community onsite includes non-native grassland as well as ornamental, non-native trees. The site contains remnants of a past dwelling, but no other improvements. The public can access the property as there is no fencing present.

2.3 - Scope of Survey

Golden State Land & Tree Assessment (GSLTA) conducted a tree survey and health assessment of all trees within the project area. The survey was performed to identify the different tree species found within the project boundary, assess their health, and provide insight as to which trees may be retained as part of the planned improvement. A health assessment was performed cataloging the health and stature parameters of each tree onsite. This included, but was not limited to; recording total diameter at breast height (DBH), canopy spread, tree height, apparent disease/decay, other signs of potential hazard, and pest damage. A potential risk assessment was also conducted keeping public safety in mind. All documentation in this report is in compliance with standards and requirements published by the International Society of Arboriculture (ISA). This report includes recommendations and mitigation measures meant to satisfy all applicable ordinances and permit guidelines.

2.4 - Survey Method and Health Assessment

Prior to the field survey, the City's website was accessed to review specific tree protection guidelines. An aerial photograph was used as a visual guide during the assessment. A handheld Global Positioning System (GPS) device and GPS-enabled smartphone with digitized project boundaries were used to identify the location of each subject tree. The crown-width was estimated by pacing or using a range finder, and the height of each subject tree was visually estimated using a tangent height gauge. These data were recorded on field sheets, and associated aluminum numeric tags were affixed to trees on the north side at BH for later reference.

Tree status (relative condition, stature, and health) was conducted by ISA arborist/biologist, George Wirtes from ground level with the aid of binoculars. Canopy spread was assessed by pacing. To estimate wood integrity, a rubber mallet was occasionally used to assess possible decay within the tree stem and flare. As indicated earlier, no invasive procedures were performed. Visual characteristics were recorded on field sheets, and twig/leaf samples as well as digital photographs, were taken as needed to assure accurate identification. The overall health and general appearance of each tree were numerically rated (Health/General Appearance Rating - 1-Good, 2-Fair, 3-Poor, 4-Decline/dead) based on the aforementioned conditions. The local environment was also assessed in relation to the tree species and conditions of its location (Local Environment Rating - 1-Good, 2-Fair, 3-Poor, 4-Inappropriate). For this rating, the species was considered in relation to the environment. Other conditions also considered included fence lines, utilities, competing canopies, grade cuts/slope, etc.

The position of the subject trees was recorded using a GPS whose data was exported into GIS for periodic illustration over aerial photographs.

2.5 - Hazard Risk Assessment

The ISA recommends a Hazard Assessment be included with arborist reports. Such an assessment is an important component of any report and is critical if trees are to be located near public areas such as parks, walkways, residences, and buildings. This tree assessment includes a *Level 2 Basic Risk Assessment* as defined by ISA Best Management Practices. This type of assessment is limited to evaluating trees and obvious signs of defects such as:

- Dead or broken structures
- Cracks
- Weakly attached branches and co-dominant stems
- Missing or decayed wood
- Unusual tree architecture or distribution
- Obvious loss of root support

A risk rating is assigned to each tree based on its defects, aesthetics, apparent health, location and the nearby targets (people or property). As defined by ISA, the ratings are defined below:

1. *Low* - Low-risk category applies when consequences are negligible, and likelihood of failure is unlikely, or consequences are minor, and likelihood is somewhat likely.

2. *Moderate* - Moderate risk situations are those for which consequences are minor and likelihood of failure is very likely or likely or likelihood is someone likely and the consequences are significant or severe.
3. *High* - High-risk situations are those for which consequences are significant and likelihood of failure is very likely or likely or Consequences are severe, and likelihood is likely
4. *Extreme* - The extreme risk category applies in situations in which failure is imminent and there is a high likelihood of impacting the target and the consequence of the failure is severe. The tree risk assessor should recommend that mitigation measures be taken as soon as possible

It is impossible to maintain a tree free of risk. A tree is considered hazardous when it has a structural defect that predisposes it to failure, and it is located near a *target*.

- A target is person or property that may sustain potential injury or property damage if a tree or a portion of a tree fails.
- Target areas include sidewalks, walkways, roads, vehicles, structures, playgrounds, or any other area where people are likely to gather.
- Structurally sound and healthy trees may also be hazardous if they interfere with utilities, roadways, walkways, and sidewalks, or if they obstruct motorist vision.
- Common hazards include dead and diseased trees, dead branches including bark, stubs from topping cuts, broken branches (hangers), multiple leaders, tight-angled crotches, and an unbalanced crown. Evaluation of risk is as follows: 1-Good, 2-Fair, 3-Poses risk, and 4-Hazardous.

2.6 - Local Tree Regulation (Fontana Municipal Code Section 28:61-75)

Chapter 28.61-.75 of the City's Municipal Code (or Code) addresses tree protection, maintenance, and replacement policies. It outlines the definition of a "heritage tree", "significant tree", and "specimen tree" and the procedures necessary to replacing them within a property. As stated in the City's Code, "Except as provided in section 28-65, no person shall remove or cause the removal of any heritage, significant or specimen tree unless a tree removal permit is first obtained."

Heritage tree means any tree which:

1. Is of historical value because of its association with a place, building, natural feature or event of local, regional or national historical significance as identified by City council resolution; or
2. Is representative of a significant period of the City's growth or development (windrow tree, European olive tree); or
3. Is a protected or endangered species as specified by Federal or State statute; or
4. Is deemed historically or culturally significant by the City manager or his or her designee because of size, condition, location or aesthetic qualities.

Windrow means a series of trees (minimum of four), usually a variety of *Eucalyptus spp.*, planted in a closely spaced line no more than ten feet apart to provide a windbreak for the protection of property and/or agricultural crops.

Significant tree means any tree that is one of the following species:
Common name (genus/species)

- Southern California black walnut (*Juglans californica)*
- Coast live oak (*Quercus agrifollia)*
- Deodora cedar (*Cedrus deodora)*
- California (western) sycamore (*Platanus racemosa)*
- London plane *Platanus acerifolia*

Specimen tree is defined as a mature tree (which is not a heritage or significant tree) which is an excellent example of its species in structure and aesthetics and warrants preservation, relocation or replacement as provided in sections 28.66, 28.67 and 28.68. Specimen trees shall not include any tree located on a private parcel of property of less than one acre zoned for residential use.

2.7 - Limitations and Exceptions of Assessment

This survey was conducted in a manner that draws upon past education, acquired knowledge, training, experience, and research. It was conducted to the greatest extent feasible, and although the information gathered reduces risk of tree failure/decline, it does not fully remove it.

No diagnostic testing was performed during this assessment. This survey associated with this Arborist Report included no soil sampling, root excavation, trunk coring/drilling or any other invasive procedure. The determinations of damage due to pest infestation and decay were made solely on outward appearance and inspection of the tree structures. Not all tree defects may be visible from the ground. Epiphytic growth can also obscure defects on the stem and in the canopy of a tree. Arborists cannot detect every condition that could possibly lead to the structural failure of a tree. Trees are living organisms subject to attack by disease, insects, fungi and other forces of nature. Many aspects of tree health and environmental conditions

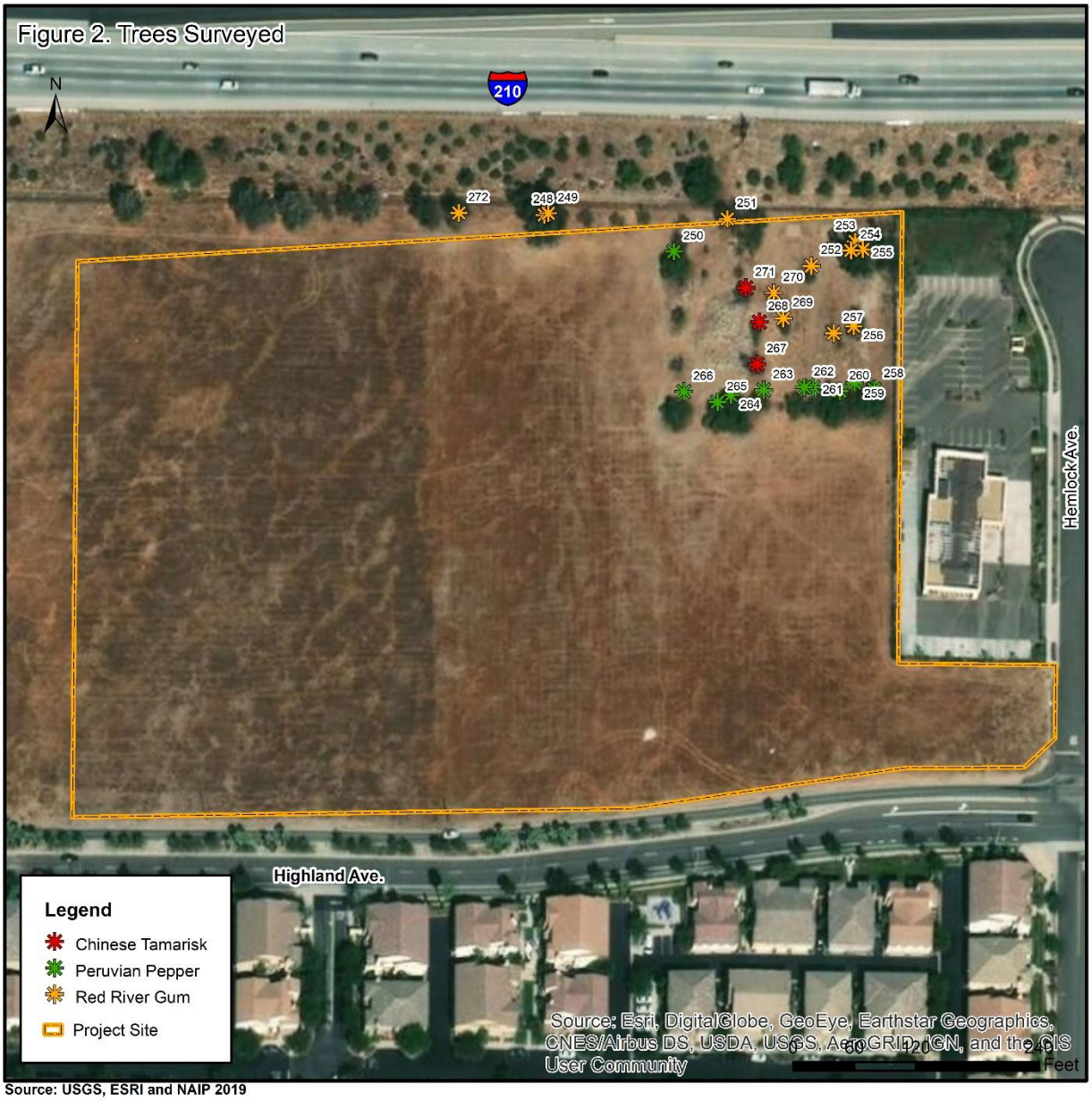
are often not detectable (internal decay, poor root anchoring, etc.). Arborists cannot guarantee that a tree will be healthy or safe under all circumstances, or for a specified period of time.

The statements made in this report do not take into account the effects of climate/wind extremes, vandalism, or accident (whether physical, chemical, or fire). In addition, this area is known to have periodic, high velocity Santa Ana winds from transient high-pressure ridges. GSLTA cannot, therefore, accept any liability in connection with these factors, or where prescribed work is not carried out in a correct and professional manner in accordance with current ISA good practice. The authority of this report ceases at any stated time limit within it, after one year from the date of the survey (if none stated), when any site conditions change, or after pruning (or other activity) not specified in this report.

The goal of this survey is to recommend measures to limit risk exposure while enhancing the beauty and health of each tree onsite. Tree that were deemed unfit to perform (i.e. poor structure or aesthetics, increased liability, poor vigor or prognosis, etc.) in the proposed project were labeled for removal. Clients may choose to accept or disregard the recommendations contained within this report, or seek additional advice. ***To live near trees is to accept some degree of risk. The only way to eliminate all risk is to remove all trees onsite***.

SECTION 3: SUBJECT TREES AND OBSERVATIONS

During the site survey, specific measurements and parameters of all trees onsite were recorded on tree assessment worksheets; these data have been transferred into the table in Appendix A at the end of this document. In all, 25 trees consisting of three distinct species were assessed (see Figure 2 below). The age of the trees onsite ranged from mature to senescent and the health from rigorous to in-decline.



Source: USGS, ESRI and NAIP 2019

3.1 - Species Assessment

During the survey, tree assessments were conducted according to general ISA and City requirements; GPS waypoints were recorded, as were specific details of each tree. The tree species represented onsite are described in detail below, and a comprehensive table is provided in Appendix A of this report. In general, the species found onsite were appropriate for the location. A profile for each tree species is provided below.

Table 2. Tree Species Observed

Tree Species	Species Characterization	Count
Red River Gum ** *Eucalyptus camaldulensis*	This species is native to Australia. Its bark and twigs can be a litter problem. Cal-IPC classifies the invasiveness of this plant as limited. Its growth habit is erect or spreading and requires ample growing space. This species has evergreen foliage. Height: 45 - 150 feet. Width: 45 - 105 feet. Growth Rate: 36 or More Inches per Season. Longevity 50 to 150 years. Exposure Full Sun to Partial Shade. This species prefers wet to dry soil and is drought tolerant. It prefers clay, loam or sand textured soil. It is susceptible to beetle borers, oak root rot and root rot. Its branch strength rated as medium and root damage potential rated as moderate.	13
Peruvian pepper ** *Schinus molle*	This species tolerates saline soil and smog. Susceptible to Texas root rot, especially in desert. Cal-IPC (California Invasive Plant Council) classifies the invasiveness of this plant as limited. It is native to Northern South America and has Evergreen foliage. Height: 25 - 50 feet. Width: 25 - 40 feet. Growth Rate: 36 Inches per Season. Longevity 50 to 150 years. This species tolerates full sun and it prefers partial shade and moist to dry soil. It is drought tolerant and can be planted in clay, loam or sand textured soils. Susceptible to aphids, psyllid, scales and thrip, phytophthora, root rot, sooty mold and verticillium. Its branch strength is rated as medium weak and root damage potential is rated as high.	10
Chinese Saltcedar ** *Tamarix chinensis*	Chinese tamarisk (*Tamarix chinensis*) is a shrub or a tree of the family Tamaricaceae; this species is typically found along streams and lake shores, throughout California, but it is also used to mitigate erosion and provide screening along roads and highways. It is no longer planted because of its ability to invade natural habitats, and many government agencies now have tamarisk eradication programs. Chinese tamarisk is native to China and Korea, and it is known in many other parts of the world as an introduced species and sometimes an invasive noxious weed. This is a deciduous shrub growing to 4.5 m (14ft 9in) at a medium rate. It is in flower from July to September. The species has both male and female organs and is pollinated by insects. It tolerates sandy to clay soils, but prefers well-drained soil ranging from basic to acidic in nature. It cannot grow well in the shade. This species is also associated with dramatic changes in geomorphology, groundwater availability, soil chemistry, fire frequency, plant community composition, and native wildlife diversity. Tamarisk is used by introduced bees as a nectar source. It forms extensive thickets along rivers and lakes and has been shown to reduce the local biodiversity of flora and fauna. Cal-IPC (California Invasive Plant Council) classifies the invasiveness of this plant as High.	3

Chinese saltcedar can take the form of a tree or bush depending on maintenance, growing conditions, and other factors. Only those individuals with a tree-like form were assessed and included in this report.
(H) = Heritage Tree (S) = Significant Tree * California native tree species ** Cal-IPC invasive tree species

Source: UFEI 2019

3.2 - Observations

As indicated earlier, the most represented trees onsite were the red river gum, and Peruvian pepper. The gum trees were situated within a relic windrow within the property, but no tree qualified as protected given the lack of trees fitting the City's windrow definition within the Code. Because of lack of maintenance, competing canopies, age, and other conditions, many of the trees within the site showed signs of dieback, mechanical damage, decay and poor growth form. A few examples observed at the time of the survey are shown below.

Plate 1. This is a view of a decay at the flare of a gum onsite (tree #247).

Plate 2. This is a view of evidence of herbivory within the canopy of a gum tree onsite (tree #247).

Plate 3. This is a view of a large canker beneath a primary branch of a gum onsite (tree #248).

Plate 4. This is a view of stained bark within a canker on the stem of tree #249.

Plate 5. This is a view of a longitudinal fissure along the underside of a large branch (tree #251).

Plate 6. This is a view of a harvested, burnt stump with local basal sprouting (tree #253).

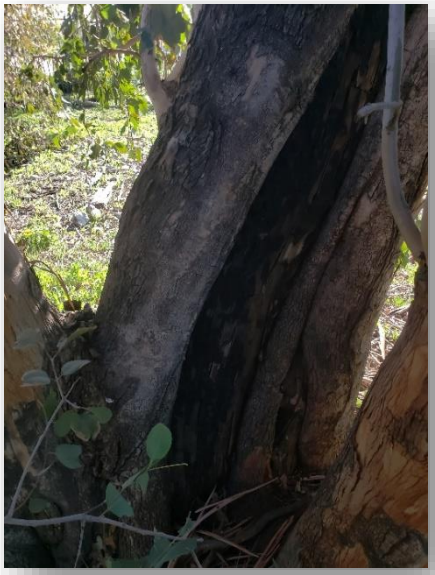


Plate 7. This is a view of a large stem cavity along the stem of tree #255.

Plate 8. This is a view of a tree with significant upper canopy deadwood or dieback (tree #267).

SECTION 4: DISCUSSION AND RECOMMENDATIONS

4.1 - Conclusion

Within the project site boundary, 26 trees were assessed composed of three distinct species (red river gum, Peruvian pepper, and Chinese saltcedar). Of these, none are native to California and all are listed as invasive with Cal-IPC given their ability to sprout and out-compete native tree species. Although there is evidence of a relic windrow, *none* of the trees within the site qualify as a functional windrow tree, and *no* special status trees (as described in the Fontana Municipal Code) occur within the site.

4.2 - Discussion

The arrangement of the trees onsite suggest the location is a remnant homestead location with just a foundation and trees remaining. Several of the trees onsite are in poor condition due to inappropriate location, lack of maintenance, mechanical damage, or factors (poor growth form, infection, limited growing space, herbivory, etc.). Because of their lack of adequate space, and other factors, 25 of the 26 trees should be removed as part of the project.

4.3 - Recommendations

4.3.1 - Tree Removal and Tree Replacement

Removal of living, native and non-native trees may result a biological impact. Recommended mitigation for living trees removed is replanting in accordance with the City's Code as provided in the Appendix B below. Native and non-native status within the tables have distinctly different replacement criteria in terms of quantity and size of the replacement tree.

4.3.2 - Trees Preserved

If any trees onsite will be preserved, strategic pruning compliant with ISA standards must be performed to subordinate non-primary, co-dominant stems, and canopy deadwood should be removed. Regular maintenance is recommended according to ISA standards.

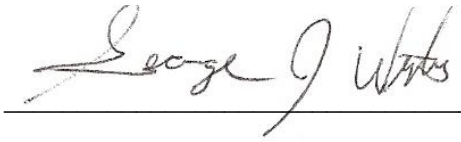
4.3.3 - Migratory Bird Treaty Act

Pursuant to the Migratory Bird Treaty Act (MBTA) and CDFG Code, removal of any trees, shrubs, or any other potential nesting habitat should be conducted outside the avian nesting season. The nesting season generally extends from early February through August, but can vary slightly from year to year based upon seasonal weather conditions.

QUALIFICATIONS OF ARBORIST

Mr. Wirtes is a Certified Arborist with the International Society of Arboriculture (CH-08084) and a member of the American Society of Consulting Arborists. Mr. Wirtes was certified in November of 2005 and has conducted numerous tree assessments for residential properties that involve oak and other tree species. Most notably, Mr. Wirtes has created an oak regeneration plan for a 2.3-acre project site in Ventura County as mitigation within a specific plan development. He has performed numerous tree surveys is Riverside, San Bernardino, and Los Angeles Counties on sites with as many as 400 trees. Mr. Wirtes' education includes a Bachelor of Science in Biology and a Master of Science in Environmental Science from California State University at Fullerton.

I certify that the details stated herein this report are true and accurate:



George Wirtes, MS
ISA Certified Arborist, CH-08084

SECTION 5: REFERENCES

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Appendix A - Tree Species Observed

Note - This tree survey and the details recorded below are meant to characterize the trees within the property. The assessment is not exhaustive, but is a balance between the competing forces of in-depth description and cost effectiveness. The goal was to accumulate enough data to make a judgment as to what role, if any, the existing trees may have in the proposed project.

Tree evaluation

Tree Tag #	Species[1]	DBH (inches)							Height (feet)	Canopy Width (feet)				Canopy Width (feet) (north on top)	Gen App	Env	Risk	Rating	Conclusion
		1st Trunk	2nd Trunk	3rd Trunk	4th Trunk	5th Trunk	6th Trunk	Total		N	E	S	W						
247	Red river gum	15	24					39	64	16	6	28	22	16 22 6 28	2	2	3	60	Remove
Canker at flair on North side, Vigor good, Competing canopy, Minor herbivory																			
248	Red river gum	21	10	12				43	66	16	10	30	16	16 16 10 30	2-3	3	2-3	60	Remove
Competing canopy, Poor canopy development, Poor aesthetics																			
249	Red river gum							0	42	14	14	28	14	14 14 14 28	2-3	3	3	55	Remove
Canker at base, Competing canopy, Poor stature and aesthetics, Flair sprouter, Grown to maturity, Poor attachment																			
250	Peruvian Pepper	12	6					18	28	10	8	12	12	10 12 8 12	2	2	2-3	70	Prune
Multi-stem, Good vigor, Canopy fair																			
251	Red river gum	14						14	40	12	8	10	16	12 16 8 10	3	2-3	2-3	55	Remove
Minor lean to South, Canopy dieback, Fissure in primary limb, Tree in decline																			
252	Red river gum	2	4.5	3				9.5	15	4	6	16	18	4 18 6 16	3	3	3	50	Remove
Evidence of borer, Stump sprouter, Poor vigor																			
253	Red river gum	5	4.5					9.5	21	6	4	4	18	6 18 4 4	3	3-4	3	50	Remove
Stump sprouter, Evidence of a fire, Poor aesthetics																			
254	Red river gum	6						6	22	4	2	8	4	4 4 2 8	3	3-4	3	50	Remove
Stump sprouter, Evidence of a fire, Poor aesthetics																			
255	Red river gum	11	15	19				45	52	6	6	24	14	6 14 6 24	2-3	3	3-4	55	Remove
Co-dominant stem, Canker at flair, Substantial cavity at crotch. Poor prognosis																			
256	Red river gum	5	5	5				15	23	4	8	12	8	4 8 8 12	3-4	3-4	3	45	Remove
Evidence of borer, Multi-stem, Increased canopy deadwood																			
257	Red river gum	5.5	2					7.5	15	3	4	6	8	3 8 4 6	3	3	3	50	Remove
Evidence of borer, Poor prognosis, Co-dominant stem																			
258	Peruvian pepper	6	6	5	5			22	14	14	16	14	18	14 18 16	2-3	3	3	55	Remove
Multi-stem, Evidence of fire, Poor aesthetics																			

															14						
259	Peruvian pepper	3	3	3				9	9	8	6	10	6		8		2-3	3	3	55	Remove
Multi-stem, Evidence of fire, Poor aesthetics														6	10	6					
260	Peruvian pepper	5	7	5	6	8		31	15	8	6	12		16	8		2-3	3	3	55	Remove
Multi-stem, Evidence of fire, Poor aesthetics														0	12	6					
261	Peruvian pepper	2.5	2.5					5	9	4	2	5	5		4		2	2-3	2-3	60	Remove
Evidence of fire, Poor Canopy development														5	5	2					
262	Peruvian pepper	5	3	5				13	10	7	6	8	12		7		2-3	3	3	55	Remove
Multi-stem, Evidence of burn and re-sprout														12	8	6					
263	Peruvian pepper	4	2					6	10	7	6	8	12		7		2-3	3	3	55	Remove
Multi-stem, Evidence of burn and re-sprout														12	8	6					
264	Peruvian pepper	7	5	5	6			23	21	9	12	18	12		9		3	3-4	3-4	45	Remove
Multi-stem, Burnt out primary stem														12	18	12					
265	Peruvian pepper	5	6					11	19	4	6	16	12		4		2-3	3	3	55	Remove
Multi-stem, Burnt out primary stem														12	16	6					
266	Peruvian pepper	4.5	7					11.5	11	4	10	16	14		4		2-3	3	3	55	Remove
Multi-stem, Burnt out primary stem														14	16	10					
267	Tamarisk	15						15	16	8	8	6	10		8		3	2-3	3	55	Remove
Significant upper canopy deadwood, Tree in decline														13	6	8					
268	Tamarisk	7						7	15	5	6	6	4		5		3	2-3	2-3	60	Remove
Lean to the South, Trash at base, Evidence of fire, Canopy dieback, Decay at flair														4	6	6					
269	Red river gum	2.5	3					5.5	10	2	4	10	6		2		3	3	3	50	Remove
Evidence of borer, Tree in decline, Result of mature basil sprouting														6	10	4					
270	Red river gum	4.5						4.5	10.5	2	6	2	4		2		3-4	3-4	3	45	Remove
Tree in decline, Little canopy, Living mass, multi-stem, substantial decay at base														4	2	6					
271	Tamarisk	13	6					19	19	5	6	5	9		5		3	3-4	3	50	Remove
Substantial decay at base, Evidence of termites, Increased liability														9	5	6					
272	Red river gum	11	7.5	4.5				23	39	14	6	20	12		14		2-3	3	2-3	55	Remove
Tree consists of mature basil sprouters, Poor attachment at base, Increased liability, Multi-stem														12	20	6					

Appendix B - Fontana Municipal Code Mitigation Matrix

Heritage and Significant Tree Replacement Table No. I for Trees Under Seven Inches in Diameter
Trunk Diameter (Approximate)/Replace With

Scale Rating (10% to 100%)	0.75″/	2″/	3.25″/	4.5″/	6″/
Very poor below 45%	1/15 gal.	1/15 gal.	1/15 gal.	1/15 gal.	1/15 gal.
Poor 45%—55%	1/15 gal.	1/15 gal.	1/15 gal.	1/15 gal.	1/15 gal.
Average 60%— 70%	1/15 gal.	1/24″ box	1/36″ box	1/48″ box	1/60″ box
Very good 75%— 85%	1/15 gal.	1/24″ box	2/36″ box	2/48″ box	2/60″ box
Excellent 90%— 100%	1/15 gal.	1/24″ box	3/36″ box	3/48″ box	3/60″ box

Heritage and Significant Tree Replacement Table No. II for Trees Seven Inches in Diameter or Greater

Scale Rating (10% to 100%)	Number Removed	Replace With	Minimum Size
Very poor below 45%	1	1	15 gallon
Poor 45%—55%	1	1	15 gallon
Average			
60%	1	4	24″ box
65%	1	4	24″ box
70%	1	4	36″ box
Very good			
75%	1	4	36″ box
80%	1	4	48″ box
85%	1	4	48″ box
Excellent			
90%	1	4	60″ box
95%	1	4	60″ box
100%	1	4	72″ box

Other Tree Replacement Table No. III for Trees under Seven Inches in Diameter Trunk Diameter (Approximate)/Replace With

Scale Rating (10% to 100%)	0.75″/	2″/	3.25″/	4.5″/	6″/
Very poor below 45%	1/15 gal.	1/15 gal.	1/15 gal.	1/15 gal.	1/15 gal.
Poor 45%—55%	1/15 gal.	1/15 gal.	1/15 gal.	1/15 gal.	1/15 gal.
Average 60%—70%	1/15 gal.	1/15 gal.	1/24″ box	1/36″ box	1/48″ box
Very good 75%—85%	1/15 gal.	1/24″ box	1/36″ box	1/48″ box	2/48″ box
Excellent 90%—100%	1/15 gal.	1/24″ box	1/36″ box	2/48″ box	3/48″ box

Other Tree Replacement Table No. IV for Trees Seven Inches in Diameter or Greater

Scale Rating (10% to 100%)	Number Removed	Replace With	Minimum Size
Very poor Below 45%	1	1	15 gallon
Poor 45%—55%	1	1	15 gallon
Average			
60%	1	4	24″ box
65%	1	4	24″ box
70%	1	4	36″ box
Very good			
75%	1	4	36″ box
80%	1	4	48″ box
85%	1	4	48″ box

Appendix C
Habitat Assessment

HIGHLAND RESIDENTIAL PROJECT
INITIAL STUDY

March 02, 2020 JN 176500

City of Fontana
Planning Department
Attn: Jon Dille, Associate Planner
8353 Sierra Avenue
Fontana, California 92335

SUBJECT: Results of a Habitat Assessment for the proposed Highland Residential Project – City of Fontana, San Bernardino County, California

Dear Mr. Dille:

Michael Baker International (Michael Baker) is pleased to submit this report to the City of Fontana documenting the results of a habitat assessment for the proposed Highland Residential Project (project or project site) located in the City of Fontana, San Bernardino County, California. Michael Baker conducted a literature review and field survey to characterize existing site conditions and assess the potential for special-status[1] plant and wildlife species to occur on or within the immediate vicinity of the project site that could pose a constraint to implementation of the proposed project. Specifically, this report provides a detailed assessment of the suitability of on-site habitat to support special-status plant and wildlife species that were identified by the California Department of Fish and Wildlife (CDFW) California Natural Diversity Database (CNDDB) RareFind 5, California Native Plant Society (CNPS) Online Inventory of Rare and Endangered Plants of California (Online Inventory), and other databases as potentially occurring in the project vicinity.

Project Location

The proposed project is generally located north of Foothill Boulevard, south of State Route 210 (SR-210), east of Interstate 15 (I-15), and west of Interstate 215 (I-215) in the City of Fontana, San Bernardino County, California (refer to Figure 1, *Regional Vicinity*). The project site is depicted in Section 35 of Township 1 North, Range 6 West, on the United States Geological Survey's (USGS) *Devore, California* 7.5-minute quadrangle (refer to Figure 2, *Project Vicinity*). Specifically, the project site is located at 14973 South Highland Avenue, between San Sevaine Road and Hemlock Avenue and consists of Assessor's Parcel Numbers 0228-021-08 and -09 (refer to Figure 3, *Project Site*).

[1] As used in this report, "special-status" refers to plant and wildlife species that are Federally-/State-listed, proposed, or candidates; plant species that have been designated a California Rare Plant Rank species by the California Native Plant Society; wildlife species that are designated by the California Department of Fish and Wildlife as Fully Protected, Species of Special Concern, or Watch List species; and State/locally rare vegetation communities.

5 Hutton Centre Drive, Suite 500 | Santa Ana, CA 92707
Office: 949-472-3505 | Fax: 949-472-8373

Project Description

The proposed project involves constructing 110 multi-family detached condominium units (refer to Attachment B, *Site Plan*). Four different floor plans, with three- and four-bedroom units and two-car garages are proposed. Of the 110 units, 64 would be arranged in a cluster development with eight units per cluster, and 46 of the units would be alley loaded. The proposed project would also include a recreational center, fitness park, and 113 guest parking spaces.

Methodology

Prior to conducting the field survey, Michael Baker conducted thorough literature reviews and records searches to determine whether special-status biological resources have the potential to occur on or within the general vicinity of the project site. A general habitat assessment (field survey) was conducted to document existing site conditions and determine the potential for special-status plant and wildlife species to occur within the project site.

Literature Review

Prior to conducting the field survey, literature reviews and records searches were conducted for special-status biological resources potentially occurring on or within the project vicinity. Previous special-status plant and wildlife species occurrence records within the USGS *Cucamonga Peak, Devore, Fontana,* and *Guasti, California* 7.5-minute quadrangles were determined through a query of the CNDDB, CNPS Online Inventory, Calflora Database, and species listings provided by the CDFW and the United States Fish and Wildlife Service (USFWS). In addition, Michael Baker reviewed available reports, survey results, and literature detailing biological resources previously observed on or within the vicinity of the project site to gain an understanding of existing site conditions, confirm previous species observations, and note the extent of any disturbances that have occurred within the project site that would otherwise limit the distribution of special-status biological resources. Standard field guides and texts were reviewed for specific habitat requirements of special-status and non-special-status biological resources, as well as the following resources:

- City of Fontana General Plan Update (City of Fontana, 2017);
- Five Year Review for San Bernardino Kangaroo Rat (*Dipodomys merriami parvus* [SBKR]) (USFWS, 2009);
- Google Earth Pro Historical Aerial Imagery from 1996 to 2018 (Google, Inc., 2020);
- San Bernardino County General Plan (County of San Bernardino, 2007);
- Species Accounts provided by Birds of North America (The Cornell Lab of Ornithology, 2020);
- Species Profile and Recovery Plan for coastal California gnatcatcher (*Polioptila californica californica*) (USFWS, 2010);
- *Staff Report on Burrowing Owl Mitigation* (CDFW, 2012);
- United States Department of Agriculture, Natural Resource Conservation Service's (USDA) *Custom Soil Resource Report for San Bernardino County Southwestern Part, California* (USDA, 2020); and
- USFWS Critical Habitat Mapper and Environmental Conservation Online System (USFWS, 2020).

Habitat Assessment

Michael Baker biologists Ashley Spencer and Tom Millington conducted a field survey on February 4, 2020 to confirm existing site conditions within the project site. Vegetation communities occurring within the project site were mapped on an aerial photograph and classified in accordance with the vegetation descriptions provided in *A Manual of California Vegetation* (Sawyer *et al*., 2009) and the *Preliminary Descriptions of the Terrestrial Natural Communities of California* (Holland, 1986). In addition, site characteristics such as soil condition, topography, hydrology, anthropogenic disturbances, indicator species, condition of on-site vegetation communities, and the presence of potentially regulated jurisdictional features were noted. Michael Baker used Geographic Information Systems (GIS) ArcView software to digitize the mapped vegetation communities and then transferred the data onto an aerial photograph to quantify the acreage of each vegetation community. Refer to Table 1 below for a summary of the survey dates, timing, surveyors, and weather conditions.

Table 1: Survey Dates, Timing, Surveyors, and Weather Conditions

Date	Time	Surveyors	Weather Conditions (start / finish)	
			Temperature (°F)	Wind Speed (mph)
February 4, 2020	0630 - 0730	Ashley Spencer Tom Millington	44 sunny / 45 sunny	3 - 7

All plant and wildlife species observed, as well as dominant plant species within each vegetation community, were recorded. Plant species observed during the habitat assessment were identified by visual characteristics and morphology in the field while unusual and less familiar plant species were photographed and later identified in the laboratory using taxonomical guides. Plant nomenclature used in this report follows the *Jepson Flora Project* (2020) and scientific names are provided immediately following common names of plant species (first reference only). Wildlife detections were made through aural and visual detection, as well as observation of sign including scat, trails, tracks, burrows, and nests. Field guides used to assist with identification of species during the habitat assessment included *The Sibley Guide to Birds* (Sibley, 2014) for birds, *A Field Guide to Western Reptiles and Amphibians* (Stebbins, 2003) for herpetofauna, and *A Field Guide to Mammals of North America* (Reid, 2006). Although common names of wildlife species are well standardized, scientific names are provided immediately following common names of wildlife species in this report (first reference only).

Existing Site Conditions

According to the *Custom Soil Resource Report for San Bernardino County Southwestern Part, California* (USDA, 2020), the project site is underlain by the following soil unit: Tujunga gravelly loamy sand, 0 to 9 Percent Slopes (TvC) (refer to Figure 4, *USDA Soils*). The project site is located at an elevation of approximately 1,424 to 1,449 feet above mean sea level and is primarily comprised of disturbed land that is subject to routine weed abatement, resulting in heavily disturbed and compacted surface soils. As such, native vegetation communities do not occur within the project site; instead it is comprised of disturbed land dominated by non-native and exotic plant species. Remnant building foundations and concrete debris piles can be found in the northeast portion of the project site. Areas surrounding the project site consist of SR-210 to the north, the Inland Valley Islamic Society property and undeveloped land to the east, residential

land uses to the south, and agricultural land to the west. Refer to Attachment C, *Site Photographs*, for representative photographs of the project site taken during the field survey.

Vegetation Communities and Land Cover Types

As previously stated, natural habitats within the project site have been eliminated due to routine weed abatement activities (i.e., disking, tilling), resulting in heavily disturbed and compacted surface soils. As such, native vegetation communities do not occur. The project site is primarily comprised of disturbed land that is dominated by ruderal/weedy, low-growing plant species and exotic plant species. These land cover types are depicted on Figure 5, *Vegetation Communities and Other Land Uses*, and described in further detail below. Additionally, refer to Attachment D, *Plant and Wildlife Species Observed List*, for a complete list of plant species observed within the project site during the field survey.

Exotic

Approximately 0.33-acre of exotic vegetation occurs within the northeast portion of the project site. Dominant plant species include red gum (*Eucalyptus camaldulensis*), silver dollar gum (*Eucalyptus polyanthemos*), Peruvian pepper tree (*Schinus molle*), and tamarisk (*Tamarix ramosissima*).

Disturbed

Disturbed areas comprise approximately 10.31 acres of the project site. Disturbed areas within the project site do not comprise a natural plant community and instead consist of unpaved bare ground or areas that have been previously disked or tilled as part of routine weed abatement activities. Surface soils within these areas have been heavily disturbed/compacted as a result of anthropogenic disturbances and are either devoid of vegetation or support non-native, ruderal plant species. Plant species observed in the disturbed areas include common fiddleneck (*Amsinckia intermedia*), Saharan mustard (*Brassica tournefortii*), ripgut brome (*Bromus diandrus*), Bermuda grass (*Cynodon dactylon*), coastal heron's bill (*Erodium cicutarium*), and dwarf nettle (*Urtica urens*).

Wildlife

Natural vegetation communities provide foraging habitat, nesting/denning sites, and shelter from adverse weather or predation. This section provides a general discussion of those wildlife species that were observed by Michael Baker during the field survey or that are expected to occur based on existing site conditions. The discussion is to be used as a general reference and is limited by the season, time of day, and weather conditions in which the field survey was conducted. Wildlife detections were based on calls, songs, scat, tracks, burrows, and direct observation. Refer to Attachment D, *Plant and Wildlife Species Observed List*, for a complete list of wildlife species observed during the field survey.

Fish

No fish or hydrogeomorphic features (e.g., perennial creeks, ponds, lakes, reservoirs) with frequent sources of water that would be sufficient in supporting fish populations were observed in the project site. Therefore, no fish species are expected to occur.

Amphibians

No amphibians or hydrogeomorphic features (e.g., perennial creeks, ponds, lakes, reservoirs) that would provide suitable breeding habitat for amphibians were observed within the project site. Due to routine weed abatement within the project site and extensive urban development in the surrounding area, it is unlikely that the project site would support a robust population of native amphibian species. Therefore, no amphibian species are expected to occur.

Reptiles

No reptiles were observed within the project site. Since the project site is primarily disturbed, it is expected to provide suitable habitat for a limited number of reptilian species that are acclimated to edge or urban environments. Reptilian species that may be present within the project site include western side-blotched lizard (*Uta stansburiana elegans*), Great Basin fence lizard (*Sceloporus occidentalis longipes*), and woodland alligator lizard (*Elgaria multicarinata webbii*).

Birds

The project site provides marginal foraging and nesting habitat for a variety of resident and migrant bird species that are adapted to a high degree of disturbance associated with the surrounding residential land uses and traffic, noise, and light pollution associated with SR-210 to the north. Bird species observed during the field survey included American pipit (*Anthus rubescens*), red-tailed hawk (*Buteo jamaicensis*), rock dove (*Columba livia*), American crow (*Corvus brachyrhynchos*), house finch (*Haemorhous mexicanus*), Say's phoebe (*Sayornis saya*), yellow-rumped warbler (*Setophaga coronata*), lesser goldfinch (*Spinus psaltria*), western meadowlark (*Sturnella neglecta*), Cassin's kingbird (*Tyrannus vociferans*), and mourning dove (*Zenaida macroura*). In addition, one (1) Cooper's hawk (*Accipiter cooperii*), a CDFW Watch List Species, was observed foraging over the project site.

Nesting birds are protected pursuant to the Federal Migratory Bird Treaty Act (MBTA) of 1918 and the California Fish and Game Code (CFGC)[2]. To maintain compliance with the MBTA and CFGC, clearance surveys are typically required prior to any ground disturbance or vegetation removal activities to avoid direct and indirect impacts to active bird nests and/or nesting birds. Consequently, if an active bird nest is destroyed or if project activities result in indirect impacts (e.g., nest abandonment, loss of reproductive effort) to nesting birds, it is considered "take" and is potentially punishable by fines and/or imprisonment.

The project site provides nesting habitat for year-round and seasonal avian residents as well as migrating songbirds that could occur in the area. Additionally, the project site provides nesting habitat for avian species that nest on the open ground (e.g., killdeer [*Charadrius vociferus*], western meadowlark). No remnant nests were observed within the project site during the field survey. Further, no active nests or birds displaying nesting behavior were observed.

[2] Section 3503 makes it unlawful to take, possess, or needlessly destroy the nest or eggs of any bird, except as otherwise provided by the CFGC or any regulation made pursuant thereto; Section 3503.5 makes it unlawful to take, possess, or destroy any birds in the orders Falconiformes or Strigiformes (birds-of-prey); and Section 3513 makes it unlawful to take or possess any migratory non-game bird except as provided by the rules and regulations adopted by the Secretary of the Interior under provisions of the MBTA, as amended (16 U.S.C. § 703 *et seq.*).

Mammals

Coyote (*Canis latrans*) and Audubon's cottontail rabbit (*Sylvilagus audubonii*) were the only mammal species observed during the field survey. The project site and surrounding habitat provides suitable habitat for a limited number of mammalian species adapted to living in edge or urban environments. However, the routine weed abatement and surrounding residential development limits the potential for mammalian species to occur. Other common mammalian species that may occur within the project site include opossum (*Didelphis virginiana*), striped skunk (*Mephitis mephitis*), and raccoon (*Procyon lotor*). Bats occur throughout most of southern California and may use the project site as foraging habitat; however, the project site is heavily disturbed. Common bat species that may forage within the project site include Mexican free-tailed bat (*Tadarida brasiliensis*) and big brown bat (*Eptesicus fuscus*). Hollow tree snags or limbs may provide potential roosting opportunities for these species; however, these features are not present within the project site.

Migratory Corridors and Linkages

Habitat linkages provide links between larger habitat areas that are separated by development. Wildlife corridors are similar to linkages but provide specific opportunities for animals to disperse or migrate between areas. A corridor can be defined as a linear landscape feature of sufficient width to allow animal movement between two comparatively undisturbed habitat fragments. Adequate cover is essential for a corridor to function as a wildlife movement area. It is possible for a habitat corridor to be adequate for one species yet, inadequate for others. Wildlife corridors are key features for dispersal, seasonal migration, breeding, and foraging. Additionally, open space can provide a buffer against both human disturbance and natural fluctuations in resources.

The project site is not located within any wildlife corridors, wilderness areas, wilderness study areas, or areas of critical environmental concern (County of San Bernardino, 2007). The project site is located within a heavily developed area of Fontana and is surrounded by I-15, SR-210, and residential development. The surrounding highways and land uses have fragmented the connection between the project site and surrounding naturally occurring vegetation communities. The disturbed landscape of the project site and absence of vegetation for cover most likely precludes the movement of wildlife through the project site. Further, elevated noise levels, vehicle traffic, lighting, and human presence associated with I-15, SR-210, and surrounding residential development, decrease the suitability of the project site to be used as a wildlife movement corridor or linkage.

State and Federal Jurisdictional Areas

There are three key agencies that regulate activities within inland streams, wetlands, and riparian areas in California. The U.S. Army Corps of Engineers (Corps) Regulatory Branch regulates discharge of dredged or fill material into "waters of the U.S." (WoUS) pursuant to Section 404 of the Federal Clean Water Act (CWA) and Section 10 of the Rivers and Harbors Act. Of the State agencies, the Regional Water Quality Control Board (Regional Board) regulates discharges to surface waters pursuant to Section 401 of the CWA and Section 13263 of the California Porter-Cologne Water Quality Control Act, and the CDFW regulates alterations to streambed and associated vegetation communities under Section 1600 *et seq*. of the CFGC.

No jurisdictional drainage or wetland features were observed within the boundaries of the project site. Therefore, development of the project site would not result in impacts to Corps, Regional Board, or CDFW jurisdictional areas and regulatory approvals would not be required.

Special-Status Biological Resources

The CNDDB and CNPS Online Inventory were queried for reported locations of special-status plant and wildlife species as well as special-status natural vegetation communities in the USGS *Cucamonga Peak, Devore, Fontana,* and *Guasti, California* 7.5-minute quadrangles. The field survey was conducted to assess the conditions of the habitat(s) within the project boundaries to determine if the existing vegetation communities, at the time of the field survey, have the potential to provide suitable habitat(s) for special-status plant and wildlife species. Additionally, the potential for special-status species to occur within the project site were determined based on the reported locations in the CNDDB and CNPS Online Inventory and their proximity, recency, abundance, and connectivity to known populations and historic distributions. Accordingly, the potential for special-status species to occur within the project site were determined based on the following:

- **Present**: the species was observed or detected within the project site during the field survey.
- **High**: Occurrence records (within 20 years) indicate that the species has been known to occur on or within 5 miles of the project site. Intact, suitable habitat occurs within the project site that makes the probability of the species occurring there high and the project site occurs within the known range of the species.
- **Moderate**: Occurrence records (within 20 years) indicate that the species has been known to occur within 5 miles of the project site. There is suitable habitat within the project site, but it is slightly disturbed and makes the probability of the species occurring there moderate and the project site occurs within the known range of the species.
- **Low**: Occurrence records (within 20 years) indicate that the species has been known to occur within 5 miles of the project site; however, there is poor quality or marginal habitat within the project site that makes the probability of the species occurring low. The project site is located outside the known range of the species.
- **Not Expected**: There are no occurrence records of the species occurring within 5 miles of the project site. Additionally, there is no suitable habitat within the project site or the project site is outside of the known range for the species.

The literature search identified fifty-seven (57) special-status plant species, sixty (60) special-status wildlife species, and five (5) special-status vegetation communities as occurring within the USGS *Cucamonga Peak, Devore, Fontana,* and *Guasti, California* 7.5-minute quadrangles. Special-status plant and wildlife species were evaluated for their potential to occur within the project site based on habitat requirements, availability and quality of suitable habitat, and known distributions. Special-status biological resources identified during the literature review as having the potential to occur within the vicinity of the project site are presented in Attachment E, *Potentially Occurring Special-Status Biological Resources*.

Special-Status Plants

Fifty-seven (57) special-status plant species have been recorded in the USGS *Cucamonga Peak, Devore, Fontana,* and *Guasti, California* 7.5-minute quadrangles by the CNDDB and CNPS Online Inventory (refer

to Attachment E, *Potentially Occurring Special-Status Biological Resources*). No special-status plant species were observed during the field survey. The project site is primarily comprised of exotic vegetation and disturbed parcels characterized by heavily disturbed/compacted soils. Additionally, the routine weed abatement within the project site and surrounding land uses have reduced the potential for the project site to provide suitable habitat for special-status plant species. Based on the results of the habitat assessment and a review of specific habitat preferences, distributions, and elevation ranges, it was determined that none of the special-status plant species identified by the CNDDB and CNPS Online Inventory database are expected to occur within the project site.

Special-Status Wildlife

Sixty (60) special-status wildlife species have been recorded in the USGS *Cucamonga Peak, Devore, Fontana,* and *Guasti, California* 7.5-minute quadrangles by the CNDDB (refer to Attachment E, *Potentially Occurring Special-Status Biological Resources*). Cooper's hawk was the only special-status wildlife species observed within the project site during the field survey. This species was observed foraging over the western portion of the project site before landing in a tree located on the adjacent property to the west. No other special-status wildlife species identified by the CNDDB were observed within the project site during the field survey. Based on the results of the habitat assessment and a review of specific habitat preferences, occurrence records, known distributions, and elevation ranges, it was determined that the project site has a low potential to support sharp-shinned hawk (*Accipiter striatus*; foraging habitat), burrowing owl (*Athene cunicularia*; foraging habitat), California horned lark (*Eremophila alpestris actia*; foraging and nesting habitat), western mastiff bat (*Eumops perotis californicus*; foraging habitat), loggerhead shrike (*Lanius ludovicianus*; foraging habitat), and San Diego black-tailed jackrabbit (*Lepus californicus bennettii*, foraging habitat). The remaining special-status wildlife species identified by the CNDDB database are not expected to occur within the project site. Due to regional significance, the potential occurrences of burrowing owl, SBKR, and California gnatcatcher are described in further detail below.

<u>Burrowing Owl</u>

The burrowing owl is currently listed as a CDFW Species of Special Concern. It is a grassland specialist distributed throughout western North America where it occupies open areas with short vegetation and bare ground within shrub, desert, and grassland environments. Burrowing owls use a wide variety of arid and semi-arid environments with well-drained, level to gently-sloping areas characterized by sparse vegetation and bare ground (Haug and Didiuk, 1993; Dechant *et al.*, 1999). Burrowing owls are dependent upon the presence of burrowing mammals (e.g., California ground squirrels [*Otospermophilus beecheyi*], coyotes, American badger [*Taxidea taxus*]) whose burrows are used for roosting and nesting. The presence or absence of mammal burrows is often a major factor that limits the presence or absence of burrowing owls. Where mammal burrows are scarce, burrowing owls have been found occupying man-made cavities, such as buried and non-functioning drain pipes, stand-pipes, and dry culverts. Burrowing owls may also burrow beneath rocks and debris or large, heavy objects such as abandoned cars, concrete blocks, or concrete pads. They also require open vegetation allowing open line-of-sight of the surrounding habitat to forage as well as watch for predators.

According to the CNDDB, there are twenty-one (21) occurrence records for burrowing owl within the

USGS *Devore, Fontana,* and *Guasti* 7.5-minute quadrangles. There are no occurrence records for burrowing owl within the USGS *Cucamonga Peak* 7.5-minute quadrangle. The closest, extant occurrence (Occurrence Number 1794) was recorded in 2009, approximately 2 miles northwest of the project site; a single burrowing owl was observed along the San Sevaine Creek in Riversidian alluvial fan sage scrub (RAFSS) habitat (CNDDB, 2011).

Despite a systematic search of the project site, no burrowing owls, signs (i.e., pellets, feathers, castings, or white wash), occupied burrows, or remnant burrows were observed during the field survey. The project site is sparsely vegetated with a variety of low-growing plant species that allow for open line-of-sight and foraging opportunities for burrowing owls. However, surface soils within the project site are heavily disturbed/compacted and lack suitable burrows (> 4 inches in diameter) that are needed to provide roosting and nesting opportunities. In addition, the presence of telephone and light poles are expected to further decrease the likelihood that burrowing owls would roost or nest within the project site as these features provide perching opportunities for larger raptors (e.g., red-tailed hawk) that are known to prey on burrowing owls. As such, burrowing owl is not expected to nest or roost in the project site; however, the species still has the potential to forage within the project site.

San Bernardino Kangaroo Rat

The SBKR is one of three subspecies of the Merriam's kangaroo rat (*Dipodomys merriami*). SBKR is Federally listed as endangered and as a CDFW Species of Special Concern. The Merriam's kangaroo rat is a widespread species that can be found from the inland valleys to the deserts. The SBKR subspecies, however, is confined to inland valley scrub communities, and more particularly, to scrub communities occurring along rivers, streams and drainages. Most of the drainages have been historically altered as a result of flood control efforts and the resulting increased use of river resources, including mining, off-road vehicle uses and road and housing development. This increased use of river resources has resulted in a reduction in both the amount and quality of habitat available for the SBKR. The habitat of SBKR is described as being confined to pioneer and intermediate RAFSS habitats, with sandy soils deposited by fluvial (water) rather than Aeolian (wind) processes. Burrows are dug in loose soil, usually near or beneath shrubs.

According to the CNDDB, there are thirty-six (36) occurrence records for SBKR within the USGS *Cucamonga Peak, Devore, Fontana,* and *Guasti* 7.5-minute quadrangles. The closest, extant occurrence (Occurrence Number 100) was recorded during surveys conducted from 1987 to 1996 on the agricultural land located southwest of the intersection of San Sevaine Road and Highland Avenue (CNDDB, 2018).

Suitable RAFSS habitat with sandy soils preferred by this species for burrowing are not present within the project site. The quality of surface soils within the project site (e.g., heavily disturbed/compacted) and ongoing weed abatement would likely preclude this species from occurring within the project site. Additionally, the project site has been effectively cut off from the natural fluvial processes and scouring regimes of Lytle Creek and flows exiting the San Gabriel Mountains by I-15, SR-210, and developments in the surrounding area. Further, ongoing weed abatement on-site further reduces the suitability of the project site to support SBKR. As such, SBKR is not expected to occur within the project site.

California Gnatcatcher

California gnatcatcher is a Federally threatened species and a CDFW Species of Special Concern. This species has restricted habitat requirements, being an obligate resident of sage scrub habitats that are dominated by California sagebrush (*Artemisia californica*). This species generally occurs below 750 feet elevation in coastal regions and below 1,500 feet inland. It ranges from Ventura County south to San Diego County and northern Baja California and is less common in sage scrub with a high percentage of tall shrubs. It prefers habitat with more low-growing vegetation. California gnatcatchers breed between mid-February and the end of August, with peak activity from mid-March to mid-May. Population estimates indicate that there are approximately 1,600 to 2,290 pairs of California gnatcatcher remaining. Declines are attributed to loss of sage scrub habitat due to development, as well as cowbird nest parasitism.

According to the CNDDB, there are seventeen (17) occurrence records for California gnatcatcher within the USGS *Cucamonga Peak*, *Devore*, *Fontana*, and *Guasti* 7.5-minute quadrangles. The closest, extant occurrence (Occurrence Number 879) was recorded in 1999, approximately 3 miles northwest of the project site; an unknown number were detected along Decliff Drive between Etiwanda Avenue and Wardman Bullock Road (CNDDB, 2008).

Suitable coastal sage scrub habitat dominated by California sagebrush is not present within the project site. The quality of surface soils within the project site (e.g., heavily disturbed/compacted) and ongoing weed abatement likely prevents the establishment of this vegetation community. Additionally, the project site has been effectively cut off from known populations of California gnatcatcher by I-15, SR-210, and developments in the surrounding area. As such, California gnatcatcher is not expected to occur within the project site.

Special-Status Vegetation Communities

Five (5) special-status vegetation communities have been reported in the USGS *Cucamonga Peak*, *Devore*, *Fontana*, and *Guasti* 7.5-minute quadrangles by the CNDDB: California walnut woodland, coastal and valley freshwater marsh, RAFSS, southern riparian forest, and southern sycamore alder riparian woodland. No special-status vegetation communities were observed within the project site during the field survey.

Critical Habitat

Under the Federal Endangered Species Act (FESA), "Critical Habitat" is designated at the time of listing of a species or up to one year after the date of its listing. Critical Habitat refers to specific areas within the geographical range of a species at the time it is listed that include the physical or biological features that are essential to the survival and eventual recovery of that species. Maintenance of these physical and biological features requires special management considerations or protection, regardless of whether individuals or the species are present or not. In the event that a project may result in take or adverse modification to a species' designated Critical Habitat, a project proponent may be required to engage in suitable mitigation. However, consultation for impacts to Critical Habitat is only required when a project has a Federal nexus. This may include projects that occur on Federal lands, require Federal permits (e.g., CWA Section 404 permit), or receive any Federal oversight or funding. If there is a Federal nexus, then the Federal agency that is responsible for providing funds or permits would be required to consult with the USFWS under the FESA.

The project site is not located within Federally-designated Critical Habitat (refer to Figure 6, *Critical Habitat*). Therefore, consultation with the USFWS under Section 7 of the FESA would not be required for the loss or adverse modification of Critical Habitat.

Conclusions and Recommendations

The project site is primarily comprised of disturbed land that is subject to routine weed abatement, resulting in heavily disturbed and compacted surface soils. As such, native vegetation communities do not occur within the project site; instead it is primarily comprised of disturbed land that is dominated by ruderal/weedy, low-growing plant species and exotic plant species.

No special-status plant species were observed during the field survey. Routine weed abatement within the project site and surrounding land uses have reduced the potential for the project site to provide suitable habitat for special-status plant species. Based on the results of the habitat assessment and a review of specific habitat preferences, distributions, and elevation ranges, it was determined that no special-status plant species identified by the CNDDB and CNPS Online Inventory database are expected to occur within the project site.

Cooper's hawk was the only special-status wildlife species observed during the field survey. Based on the results of the habitat assessment and a review of specific habitat preferences, occurrence records, known distributions, and elevation ranges, it was determined that the project site has a low potential to support sharp-shinned hawk, burrowing owl, California horned lark, western mastiff bat, loggerhead shrike, and San Diego black-tailed jackrabbit. All remaining special-status wildlife species identified by the CNDDB database are not expected to occur within the project site.

The project site and surrounding vegetation communities provide limited suitable foraging and nesting habitat for a variety of year-round and seasonal avian residents as well as migrating songbirds that could occur in the area. Nesting birds are protected under the MBTA and the CFGC. If project-related activities are to be initiated during the nesting season (January 1st to August 31st), a pre-construction nesting bird clearance survey should be conducted by a qualified biologist no more than three (3) days prior to the start of any vegetation removal or ground disturbing activities. The qualified biologist shall survey all suitable nesting habitat within the project impact area, and areas within a biologically defensible buffer zone surrounding the project impact area. Documentation of surveys and findings shall be submitted to the City of Fontana for review and file. If no active nests are detected during the clearance survey, project activities may begin, and no additional avoidance and minimization measures would be required. If an active nest is found, the bird species shall be identified and a "no-disturbance" buffer should be established around the active nest. The size of the "no-disturbance" buffer should be increased or decreased based on the judgement of the qualified biologist and level of activity and sensitivity of the species. It is further recommended that the qualified biologist periodically monitor any active nests to determine if project-related activities occurring outside the "no-disturbance" buffer disturb the birds and if the buffer should be increased. Once the young have fledged and left the nest, or the nest otherwise becomes inactive under natural conditions, project activities within the "no-disturbance" buffer may occur.

Due to the proximity of the project site to existing occurrence records for burrowing owl, pre-construction burrowing owl clearance surveys should be conducted by a qualified biologist to ensure that burrowing owls remain absent from the project site and impacts to burrowing owls do not occur. In accordance with the *Staff Report on Burrowing Owl Mitigation* (CDFW, 2012), two (2) pre-construction clearance surveys

should be conducted 14 to 30 days and 24 hours prior to any vegetation removal or ground disturbing activities. Documentation of surveys and findings shall be submitted to the City of Fontana for review and file. If no burrowing owls or occupied burrows are detected, construction may begin. If an occupied burrow is found within the development footprint during pre-construction clearance surveys, a burrowing owl exclusion and mitigation plan would need to be prepared and submitted to CDFW for approval prior to initiating project activities.

Please do not hesitate to contact me at (949) 855- 5777 or tommillington@mbakerintl.com or Ashley Spencer at (949) 472- 3454 or ashley.spencer@mbakerintl.com should you have any questions or require further information regarding this report.

Sincerely,

Thomas Millington
Senior Biologist
Natural Resources and Regulatory Permitting

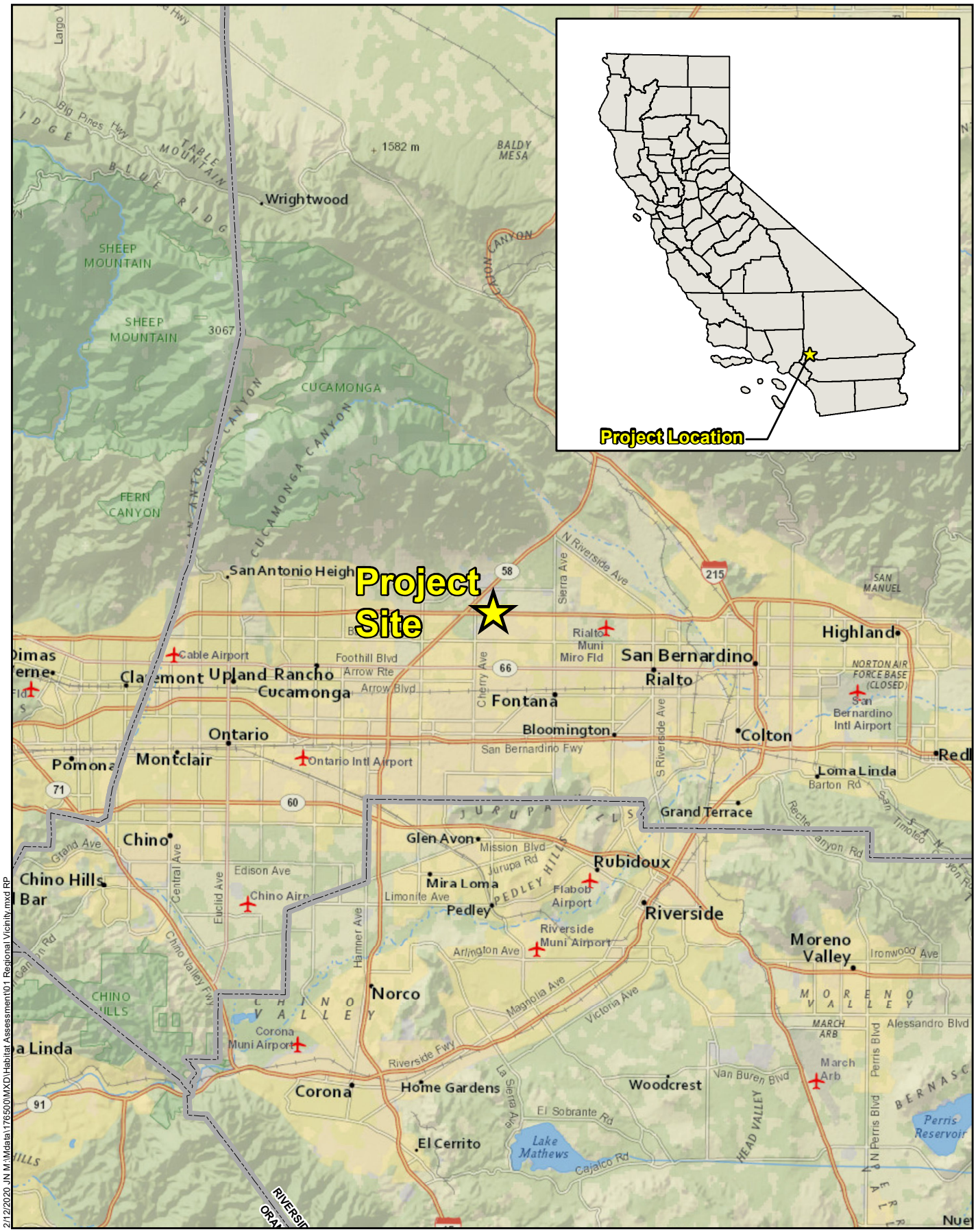
Ashley Spencer
Biologist
Natural Resources and Regulatory Permitting

Attachments:

A. *Project Figures*
B. *Site Plan*
C. *Site Photographs*
D. *Plant and Wildlife Species Observed List*
E. *Potentially Occurring Special-Status Biological Resources*
F. *References*

Attachment A

Project Figures



HIGHLAND RESIDENTIAL PROJECT
HABITAT ASSESSMENT REPORT

Regional Vicinity

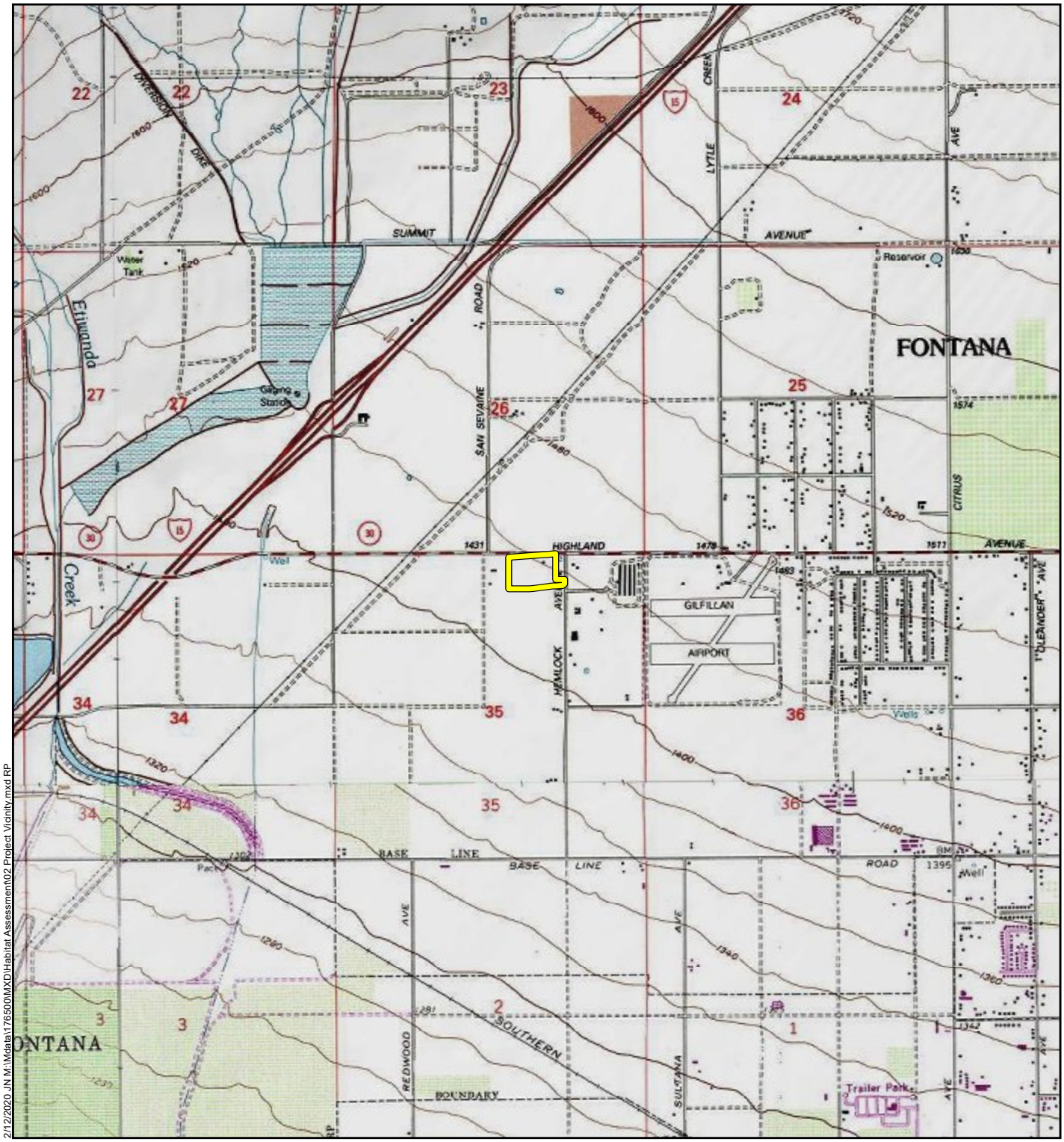
Michael Baker INTERNATIONAL

0 2.5 5 Miles

Source: National Geographic World Map

Figure 1

2/12/2020 JN M:\Mdata\176500\MXD\Habitat Assessment\01 Regional Vicinity.mxd RP



2/12/2020 JN M:\Mdata\176500\MXD\Habitat Assessment\02 Project Vicinity.mxd RP

Legend

Project Site

0 0.25 0.5 Miles

Source: Esri, USGS 7.5-Minute topographic quadrangle map

HIGHLAND RESIDENTIAL PROJECT
HABITAT ASSESSMENT REPORT

Project Vicinity

Figure 2

2/12/2020 JN M:\Mdata\176500\MXD\Habitat Assessment\03 Project Site.mxd RP

Legend

Project Site

Michael Baker INTERNATIONAL

0 250 500 Feet

Source: Esri World Imagery. Esri SSURGO Soils Database, Natural Resources Conservation Service (NRCS)

HIGHLAND RESIDENTIAL PROJECT
HABITAT ASSESSMENT REPORT

Project Site

Figure 3

2/12/2020 JN M:\Mdata\176500\MXD\Habitat Assessment\04 Soils.mxd RP

Legend

Project Site

TvC Tujunga Gravelly Loamy Sand, 0 to 9% Slopes

Michael Baker INTERNATIONAL

0 250 500 Feet

Source: Esri World Imagery. Esri SSURGO Soils Database, Natural Resources Conservation Service (NRCS)

HIGHLAND RESIDENTIAL PROJECT
HABITAT ASSESSMENT REPORT

USDA Soils

Figure 4

2/12/2020 JN M:\Mdata\176500\MXD\Habitat Assessment\05 Vegetative Communities and Other Land Uses.mxd RP

Legend

- Project Site
- Exotic (0.33 Acre)
- Disturbed (10.31 Acres)

Michael Baker INTERNATIONAL

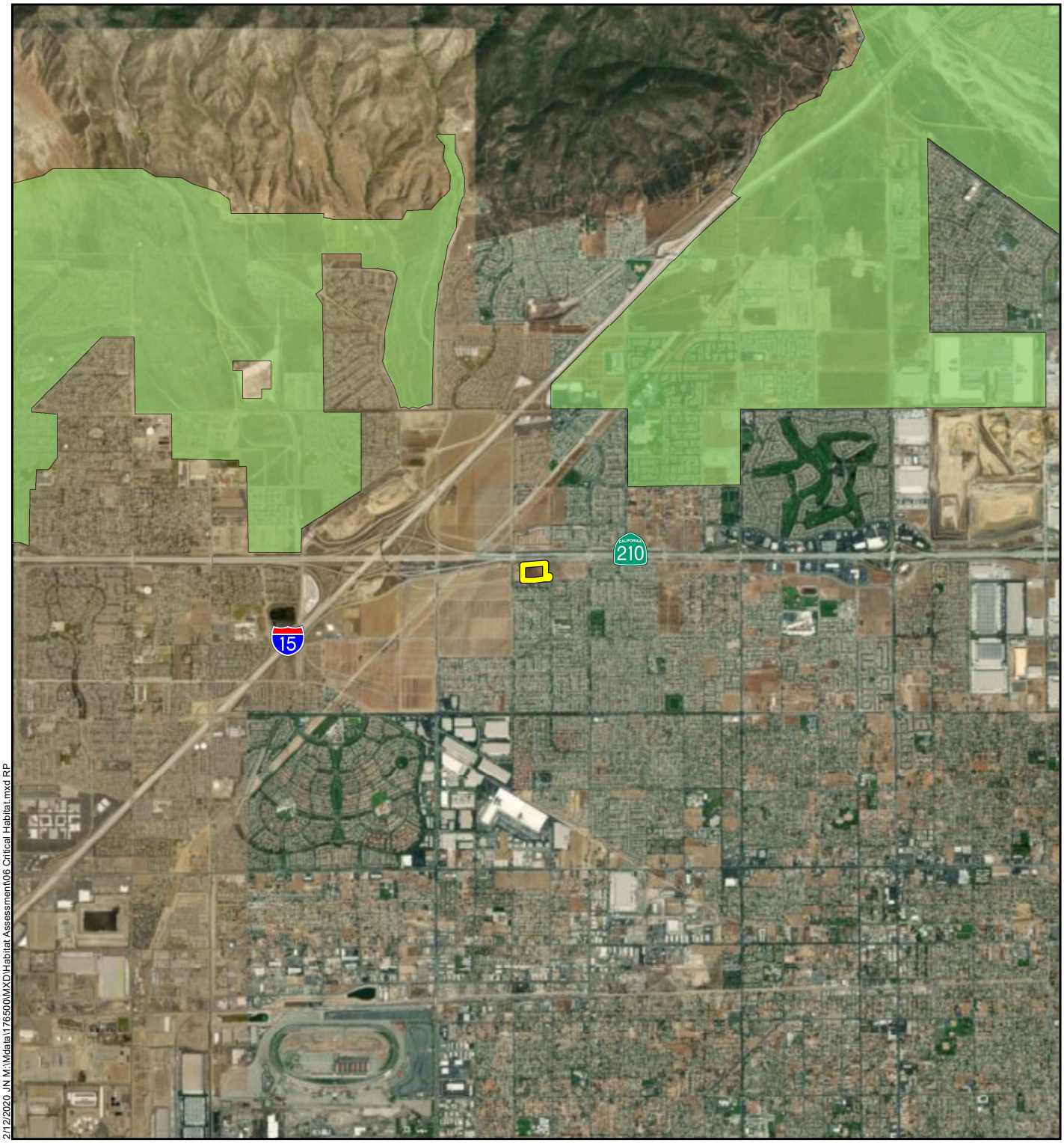
0 125 250 Feet

Source: Esri World Imagery.Michael Baker International

HIGHLAND RESIDENTIAL PROJECT
HABITAT ASSESSMENT REPORT

Vegetation Communities and Other Land Uses

Figure 5



2/12/2020 JN M:\Mdata\176500\MXD\Habitat Assessment\06 Critical Habitat.mxd RP

Legend

Project Site

San Bernardino Kangaroo Rat *(Dipodomys merriami parvus)*

Michael Baker INTERNATIONAL

0 1 2 Miles

Source: Esri World Imagery, US Fish and Wildlife Service

HIGHLAND RESIDENTIAL PROJECT
HABITAT ASSESSMENT REPORT

Critical Habitat

Figure 6

Attachment B

Site Plan

Site Summary - South Highland

Unit Count: 107
Site Area: 10.22 AC
Gross Density: 10.47 DU/AC
Total Buildable SF: 192,673 SF

Plan Type Summary

Plan Type	S.F.	BR	(Options)	BA	GAR	HT	Buildable SF	TOTAL
SFD - ALLEY LOADED								
Plan 1	1,861	3		2.50	2-Std	2	27,915	15
Plan 2	1,933	3		2.50	3-Std	2	28,995	15
Plan 3	2,069	3	Plus Den (Opt. 4th br)	3.00	3-Std	2	33,104	16
						Subtotal	90,014	**46**
SFD - DETACHED CLUSTER								
Plan 1	1,419	3		2.50	2-Std	2	21,285	15
Plan 2	1,653	3		3.00	2-Std	2	23,142	14
Plan 3	1,713	4		3.00	2-Std	2	30,834	18
Plan 4	1,957	4	(Downstairs Br)	3.00	2-Std	2	27,398	14
						Subtotal	102,659	**61**

Proposed Bldg. Setbacks

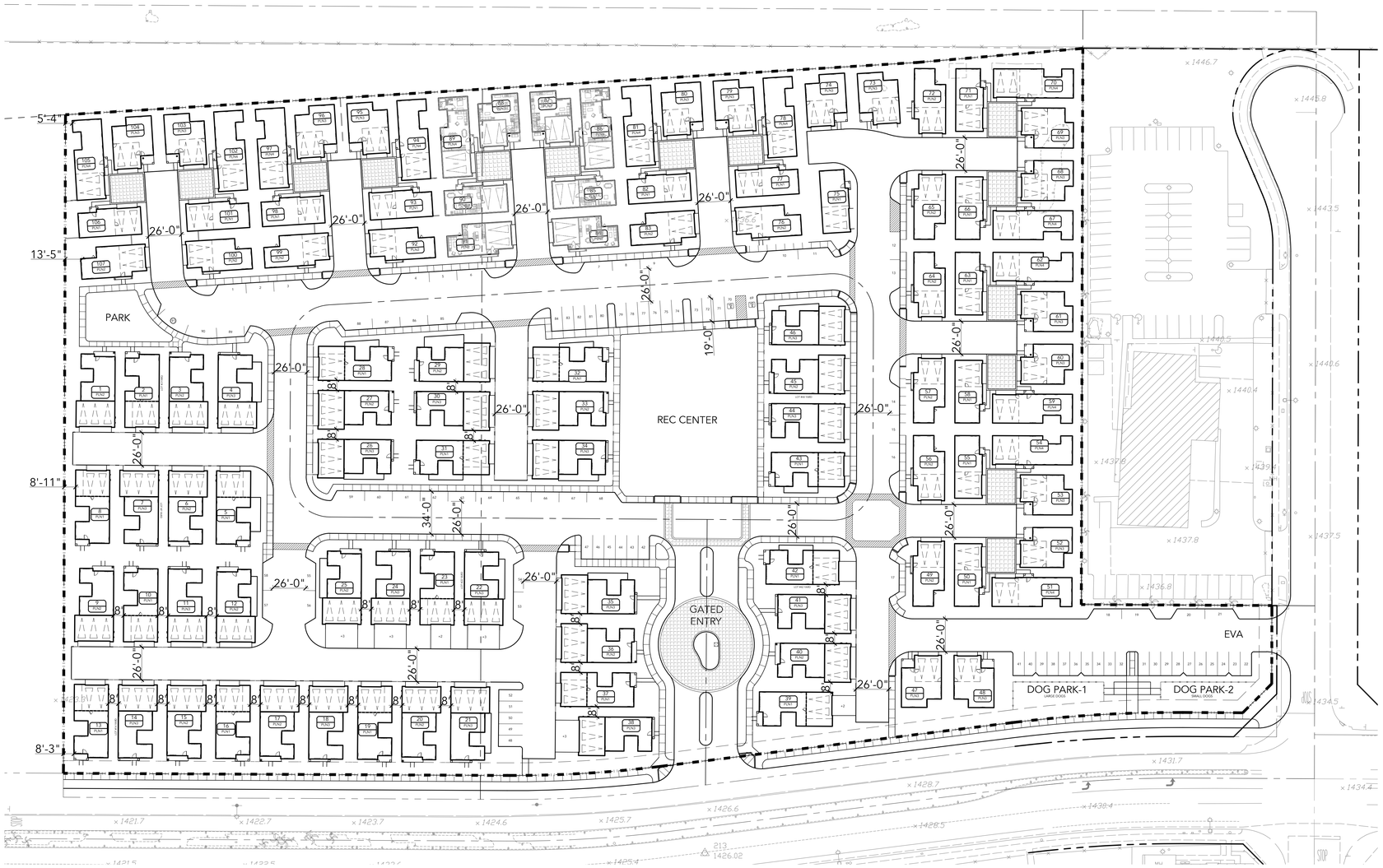
Street setback (South Highland Ave) 10 ft
Building to Building separation 8 ft / 10ft*
(* Note: Where bldgs are separated by a privacy wall, a 10' bldg separation shall be provided)

PARKING SUMMARY

PARKING REQUIRED (SFD) - Per Current Codes - Table 30-314.A Sec.30-166)	**Required**
Resident Parking: 2 garage parking space / unit (Up to 3 bdrm) =	214
Total Parking Required (Per Current Codes)=	**214**

PARKING REQUIRED (SFD) - Per Anticipated New Codes	**Required**
Resident Parking : 2 Parking Garage plus 0.5 open parking space / unit =	267.5
Guest Parking Parking: 0.5 space / unit =	**54**
Total Parking Required (Per Anticipated New Codes)=	**321**

PARKING PROVIDED:	**Provided**
Enclosed Garage Space =	**245**
Open Guest Parking Space:	
On Street Parking	91
Private driveway spaces	16
Total Guest space provided	**107**
Total Resident & Guest Parking Provided	**352**



HIGHLAND - FONTANA

FONTANA | CA

STRATHAM HOMES | TTM #20297
DATE 10 | 25 | 19 | UA JOB# 19-003 / 19-072

0 40 80
1"=40'-0"
NORTH

SITE PLAN | SP-1

URBAN ARENA

Attachment C

Site Photographs

Photograph 1: Standing in the southeast portion of the project site, facing west.

Photograph 2: Standing in the southeast portion of the project site, facing north.

Photograph 3: View of the exotic vegetation located in the northeast portion of the project site.

Photograph 4: View of the remnant building foundations and concrete debris piles located in the northeast portion of the project site.

Photograph 5: Standing adjacent to the northern boundary of the project site, looking west.

Photograph 6: Standing adjacent to the western boundary of the project site, looking east.

Photograph 7: Standing in the southern portion of the project site, facing north.

Photograph 8: Standing in the southeast portion of the project site, looking east.

Attachment D

Plant and Wildlife Species Observed List

Table D-1: Plant and Wildlife Species Observed List

Scientific Name*	Common Name	Cal-IPC Rating**	Special-Status Rank***
Plants			
Amsinckia intermedia	common fiddleneck		
*Brassica tournefortii**	Saharan mustard	High	
*Bromus diandrus**	ripgut brome	Moderate	
Croton setiger	turkey-mullein		
Cryptantha intermedia	common cryptantha		
*Cynodon dactylon**	Bermuda grass	Moderate	
*Erodium cicutarium**	coastal heron's bill	Limited	
*Eucalyptus camaldulensis**	red gum	Limited	
*Eucalyptus polyanthemos**	silver dollar gum		
Helianthus annuus	common sunflower		
Heterotheca grandiflora	telegraph weed		
*Hirschfeldia incana**	short podded mustard	Moderate	
*Marrubium vulgare**	white horehound	Limited	
*Nicotiana glauca**	tree tobacco	Moderate	
*Salsola tragus**	Russian thistle	Limited	
*Schinus molle**	Peruvian pepper tree	Limited	
*Tamarix ramosissima**	tamarisk	High	
*Urtica urens**	dwarf nettle		
*Verbesina encelioides**	golden crownbeard		
Birds			
Accipiter cooperii	Cooper's hawk		WL
Anthus rubescens	American pipit		
Buteo jamaicensis	red-tailed hawk		
Columba livia	rock dove		
Corvus brachyrhynchos	American crow		
Haemorhous mexicanus	house finch		
Sayornis saya	Say's phoebe		
Setophaga coronata	yellow-rumped warbler		
Spinus psaltria	lesser goldfinch		
Sturnella neglecta	western meadowlark		
Tyrannus vociferans	Cassin's kingbird		
Zenaida macroura	mourning dove		
Mammals			
Canis latrans	coyote		
Sylvilagus audubonii	Audubon's cottontail rabbit		

* Non-native plant species

** **California Invasive Plant Council (Cal-IPC) Ratings**

High — These species have severe ecological impacts on physical processes, plant and animal communities, and vegetation structure. Their reproductive biology and other attributes are conducive to moderate to high rates of dispersal and establishment. Most are widely distributed ecologically.

Moderate — These species have substantial and apparent—but generally not severe—ecological impacts on physical processes, plant and animal communities, and vegetation structure. Their reproductive biology and other attributes are conducive to moderate to high rates of dispersal, though establishment is generally dependent upon ecological disturbance. Ecological amplitude and distribution may range from limited to widespread.

Limited — These species are invasive, but their ecological impacts are minor on a statewide level or there was not enough information to justify a higher score. Their reproductive biology and other attributes result in low to moderate rates of invasiveness. Ecological amplitude and distribution are generally limited, but these species may be locally persistent and problematic.

*** **Special-Status Rank**

WL — Watch List - taxa that were previously designated as “Species of Special Concern” but no longer merit that status, or which do not yet meet SSC criteria, but for which there is concern and a need for additional information to clarify status.

Attachment E

Potentially Occurring Special-Status Biological Resources

Table E-1: Potentially Occurring Special-Status Biological Resources

Scientific Name Common Name	**Special-Status Rank***	**Habitat Preferences and Distribution Affinities**	**Observed On-site**	**Potential to Occur**
SPECIAL-STATUS WILDLIFE SPECIES				
Accipiter cooperii Cooper's hawk	WL G5 S4	Yearlong resident of California. Generally, found in forested areas up to 3,000 feet above mean sea level (amsl) in elevation, especially near edges and rivers. Prefers hardwood stands and mature forests, but can be found in urban and suburban areas where there are tall trees (25 to 50 feet high) for nesting. Prefers pines, oaks, Douglas-firs, beeches, spruces for nesting. Common in open areas during nesting season.	Yes	**Present:** This species was observed foraging over the project site during the 2020 field survey. However, this species is not expected to nest within the project site due to the absence of tall trees (25 to 50 feet high).
Accipiter striatus sharp-shinned hawk	WL G5 S4	Winter resident of southern California. Found in pine (*Pinus* spp.), fir (*Abies* spp.), and aspen (*Populus tremuloides*) forests. They can be found hunting in forest interior and edges from sea level to near alpine areas. Can also be found in rural, suburban and agricultural areas, where they often hunt at bird feeders.	No	**Low (Foraging):** The project site provides marginal foraging habitat for this species during the winter. This species does not breed in California.
Agelaius tricolor tricolored blackbird	ST SSC G2G3 S1S2	Range is limited to the coastal areas of the Pacific coast of North America, from Northern California to upper Baja California. Can be found in a wide variety of habitat including annual grasslands, wet and dry vernal pools and other seasonal wetlands, agricultural fields, cattle feedlots, and dairies. Occasionally forage in riparian scrub habitats along marsh borders. Basic habitat requirements for breeding include open accessible water, protected nesting substrate freshwater marsh dominated by cattails (*Typha* spp.), willows (*Salix* spp.), and bulrushes (*Schoenoplectus* spp.), and either flooded or thorny/spiny vegetation and suitable foraging space providing adequate insect prey.	No	**Not Expected:** Suitable nesting and foraging habitat consisting of annual grasslands, seasonal wetlands, freshwater marsh, and open accessible water are not present within the project site. Additionally, there are no occurrence records for this species within 5 miles of the project site (CNDDB, 2020).
Aimophila ruficeps canescens southern California rufous-crowned sparrow	WL G5T3 S3	Yearlong resident that is typically found between 3,000 and 6,000 feet amsl. Breed in sparsely vegetated scrubland on hillsides and canyons. Prefers coastal sage scrub dominated by California sagebrush (*Artemisia californica*), but they can also be found breeding in coastal bluff scrub, low-growing serpentine chaparral, and along the edges of tall chaparral habitats.	No	**Not Expected:** The project site is outside of the known elevation range for this species. Additionally, there are no occurrence records for this species within 5 miles of the project site (CNDDB, 2020).

Table E-1: Potentially Occurring Special-Status Biological Resources

Scientific Name Common Name	**Special-Status Rank***	**Habitat Preferences and Distribution Affinities**	**Observed On-site**	**Potential to Occur**
Anniella pulchra northern California legless lizard	SSC G3 S3	Occurs from the southern edge of the San Joaquin River in northern Contra Costa County south to the Ventura County, south of which there is a wide area where the species of *Anniella* is or are unknown. Occurs in moist warm loose soil with plant cover. Moisture is essential. Occurs in sparsely vegetated areas of beach dunes, chaparral, pine-oak woodlands, desert scrub, sandy washes, and stream terraces with California sycamores (*Platanus racemosa*), Fremont cottonwoods (*Populus fremontii*), or oaks (*Quercus* spp.). Leaf litter under trees and bushes in sunny areas and dunes stabilized with bush lupine *(Lupinus* sp.) and mock heather (*Ericameria ericoides*) often indicate suitable habitat. Often can be found under surface objects such as rocks, boards, driftwood, and logs. Can also be found by gently raking leaf litter under bushes and trees. Sometimes found in suburban gardens in southern California.	No	**Not Expected:** Suitable beach dune, chaparral, pine-oak woodlands, desert scrub, sandy wash, and stream terrace habitats preferred by this species do not occur within the project site. Additionally, there are no occurrence records for this species within 5 miles of the project site (CNDDB, 2020).
Anniella stebbinsi southern California legless lizard	SSC G3G4 S3S4	Locally abundant specimens are found in coastal sand dunes and a variety of interior habitats, including sandy washes and alluvial fans. A large protected population persists in the remnant of the once extensive El Segundo Dunes at Los Angeles International Airport.	No	**Not Expected:** Sandy wash and alluvial fan habitats preferred by this species are not present within the project site.
Aquila chrysaetos golden eagle	FP WL G5 S3	Yearlong resident of California. Occupies nearly all terrestrial habitats of the western states except densely forested areas. Favors secluded cliffs with overhanging ledges and large trees for nesting and cover. Hilly or mountainous country where takeoff and soaring are supported by updrafts is generally preferred to flat habitats. Deeply cut canyons rising to open mountain slopes and crags are ideal habitat.	No	**Not Expected:** This species is not expected to occur within the project site due to the lack of hilly and mountainous terrain preferred by this species for foraging and nesting. Additionally, there are no occurrence records for this species within 5 miles of the project site (CNDDB, 2020).
Arizona elegans occidentalis California glossy snake	SSC G5T2 S2	Inhabits arid scrub, rocky washes, grasslands, and chaparral habitats. Appears to prefer microhabitats of open areas and areas with soil loose enough for easy burrowing.	No	**Not Expected:** Arid scrub, rocky washes, and grassland habitats preferred by this species are not present within the project site. In addition, the project site primarily consists of heavily compacted and disturbed soils and not the loose soils preferred by this species for burrowing.

Table E-1: Potentially Occurring Special-Status Biological Resources

Scientific Name Common Name	Special-Status Rank*	Habitat Preferences and Distribution Affinities	Observed On-site	Potential to Occur
Artemisiospiza belli belli Bell's sage sparrow	WL G5T2T3 S3	This species has a wide, but sparse distribution in western Riverside County, specifically within the "Riverside lowlands, San Jacinto Foothills, Santa Ana Mountains, and Desert Transition Bioregions. Yearlong resident on the coastal side of southern California mountains. Breeds in coastal sage scrub and chaparral habitats from February to August. They require semi-open habitats with evenly spaced shrubs one to two meters high. Occurs in chaparral dominated by fairly dense stands of chamise (*Adenostoma fasciculatum*).	No	**Not Expected:** The chaparral and coastal sage scrub habitats preferred by this species for foraging and nesting are not present within the project site. In addition, this species is possibly extirpated from the area (CNDDB, 2020).
Asio otus long-eared owl	SSC G5 S3?	Nests in conifer, oak, riparian, pinyon-juniper, and desert woodlands that are either open or are adjacent to grasslands, meadows, or shrublands. Key habitat components are some dense cover for nesting and roosting, suitable nest platforms, and open foraging areas.	No	**Not Expected:** This species is not expected to occur within the project site due to the lack of dense woodland habitats preferred by this species for nesting and lack of open grasslands and meadows for foraging. Additionally, there are no occurrence records for this species within 5 miles of the project site (CNDDB, 2020).
Aspidoscelis hyperythra orange-throated whiptail	WL G5 S2S3	Uncommon to fairly common over much of its range in Orange, Riverside, and San Diego counties. Also occurs in southwestern San Bernardino County near Colton. Semi-arid brushy areas typically with loose soil and rocks, including washes, streamsides, rocky hillsides, and coastal chaparral.	No	**Not Expected:** This species is not expected to occur within the project site due to the lack of washes, streamside, rocky hillside, and coastal chaparral habitats preferred by this species. Additionally, there are no occurrence records for this species within 5 miles of the project site (CNDDB, 2020).
Aspidoscelis tigris stejnegeri coastal whiptail	SSC G5T5 S3	This subspecies is found in coastal southern California, mostly west of the Peninsular Ranges and south of the Transverse Ranges, and north into Ventura County. Ranges south into Baja California. Found in a variety of ecosystems, primarily hot and dry open areas with sparse vegetation in chaparral, woodland, and riparian areas. Associated with rocky areas with little vegetation or sunny microhabitats within shrub or grassland associations.	No	**Not Expected:** This species is not expected to occur within the project site due to the lack of chaparral, woodland, and riparian habitats preferred by this species. Additionally, there are no occurrence records for this species within 5 miles of the project site (CNDDB, 2020).

Table E-1: Potentially Occurring Special-Status Biological Resources

Scientific Name Common Name	**Special-Status Rank***	**Habitat Preferences and Distribution Affinities**	**Observed On-site**	**Potential to Occur**
Athene cunicularia burrowing owl	SSC G4 S3	Yearlong resident of California. Primarily a grassland species, but it persists and even thrives in some landscapes highly altered by human activity. Occurs in open, annual or perennial grasslands, deserts, and scrublands characterized by low-growing vegetation. The overriding characteristics of suitable habitat appear to be burrows for roosting and nesting and relatively short vegetation with only sparse shrubs and taller vegetation.	No	**Low (Foraging):** No burrowing owls or suitable burrows (>4 inches in diameter) capable of providing roosting and nesting opportunities were observed within the project site. The lack of suitable burrows, quality of surface soils within the project site, and ongoing weed abatement likely preclude burrowing owls from roosting/nesting. However, the project site does provide suitable foraging habitat for this species.
Bombus crotchii Crotch bumble bee	SCE G3G4 S1S2	Found from coastal California east to the Sierra-Cascade crest and south into Mexico. Primarily occurs in California, including the Mediterranean region, Pacific coast, western desert, great valley, and adjacent foothills through most of southwestern California. Has also been recorded in Baja California, Baja California Sur, and in southwest Nevada. Inhabits open grassland and scrub habitats. Primarily nests underground. Food plant genera include *Antirrhinum*, *Phacelia*, *Clarkia*, *Dendromecon*, *Eschscholzia*, and *Eriogonum*.	No	**Not Expected:** This species is not expected to occur within the project site due to the ongoing weed abatement and lack of the preferred food plant genera.
Buteo regalis ferruginous hawk	WL G4 S3S4	Common winter resident of grasslands and agricultural areas in southwestern California. Frequents open grasslands, sagebrush flats, desert scrub, low foothills surrounding valleys, and fringes of pinyon-juniper habitats. This species does not breed in California.	No	**Not Expected:** Suitable open grasslands, sagebrush flats, desert scrub habitats preferred by this species for foraging are not present within the project site. Additionally, this species is not expected to nest within the project site because it does not breed in California and there are no occurrence records for this species within 5 miles of the project site (CNDDB, 2020).
Catostomus santaanae Santa Ana sucker	FT G1 S1	Occur in the watersheds draining the San Gabriel and San Bernardino Mountains of southern California. Streams that Santa Ana Sucker inhabit are generally perennial streams with water ranging in depth from a few inches to several feet and with currents ranging from slight to swift.	No	**Not Expected:** Perennial streams preferred by this species are not present within the project site. Additionally, the project site is not located within Federally designated Critical Habitat for this species.

Table E-1: Potentially Occurring Special-Status Biological Resources

Scientific Name Common Name	Special-Status Rank*	Habitat Preferences and Distribution Affinities	Observed On-site	Potential to Occur
Chaetodipus fallax fallax northwestern San Diego pocket mouse	SSC G5T3T4 S3S4	Found terrestrially in a wide variety of temperate habitats ranging from chaparral and grasslands to scrub forests and deserts. Open habitat on the Pacific slope from southwestern San Bernardino County to northwestern Baja California. Habitat types include coastal sage scrub, sage scrub/grassland ecotones, and chaparral communities. Major habitat requirement is the presence of low growing vegetation or rocky outcroppings, as well as sandy soil to dig burrows.	No	**Not Expected:** Suitable coastal sage scrub/grassland and chaparral habitats with low growing vegetation and rocky outcroppings are not present within the project site. In addition, the project site primarily consists of heavily compacted and disturbed soils and not the sandy soils preferred by this species for burrowing.
Chaetodipus fallax pallidus pallid San Diego pocket mouse	SSC G5T34 S3S4	Common resident of sandy herbaceous areas, usually in association with rocks or course gravel in southwestern California. Occurs mainly in arid coastal and desert border areas. Habitats include coastal scrub, chamise-redshank chaparral, mixed chaparral, sagebrush, desert wash, desert scrub, desert succulent shrub, pinyon-juniper, and annual grassland.	No	**Not Expected:** Suitable coastal sage scrub, chamise-redshank chaparral, mixed chaparral, sagebrush, desert wash, desert scrub, desert succulent shrub, pinyon-juniper, and annual grassland habitats preferred by this species are not present within the project site. In addition, the project site primarily consists of heavily compacted and disturbed soils and not the sandy soils preferred by this species for burrowing.
Circus hudsonius northern harrier	SSC G5 S3	Yearlong resident of California. Frequents meadows, grasslands, open rangelands, desert sinks, fresh and saltwater emergent wetlands; seldom found in wooded area. In general, it prefers saltwater marshes, wet meadows, sloughs, and bogs for nesting and foraging. Nests on the ground in shrubby vegetation or patches of dense vegetation, usually at the marsh edge.	No	**Not Expected:** Preferred habitat consisting of saltwater marshes, wet meadows, sloughs, and bogs for nesting and foraging are not present within the project site. Additionally, there are no occurrence records for this species within 5 miles of the project site (CNDDB, 2020).
Coleonyx variegatus abbotti San Diego banded gecko	SSC G5T3T4 S1S2	Found in southwestern California just inland from the Pacific coast, from Ventura County south into northwestern and central Baja California. Prefers granite or rocky outcrops in coastal scrub and chaparral habitats.	No	**Not Expected:** Coastal sage scrub and chaparral habitats preferred by this species are not present within the project site. Additionally, there are no occurrence records for this species within 5 miles of the project site (CNDDB, 2020).
Contopus cooperi olive-sided flycatcher	SSC G4 S4	Uncommon to common, summer resident in a wide variety of forest and woodland habitats below 9,000 feet amsl throughout California exclusive of the deserts, the Central Valley, and other lowland valleys and basins. Preferred nesting habitats include mixed conifer, montane hardwood-conifer, Douglas fir (*Pseudotsuga menziesii*), redwood (*Sequoiadendron giganteum*), red fir (*Abies magnifica*), and lodgepole pine (*Pinus contorta*).	No	**Not Expected:** Forest and woodland habitats preferred by this species for nesting and foraging are not present within the project site. Additionally, there are no occurrence records for this species within 5 miles of the project site (CNDDB, 2020).

Table E-1: Potentially Occurring Special-Status Biological Resources

Scientific Name Common Name	Special-Status Rank*	Habitat Preferences and Distribution Affinities	Observed On-site	Potential to Occur
Crotalus ruber red-diamond rattlesnake	SSC G4 S3	Found in southwestern California, from the Morongo Valley west to the coast and south along the peninsular ranges to mid Baja California. It can be found from the desert, through dense chaparral in the foothills (it avoids the mountains above around 4,000 feet amsl), to warm inland mesas and valleys, all the way to the cool ocean shore. It is most commonly associated with heavy brush with large rocks or boulders. Dense chaparral in the foothills, boulders associated coastal sage scrub, oak/pine woodlands, and desert slope scrub associations; however, chamise and red shank (*Adenostoma sparsifolium*) associations may offer better structural habitat for refuges and food resources for this species than other habitats.	No	**Not Expected:** Dense chaparral habitats with large rocks and boulders preferred by this species are not present within the project site. Additionally, there are no occurrence records for this species within 5 miles of the project site (CNDDB, 2020).
Dipodomys merriami parvus San Bernardino kangaroo rat	FE SSC G5T1 S1	Primarily found in Riversidian alluvial fan sage scrub and sandy loam soils, alluvial fans and flood plains, and along washes with nearby sage scrub. May occur at lower densities in Riversidian upland sage scrub, chaparral and grassland in uplands and tributaries in proximity to Riversidian alluvial fan sage scrub habitats. Tend to avoid rocky substrates and prefer sandy loam substrates for digging of shallow burrows.	No	**Not Expected:** Suitable Riversidian alluvial fan sage scrub habitat with sandy soils preferred by this species for burrowing are not present within the project site. The quality of surface soils within the project site (e.g., heavily disturbed/ compacted), ongoing weed abatement, and disconnection of the project site from natural fluvial processes likely precludes this species from occurring within the project site. Additionally, the project site is not located within Federally designated Critical Habitat for this species.
Dipodomys stephensi Stephens' kangaroo rat	FE ST G2 S2	Occur in arid and semi-arid habitats of open grassland or sparse shrublands with less than 50% protective cover. Require soft, well-drained substrate for building burrows and are typically found in areas with sandy soil in areas with <30 percent slope.	No	**Not Expected:** Suitable open grassland and sparse shrubland habitats with soft, sandy soils preferred by this species for burrowing are not present within the project site. The quality of surface soils within the project site (e.g., heavily disturbed/ compacted), and ongoing weed abatement likely precludes this species from occurring within the project site. Additionally, there are no occurrence records for this species within 5 miles of the project site (CNDDB, 2020) and the project site is not located within Federally designated Critical Habitat for this species.

Table E-1: Potentially Occurring Special-Status Biological Resources

Scientific Name Common Name	Special-Status Rank*	Habitat Preferences and Distribution Affinities	Observed On-site	Potential to Occur
Elanus leucurus white-tailed kite	FP G5 S3S4	Yearlong resident along the coastal ranges and valleys of California. Occurs in low elevation, open grasslands, savannah-like habitats, agricultural areas, wetlands, and oak woodlands. Uses trees with dense canopies for cover. Important prey item is the California vole (*Microtus californicus*). Nests in tall (20 to 50 feet) coast live oaks (*Quercus agrifolia*).	No	**Not Expected:** Preferred open grassland, savannahs, agriculture, and oak woodland habitats preferred by this species for foraging and nesting are not present within the project site. Additionally, there are no occurrence records for this species within 5 miles of the project site (CNDDB, 2020).
Empidonax traillii willow flycatcher	SE G5 S1S2	A rare summer resident of California with currently known breeding locations restricted primarily to the Sierra Nevada/Cascade region, near Buelton in Santa Barbara County; Prado Basin in Riverside County; and several locations in San Diego County. In California, the species is restricted to thickets of willows, whether along streams in broad valleys, in canyon bottoms, around mountain-side seepages, or at the margins of ponds and lakes.	No	**Not Expected:** Riparian habitat with thickets of willows that are adjacent to surface water preferred by this species for foraging and nesting are not present within the project site. Additionally, there are no occurrence records for this species within 5 miles of the project site (CNDDB, 2020).
Empidonax traillii extimus southwestern willow flycatcher	FE SE G5T2 S1	Uncommon summer resident in southern California primarily found in lower elevation riparian habitats occurring along streams or in meadows. The structure of suitable breeding habitat typically consists of a dense mid-story and understory and can also include a dense canopy. Nest sites are generally located near surface water or saturated soils. The presence of surface water, swampy conditions, standing or flowing water under the riparian canopy are preferred.	No	**Not Expected:** Riparian habitats with thickets of willows that are adjacent to surface water preferred by this species for foraging and nesting are not present within the project site. Additionally, there are no occurrence records for this species within 5 miles of the project site (CNDDB, 2020) and the project site is not located within Federally designated Critical Habitat for this species.
Eremophila alpestris actia California horned lark	WL G5T4Q S4	Yearlong resident of California. This subspecies is typically found in coastal regions. Breed in level or gently sloping shortgrass prairie, montane meadows, "bald" hills, open coastal plains, fallow grain fields, and alkali flats. Within southern California, California horned larks breed primarily in open fields, (short) grasslands, and rangelands. Nests on the open ground.	No	**Low (Foraging and Nesting):** The project site provides marginal foraging and nesting habitat for this species.
Eumops perotis californicus western mastiff bat	SSC G5T4 S3S4	Primarily a cliff-dwelling species, roost generally under exfoliating rock slabs. Roosts are generally high above the ground, usually allowing a clear vertical drop of at least 3 meters below the entrance for flight. In California, it is most frequently encountered in broad open areas. Its foraging habitat includes dry desert washes, flood plains, chaparral, oak woodland, open ponderosa pine forest, grassland, and agricultural areas.	No	**Low (Foraging):** The project site provides marginal foraging habitat for this species. This species is not expected to roost within the project site due to the lack of exfoliating rock slabs.

Table E-1: Potentially Occurring Special-Status Biological Resources

Scientific Name Common Name	Special-Status Rank*	Habitat Preferences and Distribution Affinities	Observed On-site	Potential to Occur
Falco mexicanus prairie falcon	WL G5 S4	The prairie falcon is associated primarily with perennial grasslands, savannahs, rangeland, some agricultural fields during the winter season, and desert scrub areas, all typically dry environments of western North American where there are cliffs or bluffs for nest sites. The species requires sheltered cliff ledges for cover and nesting which may range in height from low rock outcrops of 30 feet to vertical, 400 feet high (or more) cliffs and typically overlook some treeless country for hunting. Open terrain is used for foraging.	No	**Not Expected:** Suitable perennial grassland, savannah, and desert scrub habitats preferred by this species for foraging are not present within the project site. Additionally, this species is not expected to nest within the project site due to the lack of sheltered cliffs. Further, there are no occurrence records for this species within 5 miles of the project site (CNDDB, 2020).
Gila orcuttii arroyo chub	SSC G2 S2	Warm streams of the Los Angeles Plain, which are typically muddy torrents during the winter, and clear quiet brooks in the summer, possibly drying up in places. They are found both in slow-moving and fast-moving sections, but generally deeper than 16 inches.	No	**Not Expected:** Perennial streams preferred by this species are not present within the project site.
Icteria virens yellow-breasted chat	SSC G5 S3	Summer resident of California. Primarily found in tall, dense, relatively wide riparian woodlands and thickets of willows, vine tangles, and dense brush with well-developed understories. Breeding habitat within southern California primarily consists of dense, wide riparian woodlands and thickets of willows, vine tangles, and dense brush with well-developed understories. Nesting areas are associated with streams, swampy ground, and the borders of small ponds. It winters south the Central America. Found at elevations ranging from 820 to 2,625 feet amsl.	No	**Not Expected:** Riparian woodland habitats with thickets of willows and dense brush that are adjacent to surface water preferred by this species for foraging and nesting are not present within the project site. Additionally, there are no occurrence records for this species within 5 miles of the project site (CNDDB, 2020).
Lanius ludovicianus loggerhead shrike	SSC G4 S4	Yearlong resident of California. Prefers open habitats with bare ground, scattered shrubs, and areas with low or sparse herbaceous cover including open-canopied valley foothill hardwood, riparian, pinyon-juniper desert riparian, creosote bush scrub, and Joshua tree woodland. Requires suitable perches including trees, posts, fences, utility lines, or other perches. Nests in branches up to 14 feet above the ground frequently in a shrub with thorns or with tangled branching habitats.	No	**Low (Foraging):** The project site provides marginal foraging habitat for this species. This species is not expected to nest within the project site due to the lack of thorny/tangled branching habitats. Further, there are no occurrence records for this species within 5 miles of the project site (CNDDB, 2020).
Larus californicus California gull	WL G5 S4	Require isolated islands in rivers, reservoirs and natural lakes for nesting, where predations pressures from terrestrial mammals are diminished. Uses both fresh and saline aquatic habitats at variable elevations and degrees of aridity for nesting and for opportunistic foraging.	No	**Not Expected:** Suitable fresh/saline aquatic habitats used by this species for foraging and nesting are not present within the project site.

Table E-1: Potentially Occurring Special-Status Biological Resources

Scientific Name Common Name	Special-Status Rank*	Habitat Preferences and Distribution Affinities	Observed On-site	Potential to Occur
Lasiurus xanthinus western yellow bat	SSC G5 S3	Uncommon in California, known only in Los Angeles and San Bernardino Counties. Occurs in valley foothill riparian, desert riparian, desert wash, and palm oasis habitats. Prefers to roost and feed in, and near, palm oases and riparian habitats. Commonly found in the southwestern U.S. roosting in the skirt of dead fronds in both native and non-native palm trees.	No	**Not Expected:** This species is not expected to roost and forage within the project site due to the lack of palm oases and riparian habitats.
Laterallus jamaicensis coturniculus California black rail	ST FP G3G4T1 S1	Suitable habitat generally includes salt marshes, freshwater marshes, and wet meadows. Typical associated vegetation includes pickle weed (*Salicornia virginica*) in salt marshes and bulrushes in less saline habitats.	No	**Not Expected:** This species is not expected to nest and forage within the project site due to the lack of salt marsh, freshwater marsh, and wet meadow habitats. Additionally, there are no occurrence records for this species within 5 miles of the project site (CNDDB, 2020).
Lepus californicus bennettii San Diego black-tailed jackrabbit	SSC G5T3T4 S3S4	Occupies many diverse habitats, but primarily is found in arid regions supporting short-grass habitats, agricultural fields, or sparse coastal scrub.	No	**Low (Foraging):** The project site provides marginal habitat for this species.
Microtus californicus mohavensis Mohave river vole	SSC G5T1 S1	Found in moist habitats including meadows, freshwater marshes and irrigated pastures in the vicinity of the Mojave River. Suitable habitat it associated with ponds and irrigation canals along with the Mojave River proper. Alfalfa (*Medicago sativa*) fields may also provide habitat.	No	**Not Expected:** The project site is outside of the known range of this species (habitats adjacent to the Mojave River). Additionally, there are no occurrence records for this species within 5 miles of the project site (CNDDB, 2020).
Neotoma lepida intermedia San Diego desert woodrat	SSC G5T3T4 S3S4	Occurs in coastal scrub communities between San Luis Obispo and San Diego Counties. Found in a variety of shrub and desert habitats, primarily associated with rock outcroppings, boulders, cacti, or areas of dense undergrowth. Woodrats often are associated with cholla cactus which they use for water and dens or boulders and boulder piles. The most common natural habitats for records are chaparral, coastal sage scrub (including Riversidian sage scrub and Diegan coastal sage scrub) and grassland.	No	**Not Expected:** Suitable chaparral, coastal sage scrub, Riversidian sage scrub, and grassland habitats preferred by this species are not present within the project site.
Nyctinomops femorosaccus pocketed free-tailed bat	SSC G4 S3	Often found in pinyon-juniper woodlands, desert scrub, desert succulent shrub, desert riparian, desert wash, alkali desert scrub, Joshua tree (*Yucca brevifolia*) woodland, and palm oasis habitats. Prefers rocky desert areas with high cliffs or rock outcrops, which are used as roosting sites.	No	**Not Expected:** This species is not expected to roost and forage within the project site due to the lack of palm oasis and desert scrub and riparian habitats with high cliffs and rock outcrops.

Table E-1: Potentially Occurring Special-Status Biological Resources

Scientific Name Common Name	**Special-Status Rank***	**Habitat Preferences and Distribution Affinities**	**Observed On-site**	**Potential to Occur**
***Oncorhynchus mykiss irideus* pop. 10** steelhead - southern California DPS	FE G5T1Q S1	Steelhead can survive in a wide range of temperature conditions. Species is found where dissolved oxygen concentration is at least 7 parts per million. In streams, deep low-velocity pools are important wintering habitats. Spawning habitat consists of gravel substrates free of excessive silt.	No	**Not Expected:** Perennial streams preferred by this species are not present within the project site.
Onychomys torridus ramona southern grasshopper mouse	SSC G5T3 S3	Common in arid desert habitats of the Mojave and southern Central Valley of California. Known elevation range is generally below 3,000 feet amsl. Little is known about habitat requirements; however, it is commonly found in scrub habitats with friable soils for digging in desert areas. It is believed that alkali desert scrub and desert scrub habitats are preferred, with somewhat lower densities expected in other desert habitats, including succulent shrub, wash, and riparian areas. Also occurs in coastal scrub, mixed chaparral, sagebrush, low sage, and bitterbrush habitats.	No	**Not Expected:** Desert scrub habitats with friable soils preferred by this species are not present within the project site. Additionally, there are no occurrence records for this species within 5 miles of the project site (CNDDB, 2020).
Ovis canadensis nelson desert bighorn sheep	FP G4T4 S3	Preferred habitat is near mountainous terrain above the desert floor that is visually open, as well as steep and rocky. Most Mojave Desert mountain ranges satisfy these requirements well. Surface water is another element that is considered important to population health.	No	**Not Expected:** Mountainous terrain preferred by this species is not present within the project site.
Pandion haliaetus osprey	WL G5 S4	Winter resident of southern California. Associated strictly with large, fish-bearing waters, primarily in ponderosa pine through mixed conifer habitats. Uses large trees, snags, and dead-topped trees in open forest habitats for cover and nesting. Requires open, clear waters for foraging and uses rivers, lakes, reservoirs, bays, estuaries, and surf zones.	No	**Not Expected:** Mixed conifer habitats adjacent to a large water body preferred by this species for foraging and nesting are not present within the project site. Additionally, there are no occurrence records for this species within 5 miles of the project site (CNDDB, 2020).
Perognathus longimembris brevinasus Los Angeles pocket mouse	SSC G5T1T2 S1S2	Occurs in lower elevation grasslands and coastal sage scrub communities in and around the Los Angeles Basin. Prefers open ground with fine sandy soils. May not dig extensive burrows, but instead will seek refuge under weeds and dead leaves instead.	No	**Not Expected:** Suitable grassland and coastal sage scrub habitats with fine sandy soils preferred by this species for burrowing are not present within the project site. The quality of surface soils within the project site (e.g., heavily disturbed/ compacted), and ongoing weed abatement likely precludes this species from occurring.

Table E-1: Potentially Occurring Special-Status Biological Resources

Scientific Name Common Name	**Special-Status Rank***	**Habitat Preferences and Distribution Affinities**	**Observed On-site**	**Potential to Occur**
Perognathus longimembris pacificus Pacific pocket mouse	FE SSC G5T1 S1	One of sixteen currently recognized subspecies of little pocket mouse (*Perognathus longimembris*), which is a widespread species that is distributed throughout arid regions of the western U.S. extending into northern part of Baja California peninsula and west central Sonora, Mexico. Pacific pocket mouse is associated with fine grain, sandy substrates in coastal strand, coastal dunes, river alluvium and coastal sage scrub habitats within 2.5 miles of the ocean in southern California.	No	**Not Expected:** Suitable coastal dune, river alluvium, and coastal sage scrub habitats with fine sandy soils preferred by this species for burrowing are not present within the project site. The quality of surface soils within the project site (e.g., heavily disturbed/ compacted), and ongoing weed abatement likely precludes this species from occurring. Additionally, there are no occurrence records for this species within 5 miles of the project site (CNDDB, 2020).
Phalacrocorax auritus double-crested cormorant	WL G5 S4	Yearlong resident of California. Prefers water less than 30 feet deep with rocky or gravel bottom. Rests in daytime and roosts overnight beside water on offshore rocks, islands, cliffs, dead branches of trees, wharfs, jetties, or even transmission lines. Occupies diverse aquatic habitats in all seasons. In California, most individuals are found nesting in coastal regions. Requires suitable places for daytime resting (e.g., rocks, sandbars, pilings). Forage in shallow water (< 30 feet deep).	No	**Not Expected:** Suitable aquatic habitats preferred by this species for foraging and nesting are not present within the project site. Additionally, there are no occurrence records for this species within 5 miles of the project site (CNDDB, 2020).
Phrynosoma blainvillii coast horned lizard	SSC G3G4 S4	Occurs in a wide variety of vegetation types including coastal sage scrub, annual grassland, chaparral, oak woodland, riparian woodland and coniferous forest. Its elevational range extends up to 4,000 feet in the Sierra Nevada foothills and up to 6,000 feet in the mountains of southern California. In inland areas, this species is restricted to areas with pockets of open microhabitat, created by disturbance (e.g. fire, floods, unimproved roads, grazing lands, and fire breaks). The key elements of such habitats are loose, fine soils with a high sand fraction; an abundance of native ants or other insects; and open areas with limited overstory for basking and low, but relatively dense shrubs for refuge.	No	**Not Expected:** Loose, fine sandy soils preferred by this species are not present within the project site. The quality of surface soils within the project site (e.g., heavily disturbed/ compacted), and ongoing weed abatement likely precludes this species from occurring.
Polioptila californica californica California gnatcatcher	FT SSC G4G5T2Q S2	Yearlong resident of sage scrub habitats that are dominated by California sagebrush. This species generally occurs below 750 feet amsl in coastal regions and below 1,500 feet amsl inland. Ranges from the Ventura County, south to San Diego County and northern Baja California and it is less common in sage scrub with a high percentage of tall shrubs. Prefers habitat with more low-growing vegetation.	No	**Not Expected:** Suitable coastal sage scrub habitat dominated by California sagebrush are not present within the project site. Additionally, the project site is not located within Federally designated Critical Habitat for this species.

Table E-1: Potentially Occurring Special-Status Biological Resources

Scientific Name Common Name	**Special-Status Rank***	**Habitat Preferences and Distribution Affinities**	**Observed On-site**	**Potential to Occur**
Rana muscosa southern mountain yellow-legged frog	FE SE WL G1 S1	The species inhabits ponds, lakes, and streams at moderate to high elevations. Usually associated with montane riparian habitats in lodgepole pine, yellow pine (*Pinus ponderosa*), sugar pine (*Pinus lambertiana*), white fir (*Abies concolor*), whitebark pine (*Pinus albicaulis*), and wet meadow vegetation types. Occupied alpine lakes usually have margins that are grassy or muddy and inhabit sandy or rocky shores at lower elevations. Streams utilized vary from rocky, high gradient streams with numerous pools, rapids, and small waterfalls to those with marshy edges and sod banks. Species seems to prefer streams of low gradient and slow or moderate flow with very small, shallow streams being less frequently used.	No	**Not Expected:** Montane riparian and wet meadow habitats preferred by this species are not present within the project site. Additionally, this species is possibly extirpated/extirpated from the United States Geological Survey's (USGS) *Cucamonga Peak* and *Devore, California* 7.5-minute quadrangles (CNDDB, 2020).
Rhaphiomidas terminatus abdominalis Delhi Sands flower-loving fly	FE G1T1 S1	Restricted to areas that include Delhi fine sand, an aeolian (wind-deposited) soil types. The highest density of this species has been found in habitat that includes a variety of plants including California buckwheat (*Eriogonum fasciculatum*), California croton (*Croton californicus*), deerweed (*Acmispon glaber*), and telegraph weed (*Heterotheca grandiflora*).	No	**Not Expected:** Delhi fine sand soils are not present within the project site.
***Rhinichthys osculus* ssp. 3** Santa Ana speckled dace	SSC G5T1 S1	Requires permanent flowing streams with summer water temperatures of 62 – 68 degrees Fahrenheit. Inhabits shallow cobble and gravel riffles and small streams that flow through steep, rocky canyons with chaparral covered walls.	No	**Not Expected:** Perennial streams preferred by this species are not present within the project site.
Salvadora hexalepis virgultea coast patch-nosed snake	SSC G5T4 S2S3	Occurs in brushy vegetation including coastal scrub and chaparral from the coast to the mountains. Takes refuge in existing small mammal burrows.	No	**Not Expected:** Coastal sage scrub and chaparral habitats preferred by this species are not present within the project site. Additionally, there are no occurrence records for this species within 5 miles of the project site (CNDDB, 2020).
Setophaga petechia yellow warbler	SSC G5 S3S4	Present in California from April through September. Nests in riparian areas dominated by willows, cottonwoods, California sycamores, or alders (*Alnus* spp.) or in mature chaparral. May also use oaks, conifers, and urban areas near stream courses.	No	**Not Expected:** Riparian habitat dominated by willows, cottonwoods, alders, and/or California sycamores are not present within the project site. Additionally, there are no occurrence records for this species within 5 miles of the project site (CNDDB, 2020).

Table E-1: Potentially Occurring Special-Status Biological Resources

Scientific Name Common Name	**Special-Status Rank***	**Habitat Preferences and Distribution Affinities**	**Observed On-site**	**Potential to Occur**
Spea hammondii western spadefoot	SSC G3 S3	Prefers open areas with sandy or gravelly soils, in a variety of habitats including mixed woodlands, grasslands, coastal sage scrub, chaparral, sandy washes, lowlands, river floodplains, alluvial fans, playas, alkali flats, foothills, and mountains. Rain pools which do not contain American bullfrogs (*Lithobates catesbeianus*), predatory fish, or crayfish are necessary for breeding. Estivates in upland habitats adjacent to potential breeding sites in burrows approximating 3 feet in depth.	No	**Not Expected:** Suitable sandy and gravelly soils and habitats preferred by this species area not present within the project site. The quality of surface soils within the project site (e.g., heavily disturbed/ compacted), and ongoing weed abatement likely precludes this species from occurring.
Strix occidentalis occidentalis California spotted owl	SSC G3G4T2T3 S3	Yearlong resident that roosts and breeds in forests and woodlands with large, old growth trees and snags, dense canopies (≥70% canopy closure), multiple canopy layers, and downed woody debris. Species is considered a habitat specialist; large, old trees are the key component as they provide nest sites and cover from inclement weather and add structure to the forest canopy and woody debris to the forest floor.	No	**Not Expected:** Suitable old growth woodland forest habitats preferred by this species for foraging and nesting are not present within the project site. Additionally, there are no occurrence records for this species within 5 miles of the project site (CNDDB, 2020).
Taxidea taxus American badger	SSC G5 S3	Occupies a wide variety of habitats including dry, open grassland, sagebrush, and woodland habitats. Require dry, friable, often sandy soil to dig burrows for cover, food storage, and giving birth. Occasionally found in riparian zones and open chaparral with less than 50% plant cover.	No	**Not Expected:** Suitable open grassland, sagebrush, and woodland habitats with sandy soils preferred by this species are not present within the project site. The quality of surface soils within the project site (e.g., heavily disturbed/ compacted), and ongoing weed abatement likely precludes this species from occurring. Additionally, there are no occurrence records for this species within 5 miles of the project site (CNDDB, 2020).
Thamnophis hammondii two-striped garter snake	SSC G4 S3S4	Occurs in or near permanent fresh water, often along streams with rocky beds and riparian growth up to 7,000 feet amsl.	No	**Not Expected:** Permanent freshwater is not present within the project site. Additionally, there are no occurrence records for this species within 5 miles of the project site (CNDDB, 2020).
Vireo bellii pusillus least Bell's vireo	FE SE SSC G5T2 S2	Summer resident in southern California. Breeding habitat generally consists of dense, low, shrubby vegetation in riparian areas, and mesquite brushlands, often near water in arid regions. Early successional cottonwood-willow riparian groves are preferred for nesting. The most critical structural component of nesting habitat in California is a dense shrub layer that is 2 to 10 feet (0.6 to 3.0 meters) above ground. The presence of water, including ponded surface water or moist soil conditions, may also be a key component for nesting habitat.	No	**Not Expected:** Riparian habitats with early successional cottonwood – willow groves that are adjacent to surface water preferred by this species for foraging and nesting are not present within the project site. Additionally, the project site is not located within Federally designated Critical Habitat for this species.

Table E-1: Potentially Occurring Special-Status Biological Resources

Scientific Name Common Name	Special-Status Rank*	Habitat Preferences and Distribution Affinities	Observed On-site	Potential to Occur
Xanthocephalus xanthocephalus yellow-headed blackbird	SSC G5 S3	Locally common yearlong resident in California. Occurs in freshwater emergent wetlands, and moist, open areas along croplands and mud flats of lacustrine habitats. Prefers to nest in dense wetland vegetation characterized by tules, cattails, or other similar plant species along the border of lakes and ponds.	No	**Not Expected:** Freshwater emergent wetland habitats preferred by this species for foraging and nesting are not present within the project site. Additionally, there are no occurrence records for this species within 5 miles of the project site (CNDDB, 2020).
SPECIAL-STATUS PLANT SPECIES				
Acanthoscyphus parishii* var. *parishii Parish's oxytheca	4.2 G4?T3T4 S3S4	Annual herb. Habitats include sandy or shale chaparral. Found at elevations ranging from 3,750 to 6,748 feet amsl. Blooming period is June through August.	No	**Not Expected:** The project site is outside of the known elevation range for this species.
Ambrosia monogyra singlewhorl burrobrush	2B.2 G5 S2	Perennial shrub. Found in sandy soils within chaparral and Sonoran Desert scrub habitat. Found at elevations ranging from 33 to 1,640 feet amsl. Blooming period is August through November.	No	**Not Expected:** The quality of surface soils within the project site (e.g., heavily disturbed/ compacted), and ongoing weed abatement within the project site likely precludes this species from establishing.
Arctostaphylos glandulosa* ssp. *gabrielensis San Gabriel manzanita	1B.2 G5T3 S3	Perennial evergreen shrub. Occurs on rocky soils within chaparral habitats. Occurs at elevations ranging from 1,952 to 4,921 feet amsl. Blooms during the month of March.	No	**Not Expected:** The project site is outside of the known elevation range for this species.
Arenaria paludicola marsh sandwort	FE SE 1B.1 G1 S1	Perennial stoloniferous herb. Found on sandy, openings within marshes and swamps (freshwater or brackish). Found at elevations ranging from 12 to 558 feet amsl. Blooming period is May through August.	No	**Not Expected:** The project site is outside of the known elevation range for this species.
Asplenium vespertinum western spleenwort	4.2 G4 S4	Perennial rhizomatous herb. Found on rocky soils within chaparral, cismontane woodland, and coastal scrub habitat. Found at elevations ranging from 591 to 3,281 feet amsl. Blooming period is February through June.	No	**Not Expected:** The quality of surface soils within the project site (e.g., heavily disturbed/ compacted), and ongoing weed abatement within the project site likely precludes this species from establishing.
Berberis nevinii Nevin's barberry	FE SE 1B.1 G1 S1	Perennial evergreen shrub. Occurs on sandy or gravelly soils in chaparral, cismontane woodland, coastal scrub, and riparian scrub. Found at elevations ranging from 899 to 2,707 feet amsl. Blooming period is (February) March through June.	No	**Not Expected:** The quality of surface soils within the project site (e.g., heavily disturbed/ compacted), and ongoing weed abatement within the project site likely precludes this species from establishing.
Calochortus catalinae Catalina mariposa-lily	4.2 G3G4 S3S4	Perennial bulbiferous herb. Habitats include chaparral, cismontane woodland, coastal scrub, valley and foothill grassland. Found at elevations ranging from 49 to 2,297 feet amsl. Blooming period is (February) March to June.	No	**Not Expected:** The quality of surface soils within the project site (e.g., heavily disturbed/ compacted), and ongoing weed abatement within the project site likely precludes this species from establishing.

Table E-1: Potentially Occurring Special-Status Biological Resources

Scientific Name Common Name	Special-Status Rank*	Habitat Preferences and Distribution Affinities	Observed On-site	Potential to Occur
Calochortus plummerae Plummer's mariposa-lily	4.2 G4 S4	Perennial bulbiferous herb. Occurs on granitic and rocky soils within chaparral, cismontane woodland, coastal scrub, lower montane coniferous forest, and valley/foothill grassland. Grows in elevations ranging from 328 to 5,577 feet amsl. Blooming period is May through July.	No	**Not Expected:** The quality of surface soils within the project site (e.g., heavily disturbed/ compacted), and ongoing weed abatement within the project site likely precludes this species from establishing.
Calochortus weedii* var. *intermedius intermediate mariposa-lily	1B.2 G3G4T2 S2	Perennial bulbiferous herb. Found in chaparral, coastal scrub, and valley and foothill grasslands in rocky or calcareous soils. Found at elevations ranging from 344 to 2,805 feet amsl. Blooming period is from May to July.	No	**Not Expected:** The quality of surface soils within the project site (e.g., heavily disturbed/ compacted), and ongoing weed abatement within the project site likely precludes this species from establishing.
Chloropyron maritimum* ssp. *maritimum salt marsh bird's-beak	FE SE 1B.2 G4?T1 S1	Annual herb (hemiparasitic). Occurs on coastal dunes and marshes and swamps (coastal salt). Found at elevations ranging from 0 to 98 feet amsl. Blooming period is May through October (November).	No	**Not Expected:** The project site is outside of the known elevation range for this species.
Chorizanthe parryi* var. *parryi Parry's spineflower	1B.1 G3T2 S2	Annual herb. Occurs on sandy and/or rocky soils in chaparral, coastal sage scrub, and sandy openings within alluvial washes and margins. Found at elevations ranging from 951 to 3,773 feet amsl. Blooming period is April through June.	No	**Not Expected:** The quality of surface soils within the project site (e.g., heavily disturbed/ compacted), and ongoing weed abatement within the project site likely precludes this species from establishing.
Chorizanthe xanti* var. *leucotheca white-bracted spineflower	1B.2 G4T3 S3	Annual herb. Occurs on sandy or gravelly soils in coastal sage scrub (alluvial fans), Mojavean desert scrub, and pinyon and juniper woodland habitats. Found at elevations ranging from 984 to 3,937 feet amsl. Blooming period is April through June.	No	**Not Expected:** The quality of surface soils within the project site (e.g., heavily disturbed/ compacted), and ongoing weed abatement within the project site likely precludes this species from establishing.
Cladium californicum California sawgrass	2B.2 G4 S2	Perennial rhizomatous herb. Found in meadows and seeps, marshes and swamps (alkaline or freshwater). Found at elevations ranging from 197 to 5,249 feet amsl. Blooming period is June through September.	No	**Not Expected:** The quality of surface soils within the project site (e.g., heavily disturbed/ compacted), and ongoing weed abatement within the project site likely precludes this species from establishing.
Claytonia peirsonii* ssp. *peirsonii Peirson's spring beauty	1B.2 G2G3T2 S2	Perennial herb. Grows on scree within subalpine coniferous forest and upper montane coniferous forest habitats. Found at elevations ranging from 4,954 to 9,005 feet amsl. Blooming period is (March) May through June.	No	**Not Expected:** The project site is outside of the known elevation range for this species.
Cryptantha incana Tulare cryptantha	1B.3 G2 S2	Annual herb. Grows on gravelly or rocky soils within lower montane coniferous forest. Found at elevations ranging from 4,692 to 7,054 feet amsl. Blooming period is June through August.	No	**Not Expected:** The project site is outside of the known elevation range for this species.

Table E-1: Potentially Occurring Special-Status Biological Resources

Scientific Name Common Name	**Special-Status Rank***	**Habitat Preferences and Distribution Affinities**	**Observed On-site**	**Potential to Occur**
Deinandra paniculata paniculate tarplant	4.2 G4 S4	Annual herb. Occurs in coastal scrub, vernal pools, and valley/foothill grassland habitats. Found at elevations ranging from 82 to 3,084 feet amsl. Blooming period is (March) April through November (December).	No	**Not Expected:** The quality of surface soils within the project site (e.g., heavily disturbed/ compacted), and ongoing weed abatement within the project site likely precludes this species from establishing.
Diplacus johnstonii Johnston's monkeyflower	4.3 G4 S4	Annual herb. Found in lower montane coniferous forest (scree, disturbed areas, rocky or gravelly, roadside). Found at elevations ranging from 3,198 to 9,580 feet amsl. Blooming period is (April) May through August.	No	**Not Expected:** The project site is outside of the known elevation range for this species.
Dodecahema leptoceras slender-horned spineflower	FE SE 1B.1 G1 S1	Annual herb. Occurs on flood deposited terraces and washes in chaparral, coastal scrub, and alluvial fan sage scrub habitats. Found at elevations ranging from 1,181 to 2,690 feet amsl. Blooming period is April through June.	No	**Not Expected:** The quality of surface soils within the project site (e.g., heavily disturbed/ compacted), and ongoing weed abatement within the project site likely precludes this species from establishing.
Eriastrum densifolium* ssp. *sanctorum Santa Ana River woolly-star	FE SE 1B.1 G4T1 S1	Perennial herb. Grows on sandy or gravelly soils within chaparral and coastal scrub (alluvial fan) habitats. Found at elevations ranging from 298 to 2,001 feet amsl. Blooming period is April through September.	No	**Not Expected:** The quality of surface soils within the project site (e.g., heavily disturbed/ compacted), and ongoing weed abatement within the project site likely precludes this species from establishing.
Eriogonum microthecum* var. *alpinum alpine slender buckwheat	4.3 G5T3 S3	Perennial herb. Found in alpine dwarf scrub and Great Basin scrub, sometimes rocky or gravelly soils. Has an elevational range of 8,202 to 10,826 feet amsl. Blooming period is July to September.	No	**Not Expected:** The project site is outside of the known elevation range for this species.
Eriogonum microthecum* var. *johnstonii Johnston's buckwheat	1B.3 G5T2 S2	Perennial deciduous shrub. Grows on rocky soils in subalpine coniferous forest and upper montane coniferous forest habitat. Found at elevations ranging from 6,000 to 9,600 feet amsl. Blooming period is July through September.	No	**Not Expected:** The project site is outside of the known elevation range for this species.
Eriogonum umbellatum* var. *minus alpine sulphur-flowered buckwheat	4.3 G5T4 S4	Perennial herb. Occurs on gravelly soils within subalpine coniferous forest and upper montane coniferous forests. Found at elevations ranging from 5,906 to 10,066 feet amsl. Blooming period is June through September.	No	**Not Expected:** The project site is outside of the known elevation range for this species.
Eriophyllum lanatum* var. *obovatum Southern Sierra woolly sunflower	4.3 G5T4 S4	Perennial herb. Grows on sandy loam soils within lower montane coniferous forest and upper montane coniferous forest. Found at elevations ranging from 3,655 to 8,202 feet amsl. Blooming period is June though July.	No	**Not Expected:** The project site is outside of the known elevation range for this species.

Table E-1: Potentially Occurring Special-Status Biological Resources

Scientific Name Common Name	Special-Status Rank*	Habitat Preferences and Distribution Affinities	Observed On-site	Potential to Occur
Fritillaria pinetorum pine fritillary	4.3 G4 S4	Perennial bulbiferous herb. Associated with granitic and metamorphic soils within chaparral, lower montane coniferous forest, upper montane coniferous forest, subalpine coniferous forest, pinyon and juniper woodland. Found at elevations ranging from 5,692 to 10,826 feet amsl. Blooming period is May through July (September).	No	**Not Expected:** The project site is outside of the known elevation range for this species.
Galium angustifolium* ssp. *gabrielense San Antonio Canyon bedstraw	4.3 G5T3 S3	Perennial herb. Grows on granitic, sandy, or rocky soils within chaparral and lower montane coniferous forest. Found at elevations ranging from 3,937 to 8,694 feet amsl. Blooming period is April through August.	No	**Not Expected:** The project site is outside of the known elevation range for this species.
Galium jepsonii Jepson's bedstraw	4.3 G3 S3	Perennial rhizomatous herb. Grows on granitic, rocky, or gravelly soils within lower montane coniferous forest and upper montane coniferous forest habitats. Found at elevations ranging from 5,052 to 8,202 feet amsl. Blooming period is May through July.	No	**Not Expected:** The project site is outside of the known elevation range for this species.
Galium johnstonii Johnston's bedstraw	4.3 G4 S4	Perennial herb. Preferred habitats include chaparral, riparian woodland, lower montane coniferous forest, pinyon and juniper woodland. Found at elevations ranging from 4,003 to 7,546 feet amsl. Blooming period is June through July.	No	**Not Expected:** The project site is outside of the known elevation range for this species.
Heuchera caespitosa urn-flowered alumroot	4.3 G3 S3	Perennial rhizomatous herb. Grows on rocky soils within cismontane woodland, lower montane coniferous forest, riparian forest, and upper montane coniferous forest. Found at elevations ranging from 3,789 to 8,694 feet amsl. Blooming period is May through August.	No	**Not Expected:** The project site is outside of the known elevation range for this species.
Horkelia cuneata* var. *puberula mesa horkelia	1B.1 G4T1 S1	Perennial herb. Found on sandy or gravelly soils within chaparral, cismontane woodland, and coastal scrub habitats. Found at elevations ranging from 230 to 2,657 feet amsl. Blooming period is February through July (September).	No	**Not Expected:** The quality of surface soils within the project site (e.g., heavily disturbed/ compacted), and ongoing weed abatement within the project site likely precludes this species from establishing.
Juglans californica southern California black walnut	4.2 G4 S4	Perennial deciduous tree. Found in chaparral, cismontane woodland, coastal scrub, and riparian woodland habitats. Found at elevations ranging from 164 to 2,953 feet amsl. Blooming period is March through August.	No	**Not Expected:** This species was not observed onsite during the field survey.
Juncus duranii Duran's rush	4.3 G3 S3	Perennial rhizomatous herb. Habitats include lower and upper montane coniferous forests, meadows and seeps. Found at elevations ranging from 5,801 to 9,199 feet amsl. Blooming period is July through August.	No	**Not Expected:** The project site is outside of the known elevation range for this species.

Table E-1: Potentially Occurring Special-Status Biological Resources

Scientific Name Common Name	**Special-Status Rank***	**Habitat Preferences and Distribution Affinities**	**Observed On-site**	**Potential to Occur**
Lepechinia fragrans fragrant pitcher sage	4.2 G3 S3	Perennial shrub. Occurs in chaparral habitats. Found at elevations ranging from 66 to 4,298 feet amsl. Blooming period is March through October.	No	**Not Expected:** The quality of surface soils within the project site (e.g., heavily disturbed/ compacted), and ongoing weed abatement within the project site likely precludes this species from establishing.
Lepidium virginicum* var. *robinsonii Robinson's pepper-grass	4.3 G5T3 S3	Annual herb. Dry soils on chaparral and coastal sage scrub. Found at elevations ranging from 66 to 4,396 feet amsl. Blooming period is January through July.	No	**Not Expected:** The quality of surface soils within the project site (e.g., heavily disturbed/ compacted), and ongoing weed abatement within the project site likely precludes this species from establishing.
Lilium humboldtii* ssp. *ocellatum ocellated Humboldt lily	4.2 G4T4? S4?	Perennial bulbiferous herb. Found in openings within chaparral, cismontane woodland, coastal scrub, lower montane coniferous forest, and riparian woodland habitats. Found at elevations ranging from 98 to 5,906 feet amsl. Blooming period is March through July (August).	No	**Not Expected:** The quality of surface soils within the project site (e.g., heavily disturbed/ compacted), and ongoing weed abatement within the project site likely precludes this species from establishing.
Lilium parryi lemon lily	1B.2 G3 S3	Perennial bulbiferous herb. Occurs on mesic soils within lower montane coniferous forest, meadows and seeps, riparian forest, and upper montane coniferous forest. Grows in elevation ranging from 4,003 to 9,006 feet amsl. Blooming period is July through August.	No	**Not Expected:** The project site is outside of the known elevation range for this species.
Linanthus concinnus San Gabriel linanthus	1B.2 G2 S2	Annual herb. Grows in rocky openings within chaparral, lower montane coniferous forest, and upper montane coniferous forest. Found at elevations ranging from 4,987 to 9,186 feet amsl. Blooming period is April through July.	No	**Not Expected:** The project site is outside of the known elevation range for this species.
Lycium parishii Parish's desert-thorn	2B.3 G3? S1	Perennial shrub. Grows in coastal scrub and Sonoran Desert scrub habitats. Found at elevations ranging from 443 to 3,281 feet amsl. Blooming period is March through April.	No	**Not Expected:** The quality of surface soils within the project site (e.g., heavily disturbed/ compacted), and ongoing weed abatement within the project site likely precludes this species from establishing.
Malacothamnus parishii Parish's bush-mallow	1A GXQ SX	Perennial deciduous shrub. Found in chaparral and coastal scrub habitats. Found at elevations ranging from 1,000 to 1,493 feet amsl. Blooming period is June through July.	No	**Not Expected:** The quality of surface soils within the project site (e.g., heavily disturbed/ compacted), and ongoing weed abatement within the project site likely precludes this species from establishing.

Table E-1: Potentially Occurring Special-Status Biological Resources

Scientific Name Common Name	Special-Status Rank*	Habitat Preferences and Distribution Affinities	Observed On-site	Potential to Occur
Monardella australis* ssp. *jokerstii Jokerst's monardella	1B.1 G4T1 S1	Perennial rhizomatous herb. Grows on steep scree or talus slopes between breccia and secondary alluvial benches along drainages and washes. Found in chaparral and lower montane coniferous forest habitat. Blooming period is July through September. Found at elevations ranging from 4,429 to 5,741 feet amsl.	No	**Not Expected:** The project site is outside of the known elevation range for this species.
Monardella pringlei Pringle's monardella	1A GX SX	Annual herb. Found on sandy soils within coastal scrub habitats. Found at elevations ranging from 984 to 1,312 feet amsl. Blooming period is May through June.	No	**Not Expected:** The quality of surface soils within the project site (e.g., heavily disturbed/ compacted), and ongoing weed abatement within the project site likely precludes this species from establishing.
Monardella saxicola rock monardella	4.2 G3 S3	Perennial rhizomatous herb. Grows on rocky (usually serpentinite) soils in closed-cone coniferous forest, chaparral, and lower montane coniferous forest habitats. Found at elevations ranging from 1,640 to 5,906 feet amsl. Blooming period is June through September.	No	**Not Expected:** The project site is outside of the known elevation range for this species.
Muhlenbergia californica California muhly	4.3 G4 S4	Perennial rhizomatous herb. Found in mesic areas, meadows, seeps, and streambanks within chaparral, coastal scrub, and lower montane coniferous forest. Found at elevations ranging from 328 to 6,562 feet amsl. Blooming period is June through September.	No	**Not Expected:** The quality of surface soils within the project site (e.g., heavily disturbed/ compacted), and ongoing weed abatement within the project site likely precludes this species from establishing.
Muhlenbergia utilis aparejo grass	2B.2 G4 S2S3	Perennial herb. Usually occurs in coastal sage scrub, creosote bush scrub, and wetland riparian habitats. Found at elevations ranging from 820 to 3,281 feet amsl. Blooming period is October through March.	No	**Not Expected:** The quality of surface soils within the project site (e.g., heavily disturbed/ compacted), and ongoing weed abatement within the project site likely precludes this species from establishing.
Navarretia prostrata prostrate vernal pool navarretia	1B.1 G2 S2	Annual herb. Blooms April through July. Occurs on mesic sites and on alkaline soils in coastal scrub, valley and foothill grassland, vernal pool, meadows, and seeps. Known elevations range from 5 to 4,055 feet amsl.	No	**Not Expected:** The quality of surface soils within the project site (e.g., heavily disturbed/ compacted), and ongoing weed abatement within the project site likely precludes this species from establishing.
Opuntia basilaris* var. *brachyclada short-joint beavertail	1B.2 G5T3 S3	Perennial stem succulent. Grows in chaparral, Joshua tree woodland, Mojavean desert scrub, and pinyon and juniper woodland habitats. Found at elevations ranging from 1,394 to 5,906 feet amsl. Blooming period is April through June.	No	**Not Expected:** The quality of surface soils within the project site (e.g., heavily disturbed/ compacted), and ongoing weed abatement within the project site likely precludes this species from establishing.

Table E-1: Potentially Occurring Special-Status Biological Resources

Scientific Name Common Name	Special-Status Rank*	Habitat Preferences and Distribution Affinities	Observed On-site	Potential to Occur
Oreonana vestita woolly mountain-parsley	1B.3 G3 S3	Perennial herb. Associated with gravel and talus soils within lower montane coniferous forest, subalpine coniferous forest, and upper montane coniferous forest. Found at elevations ranging from 5,299 to 11,483 feet amsl. Blooming period is March through September.	No	**Not Expected:** The project site is outside of the known elevation range for this species.
Phacelia mohavensis Mojave phacelia	4.3 G4Q S4	Annual herb. Occurs on sandy or gravelly soils within cismontane woodland, lower montane coniferous forest, meadows and seeps, pinyon and juniper woodland. Found at elevations ranging from 4,593 to 8,202 feet amsl. Blooming period is April through August.	No	**Not Expected:** The project site is outside of the known elevation range for this species.
Phacelia stellaris Brand's star phacelia	1B.1 G1 S1	Annual herb. Found in coastal dunes and coastal scrub habitats. Found at elevations ranging from 3 to 1,312 feet amsl. Blooming period is March through June.	No	**Not Expected:** The quality of surface soils within the project site (e.g., heavily disturbed/ compacted), and ongoing weed abatement within the project site likely precludes this species from establishing.
Pseudognaphalium leucocephalum white rabbit-tobacco	2B.2 G4 S2	Perennial herb. Found on sandy and gravelly soils within chaparral, cismontane woodland, coastal scrub, and riparian woodland habitats. Found at elevations ranging from 0 to 6,890 feet amsl. Blooming period is August (July) through November (December).	No	**Not Expected:** The quality of surface soils within the project site (e.g., heavily disturbed/ compacted), and ongoing weed abatement within the project site likely precludes this species from establishing.
Quercus durata* var. *gabrielensis San Gabriel Mountains leather oak	4.2 G4T3 S3	Perennial evergreen shrub. Habitats include chaparral and cismontane woodland habitats. Found at elevations ranging from 1,476 to 3,281 feet amsl. Blooming period is April through May.	No	**Not Expected:** The quality of surface soils within the project site (e.g., heavily disturbed/ compacted), and ongoing weed abatement within the project site likely precludes this species from establishing.
Sagittaria sanfordii Sandford's arrowhead	1B.2 G3 S3	Perennial rhizomatous herb (emergent). Blooms May through October (November). Found in standing or slow-moving freshwater ponds, marshes, and ditches. Known elevations range from 0 to 1,180 feet amsl.	No	**Not Expected:** The project site is outside of the known elevation range for this species.
Senecio aphanactis chaparral ragwort	2B.2 G3 S2	Annual herb. Grows on alkaline soils within chaparral, cismontane woodland, and coastal scrub habitats. Found at elevations ranging from 49 to 2,625 feet amsl. Blooming period is January through April (May).	No	**Not Expected:** The quality of surface soils within the project site (e.g., heavily disturbed/ compacted), and ongoing weed abatement within the project site likely precludes this species from establishing.
Senecio astephanus San Gabriel ragwort	4.3 G3 S3	Perennial herb. Occurs on rocky slopes within coastal bluff scrub and chaparral habitats. Found at elevations ranging from 1,312 to 4,921 feet amsl. Blooming period is May through July.	No	**Not Expected:** The quality of surface soils within the project site (e.g., heavily disturbed/ compacted), and ongoing weed abatement within the project site likely precludes this species from establishing.

Table E-1: Potentially Occurring Special-Status Biological Resources

Scientific Name Common Name	**Special-Status Rank***	**Habitat Preferences and Distribution Affinities**	**Observed On-site**	**Potential to Occur**
Sphenopholis obtusata prairie wedge grass	2B.2 G5 S2	Perennial herb. Occurs in cismontane woodland and meadows and seeps within mesic soils. Found at elevations ranging from 984 to 6,562 feet amsl. Blooming period is April through July.	No	**Not Expected:** The quality of surface soils within the project site (e.g., heavily disturbed/ compacted), and ongoing weed abatement within the project site likely precludes this species from establishing.
Streptanthus bernardinus Laguna Mountains jewelflower	4.3 G3G4 S3S4	Perennial herb. Occurs in chaparral and lower montane coniferous forest habitat. Found at elevations ranging from 2,198 to 8,202 feet amsl. Blooming period is May through August.	No	**Not Expected:** The project site is outside of the known elevation range for this species.
Symphyotrichum defoliatum San Bernardino aster	1B.2 G2 S2	Perennial rhizomatous herb. Occurs near ditches, streams, and springs within cismontane woodland, coastal scrub, lower montane coniferous forest, meadows, seeps, marshes, and valley/foothill grassland. Grows in elevations ranging from 0 to 6,700 feet amsl. Blooming period is July through November (December).	No	**Not Expected:** The quality of surface soils within the project site (e.g., heavily disturbed/ compacted), and ongoing weed abatement within the project site likely precludes this species from establishing.
Viola pinetorum* ssp. *grisea grey-leaved violet	1B.3 G4G5T3 S3	Perennial herb. Associated with upper montane coniferous forest, subalpine coniferous forest, meadows and seeps. Found at elevations ranging from 4,921 to 11,155 feet amsl. Blooming period is April through July.	No	**Not Expected:** The project site is outside of the known elevation range for this species.
SPECIAL-STATUS VEGETATION COMMUNITIES				
CNDDB/Holland (1986) California walnut woodland **MCV (1995)** California walnut series **NVCS (2009)** *Juglans californica* woodland alliance	G3 S3.2	Found at elevations ranging from 490 to 2,952 feet amsl in riparian corridors, but most stands cover all hillslopes. Southern California black walnut is dominant or co-dominant in the tree canopy with white alder (*Alnus rhombifolia*), two petaled ash (*Fraxinus dipetala*), toyon (*Heteromeles arbutifolia*), coast live oak, valley oak (*Quercus lobata*), polished willow (*Salix laevigata*), arroyo willow (*Salix lasiolepis*), black elderberry (*Sambucus nigra*), and California bay (*Umbellularia californica*). Trees are less than 50 feet tall; canopy is open to continuous. Shrub layer is sparse to intermittent. Herbaceous layer is sparse or grassy.	No	**Absent:** This vegetation community does not occur within or adjacent to the project site.

Table E-1: Potentially Occurring Special-Status Biological Resources

Scientific Name Common Name	**Special-Status Rank***	**Habitat Preferences and Distribution Affinities**	**Observed On-site**	**Potential to Occur**
CNDDB/Holland (1986) Coastal and valley freshwater marsh **MCV (1995)** Cattail series, bulrush-cattail series **NVCS (2009)** *Typha (angustifolia, latifolia)-(Schoenoplectus* spp.) semipermanently flooded herbaceous alliance, *Typha domingensis* seasonally flooded temperate herbaceous alliance, *Typha latifolia* seasonally flooded herbaceous alliance	G5 S5	Occurs at elevations ranging from 0 to 1,148 feet amsl in semi-permanently flooded freshwater or brackish marshes with clayey or silty soils. Narrowleaf cattail (*Typha angustifolia*), southern cattail (*Typha domingensis*) or bulrush (*Typha latifolia*) is dominant or co-dominant in the herbaceous layer with creeping bentgrass (*Agrostis stolonifera*), pacific silverweed (*Argentina egedii*), *Cyperus* spp., desert saltgrass (*Distichlis spicata*), cockspur grass (*Echinochloa crus-galli*), common spikerush (*Eleocharis macrostachya*), great horsetail (*Equisetum telmateia*), *Juncus* spp., least duckweed (*Lemna minuta*), broad leaved pepper grass (*Lepidium latifolium*), water parsley (*Oenanthe sarmentosa*), common knotweed (*Persicaria lapathifolia*), dotted smartweed (*Persicaria punctate*), common reed (*Phragmites australis*), Chairmaker's bulrush (*Schoenoplectus americanus*), California bulrush (*Schoenoplectus californicus*), *Typha ×glauca* and rough cocklebur *(Xanthium strumarium*). Emergent trees may be present at low cover, including *Salix* spp.	No	**Absent:** This vegetation community does not occur within or adjacent to the project site.
CNDDB/Holland (1986) Riversidian alluvial fan sage scrub **MCV (1995)** Scalebroom series **NVCS (2009)** *Lepidospartum squamatum* intermittently flooded shrubland alliance	G3 S3	Found at elevations ranging from 164 to 4,922 feet amsl on intermittently or rarely flooded, low-gradient alluvial deposits along streams, washes, and fans. Scalebroom (*Lepidospartum squamatum*) is dominant, co-dominant, or conspicuous in the shrub canopy with burrobrush (*Ambrosia salsola*), California sagebrush, mule fat (*Baccharis salicifolia*), bladderpod (*Cleome isomeris*), California cholla (*Cylindropuntia californica*), brittlebush (*Encelia farinosa*), thick leaved yerba santa (*Eriodictyon crassifolium*), hairy yerba santa (*Eriodictyon trichocalyx*), California buckwheat, chaparral yucca (*Hesperoyucca whipplei*), deerweed, laurel sumac (*Malosma laurina*), prickly-pear cactus (*Opuntia littoralis*), lemonade berry (*Rhus integrifolia*), sugar bush (*Rhus ovata*), skunkbrush (*Rhus aromatica*), and poison oak (*Toxicodendron diversilobum*). Emergent trees or tall shrubs may be present at low cover, including mountain mahogany (*Cercocarpus betuloides*), southern California black walnut, California juniper (*Juniperus californica*), California sycamore, Fremont cottonwood, or black elderberry. Shrubs are less than 7 feet tall; canopy is open to continuous, and two tiered. Herbaceous is layer variable and may be grassy.	No	**Absent:** This vegetation community does not occur within or adjacent to the project site.

Table E-1: Potentially Occurring Special-Status Biological Resources

Scientific Name Common Name	**Special-Status Rank***	**Habitat Preferences and Distribution Affinities**	**Observed On-site**	**Potential to Occur**
CNDDB/Holland (1986) Southern riparian forest **MCV (1995)** N/A **NVCS (2009)** N/A	N/A N/A	Riparian zones dominated by larger, mature trees consisting of various species of willows, cottonwoods, and sycamores.	No	**Absent:** This vegetation community does not occur within or adjacent to the project site.
CNDDB/Holland (1986) Southern sycamore alder riparian woodland **MCV (1995)** California sycamore series **NVCS (2009)** *Platanus racemosa* woodland alliance	G3 S3	Found at elevations ranging from sea level to 7,874 feet amsl in gullies, intermittent streams, springs, seeps, stream banks, and terraces adjacent to floodplains that are subject to high-intensity flooding. Soils are rocky or cobbly alluvium with permanent moisture at depth. California sycamore is a dominant or co-dominant in the tree canopy with white alder, southern California black walnut, Fremont cottonwood, coast live oak, valley oak, narrowleaf willow, Goodding's black willow (*Salix gooddingii*), polished willow, arroyo willow, yellow willow (*Salix lutea*), Peruvian pepper tree (*Schinus mole*), and California bay.	No	**Absent:** This vegetation community does not occur within or adjacent to the project site.

* **U.S. Fish and Wildlife Service (USFWS)**

FE Endangered – any species which is in danger of extinction throughout all or a significant portion of its range.

FT Threatened – any species which is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range.

California Department of Fish and Wildlife (CDFW)

SE Endangered – any native species or subspecies of bird, mammal, fish, amphibian, reptile, or plant which is in serious danger of becoming extinct throughout all, or a significant portion, of its range due to one or more causes, including loss of habitat, change in habitat, overexploitation, predation, competition, or disease.

SCE State Candidate for Listing as Endangered – the classification provided to a native species or subspecies of a bird, mammal, fish, amphibian, reptile, or plant that the Fish and Game Commission has formally noticed as being under review by the Department of Fish and Wildlife for addition to the list of endangered species, or a species for which the commission has published a notice of proposed regulation to add the species to the list of endangered species.

ST Threatened – any native species or subspecies of bird, mammal, fish, amphibian, reptile, or plant that, although not presently threatened with extinction, is likely to become an endangered species in the foreseeable future in the absence of the special protection and management efforts required under the California Endangered Species Act.

FP Fully Protected – any native species or subspecies of bird, mammal, fish, amphibian, or reptile that were determined by the State of California to be rare or face possible extinction.

SSC Species of Special Concern – any species, subspecies, or distinct population of fish, amphibian, reptile, bird, or mammal native to California that currently satisfies one or more of the following criteria:

- is extirpated from California or, in the case of birds, in its primary seasonal or breeding role;
- is listed as Federally-, but not State-, threatened or endangered; meets the State definition of threatened or endangered but has not formally been listed.
- is experiencing, or formerly experienced, serious (noncyclical) population declines or range retractions (not reversed) that, if continued or resumed, could qualify it for State threatened or endangered status; or
- has naturally small populations exhibiting high susceptibility to risk from any factor(s), that if realized, could lead to declines that would qualify it for State threatened or endangered status.

WL Watch List - taxa that were previously designated as “Species of Special Concern” but no longer merit that status, or which do not yet meet SSC criteria, but for which there is concern and a need for additional information to clarify status.

California Native Plant Society (CNPS) California Rare Plant Rank

1A Presumed extirpated in California and either rare or extinct elsewhere.

1B Plants rare, threatened, or endangered in California and elsewhere.

2B Plants rare, threatened, or endangered in California but more common elsewhere.

4 Plants of limited distribution – Watch List.

Threat Ranks

.1 Seriously threatened in California (over 80% of occurrences threatened/high degree any immediacy of threat).

.2 Moderately threatened in California (20 to 80 percent of occurrences threatened/moderate degree and immediacy of threat).

.3 Not very threatened in California (less than 20 percent of occurrences threatened/low degree and immediacy of threat or no current threats known).

NatureServe Conservation Status Rank

The Global Rank (G#) reflects the overall condition and imperilment of a species throughout its global range. The Infraspecific Taxon Rank (T#) reflects the global situation of just the subspecies or variety. The State Rank (S#) reflects the condition and imperilment of an element throughout its range within California. (G#Q) reflects that the element is very rare but there are taxonomic questions associated with it; the calculated G rank is qualified by adding a Q after the G#). Adding a ? to a rank expresses uncertainty about the rank.

G1/T1 Critically Imperiled – At very high risk of extinction due to extreme rarity (often 5 or fewer populations), very steep declines, or other factors.

G2/T2 Imperiled— At high risk of extinction due to very restricted range, very few populations (often 20 or fewer), steep declines, or other factors.

G3/T3 Vulnerable— At moderate risk of extinction due to a restricted range, relatively few populations (often 80 or fewer), recent and widespread declines, or other factors.

G4/T4 Apparently Secure— Uncommon but not rare; some cause for long-term concern due to declines or other factors.

G5 Secure – Common; widespread and abundant.

S1 Critically Imperiled – Critically imperiled in the state because of extreme rarity (often 5 or fewer occurrences) or because of some factor(s) such as very steep declines making it especially vulnerable to extirpation from the State.

S2 Imperiled – Imperiled in the State because of rarity due to very restricted range, very few populations (often 20 or fewer), steep declines, or other factors making it very vulnerable to extirpation from the nation or State.

S3 Vulnerable – Vulnerable in the State due to a restricted range, relatively few populations (often 80 or fewer), recent and widespread declines, or other factors making it vulnerable to extirpation.

S4 Apparently Secure – Uncommon but not rare; some cause for long-term concern due to declines or other factors.

Attachment F

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Appendix D
Cultural Resources Assessment

HIGHLAND RESIDENTIAL PROJECT
INITIAL STUDY

CULTURAL RESOURCES ASSESSMENT

Highland Project

Fontana, San Bernardino County, California

Prepared for:

Michael Baker International
3536 Concours Street, Suite 100
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Prepared by:

David Brunzell, M.A., RPA
Contributions by Joseph Orozco, M.A., RPA
BCR Consulting LLC
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Project No. MBI2001

Data Base Information:
Type of Study: Intensive
Resources Recorded: P-36-7325, Historic-Period Stone and Concrete Features
Keywords: Fontana
USGS Quadrangle: 7.5-minute *Devore, California* (1988)

BCRCONSULTING LLC

April 21, 2020

MANAGEMENT SUMMARY

BCR Consulting LLC (BCR Consulting) is under contract to Michael Baker International to conduct a Cultural Resources Assessment of the proposed Highland Project (the project site) located in the City of Fontana, San Bernardino County, California. Tasks completed for the scope of work include a cultural resources records search, reconnaissance-level pedestrian cultural resources survey, Sacred Lands File Search with the Native American Heritage Commission (NAHC), and paleontological resources overview. These tasks were performed in partial fulfillment of California Environmental Quality Act (CEQA) requirements. The records search revealed that 31 cultural resource studies have taken place resulting in the recording of 23 cultural resources within a one-mile radius of the project site. One previous study has assessed the project site and one cultural resource (historic-period stone and concrete features designated P-36-7325) has been previously recorded within its boundaries.

During the field survey, BCR Consulting personnel identified P-36-7325, and updated the Department of Park and Recreation (DPR) 523 form. This resource is not recommended eligible for the California Register of Historical Resources (California Register). As such it is not recommended a “historical resource” under CEQA. It does not warrant further consideration. Due to a lack of historical resources located within the project site, BCR Consulting recommends that no additional cultural resources work or monitoring is necessary for any proposed project activities. However, if previously undocumented cultural resources are identified during earthmoving activities, a qualified archaeologist shall be contacted to assess the nature and significance of the find, diverting construction excavation if necessary.

If human remains are encountered during the undertaking, State Health and Safety Code Section 7050.5 states that no further disturbance shall occur until the County Coroner has made a determination of origin and disposition pursuant to Public Resources Code Section 5097.98. The County Coroner must be notified of the find immediately. If the remains are determined to be prehistoric, the Coroner will notify the Native American Heritage Commission (NAHC), which will determine and notify a Most Likely Descendant (MLD). With the permission of the landowner or his/her authorized representative, the MLD may inspect the site of the discovery. The MLD shall complete the inspection within 48 hours of notification by the NAHC.

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D: PALEONTOLOGICAL OVERVIEW

INTRODUCTION

BCR Consulting LLC (BCR Consulting) is under contract to Michael Baker International to conduct a Cultural Resources Assessment of the proposed Highland Project (the project) located in the City of Fontana (City), San Bernardino County, California. The project site is located on Section 35 of Township 1 North, Range 4 West, San Bernardino Baseline and Meridian, in the City of Fontana. It is depicted on the United States Geological Survey (USGS) *Devore, California* (1988) 7.5-minute topographic quadrangle (Figure 1).

Regulatory Setting

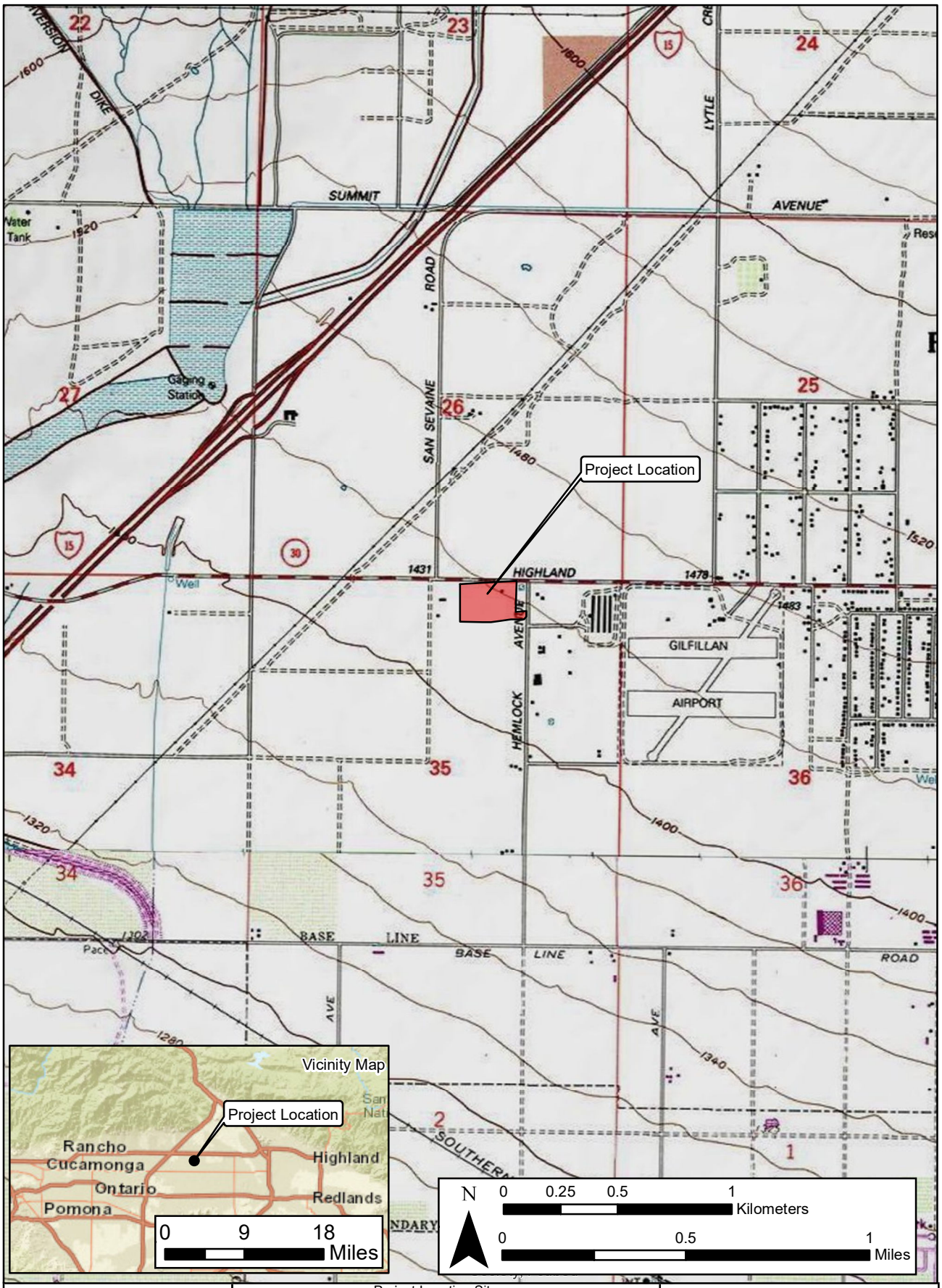
The California Environmental Quality Act. CEQA applies to all discretionary projects undertaken or subject to approval by the state's public agencies (California Code of Regulations 14(3), § 15002(i)). Under CEQA, "A project with an effect that may cause a substantial adverse change in the significance of a historical resource is a project that may have a significant effect on the environment" (Cal. Code Regs. tit. 14(3), § 15064.5(b)). State CEQA Guidelines section 15064.5(a) defines a "historical resource" as a resource that meets one or more of the following criteria:

- Listed in, or eligible for listing in, the California Register of Historical Resources (California Register)
- Listed in a local register of historical resources (as defined at Cal. Public Res. Code § 5020.1(k))
- Identified as significant in a historical resource survey meeting the requirements of § 5024.1(g) of the Cal. Public Res. Code
- Determined to be a historical resource by a project's lead agency (Cal. Code Regs. tit. 14(3), § 15064.5(a))

A historical resource consists of "Any object, building, structure, site, area, place, record, or manuscript which a lead agency determines to be historically significant or significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural annals of California…Generally, a resource shall be considered by the lead agency to be 'historically significant' if the resource meets the criteria for listing in the California Register of Historical Resources" (Cal. Code Regs. tit. 14(3), § 15064.5(a)(3)).

The significance of a historical resource is impaired when a project demolishes or materially alters in an adverse manner those physical characteristics of a historical resource that convey its historical significance and that justify its eligibility for the California Register. If an impact on a historical or archaeological resource is significant, CEQA requires feasible measures to minimize the impact (State CEQA Guidelines § 15126.4 (a)(1)). Mitigation of significant impacts must lessen or eliminate the physical impact that the project will have on the resource.

Section 5024.1 of the Cal. Public Res. Code established the California Register. Generally, a resource is considered by the lead agency to be "historically significant" if the resource meets the criteria for listing in the California Register (Cal. Code Regs. tit. 14(3), § 15064.5(a)(3)). The eligibility criteria for the California Register are similar to those of the National Register of Historic Places (National Register), and a resource that meets one or



BCRCONSULTING LLC

Project Location Site
Highland Project

Reference: ESRI; USGS Quad: Devore, CA (1988)

Figure 1

Michael Baker International

more of the eligibility criteria of the National Register will be eligible for the California Register. The California Register program encourages public recognition and protection of resources of architectural, historical, archaeological, and cultural significance, identifies historical resources for state and local planning purposes, determines eligibility for state historic preservation grant funding and affords certain protections under CEQA. Criteria for eligibility:

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

In addition to meeting one or more of the above criteria, the California Register requires that sufficient time has passed since a resource's period of significance to "obtain a scholarly perspective on the events or individuals associated with the resources." (CCR 4852 [d][2]). Fifty years is normally considered sufficient time for a potential historical resource, and in order that the evaluation remain valid for a minimum of five years after the date of this report, all resources older than 45 years (i.e. resources from the "historic-period") will be evaluated for California Register listing eligibility, or CEQA significance. The California Register also requires that a resource possess integrity. This is defined as the ability for the resource to convey its significance through seven aspects: location, setting, design, materials, workmanship, feeling, and association.

Finally, CEQA requires that significant effects on unique archaeological resources be considered and addressed. CEQA defines a unique archaeological resource as any archaeological artifact, object, or site about which it can be clearly demonstrated that, without merely adding to the current body of knowledge, there is a high probability that it meets any of the following criteria:

1. Contains information needed to answer important scientific research questions and there is a demonstrable public interest in that information.
2. Has a special and particular quality such as being the oldest of its type or the best available example of its type.
3. Is directly associated with a scientifically recognized important prehistoric or historic event or person.

CEQA Guidelines Section 15064.5 Appendix G includes significance criteria relative to archaeological and historical resources. These have been utilized as thresholds of significance here, and a project would have a significant environmental impact if it would:

a) Cause a substantial adverse change in the significance of a historical resource as defined in section 10564.5;

b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to Section 10564.5;
c) Disturb any human remains, including those interred outside of formal cemeteries.

Tribal Cultural Resources. The Legislature added requirements regarding tribal cultural resources for CEQA in Assembly Bill 52 (AB 52) that took effect July 1, 2015. AB 52 requires consultation with California Native American tribes and consideration of tribal cultural resources in the CEQA process. By including tribal cultural resources early in the CEQA process, the legislature intended to ensure that local and Tribal governments, public agencies, and project proponents would have information available, early in the project planning process, to identify and address potential adverse impacts to tribal cultural resources. By taking this proactive approach, the legislature also intended to reduce the potential for delay and conflicts in the environmental review process. To help determine whether a project may have such an effect, the Public Resources Code requires a lead agency to consult with any California Native American tribe that requests consultation and is traditionally and culturally affiliated with the geographic area of a proposed project. Since the City will initiate and carry out the required AB52 Native American Consultation, the results of the consultation are not provided in this report. However, this report may be used during the consultation process, and BCR Consulting staff is available to answer questions and address comments as necessary.

Paleontological Resources. CEQA provides guidance relative to significant impacts on paleontological resources, indicating that a project would have a significant impact on paleontological resources if it disturbs or destroys a unique paleontological resource or site or unique geologic feature. Section 5097.5 of the California Public Resources Code specifies that any unauthorized removal of paleontological remains is a misdemeanor. Further, California Penal Code Section 622.5 sets the penalties for damage or removal of paleontological resources. CEQA projects assess paleontological resources as a condition of the CEQA process to disclose potential impacts. Please note that as of January 2018 paleontological resources are considered in the geological rather than cultural resources category. Therefore, paleontological resources are not summarized in the body of this cultural resources report. A paleontological overview completed by professional paleontologists from the Western Science Center is provided as Appendix D.

NATURAL SETTING

The elevation of the project site ranges from approximately 1410 to 1440 feet above mean sea level (AMSL). The property has been subject to disturbances related to previous building construction within the project site and discing for weed abatement. The project site is covered with alluvial-fan deposits (Qa) derived from the San Gabriel Mountains (Morton and Matti 2001). The current study has not yielded any evidence that such sediments have produced raw materials used in prehistoric tool manufacture. Local rainfall ranges from 5 to 15 inches annually (Jaeger and Smith 1971:36-37). The project site is flat, although the general slope conveys local water from northeast to southwest (USGS 1980).

Although recent and historic-period impacts have decimated local vegetation, remnants of a formerly dominant coastal sage scrub vegetation community have been sporadically observed in the area. Signature plant species include black sage (*Salvia mellifera*),

California brittlebush (*Encelia californica*), California buckwheat (*Eriogonum fasciculatum*), California sagebrush (*Artemesia californica*), deerweed (*Lotus scoparius*), golden yarrow (*Eriophyllum confertiflorum*), laurel sumac (*Malosma laurina*), lemonadeberry (*Rhus integrifolia*), poison oak (*Toxicodendron diverilobum*), purple sage (*Salvia leucophyla*), sticky monkeyflower (*Mimulus aurantiacus*), sugar bush (*Rhus ovate*), toyon (*Heteromeles arbutifolia*), white sage (*Salvia apiana*), coastal century plant (*Agave shawii*), coastal cholla (*Opuntia prolifera*), Laguna Beach liveforever (*Dudleya stolonifera*), many-stemmed liveforever (*Dudleya multicaulis*), our Lord's candle (*Yucca whipplei*), prickly pear cactus (*Opuntia sp.*) (Williams et al. 2008:118-119). Signature animal species within Coastal Sage Scrub habitat include the kangaroo rat (*Dipodomys sp.*), California horned lizard (*Phrynosoma coronatum frontale*), orange throated whiptail (*Cnemidophorus hyperthrus*), San Diego horned lizard (*Phrynosoma coronatum blainvillii*), brown-headed cowbird (*Molothrus ater*), California gnatcatcher (*Polioptila californica californica*), California quail (*Callipepla californica*), and San Diego cactus wren (*Campylorhynchus brunnecapillus sandiegensis*) (Williams et al. 2008:118-120). Local native groups made use of many of these species (see Lightfoot and Parrish 2009).

CULTURAL SETTING

Prehistoric Context

The local prehistoric cultural setting has been organized into many chronological frameworks (see Warren and Crabtree 1986; Bettinger and Taylor 1974; Lanning 1963; Hunt 1960; Wallace 1958, 1962, 1978; Campbell and Campbell 1935), although there is no definitive sequence for the region. The difficulties in establishing cultural chronologies for western San Bernardino County are a function of its enormous size and the small amount of archaeological excavations conducted there. Moreover, throughout prehistory many groups have occupied the area and their territories often overlap spatially and chronologically resulting in mixed artifact deposits. Due to dry climate and capricious geological processes, these artifacts rarely become integrated in-situ. Lacking a milieu hospitable to the preservation of cultural midden, local chronologies have relied upon temporally diagnostic artifacts, such as projectile points, or upon the presence/absence of other temporal indicators, such as groundstone. Such methods are instructive, but can be limited by prehistoric occupants' concurrent use of different artifact styles, or by artifact re-use or re-sharpening, as well as researchers' mistaken diagnosis, and other factors (see Flenniken 1985; Flenniken and Raymond 1986; Flenniken and Wilke 1989). Recognizing the shortcomings of comparative temporal indicators, this study recommends review of Warren and Crabree (1986), who have drawn upon this method to produce a commonly cited and relatively comprehensive chronology.

Ethnography

In general the project site is situated at an ethnographic nexus peripherally occupied by the Gabrielino and Serrano. Each group consisted of semi-nomadic hunter-gatherers who spoke a variation of the Takic language subfamily. Individual ethnographic summaries are provided below.

Gabrielino. The Gabrielino probably first encountered Europeans when Spanish explorers reached California's southern coast during the 15th and 16th centuries (Bean and Smith 1978; Kroeber 1925). The first documented encounter, however, occurred in 1769 when Gaspar de Portola's expedition crossed Gabrielino territory (Bean and Smith 1978). Other brief encounters took place over the years, and are documented in McCawley 1996 (citing

numerous sources). The Gabrielino name has been attributed by association with the Spanish mission of San Gabriel, and refers to a subset of people sharing speech and customs with other Cupan speakers (such as the Juaneño/Luiseño/Ajachemem) from the greater Takic branch of the Uto-Aztecan language family (Bean and Smith 1978). Gabrielino villages occupied the watersheds of various rivers (locally including the Santa Ana) and intermittent streams. Chiefs were usually descended through the male line and often administered several villages. Gabrielino society was somewhat stratified and is thought to have contained three hierarchically ordered social classes which dictated ownership rights and social status and obligations (Bean and Smith 1978:540-546). Plants utilized for food were heavily relied upon and included acorn-producing oaks, as well as seed-producing grasses and sage. Animal protein was commonly derived from rabbits and deer in inland regions, while coastal populations supplemented their diets with fish, shellfish, and marine mammals (Boscana 1933, Heizer 1968, Johnston 1962, McCawley 1996). Dog, coyote, bear, tree squirrel, pigeon, dove, mud hen, eagle, buzzard, raven, lizards, frogs, and turtles were specifically not utilized as a food source (Kroeber 1925:652).

Serrano. Kroeber (1925) applied the generic term “Serrano” to four groups, each with distinct territories: the Kitanemuk, Tataviam, Vanyume, and Serrano. Only one group, in the San Bernardino Mountains and West-Central Mojave Desert, ethnically claims the term Serrano. Bean and Smith (1978) indicate that the Vanyume, an obscure Takic population, was found along the Mojave River at the time of Spanish contact. The Kitanemuk lived to the north and west, while the Tataviam lived to the west. All may have used the western San Bernardino County area seasonally. Serrano villages consisted of small collections of willow-framed domed structures situated near reliable water sources. A lineage leader administered laws and ceremonies from a large ceremonial house centrally located in most villages. Local Serrano relied heavily on acorns and piñon nuts for subsistence, although roots, bulbs, shoots, and seeds supplemented these. When available, game animals commonly included deer, mountain sheep, antelope, rabbits, small rodents, and various birds –particularly quail (Bean and Smith 1978:571).

History

Historic-era California is generally divided into three periods: the Spanish or Mission Period (1769 to 1821), the Mexican or Rancho Period (1821 to 1848), and the American Period (1848 to present).

Spanish Period. The first European to pass through the area is thought to be a Spaniard called Father Francisco Garces. Having become familiar with the area, Garces acted as a guide to Juan Bautista de Anza, who had been commissioned to lead a group across the desert from a Spanish outpost in Arizona to set up quarters at the Mission San Gabriel in 1771 near what today is Pasadena (Beck and Haase 1974). Garces was followed by Alta California Governor Pedro Fages, who briefly explored the region in 1772. Searching for San Diego Presidio deserters, Fages had traveled through Riverside to San Bernardino, crossed over the mountains into the Mojave Desert, and then journeyed westward to the San Joaquin Valley (Beck and Haase 1974).

Mexican Period. In 1821, Mexico overthrew Spanish rule and the missions began to decline. By 1833, the Mexican government passed the Secularization Act, and the missions, reorganized as parish churches, lost their vast land holdings, and released their neophytes (Beattie and Beattie 1974).

American Period. The American Period, 1848–Present, began with the Treaty of Guadalupe Hidalgo. In 1850, California was accepted into the Union of the United States primarily due to the population increase created by the Gold Rush of 1849. The cattle industry reached its greatest prosperity during the first years of the American Period. Mexican Period land grants had created large pastoral estates in California, and demand for beef during the Gold Rush led to a cattle boom that lasted from 1849–1855. However, beginning about 1855, the demand for beef began to decline due to imports of sheep from New Mexico and cattle from the Mississippi and Missouri Valleys. When the beef market collapsed, many California ranchers lost their ranchos through foreclosure. A series of disastrous floods in 1861–1862, followed by a significant drought further diminished the economic impact of local ranching. This decline combined with ubiquitous agricultural and real estate developments of the late 19th century, set the stage for diversified economic pursuits that have continued to proliferate to this day (Beattie and Beattie 1974; Cleland 1941).

Local Sequence (Brunzell 2017:5). In 1851, Mormons settling in the San Bernardino Valley purchased the land from Don Antonio Maria Lugo. Early communities in the San Bernardino County area started with this group of Mormons, although most returned to Salt Lake City in 1857. The Southern Pacific Railroad moved into the San Bernardino Valley in 1875, and the Santa Fe Railroad built a stop in the Fontana area in 1887, naming it Rosena. A trickle of settlement continued, and there were around 25 families living there by the time A. B. Miller arrived in 1905. He purchased the land the next year, and a town was laid out in 1909. Settlement was successfully promoted by a dedication ceremony and celebration in 1913, at which a number of plots in the area were sold. By 1927, there were 399 families with land in the area, and the township was officially created in 1929.

The Semi-Tropic Water and Land Company incorporated in 1887 in order to sell real estate and water rights in San Bernardino County. The company acquired 285,000 acres of land along ten miles of Lytle Creek, giving it riparian rights and allowing it to control and sell the water. The company laid out small towns including Fontana, Rialto, Sansevaine, and Bloomington on its land holdings. In 1891, the company subdivided most of the land surrounding the town sites into 20-acre parcels it called “farm lots.” Successful agricultural endeavors resulted in residential and institutional expansion during the 1920s. Between 1924 and 1926, the school district was established, the American Legion Post 262 was constructed, and the Fontana Woman’s Club House was established and constructed. Proliferation of the automobile was accompanied by an expanded infrastructure of paved roads and two garages and several service stations were constructed.

Fontana remained an agricultural area for the first few decades of its existence; citrus, grain, grape, poultry, cattle, and swine production formed the basis of the local economy. World War II changed this dynamic with the establishment of the Fontana Kaiser Steel plant in 1942, the first steel mill west of the Mississippi. Fontana quickly became the West Coast’s leading steel producer, and the plant remained in operation until 1984. Mickey Thompson’s Fontana International Drag Way, an important drag racing strip, was established in the 1950s. While it no longer operates, Fontana retains a connection to drag racing with both a new drag strip and an automobile museum. Today, Fontana has a population of over 175,000 and occupies approximately 56 square miles. Shipping and trucking play a major role in the city’s economy.

PERSONNEL

David Brunzell, M.A., RPA acted as the Project Manager and Principal Investigator for the current study, and wrote the technical report. BCR Consulting Field Director Joseph Orozco, M.A., RPA, conducted the cultural resources records search and compiled the Department of Park and Recreation (DPR) 523 forms and contributed to the technical report. BCR Consulting Staff Archaeologists Nick Shepetuk, B.A., and Kainoa Heskett, B.A., completed the pedestrian field survey. The paleontological overview (provided in Appendix D) was completed by Professional Paleontologist Darla Radford, Collections Manager for the Western Science Center.

METHODS

This work was completed pursuant to CEQA, the Public Resources Code (PRC) Chapter 2.6, Section 21083.2, and California Code of Regulations (CCR) Title 14, Chapter 3, Article 5, Section 15064.5. The pedestrian cultural resources survey was intended to locate and document previously recorded or new cultural resources, including archaeological sites, features, isolates, and historic-period buildings, that exceed 45 years in age within defined project boundaries. The project site was examined using 15-meter transect intervals. Transect intervals were narrowed to between one and five meters where cultural resources were identified. This study is intended to determine whether cultural resources are located within the project boundaries, whether any cultural resources are significant pursuant to the above-referenced regulations and standards, and to develop specific mitigation measures that will address potential impacts to existing or potential resources. Tasks pursued to achieve that end include:

- Cultural resources records search to review studies and archaeological/historical resources recorded within a one-mile radius of the project boundaries
- Additional land use history research through local repositories and internet resources
- Systematic pedestrian survey of the entire project site
- California Register of Historical Resources (California Register) eligibility evaluation for any cultural resources discovered
- Development of recommendations and mitigation measures for cultural resources documented within the project boundaries, following CEQA
- Completion of DPR 523 forms for any discovered cultural resources
- Vertebrate paleontology resources report through the Western Science Center.

Research

Records Search. Prior to fieldwork, an archaeological records search was conducted at the South Central Coastal Information Center (SCCIC) at the California State University, Fullerton. This included a review of all recorded historic and prehistoric cultural resources, as well as a review of known cultural resources, and survey and excavation reports generated from projects completed within one mile of the project site. In addition, a review was conducted of the National Register of Historic Places (National Register), the California Register of Historical Resources (California Register), and documents and inventories from the California Office of Historic Preservation including the lists of California Historical

Landmarks, California Points of Historical Interest, Listing of National Register Properties, and the Inventory of Historic Structures.

Additional Research. BCR Consulting performed additional research through records of the General Land Office Maintained by the Bureau of Land Management, the San Bernardino County Assessor, the San Bernardino County Historical Archives, the Fontana Historical Society, and through various Internet resources.

Field Survey

A pedestrian cultural resources field survey of the project site was conducted on January 20, 2020. The survey was conducted by walking parallel transects spaced approximately 15 meters apart across 100 percent of the project site. Transect intervals were narrowed to between one and five meters where resources were identified. Soil exposures, including natural and artificial clearings were carefully inspected for evidence of cultural resources. Cultural resources were recorded per the California OHP *Instructions for Recording Historical Resources* in the field using:

- Detailed note-taking for entry on DPR Forms (Appendix A)
- Hand-held Garmin Global Positioning systems for mapping purposes
- Digital photography of all cultural resources (Appendix A and B).

RESULTS

Research

Records Search. Data from the SCCIC revealed that 31 cultural resource studies have taken place resulting in the recording of 23 cultural resources within a one-mile radius of the project site. One previous study has assessed the project site and one cultural resource (historic-period stone and concrete features designated P-36-7325) has been previously recorded within its boundaries. The records search is summarized as follows:

Table A. Cultural Resources and Reports Located Within One Mile of the Project Site

USGS 7.5 Min Quad	Cultural Resources Within One Mile of Project Site	Studies Within One Mile
Devore, California (1988)	P-36-7324: Historic-Period Privy/Trash, Structure (3/4 Mile North) P-36-7325: Hist-Period Stone/Concrete Features (Within Project) P-36-7326: Historic-Period Privy/Dump, Structure (1/2 Mile East) P-36-9363: Historic-Period Residence (1/8 Mile East) P-36-9364: Historic-Period Residence (1/2 Mile Southeast) P-36-9365: Prehistoric Lithic Scatter, Bedrock Milling Feature, Historic-Period Residence (1/2 Mile Southeast) P-36-9366: Historic-Period Road (1/2 Mile Southeast) P-36-9365: Historic-Period Residence (1/2 Mile Southeast) P-36-9367: Historic-Period Water Reservoir (1/2 Mile Northeast) P-36-9368: Historic-Period Well/Cistern (1/2 Mile North) P-36-9369: Historic-Period Residence (3/4 Mile North) P-36-14190: Historic-Period Water Reservoir (200' East) P-36-14191: Historic-Period Residence (1/2 Mile East) P-36-14192: Historic-Period Residence (1/2 Mile East)	SB-106-398, 1189, 1459, 1501, 2033, 2039, 2240, 2241, 2457, 2621, 2795, 2951, 3050, 3172, 3173, 3174, 4019, 4023, 4547, 4548, 4549, 4554, 5911, 6016, 6392, 6114, 6450, 6492, 6907, 6986, 7401; Archaeological Survey of the Proposed Foothill Freeway: 07-LA-30

USGS 7.5 Min Quad	Cultural Resources Within One Mile of Project Site	Studies Within One Mile
	P-36-14193: Historic-Period Residence (3/4 Mile East) P-36-14194: Historic-Period Residence (1 Mile East) P-36-14195: Historic-Period Residence (1 Mile East) P-36-14196: Historic-Period Residence (1 Mile East) P-36-15497: Historic-Period Highway (3/4 Mile South) P-36-20915: Historic-Period Residence (3/4 Mile Northeast) P-36-20916: Historic-Period Residence (3/4 Mile Northeast) P-36-20917: Historic-Period Residence (3/4 Mile Northeast) P-36-20918: Historic-Period Residence (3/4 Mile Northeast)	/ P.M. 2.4 to 7.8; 08-SBd-30 P.M. 0.0 to 22.8*

*Included project site. Not on file at the SCCIC.

Additional Research. Previous documentation indicates that structures were present within the project site boundaries in 1938, and by 1971 they had been demolished. Assessor records show that William and Laura Wacker bought the property from the Arrowhead Realty Company in 1925, and later that year built a cobble stone house on the property. Around 1928 the Sunnyside Service Station and Lunch Room were constructed (Sutton and Zeller 1992). William was born in Illinois in 1866 and lived in Fontana from about 1913 until his death in 1929. He owned and operated the Sunnyside service station and lunch-room in Fontana, the remnants of which have been designated P-36-7325 (San Bernardino County Sun 25 March 1929:2).

Field Survey

During the field survey, Mr. Shepetuk and Mr. Heskett carefully inspected the project site. Surface visibility was approximately 75 percent. They re-identified site P-36-7325 in the northwest corner of the project site. This site was originally recorded by Paula Sutton and Andrea Zeller in 1992. They noted the presence of several structural foundations (Features 1 and 2), two cobble-concrete pillars (Feature 3), a small cobblestone reservoir (Feature 4), remnants of a cobble-concrete structure with adjacent sidewalk (Feature 5), a north-south trending cobble alignment on the east side of a row of Eucalyptus trees (Feature 6), a tree ladder (Feature 7), and a driveway (Feature 8). A sparse artifact scatter was also identified, consisting of a stove pipe, tin can, clear and brown bottle glass, a battery casing, wire nails, and coat hangers.

Features 1, 2, 4, and 5 were in place as recorded. The cobble-concrete pillars (Feature 3) have been pushed over but remain on the site. Three Eucalyptus trees remain in place, although the tree ladder, driveway, and cobble alignment (Features 6, 7, and 8) and most artifacts have been removed by repeated discing. Careful surface inspection of the site location at one-meter transect intervals have revealed high visibility within the site boundaries. The site exhibits a low likelihood for buried deposits.

SIGNIFICANCE EVALUATIONS

During the field survey several historic-period structural foundations and associated features previously designated P-36-7325 were identified. CEQA calls for the evaluation and recordation of historic and archaeological resources. The criteria for determining the significance of impacts to cultural resources are based on Section 15064.5 of the *CEQA*

Guidelines and Guidelines for the Nomination of Properties to the California Register. Properties eligible for listing in the California Register and subject to review under CEQA are those meeting the criteria for listing in the California Register, or designation under a local ordinance.

Significance Criteria

California Register of Historical Resources. The California Register criteria are based on National Register criteria. For a property to be eligible for inclusion on the California Register, one or more of the following criteria must be met:

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

In addition to meeting one or more of the above criteria, the California Register requires that sufficient time has passed since a resource's period of significance to "obtain a scholarly perspective on the events or individuals associated with the resources." (CCR 4852 [d][2]). The California Register also requires that a resource possess integrity. This is defined as the ability for the resource to convey its significance through seven aspects: location, setting, design, materials, workmanship, feeling, and association.

Finally, CEQA requires that significant effects on unique archaeological resources be considered and addressed. CEQA defines a unique archaeological resource as any archaeological artifact, object, or site about which it can be clearly demonstrated that, without merely adding to the current body of knowledge, there is a high probability that it meets any of the following criteria:

4. Contains information needed to answer important scientific research questions and there is a demonstrable public interest in that information.
5. Has a special and particular quality such as being the oldest of its type or the best available example of its type.
6. Is directly associated with a scientifically recognized important prehistoric or historic event or person.

Significance Threshold Criteria

CEQA Guidelines Section 15064.5 Appendix G includes significance criteria relative to archaeological and historical resources. These have been utilized as thresholds of significance here, and a project would have a significant environmental impact if it would:

b) Cause a substantial adverse change in the significance of a historical resource as defined in section 10564.5;
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to Section 10564.5;
d) Disturb any human remains, including those interred outside of formal cemeteries.

California Register Evaluation

P-36-7325. Extensive research has failed to associate the historic-period structural foundations and associated features with any important events or persons (Criteria 1 and 2). The site does not embody any distinctive characteristics, represent the work of a master, or possess high artistic values (Criterion 3). Intensive survey has not identified any potential for the site to yield information important to the prehistory or history of the local area, California, or the nation. The site is not recommended eligible for the California Register, and is not recommended a historical resource under CEQA. Finally, the site does not contain information important to answer important scientific research questions. It does not have any special or particular qualities. As such it is not a unique archaeological resource.

RECOMMENDATIONS

BCR Consulting conducted a Cultural Resources Assessment of the proposed project, pursuant to CEQA. During the field survey, BCR Consulting personnel identified P-36-7325, and updated the DPR 523 form. This resource is not recommended eligible for the California Register. As such it is not recommended a “historical resource” under CEQA. It does not warrant further consideration. Due to a lack of historical resources located within the project site, BCR Consulting recommends that no additional cultural resources work or monitoring is necessary for any proposed project activities. However, if previously undocumented cultural resources are identified during earthmoving activities, a qualified archaeologist should be contacted to assess the nature and significance of the find, diverting construction excavation if necessary.

If human remains are encountered during the undertaking, State Health and Safety Code Section 7050.5 states that no further disturbance shall occur until the County Coroner has made a determination of origin and disposition pursuant to Public Resources Code Section 5097.98. The County Coroner must be notified of the find immediately. If the remains are determined to be prehistoric, the Coroner will notify the Native American Heritage Commission (NAHC), which will determine and notify a Most Likely Descendant (MLD). With the permission of the landowner or his/her authorized representative, the MLD may inspect the site of the discovery. The MLD shall complete the inspection within 48 hours of notification by the NAHC.

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APPENDIX A
DPR 523 FORMS

***Recorded by:** Nicholas Shepetuk and Kai Heskett ***Date:** January 20, 2020 ☐ Continuation ☑ Update

This site was originally recorded by Paula Sutton and Andrea Zeller in 1992. They noted the presence of several structural foundations (Features 1 and 2), two cobble-concrete pillars (Feature 3), a small cobblestone reservoir (Feature 4), remnants of a cobble-concrete structure with adjacent sidewalk (Feature 5), a north-south trending cobble alignment on the east side of a row of Eucalyptus trees (Feature 6), a tree ladder (Feature 7), and a driveway (Feature 8). A sparse artifact scatter was also identified, consisting of a stove pipe, tin can, clear and brown bottle glass, a battery casing, wire nails, and coat hangers.

BCR Consulting visited the site on January 20, 2020. Features 1, 2, 4, and 5 were in place as recorded, and measurements are accurate. The cobble-concrete pillars (Feature 3) have been pushed over but remain on the site. Three Eucalyptus trees remain in place, although the tree lader, driveway, and cobble alignment (Features 6, 7, and 8) and most artifacts have been removed by repeated discing. High visibility and no previously unidentified remains indicates a low likelihood for buried deposits. The previous site form did not include UTMs for features. These are provided below, taken from the southwest corner of each feature (NAD83):

Feature 1: 456093mE/3777308mN
Feature 2: 456081mE/3777313mN
Feature 3: 456053mE/3777315mN
Feature 4: 456064mE/3777309mN
Feature 5: 456058mE/3777272mN

Reference:
Sutton, Paula and Andrea Zeller
1992 Site Record for Primary #P-36-7325 on file, South-Central Coastal Information Center at California State University, Fullerton.

Feature 1 (View NE)

Feature 3 (View W)

Feature 2 (View NW)

Feature 4 (View W)

1072

P36-001325

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

Permanent Trinomial: CA-SBR-7325 H Supplement [ ]

ARCHEOLOGICAL SITE RECORD

Other Designation: 08-SBd-30-PS-11

1. County: San Bernardino 2. USGS Quad: Devore, CA 1966 (7.5') X (15') Photorevised 1988

3. UTM Coordinates: Zone 11 / 456160 m Easting / 3777090 m Northing

4. Township 1N Range 6W; the NE 1/4 of NE 1/4 of NW 1/4 of NE 1/4 of Section 35 Base (Mer.) SBM

5. Map Coordinates: 528 mmS 94 mmE (from NW corner of map) 6. Elevation 1440 ft above MSL

7. Location: The site is located on the south side of Highland Avenue, approximately 400 feet west of Hemlock Avenue and on the west side of Arrowhead Reservoir, in the City of Fontana, CA. The site datum is the NW corner of Feature 5: cobble-concrete foundation remnants of a residential structure.

8. Prehistoric Historic X Protohistoric 9. Site Description: TWENTIETH CENTURY RESIDENTIAL/COMMERCIAL SITE (estimated date: ca. 1925). The site consists of several structural foundations, a small cobblestone reservoir (fish pond?), a driveway with cobble-concrete pillars, a rock alignment, a sparse scatter of artifacts, a tree ladder, and landscape vegetation.

10. Area: @ 61 m (N-S) x @ 73 m (E-W) = @ 4450 m^2. [@ 200 ft (N-S) x @ 240 ft (E-W) = @ 48000 ft^2] Method of Determination: Taping and measuring from map

11. Depth: est. 30 cm. (< 1 ft) Method of Determination: Presence of foundations

12. Features: Feature 1: Remnants of a structure (@ 25.6' N-S x 39.7' E-W) that includes two rectangular poured concrete slab foundations (east slab: 19.4' x 25.6' and west slab: 20.3' x 4.8'). The SW portion shows collapsed walls of cobble-concrete construction. A slab step measuring 3' x 29" exists on the south side. Foundation description of the east slab: bottom foot is cobble-concrete, overlain be 10" thick pebble concrete, overlain by a 1" thick concrete slab. Boards measuring 3 1/2" x 1 3/4", are spaced about 2' apart.

Feature 2: Remnants of a structure consisting of a poured concrete structure foundation (@ 12' N-S x 14.' E-W), and two small concrete slabs located approximately 10' north (possible gas station island). A small shovel (possible coal shovel) lies on the slab.

Feature 3: Two cobble-concrete pillars (@ 4' high x 26" x 26") spaced 14' apart on either side of a dirt driveway. Each has a 2" diameter pipe in the center. Four wire loops (probable gate connection) are present on the driveway side. A short piece of barbed wire hangs from one of the loops.

Feature 4: Cobble-concrete oval reservoir (fish pond?) (@ 10' E-W x 6' N-S, exterior ht = 6", interior ht = 2', wall thickness = 6").

Feature 5: Remnants of cobble-concrete structure. The foundation appears to be @ 27' N-S x 23' E-W, with lots of rubble and some boards (including boards measuring 1 3/4" x 5 3/4"). A concrete sidewalk exists on the west and south sides. Other artifacts include wire nails: 1890 to present (Fontana and Greenleaf 1962: 55), tar paper, stove pipe, rectangular tin can (9" high x 6 1/2" x 4 "), clear and brown bottle glass, a battery casing, and coat hangers.

Feature 6: north-south trending cobble alignment on east side of row of Eucalyptus trees.

See Continuation Sheet (X)

8/10/92
SUTTON

Feature 7: Tree ladder. Four rungs of varying sized boards attached by wire nails, some double-headed.

Feature 8: Dirt driveway running along the west and south ends of the site.

13. **Artifacts:** Other than what is mentioned above under feature descriptions, artifacts noted include:

GLASS: Machine-made bottle fragments (incl. clear, brown, emerald green, cobalt blue, pink, milkglass canning jar inset cap): 1910-present. Bottle types include liquor, milk, soda, food. Other glass noted includes an aqua window pane fragment (width = 1/8" thick).

Glass Maker's Marks noted: "GENUINE PHILLIPS/MADE IN USA", "DIXIE" (beer), "HALF PINT" .

CERAMICS: porcelain bowl sherd (remnants of green painted design), stoneware teapot spout, orange and blue fiestaware: 1936-1973 (Lehner 1988:246), refined earthenware plate sherd with brown annular band.

METAL: crown bottle caps: post 1895 (Rosenberg and Kvietak: n.d.). zinc canning jar lid, tin can fragments, camp toaster.

14. **Non-artifactual Constituents and Faunal Remains:** None noted

15. **Date Recorded:** 8-10-92

16. **Recorded By:** Paula Sutton assisted by Andrea Zeller

17. **Affiliation and Address:** CALTRANS, District 08, 247 W. 3rd St. San Bernardino, CA 92402

18. **Human Remains:** N/A

19. **Site Disturbances:** The site appears to retain some integrity due to the presence of intact foundations and landscape vegetation. Disturbance factors include disking for weed abatement.

20. **Nearest Water (type, distance and direction):** Arrowhead Reservoir is located on the east side of the site.

21. **Vegetation Community (site vicinity):** Ruderal grasses.
Plant List: Bromus (Bromus).

22. **Vegetation Community (on site):** Ruderal grasses.
Plant List: Bromus (Bromus); introduced landscape plants: Eucalyptus - Red Ironbark (Eucalyptus sideroxylon), Eucalyptus - Blue Gum (Eucalyptus globulus), Oleander (Nerium oleander), Tamarisk (Tolmarix articulata), and English Walnut (Juglans regia)

23. **Site Soil:** Silty loam alluvium

24. **Surrounding Soil:** Silty loam alluvium

25. **Geology:** Granitic cobbles and boulders eroded down from the San Gabriel Mountains

26. **Landform:** alluvial fan/valley edge (northwestern side of the San Bernardino Valley)

27. **Slope:** 0 degrees

28. **Exposure:** Open

29. **Landowner(s) (and/or tenants) and Address:** Parcel No. 228-021-9
John D.C. and Susan Chow, 20745 E. Fuero Dr., Walnut, Calif. (Present owner)

30. **Remarks:** Structures are depicted on a 1938 USDA aerial photo. The site does not appear on a 1954 USGS map, however, structure foundations appear on a 1971 aerial photo. Assessor's Records indicate that William and Laura Wacker purchased the property from the Arrowhead Realty Company in 1925, and during that same year, they built the cobblestone house (now in ruins). In 1928, there was a significant increase in the assessed value of improvements, most likely reflecting construction of a roadside filling station and adjacent cafe and/or store. The date this commercial activity ended is not known. Carl Metoyer, who first came to the area in 1941, and other residents who moved to the nearby Maloof tract in the mid-1940's do not recall any commercial activity at the site.

31. **References:** Route 30 Freeway Alternative Map, City of Fontana, Figure 19 of 32 (Parsons and Brinkerhoff 7-14-92), USGS 15' Quad San Bernardino, CA; Aerial photos [7-4-38 USDA #AXL-60-80 (CT #451172), CALTRANS 4-2-71/SBd-30/1-28 (CT #273117) on file at California Department of Transportation, San Bernardino; San Bernardino County Tax Assessor's Records.

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P36-001325

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32. **Name of Project:** Addendum Archaeological Survey of the Proposed Foothill Freeway: 07-LA-30 / 08-SBd-30 Between Damien Ave in Los Angeles County and SR 215 in San Bernardino County [07-LA-30 P.M. 2.4 to 7.8 (5.4 miles); 08-SBd-30 P.M. 0.0 to 22.8 (22.8 miles)]. NOTE: This addendum survey was conducted to take into consideration revisions in project plans.

33. **Type of Investigation:** Cultural Resource Survey **34. Site Accession Number:** No collections made **Curated At:** N/A

35. **Photos:** Roll # Color 30.2; Frames 6-15 **Taken By:** Paula Sutton (X)

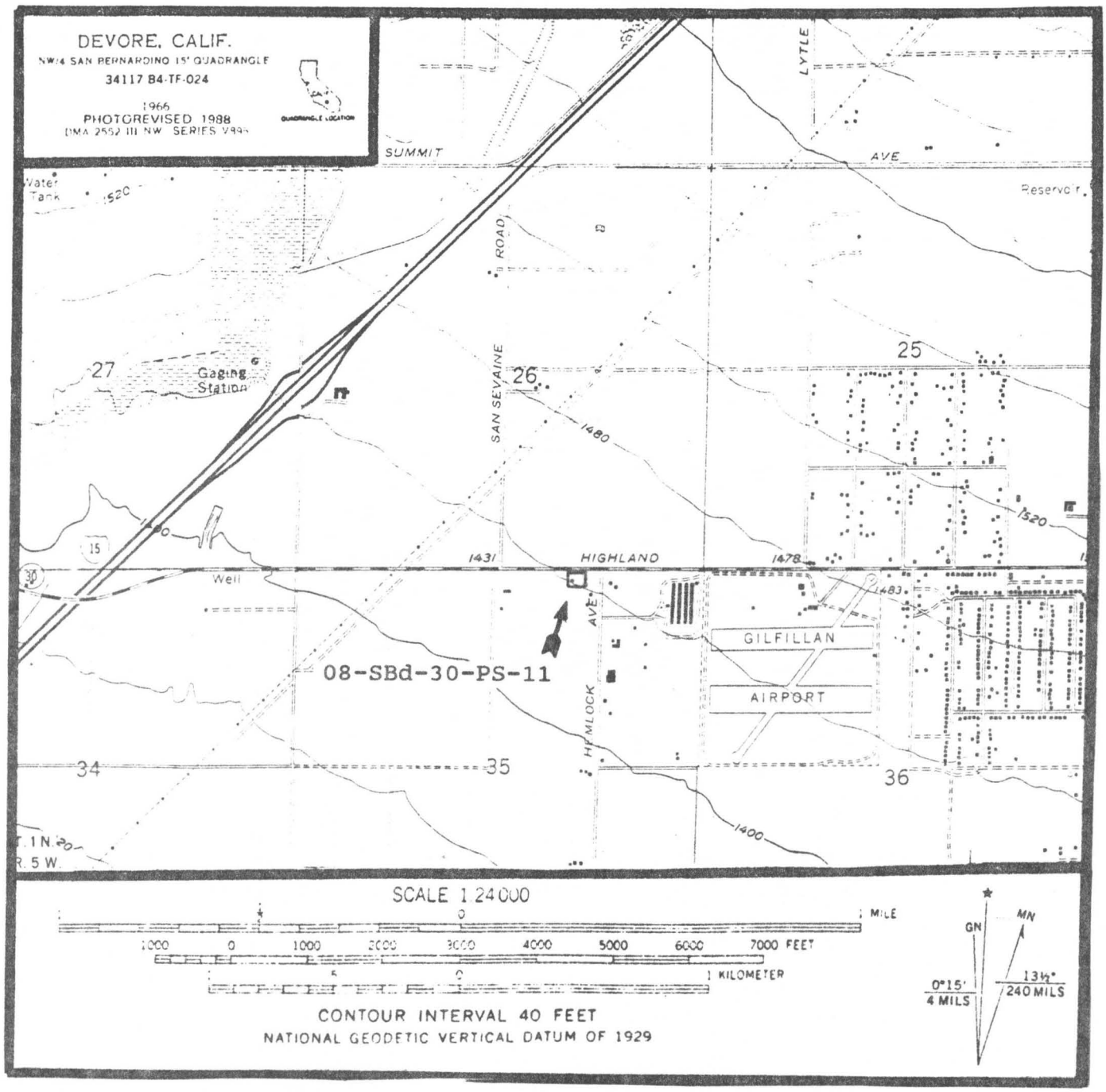
P36-007325

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

Permanent Trinomial: CA-SBR-7325 H

ARCHEOLOGICAL SITE LOCATION MAP

Other Designation: 08-SBd-30-PS-11



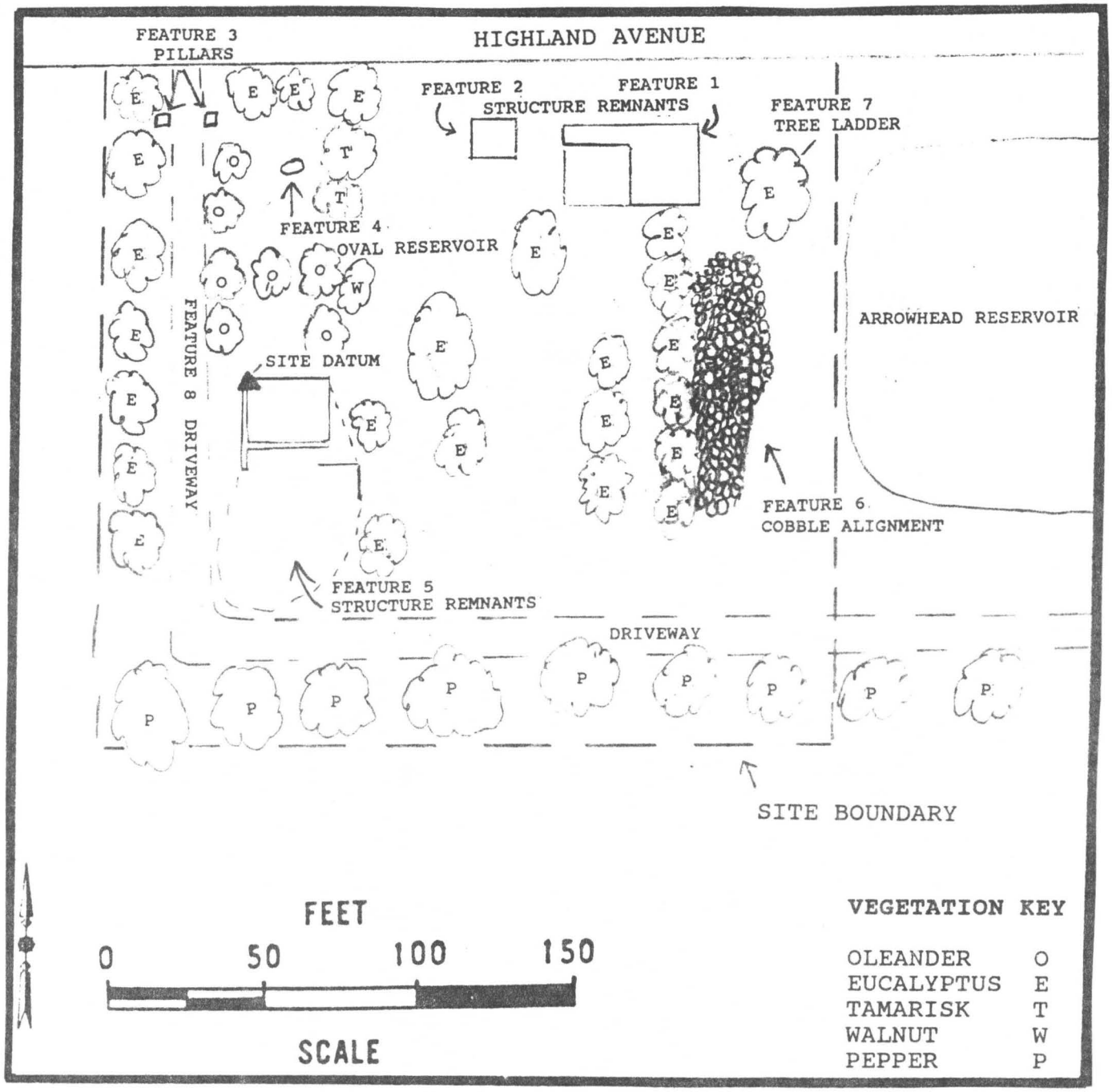
D86E07325

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

Permanent Trinomial: CA-SBR-7325 H

ARCHEOLOGICAL SITE MAP

Other Designation: 08-SBd-30-PS-11



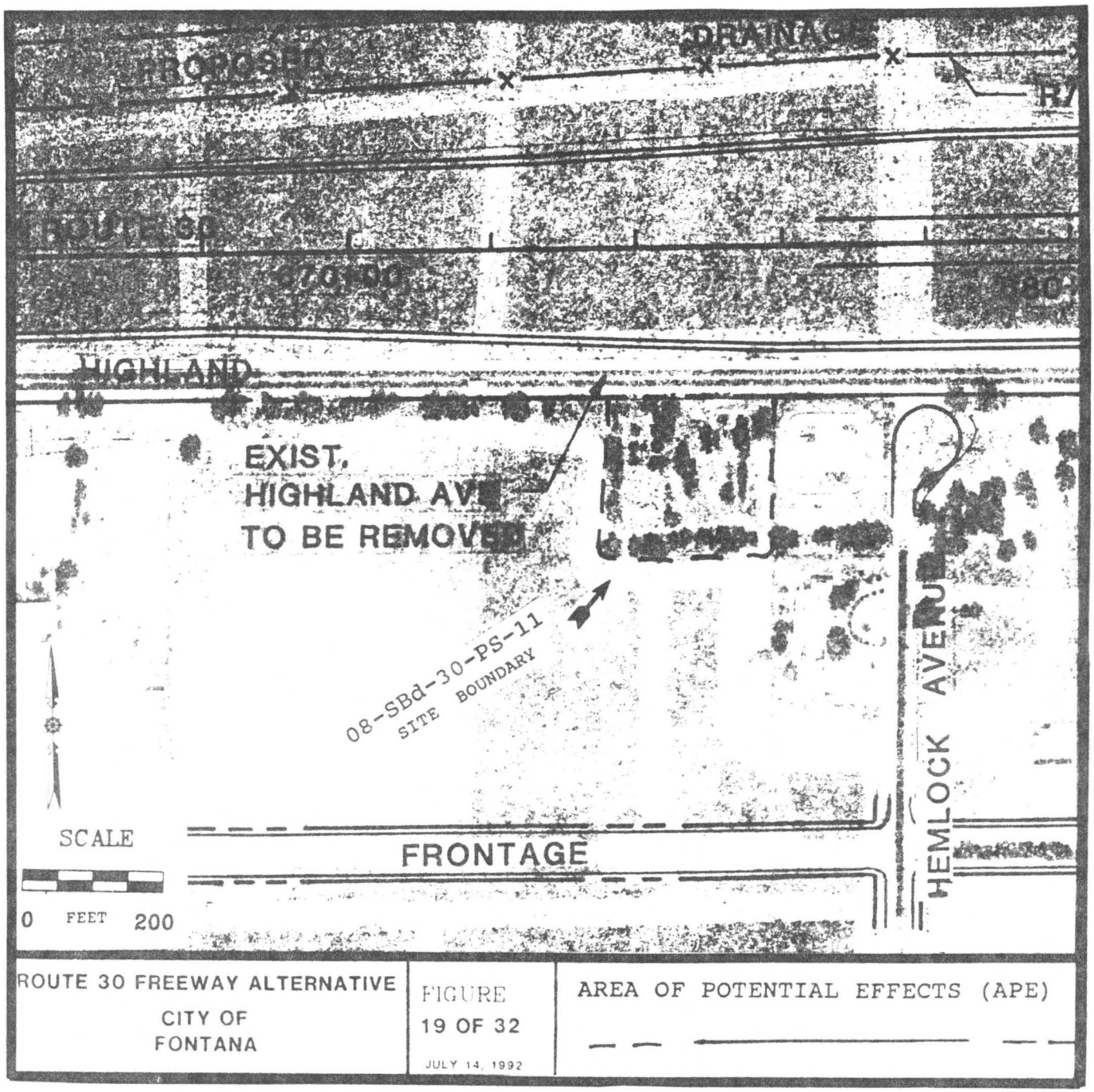
P36-007325

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

Permanent Trinomial: CA-SBR-7325 H

AREA OF POTENCIAL EFFECTS MAP

Other Designation: 08-SBd-30-PS-11



ROUTE 30 FREEWAY ALTERNATIVE CITY OF FONTANA	FIGURE 19 OF 32 JULY 14, 1992	AREA OF POTENTIAL EFFECTS (APE)

DPR 422 A (Rev. 4/86)

P36000735

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

Permanent Trinomial: CA-SBR-9325 H

Other Designation: 08-SBd-30-PS-

ARCHEOLOGICAL PHOTOGRAPHIC RECORD

Page 1 of 1.

Camera and Lens Types: Fuji Autofocus 34 and 53 mm

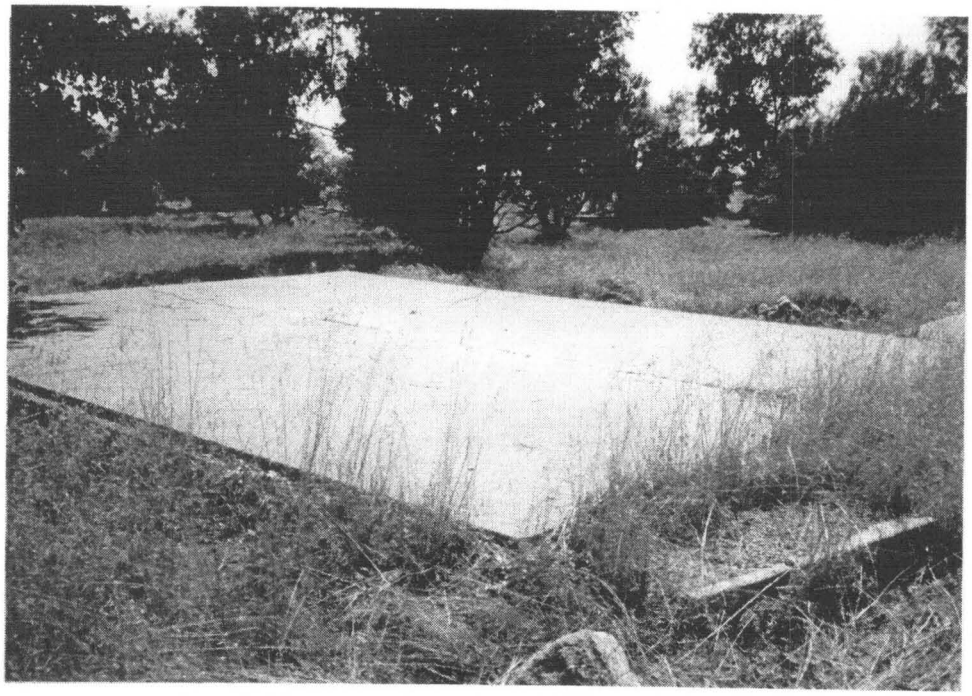
Film Type and Speed: Color 200

Roll Number: Color / 30.2

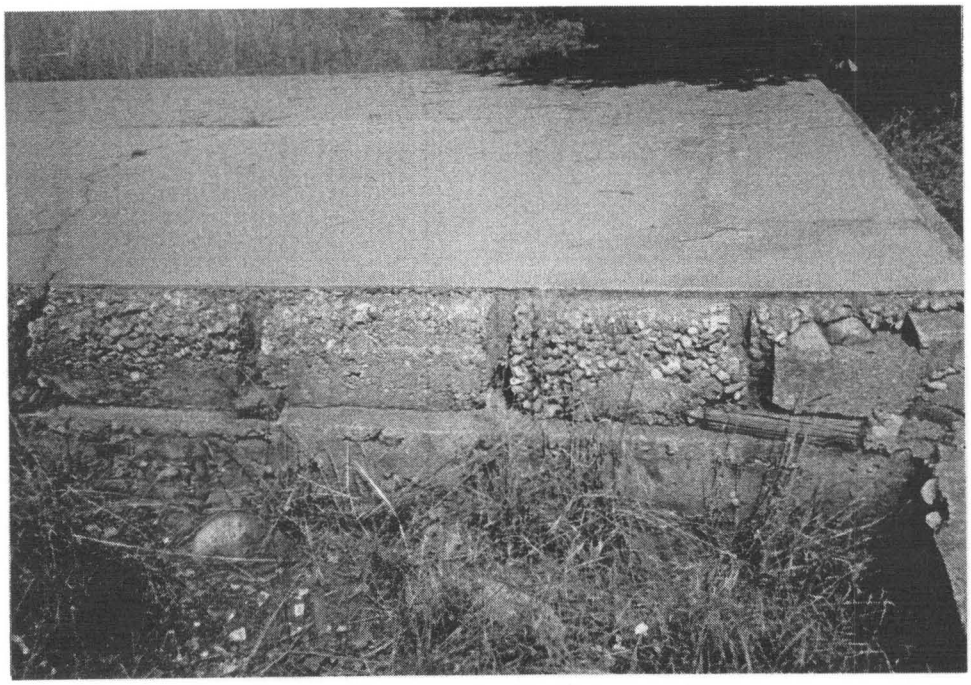
On File at: CALTRANS, Dist. 08
Environmental Branch
247 W. 3rd St.
San Bernardino, CA 92402

Mo.	Day	Time	Frame	Subject/Description	View Toward	Accession No.	Photographer
8/	20/92	PM	6	Site overview showing Feature 1 and landscape vegetation. Highland Ave. in foreground.	SW		Paula Sutton
8/	20/92	PM	7	Feature 1: Poured concrete pad foundation.	SW		Paula Sutton
8/	20/92	PM	8	Feature 2: Poured concrete pad foundation.	SE		Paula Sutton
8/	20/92	PM	9	Feature 3: Cobble-concrete pillars at driveway entrance.	SE		Paula Sutton
8/	20/92	PM	10	Feature 4: Cobble-concrete reservoir (fish pond?)	E		Paula Sutton
8/	20/92	PM	11	Feature 5: Cobble-concrete foundation.	SSE		Paula Sutton
8/	20/92	PM	12	Feature 5: Cobble-concrete foundation.	NNE		Paula Sutton
8/	20/92	PM	13	Feature 6: Cobblestone alignment adjacent to row of Eucalyptus trees.	NNE		Paula Sutton
8/	20/92	PM	14	Feature 7: Eucalyptus tree with ladder.	NNE		Paula Sutton
8/	20/92	PM	15	Feature 1: Cross-section of foundation.	E		Paula Sutton

Site overview showing foundations and landscape vegetation. View toward the south. Roll No. Color Roll 30.2, frame No. 6.

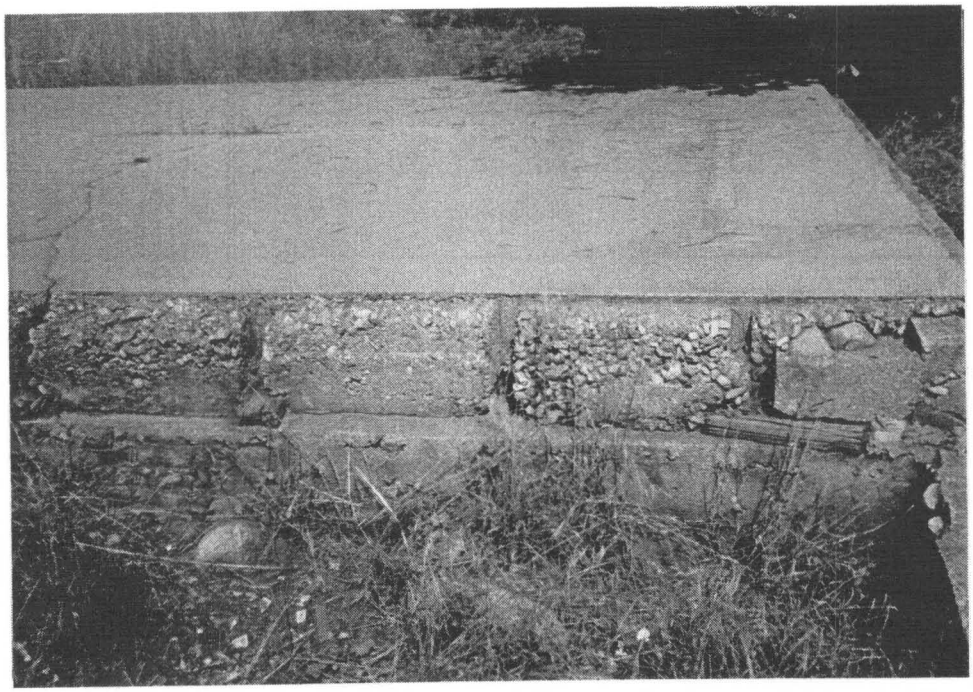


Feature 1: Poured concrete foundations. View toward the southwest. Roll No. Color Roll 30.2, frame No. 7.



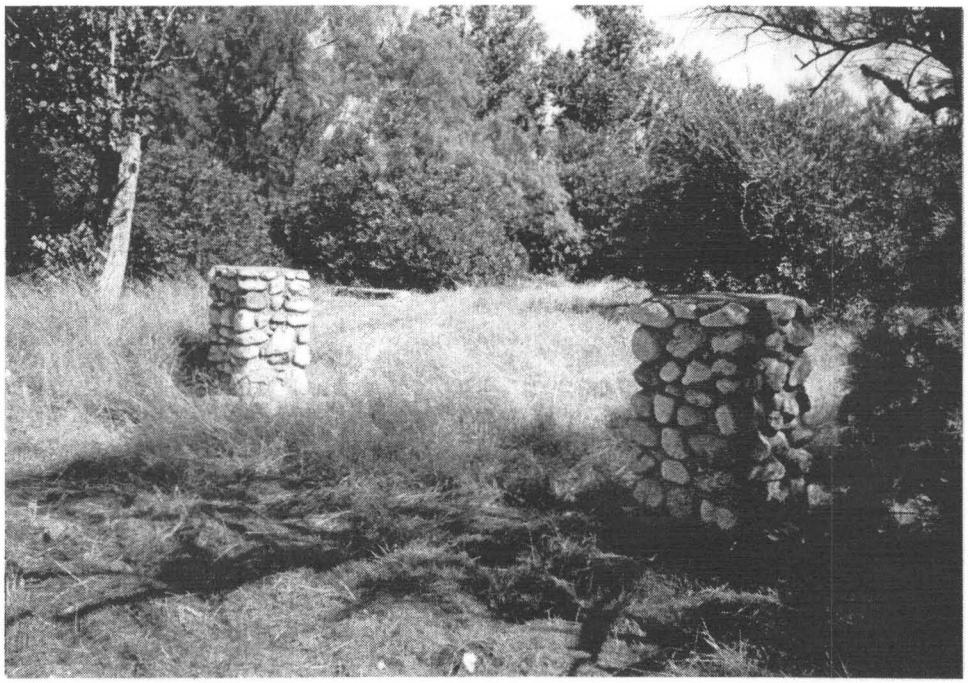
Feature 1: Cross-section of foundation. View toward the east.
Roll No. Color Roll 30.2, frame No. 15.

Feature 2: Poured concrete pad foundation. View toward the SE.
Roll No. Color Roll 30.2, frame No. 8.



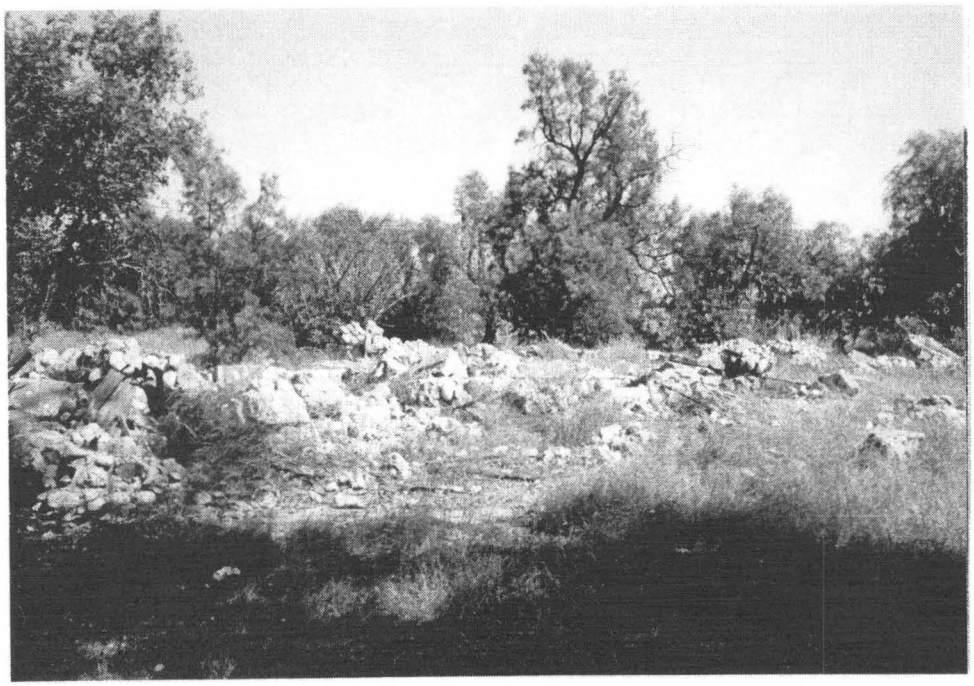
Feature 1: Cross-section of foundation. View toward the east.
Roll No. Color Roll 30.2, frame No. 15.

Feature 2: Poured concrete pad foundation. View toward the SE.
Roll No. Color Roll 30.2, frame No. 8.



Feature 3: Cobble-concrete pillars at driveway entrance. View toward the SE. Roll No. Color Roll 30.2, frame No. 9.

Feature 4: Cobble-concrete reservoir (fish pond?). View toward the east. Roll No. Color Roll 30.2, frame No. 10.



Feature 5: Cobble-concrete foundation. View toward the south-southeast.
Roll No. Color Roll 30.2, frame No. 11.

Feature 5: Cobble-concrete foundation. View toward the north-northeast.
Roll No. Color Roll 30.2, frame No. 12.

Feature 6: Cobblestone alignment adjacent to row of Eucalyptus trees. View toward the north-northeast. Roll No. Color Roll 30.2, frame No. 13.

Feature 7: Eucalyptus tree with ladder. View toward the north-northeast. Roll No. Color Roll 30.2, frame No. 14.

Site overview showing foundations and landscape vegetation. View toward the south. Roll No. Color Roll 30.2, frame No. 6.

Feature 1: Poured concrete foundations. View toward the southwest. Roll No. Color Roll 30.2, frame No. 7.

Feature 1: Cross-section of foundation. View toward the east.
Roll No. Color Roll 30.2, frame No. 15.

Feature 2: Poured concrete pad foundation. View toward the SE.
Roll No. Color Roll 30.2, frame No. 8.

Feature 3: Cobble-concrete pillars at driveway entrance. View toward the SE. Roll No. Color Roll 30.2, frame No. 9.

Feature 4: Cobble-concrete reservoir (fish pond?). View toward the east. Roll No. Color Roll 30.2, frame No. 10.

Feature 5: Cobble-concrete foundation. View toward the south-southeast.
Roll No. Color Roll 30.2, frame No. 11.

Feature 5: Cobble-concrete foundation. View toward the north-northeast.
Roll No. Color Roll 30.2, frame No. 12.

Feature 6: Cobblestone alignment adjacent to row of Eucalyptus trees. View toward the north-northeast. Roll No. Color Roll 30.2, frame No. 13.

Feature 7: Eucalyptus tree with ladder. View toward the north-northeast. Roll No. Color Roll 30.2, frame No. 14.

APPENDIX B
PROJECT PHOTOGRAPHS

Photo 1: Project Site Overview (West East)

Photo 2: Historic-Period Structure Remains (View Northeast)

Photo 3: Historic-Period Structure Remains (View East)

Photo 4: Project overview (View West)

APPENDIX C
NATIVE AMERICAN HERITAGE COMMISSION SACRED LANDS FILE SEARCH

NATIVE AMERICAN HERITAGE COMMISSION

CHAIRPERSON
Laura Miranda
Luiseño

VICE CHAIRPERSON
Reginald Pagaling
Chumash

SECRETARY
Merri Lopez-Keifer
Luiseño

PARLIAMENTARIAN
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Karuk

COMMISSIONER
Marshall McKay
Wintun

COMMISSIONER
William Mungary
Paiute/White Mountain Apache

COMMISSIONER
Joseph Myers
Pomo

COMMISSIONER
Julie Tumamait-Stenslie
Chumash

COMMISSIONER
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EXECUTIVE SECRETARY
Christina Snider
Pomo

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

January 22, 2020

Joseph Orozco
BCR Consulting LLC

Via Email to: josephorozco513@gmail.com

Re: Native American Consultation, Pursuant to Senate Bill 18, Government Code §65352.3 and §65352.4, Highland Project, San Bernardino County

Dear Mr. Orozco:

Attached is a consultation list of tribes with traditional lands or cultural places located within the boundaries of the above referenced counties.

Government Code §65352.3 and §65352.4 require local governments to consult with California Native American tribes identified by the Native American Heritage Commission (NAHC) for the purpose of avoiding, protecting, and/or mitigating impacts to cultural places when creating or amending General Plans, Specific Plans and Community Plans.

The law does not preclude initiating consultation with the tribes that are culturally and traditionally affiliated within your jurisdiction. The NAHC believes that this is the best practice to ensure that tribes are consulted commensurate with the intent of the law.

The NAHC also believes that agencies should also include with their notification letters, information regarding any cultural resources assessment that has been completed on the area of potential effect (APE), such as:

1. The results of any record search that may have been conducted at an Information Center of the California Historical Resources Information System (CHRIS), including, but not limited to:

    - A listing of any and all known cultural resources that have already been recorded or are adjacent to the APE, such as known archaeological sites;
    - Copies of any and all cultural resource records and study reports that may have been provided by the Information Center as part of the records search response;
    - Whether the records search indicates a low, moderate or high probability that unrecorded cultural resources are located in the APE; and
    - If a survey is recommended by the Information Center to determine whether previously unrecorded cultural resources are present.

2. The results of any archaeological inventory survey that was conducted, including:

    - Any report that may contain site forms, site significance, and suggested mitigation measures.

All information regarding site locations, Native American human remains, and associated funerary objects should be in a separate confidential addendum, and not be made available for public disclosure in accordance with Government Code §6254.10.

3. The result of the Sacred Lands File (SLF) check conducted through the Native American Heritage Commission was positive. Please contact the Gabrieleno Band of Mission Indians – Kizh Nation on the attached list for more information.

4. Any ethnographic studies conducted for any area including all or part of the APE; and

5. Any geotechnical reports regarding all or part of the APE.

Lead agencies should be aware that records maintained by the NAHC and CHRIS are not exhaustive. A tribe may be the only source of information regarding the existence of a tribal cultural resource.

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

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

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

Sincerely,

Andrew Green
Staff Services Analyst

Attachment

Native American Heritage Commission
Tribal Consultation List
San Bernardino County
1/22/2020

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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 6097.98 of the Public Resources Code and section 5097.98 of the Public Resources Code.

This list is only applicable for consultation with Native American tribes under Government Code Sections 65352.3 and 65352.4 et seq for the proposed Highland Project, San Bernardino County.

APPENDIX D
PALEONTOLOGICAL OVERVIEW

WESTERN SCIENCE CENTER

January 21, 2020

BCR Consulting LLC
Joseph Orozco
505 West 8th Street
Claremont, CA 91711

Dear Mr. Orozco,

This letter presents the results of a record search conducted for the Highland Project in Fontana, San Bernardino County, California. The project area is located north of South Highland Avenue, south of State Highway 210 and west of Hemlock Avenue in Section 35, Township 1 North, Range 4 West on the Devore USGS 7.5 minute quadrangle.

The geologic units underlying this project are mapped entirely as young alluvial deposits dating from the late Holocene period (Morton & Miller, 2006). Holocene alluvial units are considered to be of high preservation value, but material found is unlikely to be fossil material due to the relatively modern associated dates of the deposits. However, if development requires any substantial depth of disturbance, the likelihood of reaching Pleistocene alluvial sediments would increase. The Western Science Center does not have localities within the project area or within a 1 mile radius.

While the presence of any fossil material is unlikely, if excavation activity disturbs deeper sediment dating to the earliest parts of the Holocene or Late Pleistocene periods, the material would be scientifically significant. Excavation activity associated with the development of the project area is unlikely to be paleontologically sensitive, but caution during development should be observed.

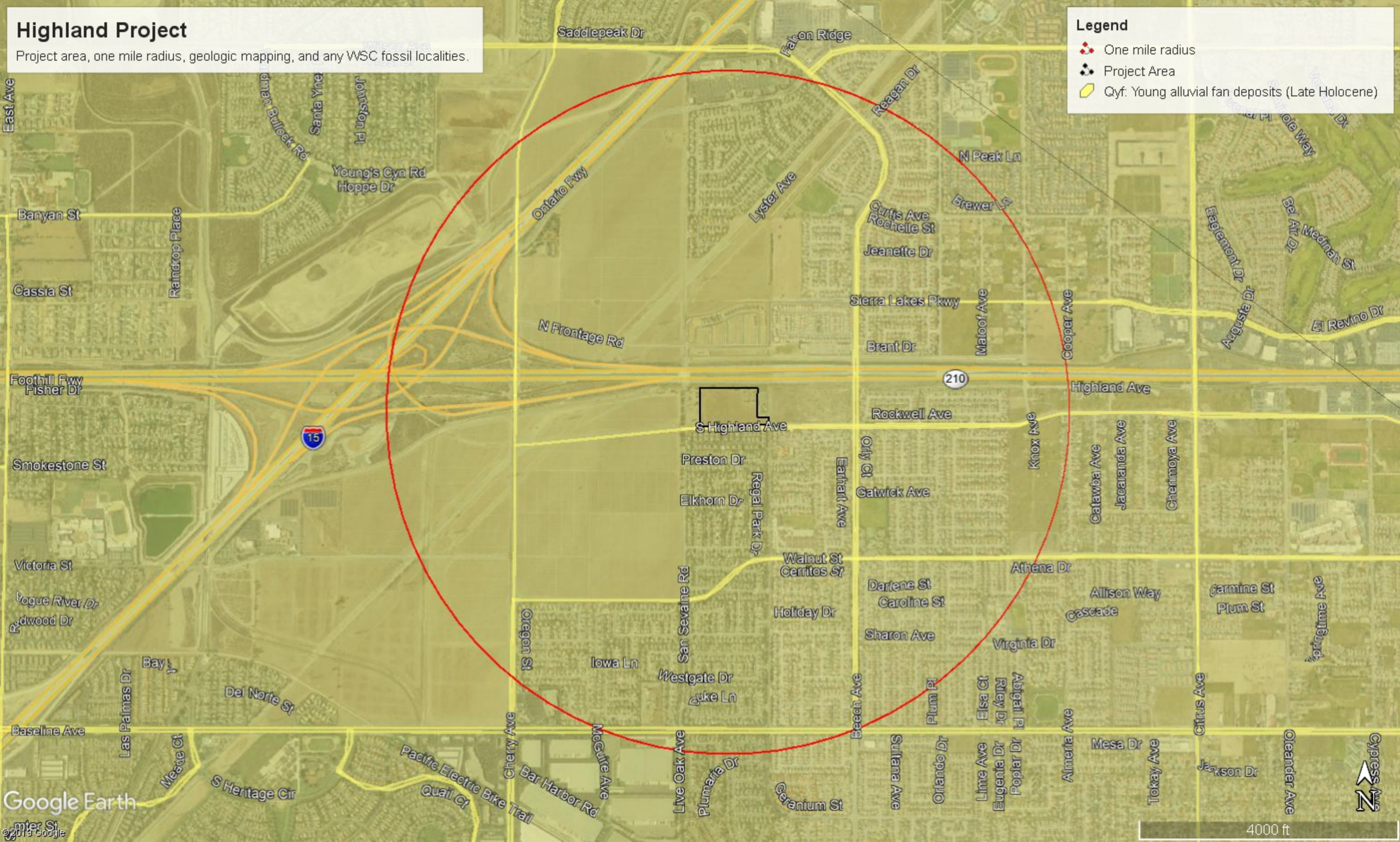
If you have any questions, or would like further information, please feel free to contact me at dradford@westerncentermuseum.org

Sincerely,

Darla Radford
Collections Manager

Highland Project

Project area, one mile radius, geologic mapping, and any WSC fossil localities.



Appendix E
Energy Analysis Technical Memorandum

HIGHLAND RESIDENTIAL PROJECT
INITIAL STUDY

Michael Baker INTERNATIONAL

We Make a Difference

MEMORANDUM

To: Emily Elliot, Michael Baker International

From: Pierre Glaize, Michael Baker International
Eddie Torres, Michael Baker International

Date: April 23, 2020

Subject: Highland Residential Project – Energy Analysis Technical Memorandum

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PURPOSE

The purpose of this technical memorandum is to evaluate potential short-term construction and long-term operational energy consumption impacts as a result of the proposed Highland Residential Project (project), located in the City of Fontana (City), California.

PROJECT LOCATION

The project is located at 14973 South Highland Avenue, on the north side of South Highland Avenue between Hemlock Avenue and San Sevaine Road in the City. The City is located in the southwestern portion of San Bernardino County (County). The City is bounded by the San Bernardino National Forest to the north, the City of Rialto to the east, the Jurupa Hills to the south, and unincorporated San Bernardino County and the Cities of Rancho Cucamonga and Ontario to the west. The City's Sphere of Influence extends north to the San Bernardino National Forest and west to the Cities of Rancho Cucamonga and Ontario.

Regional access to the site is available via State Route 210 (SR-210) at the Cherry Avenue exit, which is approximately one-half mile to the west of the site, and via Interstate 15 (I-15) at the Sierra Avenue exit, which is approximately 2.2 miles to the southwest of the site. Local access to the site is provided via South Highland Avenue and San Sevaine Road.

The project includes two parcels (APNs: 0228-021-08 and 0228-021-09) totaling approximately 10.2 acres.

EXISTING SITE CONDITIONS

The proposed project site is located on the gently sloping alluvial plain descending southward from the San Gabriel Mountains within the northern portion of the City. The project site currently consists of vacant land and the site's natural vegetation has been largely removed. The site is unimproved and there are no existing structures onsite. The topography of the site is relatively flat. The site drains to the southwest, the highest elevation is approximately 1,449 feet at the northeast corner of the site, and the lowest elevation is approximately 1,424 feet in the southwest corner of the site, an approximate elevation

difference of 25 feet. Concrete debris and cobbles and concrete slabs exist onsite, which appear to cover a cistern system.

The project site is surrounded by SR-210 to the north; a church facility to the east; residential development to the south; and vacant land to the west.

PROJECT DESCRIPTION

The project proposes development of a residential community involving construction of 107 multi-family detached units and associated infrastructure and improvements including private roads, sidewalks, landscaping, utilities, infiltration basins/drainage facilities, and parking. The community would be gate guarded and would construct on-site recreational facilities, including a community pool and clubhouse, tot lot, dog park, and exercise area. The dwelling units would be two-stories with two-car attached garages ranging in size from 1,400 square feet to 2,200 square feet. The project would also include General Plan Amendment No. 19-006 (General Commercial to Medium Density Residential) and Zone Change (General Commercial to Medium Density Residential).

Project construction would occur over approximately 14 months, beginning in March 2021. Construction of the project would include the following phases: site preparation, grading, building construction, paving, and architectural coating. It is anticipated that the project would be completed and operational by April 2022.

ENERGY CONSERVATION

In 1975, largely in response to the oil crisis of the 1970s, the California State Legislature adopted Assembly Bill 1575 (AB 1575), which created the California Energy Commission (CEC). The statutory mission of the CEC is to forecast future energy needs, license thermal power plants of 50 megawatts or larger, develop energy technologies and renewable energy resources, plan for and direct State responses to energy emergencies, and—perhaps most importantly—promote energy efficiency through the adoption and enforcement of appliance and building energy efficiency standards. AB 1575 also amended Public Resources Code Section 21100(b)(3) to require Environmental Impact Reports (EIRs) to consider the wasteful, inefficient, and unnecessary consumption of energy caused by a project. Thereafter, the California Natural Resources Agency created Appendix F, *Energy Conservation*, in the State's *California Environmental Quality Act Guidelines* (CEQA Guidelines). CEQA Guidelines Appendix F is an advisory document that assists EIR preparers in determining whether a project will result in the inefficient, wasteful, and unnecessary consumption of energy.

In December 2018, the California Natural Resources Agency finalized updates to the CEQA Guidelines. New CEQA Guidelines Section 15126.2(b) treats "wasteful, inefficient, or unnecessary" energy consumption as a significant environmental impact. As a result, energy thresholds have been incorporated into Appendix G, *Environmental Checklist Form*, of the CEQA Guidelines. This technical memorandum has been prepared to assess the project's energy impacts in accordance with Appendix G of the CEQA Guidelines.

EXISTING SETTING

Electricity/Natural Gas Services

Southern California Edison (SCE) provides electrical services to the County through State-regulated public utility contracts. Over the past 15 years, electricity generation in California has undergone a transition. Historically, California has relied heavily on oil- and gas-fired plants to generate electricity. Spurred by regulatory measures and tax incentives, California's electrical system has become more reliant on renewable energy sources, including cogeneration, wind energy, solar energy, geothermal energy, biomass conversion, transformation plants, and small hydroelectric plants. Unlike petroleum production, electricity generation is usually not tied to the location of the fuel source and can be delivered great distances via the electrical grid. The generating capacity of a unit of electricity is expressed in megawatts (MW). Net generation refers to the gross amount of energy produced by a unit, minus the amount of energy the unit consumes. Generation is typically measured in kilowatt-hours (kWh), megawatt-hours (MWh), or gigawatt-hours (GWh).

The Southern California Gas Company (SoCalGas) provides natural gas services to the County. Natural gas is a hydrocarbon fuel found in reservoirs beneath the Earth's surface and is composed primarily of methane (CH_4). It is used for space and water heating, process heating and electricity generation, and as transportation fuel. Use of natural gas to generate electricity is expected to increase in coming years as it is a relatively clean alternative to other fossil fuels like oil and coal. In California and throughout the western United States, many new electrical generation plants fired by natural gas are being brought online. Thus, there is great interest in importing liquefied natural gas from other parts of the world. Nearly 45 percent of natural gas burned in California was used for electricity generation.[1] While the supply of natural gas in the United States and production has increased greatly, California produces little and imports 90 percent of its natural gas.[2]

Electricity and natural gas services are available to locations where land uses could be developed. The County's ongoing development review process includes a review and comment opportunity for privately-owned utility companies, including SCE and SoCalGas, to allow informed input from each utility company on all development proposals. The input facilitates a detailed review of all projects by service purveyors to assess the potential demands for utility services on a project-by-project basis. The ability of utility providers to provide services concurrently with each project is evaluated during the development review process. Utility companies are bound by contract to update energy systems to meet any additional demand.

Energy Usage

Energy usage is typically quantified using the British Thermal Unit (BTU). Total energy usage in California was 7,881.3 trillion BTUs in 2017 (the most recent year for which this specific data is available), which equates to an average of 199 million BTUs per capita.[3] Of California's total energy usage, the breakdown by sector is 39.8 percent transportation, 23.7 percent industrial, 18.9 percent commercial, and 17.7

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[1] California Energy Commission, *Supply and Demand of Natural Gas in California*, https://ww2.energy.ca.gov/almanac/naturalgas_data/overview.html, accessed April 15, 2020.

[2] Ibid.

[3] U.S. Energy Information Administration, *Table F32: Total energy consumption, price, and expenditure estimates, 2017,* https://www.eia.gov/state/seds/data.php?incfile=/state/seds/sep_fuel/html/fuel_te.html&sid=CA, accessed by April 15, 2020.

percent residential.[4] Electricity and natural gas in California are generally consumed by stationary users such as residences, commercial, and industrial facilities, whereas petroleum consumption is generally accounted for by transportation-related energy use.[5] In 2018, taxable gasoline sales (including aviation gasoline) in California accounted for 15,589,042,965 gallons of gasoline.[6] The electricity consumption attributable to the County from 2010 to 2018 is shown in Table 1, *Electricity Consumption in San Bernardino County 2010-2018*. As indicated in Table 1, energy consumption in the County has slowly increased from 2010 to 2018.

Table 1
Electricity Consumption in San Bernardino County 2010-2018

Year	Electricity Consumption (in millions of kilowatt hours)
2010	13,495
2011	13,744
2012	14,365
2013	14,386
2014	14,765
2015	14,780
2016	14,970
2017	15,488
2018	15,634

Source: California Energy Commission, *Electricity Consumption by County*, http://www.ecdms.energy.ca.gov/, accessed April 15, 2020.

The natural gas consumption attributable to the County from 2010 to 2018 is shown in Table 2, *Natural Gas Consumption in San Bernardino County 2010-2018*. Natural gas consumption in the County dropped in 2013 but steadily rose back up in 2016 and has been consistent since then.

Table 2
Natural Gas Consumption in San Bernardino County 2010-2018

Year	Natural Gas Consumption (in millions of therms)
2010	492.54
2011	485.70
2012	502.66
2013	451.76
2014	469.44
2015	469.44
2016	494.38
2017	493.14
2018	500.08

Source: California Energy Commission, *Natural Gas Consumption by County*, http://www.ecdms.energy.ca.gov/, accessed April 15, 2020.

[4] Ibid.

[5] U.S. Energy Information Administration, *California State Profile and Energy Estimates*, https://www.eia.gov/state/?sid=CA, accessed April 15, 2020.

[6] California Department of Tax and Fee Administration, *Net Taxable Gasoline Gallons*, http://www.cdtfa.ca.gov/taxes-and-fees/MVF-10-Year-Report.pdf, accessed April 15, 2020.

Automotive fuel consumption in the County from 2010 to 2020 is shown in Table 3, *Automotive Fuel Consumption in San Bernardino County 2010-2020*. As shown in Table 3, on-road automotive fuel consumption in the County declined from 2010 to 2013, increased from 2013 to 2016, and has been declining since. Heavy-duty vehicle fuel consumption dropped in 2012 and has steadily risen since 2013.

Table 3
Automotive Fuel Consumption in San Bernardino County 2010-2018

Year	On-Road Automotive Fuel Consumption (gallons)	Heavy-Duty Vehicle/Diesel Fuel Consumption (Construction Equipment) (gallons)
2010	928,350,731	213,416,884
2011	909,724,304	213,416,884
2012	905,737,291	210,608,085
2013	903,612,454	222,501,950
2014	917,134,470	229,330,896
2015	948,510,973	232,420,563
2016	978,391,333	248,086,190
2017	958,940,800	251,290,680
2018	939,239,990	255,432,484
2019	917,963,234	258,231,256
2020 (projected)	900,254,322	260,142,425

Source: California Air Resources Board, EMFAC2017.

REGULATORY SETTING

State

Senate Bill 100. Senate Bill (SB) 100 (Chapter 312, Statutes of 2018) requires that retail sellers and local publicly owned electric utilities procure a minimum quantity of electricity products from eligible renewable energy resources so that the total kilowatt-hours (kWh) of those products sold to their retail end-use customers achieve 44 percent of retail sales by December 31, 2024; 52 percent by December 31, 2027; 60 percent by December 31, 2030; and 100 percent by December 31, 2045. The bill requires the California Public Utilities Commission (CPUC), California Energy Commission (CEC), State board, and all other State agencies to incorporate that policy into all relevant planning. In addition, SB 100 requires the CPUC, CEC, and State board to utilize programs authorized under existing statutes to achieve that policy and, as part of a public process, issue a joint report to the Legislature by January 1, 2021, and every four years thereafter, that includes specified information relating to the implementation of the policy.

California Building Energy Efficiency Standards (Title 24). In 1978, the CEC established Title 24, California's energy efficiency standards for residential and non-residential buildings, in response to a legislative mandate to create uniform building codes to reduce California's energy consumption. In 2013, the CEC updated Title 24 standards with more stringent requirements. The 2016 standards substantially reduce electricity and natural gas consumption. Additional savings result from the application of Title 24 standards on building alterations. For example, requirements for cool roofs, lighting, and air distribution ducts are expected to save additional electricity. These savings are cumulative, doubling as years go by. The 2016 standards went into effect on January 1, 2017. California's energy efficiency standards are updated on an approximate three-year cycle. The 2019 Title 24 standards were recently adopted and go into effect on January 1, 2020. Under 2019 standards, non-residential buildings will use about 30 percent

less energy, mainly due to lighting upgrades, when compared to non-residential buildings constructed under 2016 standards, and residential buildings will use about 53 percent less energy than those under the 2016 standards.[7]

California Green Building Standards. The California Green Building Standards (CALGreen) Code (California Code of Regulations Title 24, Part 11), is a Statewide mandatory construction code that was developed and adopted by the California Building Standards Commission and the California Department of Housing and Community Development. CALGreen standards require new residential and commercial buildings to comply with mandatory measures under five topical areas: planning and design; energy efficiency; water efficiency and conservation; material conservation and resource efficiency; and environmental quality. CALGreen also provides voluntary tiers and measures that local governments may adopt which encourage or require additional measures in the five green building topics. The most recent update to the CALGreen Code was adopted in 2019 and takes effect January 1, 2020. CALGreen requires new buildings to reduce water consumption by 20 percent, divert 50 percent of construction waste from landfills, and install low pollutant-emitting materials, among others.

California Public Utilities Commission Energy Efficiency Strategic Plan. The California Public Utilities Commission (CPUC) prepared an *Energy Efficiency Strategic Plan* in 2011 with the goal of promoting energy efficiency and greenhouse gas reduction. Assembly Bill 1109 (AB 1109), adopted in 2007, also serves as a framework for lighting efficiency. AB 1109 requires the State Energy Resources Conservation and Development Commission to adopt minimum energy efficiency standards as a means to reduce average Statewide electrical energy consumption by not less than 50 percent from the 2007 levels for indoor residential lighting and not less than 25 percent from the 2007 levels for indoor commercial and outdoor lighting by 2018.

Local

City of Fontana

General Plan Update 2015-2035

The City of Fontana adopted the *General Plan Update 2015-2035* (General Plan Update) on November 13, 2018. Chapter 12 Sustainability and Resilience of the General Plan Update[8] identifies goals and policies to pursue sustainability and resilience by making resource-efficient choices to conserve water, energy, and materials, improve air quality, and adjust to changing conditions. The following goals and policies focus on renewable energy and energy efficiency and are applicable to the proposed project:

- **Goal 3:** Renewable sources of energy, including solar and wind, and other energy-conservation strategies are available to city households and businesses.
    - Policy: Promote renewable energy programs for government, Fontana businesses, and Fontana residences.

- **Goal 5:** Green building techniques are used in new development and retrofits.

[7] California Energy Commission, *2019 Building Energy Efficiency Standards*, https://www.energy.ca.gov/title24/2019standards/documents/2018_Title_24_2019_Building_Standards_FAQ.pdf, accessed April 15, 2020.

[8] City of Fontana, *General Plan Update 2015-2035, Chapter 12 Sustainability and Resilience*, November 13, 2018, https://www.fontana.org/DocumentCenter/View/26751/Chapter-12---Sustainability-and-Resilience, accessed March 27, 2020.

- Policy: Promote green building through guidelines, awards and nonfinancial incentives.

- **Goal 6:** Fontana is a leader energy-efficient development and retrofits.
  - Policy 1: Promote energy-efficient development in Fontana.
  - Policy 2: Meet or exceed state goals for energy-efficient new construction.

CALIFORNIA ENVIRONMENTAL QUALITY ACT (CEQA) THRESHOLDS

In accordance with the CEQA Guidelines, project impacts are evaluated to determine whether significant adverse environmental impacts would occur. This analysis will focus on the project's potential impacts and provide mitigation measures, if required, to reduce or avoid any potentially significant impacts that are identified. According to Appendix G of the CEQA Guidelines, the proposed project would have a significant impact related to energy, if it would:

- Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation (refer to Impact Statement EN-1); and/or

- Conflict with or obstruct a State or local plan for renewable energy or energy efficiency (refer to Impact Statement EN-2).

The impact analysis focuses on three energy sources that are relevant to the proposed project: electricity, natural gas, and transportation fuel for vehicle trips associated with construction and operations of the project.

IMPACT ANALYSES

ENERGY CONSUMPTION

EN-1 WOULD THE PROJECT RESULT IN WASTEFUL, INEFFICIENT, OR UNNECESSARY CONSUMPTION OF ENERGY RESOURCES?

This analysis focuses on three sources of energy that are relevant to the proposed project: electricity, natural gas, and transportation fuel for vehicle trips associated with project construction and operations. The analysis of operational electricity is based on the California Emissions Estimator Model version 2016.3.2 (CalEEMod) modeling results for the project. The project's estimated electricity consumption is based primarily on CalEEMod's default settings for the County, and consumption factors provided by Southern California Edison (SCE) and the Southern California Gas Company (SoCalGas), who are the electricity and natural gas providers for the City and the project site. Further, the population estimate for the County were taken from the United States Census Bureau and the City's person per household estimates were taken from the State of California Department of Finance.[9,10] The results of the CalEEMod and energy consumption modeling are included in Appendix A, *Energy Data*. The amount of operational fuel consumption was estimated using the project's annual vehicle miles traveled (VMT) outputs from

[9] United Sates Census Bureau, *San Bernardino County, California*, https://data.census.gov/cedsci/profile?q=San%20Bernardino%20County,%20California&g=0500000US06071, accessed April 21, 2020.

[10] State of California Department of Finance, *E-5 Population and Housing Estimates for Cities, Counties, and the State, 2011-2019 with 2010 Census Benchmark*, http://dof.ca.gov/Forecasting/Demographics/Estimates/E-5/, accessed April 21, 2020.

CalEEMod. The estimated construction fuel consumption is based on the project's construction equipment list timing/phasing, and hours of duration for construction equipment, as well as vendor, hauling, and construction worker trips.

The project's estimated energy consumption is summarized in Table 4, *Project and Countywide Energy Consumption*. As shown in Table 4, the project's per capita electricity consumption would be approximately 58 percent less than the current County-wide per capita electricity consumption. Furthermore, the project's per capital natural gas consumption would be approximately 68 percent less than the current County-wide per capita natural gas consumption. Table 5, *Project and Countywide Fuel Consumption* compares the project's construction and operational vehicle fuel consumption to that found within the County. As show in Table 5, project construction and operation would increase the County's consumption by 0.0332 percent and 0.0240 percent, respectively.

Table 4
Project and Countywide Energy Consumption

Energy Type	Project Annual Energy Consumption[1]	San Bernardino County Annual Energy Consumption[2]	County-wide Per Capita Energy Consumption[2]	Project Per Capita Energy Consumption[3]	Percent Difference (decrease)
Electricity Consumption	1,358 MWh	15,633,660 MWh	7 MWh	3 MWh	57.93%
Natural Gas Consumption	32,738 therms	500,082,474 therms	234 therms	74 therms	68.30%

Notes:
1. As modeled in CalEEMod version 2016.3.2.
2. The project per capita electricity and natural gas consumption are compared to the per capita consumption in San Bernardino County in 2018. To account for Countywide energy use in all sectors, total capita in the County is calculated as the summary of population and employment.
   San Bernardino County electricity consumption data source: California Energy Commission, *Electricity Consumption by County*, http://www.ecdms. energy.ca.gov/elecbycounty.aspx, accessed April 15, 2020.
   San Bernardino County natural gas consumption data source: California Energy Commission, *Gas Consumption by County*, http://www.ecdms.energy. ca.gov/gasbycounty.aspx, accessed April15, 2020.
   San Bernardino County Population and Employment data source: https://data.census.gov/cedsci/profile?q=San%20Bernardino%20County,%20California&g=0500000US06071, accessed April 21, 2020.
3. The project would have 107 Multi-family units. Per the Department of Finance E-5 population estimates, the City of Fontana has 4.12 persons per household. As such, the project is anticipated to have a population of 441 residents. City of Fontana and anticipated project population data source: http://dof.ca.gov/Forecasting/Demographics/Estimates/E-5/, accessed April 21, 2020.

Refer to Appendix A for assumptions used in this analysis.

Table 5
Project and Countywide Fuel Consumption

Energy Type	Project Annual Fuel Consumption[1]	San Bernardino County Annual Fuel Consumption[2]	Percentage Increase Countywide
Fuel Consumption			
• Construction Fuel Consumption[3]	86,383 gallons	260,367,71 gallons	0.0332%
• Operational Automotive Fuel Consumption[3]	208,901 gallons	868,827,791 gallons	0.0240%

Notes:
1. As modeled in CalEEMod version 2016.3.2.
2. Project fuel consumption calculated based on CalEEMod results. 2022 (Operational Year) Countywide fuel consumption is from the California Air Resources Board EMFAC2017 model.

Refer to Appendix A for assumptions used in this analysis.

Construction-Related Energy

Project construction would consume energy in two general forms: (1) the fuel energy consumed by construction vehicles and equipment; and (2) bound energy in construction materials, such as asphalt, steel, concrete, pipes, and manufactured or processed materials such as lumber and glass.

Fossil fuels used for construction vehicles and other energy-consuming equipment would be used during site clearing, grading, paving, building construction, and architectural coatings. Fuel energy consumed during construction would be temporary and would not represent a significant demand on energy resources. In addition, some incidental energy conservation would occur during construction through compliance with State requirements that heavy-duty diesel equipment not in use for more than five minutes be turned off. Project construction equipment would also be required to comply with the latest U.S. Environmental Protection Agency (EPA) and CARB engine emissions standards. These emissions standards require highly efficient combustion systems that maximize fuel efficiency and reduce unnecessary fuel consumption. Due to increasing transportation costs and fuel prices, contractors and owners have a strong financial incentive to avoid wasteful, inefficient, and unnecessary consumption of energy during construction.

Substantial reductions in energy inputs for construction materials can be achieved by selecting green building materials composed of recycled materials that require less energy to produce than non-recycled materials.[11] The integration of green building materials can help reduce environmental impacts associated with the extraction, transport, processing, fabrication, installation, reuse, recycling, and disposal of these building industry source materials.[12] The project-related incremental increase in the use of energy bound in construction materials such as asphalt, steel, concrete, pipes and manufactured or processed materials (e.g., lumber and gas) would not substantially increase demand for energy compared to overall local and regional demand for construction materials. As indicated in Table 5, the project's fuel consumption from construction would be approximately 86,383 gallons, which would increase fuel use in the County by 0.0332 percent. As such, construction would have a nominal effect on the local and regional energy supplies. It is noted that construction fuel use is temporary and would cease upon completion of construction activities. There are no unusual project characteristics that would necessitate the use of construction equipment that would be less energy efficient than at comparable construction sites in the region or State. Therefore, construction fuel consumption would not be any more inefficient, wasteful, or unnecessary than other similar development projects of this nature. As such, a less than significant impact would occur in this regard.

Operational Energy Consumption

Transportation Energy Demand

Pursuant to the Federal Energy Policy and Conservation Act of 1975, the National Highway Traffic and Safety Administration (NTSA) is responsible for establishing additional vehicle standards and for revising existing standards. Compliance with Federal fuel economy standards is not determined for each individual

[11] California Department of Resources Recycling and Recovery, *Green Building Materials*, https://www.calrecycle.ca.gov/greenbuilding/materials#Material, accessed April 16, 2020.

[12] Ibid.

vehicle model. Rather, compliance is determined based on each manufacturer's average fuel economy for the portion of their vehicles produced for sale in the United States. Table 5 provides an estimate of the daily fuel consumed by vehicles traveling to and from the project site. As indicated in Table 5, project operations are estimated to consume approximately 208,901 gallons of fuel per year, which would increase the County's automotive fuel consumption by 0.0240 percent. The project would not result in any unusual characteristics that would result in excessive operational fuel consumption associated with vehicular travel. Fuel consumption associated with project-related vehicle trips would not be considered inefficient, wasteful, or unnecessary in comparison to other similar developments in the region. As such, a less than significant impact would occur in this regard.

Building Energy Demand

The project would consume energy for interior and exterior lighting, heating/ventilation and air conditioning (HVAC), electronics systems, appliances, and security systems, among other common light industrial features. The project would be required to comply with Title 24 standards, which provide minimum efficiency standards related to various building features, including appliances, water and space heating and cooling equipment, building insulation and roofing, and lighting. Implementation of the Title 24 standards significantly reduces energy usage. Because the Title 24 Building Energy Efficiency Standards are updated every 3-year and become more stringent between each update, complying with the latest Title 24 standards would make the proposed project more energy efficient than existing buildings built under the earlier versions of the Title 24 standards. Furthermore, the electricity provider, SCE, is subject to California's Renewables Portfolio Standard (RPS). The RPS requires investor-owned utilities, electric service providers, and community choice aggregators to increase procurement from eligible renewable energy resources to 33 percent of total procurement by 2020 and to 60 percent of total procurement by 2030. As indicated in Table 4, operational energy consumption would represent an approximate 58 percent decrease in electricity consumption per capita and approximate 68 percent decrease in natural gas consumption per capita over the current Countywide per capita usage. Therefore, the project would be more energy efficient than the County average. As such, the project would not result in the inefficient, wasteful, or unnecessary consumption of building energy, and impacts in this regard would be less than significant.

Conclusion

As depicted in Table 4, the project operational energy consumption would represent an approximate 58 percent decrease in electricity consumption per capita and approximate 68 percent decrease in natural gas consumption per capita over the current Countywide per capita usage. The project would adhere to all Federal, State, and local requirements for energy efficiency, including the Title 24 standards. Additionally, the project would not result in a substantial increase in demand for transmission service, resulting in the need for new or expanded sources of energy supply or new or expanded energy delivery systems or infrastructure. The project would not result in the inefficient, wasteful, or unnecessary consumption of building energy. A less than significant impact would occur in this regard.

Mitigation Measures: *No mitigation measures are required.*

Level of Significance: *Less Than Significant Impact.*

EN-2 WOULD THE PROJECT CONFLICT WITH OR OBSTRUCT A STATE OR LOCAL PLAN FOR RENEWABLE ENERGY OR ENERGY EFFICIENCY?

The project would comply the most recent version Title 24 and CALGreen efficiency standards, which would ensure the project incorporates photovoltaic solar panels, energy efficient windows, insulation, lighting, ventilation systems, water efficient fixtures, as well as green building standards. In addition, the project would comply with goals and policies found within the Sustainability and Resilience Element, as listed in Table 6, *Project Sustainability and Resilience Strategies Element Consistency Analysis*. These goals include promoting the usage of renewable energy, the reduction of greenhouse gas emissions, and implementation of green building and energy-efficient development. Adherence to the Title 24 and CALGreen requirements will ensure conformance with the State's goal of promoting energy, water, and lighting efficiency, and the City's goal to purse sustainability and resilience.

The proposed project would also comply with the Energy Independence and Security Act of 2007, Federal vehicle standards, and California's Low Carbon Fuel Standard, which regulates fuel efficiencies for vehicles, including trucks. Fuel consumption associated with vehicle trips generated by the proposed project would not be considered inefficient, wasteful, or unnecessary in comparison to other similar developments in the region. Therefore, the proposed project would result in less than significant impacts associated with renewable energy or energy efficiency plans.

Table 6
Project Sustainability and Resilience Strategies Element Consistency Analysis

Goal/Policy	Project Consistency
Goal 3: Renewable sources of energy, including solar and wind, and other energy-conservation strategies are available to city households and businesses. • Policy: Promote renewable energy programs for government, Fontana businesses, and Fontana residences.	**Consistent.** The project would comply with 2019 Title 24 Building Energy Efficiency Standards, which require solar photovoltaic systems for new homes and would be 53 percent more energy efficient than the 2016 standards.
Goal 5: Green building techniques are used in new development and retrofits. • Policy: Promote green building through guidelines, awards and nonfinancial incentives.	**Consistent.** The project would meet the 2019 Title 24 Building Energy Efficiency Standards and the applicable requirements of the CALGreen Code.
Goal 6: Fontana is a leader energy-efficient development and retrofits. • Policy 1: Promote energy-efficient development in Fontana. • Policy 2: Meet or exceed state goals for energy-efficient new construction.	**Consistent.** The project would meet the 2019 Title 24 Building Energy Efficiency Standards and the applicable requirements of the CALGreen Code. This would include parking spaces for EVs in the common use parking area in compliance with CALGreen Section 4.106.4.2.1. In addition, the project would be required to install necessary circuit for EV chargers in each dwelling unit in compliance with CALGreen Section 4.106.4.1.
Source: City of Fontana, *General Plan Update 2015-2035, Chapter 12 Sustainability and Resilience,* November 13, 2018, https://www.fontana.org/DocumentCenter/View/26751/Chapter-12---Sustainability-and-Resilience, accessed March 27, 2020.	

Mitigation Measures: *No mitigation measures are required.*

Level of Significance: *Less Than Significant Impact.*

REFERENCES

Software/Websites

1. California Air Resources Board, EMFAC2017.

2. California Energy Commission, *2019 Building Energy Efficiency Standards*, https://www.energy.ca.gov/title24/2019standards/documents/2018_Title_24_2019_Building_Standards_FAQ.pdf, accessed December 5, 2019.

3. California Energy Commission, *Electricity Consumption by County*, http://www.ecdms.energy.ca.gov/elecbycounty.aspx, accessed April 15, 2020.

4. California Energy Commission, *Gas Consumption by County*, http://www.ecdms.energy.ca.gov/gasbycounty.aspx, accessed April 15, 2020.

5. California Energy Commission, *Supply and Demand of Natural Gas in California*, https://ww2.energy.ca.gov/almanac/naturalgas_data/overview.html, accessed April 15, 2020.

6. California Department of Resources Recycling and Recovery, *Green Building Materials*, https://www.calrecycle.ca.gov/greenbuilding/materials#Material, accessed April 16, 2020.

7. California Department of Tax and Fee Administration, *Net Taxable Gasoline Gallons*, http://www.cdtfa.ca.gov/taxes-and-fees/MVF-10-Year-Report.pdf, accessed April 15, 2020.

8. City of Fontana, *2018 General Plan Sustainability and Resilience Element*, November 2018.

9. State of California Department of Finance, *E-5 Population and Housing Estimates for Cities, Counties, and the State, 2011-2019 with 2010 Census Benchmark*, http://dof.ca.gov/Forecasting/Demographics/Estimates/E-5/, accessed April 21, 2020.

10. United Sates Census Bureau, *San Bernardino County, California*, https://data.census.gov/cedsci/profile?q=San%20Bernardino%20County,%20California&g=0500000US06071, accessed April 21, 2020.

11. U.S. Energy Information Administration, *Table F32: Total energy consumption, price, and expenditure estimates, 2017,* https://www.eia.gov/state/seds/data.php?incfile=/state/seds/sep_fuel/html/fuel_te.html&sid=CA, accessed April 16, 2020.

12. U.S. Energy Information Administration, *California State Profile and Energy Estimates*, https://www.eia.gov/state/?sid=CA, accessed April 15, 2020.

Appendix A

Energy Data

Highland Residential

South Coast AQMD Air District, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Parking Lot	107.00	Space	0.96	42,800.00	0
City Park	0.38	Acre	0.38	16,552.80	0
Single Family Housing	107.00	Dwelling Unit	8.88	192,600.00	306

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	31
Climate Zone	10			**Operational Year**	2022
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	702.44	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - 107 open guest parking spaces; park+recreation center area estimated from site plan; total site area 10.22 acres

Construction Phase - construction schedule provided by project applicant

Off-road Equipment -

Off-road Equipment - equipment list provided by project applicant

Off-road Equipment - equipment list provided by project applicant

Off-road Equipment - equipment list provided by project applicant

Off-road Equipment - equipment list provided by project applicant

Trips and VMT - project applicant estimated 10 cubic yards/truck, 5-mile roundtrip distance during site preparation and 1-mile roundtrip distance during grading

Grading - total site area 10.22

Architectural Coating - SCAQMD Rule 1113 - low VOC painting

Vehicle Trips - trip generation rate from TIA Table 4-1 dated March 10, 2020

Area Coating - SCAQMD Rule 1113 - low VOC painting

Construction Off-road Equipment Mitigation - SCAQMD Rule 403

Area Mitigation - SCAQMD Rule 445 - no wood-burning devices in new development

Table Name	Column Name	Default Value	New Value
tblArchitecturalCoating	EF_Nonresidential_Exterior	100.00	50.00
tblArchitecturalCoating	EF_Nonresidential_Interior	100.00	50.00
tblArchitecturalCoating	EF_Parking	100.00	50.00
tblAreaCoating	Area_EF_Nonresidential_Exterior	100	50
tblAreaCoating	Area_EF_Nonresidential_Interior	100	50
tblAreaCoating	Area_EF_Parking	100	50
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstructionPhase	NumDays	10.00	15.00
tblConstructionPhase	NumDays	30.00	45.00
tblConstructionPhase	NumDays	300.00	180.00
tblConstructionPhase	NumDays	20.00	30.00
tblConstructionPhase	NumDays	20.00	30.00
tblGrading	AcresOfGrading	202.50	10.22
tblGrading	MaterialExported	0.00	2.00
tblGrading	MaterialImported	0.00	5,000.00
tblLandUse	LotAcreage	34.74	8.88
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	4.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	1.00
tblTripsAndVMT	HaulingTripLength	20.00	5.00

tblTripsAndVMT	HaulingTripLength	20.00	1.00
tblTripsAndVMT	HaulingTripNumber	0.00	75.00
tblTripsAndVMT	HaulingTripNumber	625.00	500.00
tblTripsAndVMT	WorkerTripNumber	18.00	10.00
tblTripsAndVMT	WorkerTripNumber	30.00	25.00
tblVehicleTrips	ST_TR	22.75	0.00
tblVehicleTrips	ST_TR	9.91	9.44
tblVehicleTrips	SU_TR	16.74	0.00
tblVehicleTrips	SU_TR	8.62	9.44
tblVehicleTrips	WD_TR	1.89	0.00
tblVehicleTrips	WD_TR	9.52	9.44

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2021	0.5772	5.6198	4.0746	9.6300e-003	0.3500	0.2536	0.6035	0.1693	0.2349	0.4042	0.0000	847.9248	847.9248	0.2314	0.0000	853.7099
2022	0.7103	0.6316	0.5671	1.3200e-003	0.0128	0.0284	0.0412	3.4400e-003	0.0264	0.0298	0.0000	116.3415	116.3415	0.0305	0.0000	117.1035
Maximum	**0.7103**	**5.6198**	**4.0746**	**9.6300e-003**	**0.3500**	**0.2536**	**0.6035**	**0.1693**	**0.2349**	**0.4042**	**0.0000**	**847.9248**	**847.9248**	**0.2314**	**0.0000**	**853.7099**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2021	0.5772	5.6198	4.0746	9.6300e-003	0.1758	0.2536	0.4294	0.0751	0.2349	0.3100	0.0000	847.9239	847.9239	0.2314	0.0000	853.7090
2022	0.7103	0.6315	0.5671	1.3200e-003	0.0128	0.0284	0.0412	3.4400e-003	0.0264	0.0298	0.0000	116.3414	116.3414	0.0305	0.0000	117.1033
Maximum	**0.7103**	**5.6198**	**4.0746**	**9.6300e-003**	**0.1758**	**0.2536**	**0.4294**	**0.0751**	**0.2349**	**0.3100**	**0.0000**	**847.9239**	**847.9239**	**0.2314**	**0.0000**	**853.7090**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**48.01**	**0.00**	**27.02**	**54.51**	**0.00**	**21.70**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	**3-1-2021**	**5-31-2021**	2.4389	2.4389
2	**6-1-2021**	**8-31-2021**	1.5872	1.5872
3	**9-1-2021**	**11-30-2021**	1.5708	1.5708
4	**12-1-2021**	**2-28-2022**	1.1436	1.1436
5	**3-1-2022**	**5-31-2022**	0.7334	0.7334
		Highest	2.4389	2.4389

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	1.2009	0.0405	1.7862	1.7900e-003		0.1083	0.1083		0.1083	0.1083	11.3654	23.6456	35.0111	0.0356	7.7000e-004	36.1319
Energy	0.0177	0.1509	0.0642	9.6000e-004		0.0122	0.0122		0.0122	0.0122	0.0000	476.6413	476.6413	0.0158	5.7800e-003	478.7596
Mobile	0.2979	1.7000	4.0601	0.0156	1.3115	0.0124	1.3239	0.3515	0.0115	0.3630	0.0000	1,443.9224	1,443.9224	0.0686	0.0000	1,445.6371

Waste						0.0000	0.0000		0.0000	0.0000	25.4733	0.0000	25.4733	1.5054	0.0000	63.1091
Water						0.0000	0.0000		0.0000	0.0000	2.2117	46.0838	48.2955	0.2291	5.7600e-003	55.7380
Total	**1.5164**	**1.8913**	**5.9105**	**0.0184**	**1.3115**	**0.1328**	**1.4444**	**0.3515**	**0.1320**	**0.4835**	**39.0505**	**1,990.2931**	**2,029.3436**	**1.8545**	**0.0123**	**2,079.3758**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.8528	0.0327	1.1145	1.9000e-004		7.7200e-003	7.7200e-003		7.7200e-003	7.7200e-003	0.0000	24.9304	24.9304	2.1900e-003	4.2000e-004	25.1114
Energy	0.0177	0.1509	0.0642	9.6000e-004		0.0122	0.0122		0.0122	0.0122	0.0000	476.6413	476.6413	0.0158	5.7800e-003	478.7596
Mobile	0.2979	1.7000	4.0601	0.0156	1.3115	0.0124	1.3239	0.3515	0.0115	0.3630	0.0000	1,443.9224	1,443.9224	0.0686	0.0000	1,445.6371
Waste						0.0000	0.0000		0.0000	0.0000	25.4733	0.0000	25.4733	1.5054	0.0000	63.1091
Water						0.0000	0.0000		0.0000	0.0000	2.2117	46.0838	48.2955	0.2291	5.7600e-003	55.7380
Total	**1.1683**	**1.8835**	**5.2388**	**0.0168**	**1.3115**	**0.0323**	**1.3438**	**0.3515**	**0.0315**	**0.3829**	**27.6851**	**1,991.5778**	**2,019.2629**	**1.8211**	**0.0120**	**2,068.3553**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**22.96**	**0.41**	**11.36**	**8.71**	**0.00**	**75.70**	**6.96**	**0.00**	**76.17**	**20.80**	**29.10**	**-0.06**	**0.50**	**1.80**	**2.84**	**0.53**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	3/1/2021	3/21/2021	5	15	
2	Grading	Grading	3/22/2021	5/21/2021	5	45	

3	Building Construction	Building Construction	5/22/2021	1/28/2022	5	180	
4	Paving	Paving	1/29/2022	3/11/2022	5	30	
5	Architectural Coating	Architectural Coating	3/12/2022	4/22/2022	5	30	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 10.22

Acres of Paving: 0.96

Residential Indoor: 390,015; Residential Outdoor: 130,005; Non-Residential Indoor: 22,500; Non-Residential Outdoor: 7,500; Striped

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Excavators	1	8.00	158	0.38
Site Preparation	Rubber Tired Loaders	2	8.00	203	0.36
Site Preparation	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Grading	Excavators	2	8.00	158	0.38
Grading	Off-Highway Trucks	2	8.00	402	0.38
Grading	Scrapers	4	8.00	367	0.48
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Building Construction	Off-Highway Trucks	2	7.00	402	0.38
Building Construction	Rubber Tired Loaders	2	8.00	203	0.36
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction	Trenchers	2	8.00	78	0.50
Paving	Graders	1	8.00	187	0.41
Paving	Pavers	1	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	1	8.00	80	0.38
Paving	Rubber Tired Loaders	1	8.00	203	0.36
Architectural Coating	Air Compressors	1	6.00	78	0.48
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20

Building Construction	Generator Sets	1	8.00	84	0.74
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Building Construction	Welders	1	8.00	46	0.45

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	7	10.00	0.00	75.00	14.70	6.90	5.00	LD_Mix	HDT_Mix	HHDT
Grading	12	25.00	0.00	500.00	14.70	6.90	1.00	LD_Mix	HDT_Mix	HHDT
Building Construction	15	63.00	21.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	13.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Replace Ground Cover

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

3.2 Site Preparation - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1355	0.0000	0.1355	0.0745	0.0000	0.0745	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0318	0.3352	0.1563	3.5000e-004		0.0155	0.0155		0.0143	0.0143	0.0000	30.5740	30.5740	9.8900e-003	0.0000	30.8212

Total	**0.0318**	**0.3352**	**0.1563**	**3.5000e-004**	**0.1355**	**0.0155**	**0.1510**	**0.0745**	**0.0143**	**0.0888**	**0.0000**	**30.5740**	**30.5740**	**9.8900e-003**	**0.0000**	**30.8212**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.2000e-004	5.0700e-003	8.7000e-004	1.0000e-005	1.6000e-004	1.0000e-005	1.7000e-004	4.0000e-005	1.0000e-005	5.0000e-005	0.0000	0.9881	0.9881	1.0000e-004	0.0000	0.9905
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.1000e-004	2.3000e-004	2.6100e-003	1.0000e-005	8.2000e-004	1.0000e-005	8.3000e-004	2.2000e-004	1.0000e-005	2.2000e-004	0.0000	0.7168	0.7168	2.0000e-005	0.0000	0.7172
Total	**4.3000e-004**	**5.3000e-003**	**3.4800e-003**	**2.0000e-005**	**9.8000e-004**	**2.0000e-005**	**1.0000e-003**	**2.6000e-004**	**2.0000e-005**	**2.7000e-004**	**0.0000**	**1.7048**	**1.7048**	**1.2000e-004**	**0.0000**	**1.7077**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0502	0.0000	0.0502	0.0276	0.0000	0.0276	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0318	0.3352	0.1563	3.5000e-004		0.0155	0.0155		0.0143	0.0143	0.0000	30.5739	30.5739	9.8900e-003	0.0000	30.8211
Total	**0.0318**	**0.3352**	**0.1563**	**3.5000e-004**	**0.0502**	**0.0155**	**0.0657**	**0.0276**	**0.0143**	**0.0419**	**0.0000**	**30.5739**	**30.5739**	**9.8900e-003**	**0.0000**	**30.8211**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.2000e-004	5.0700e-003	8.7000e-004	1.0000e-005	1.6000e-004	1.0000e-005	1.7000e-004	4.0000e-005	1.0000e-005	5.0000e-005	0.0000	0.9881	0.9881	1.0000e-004	0.0000	0.9905
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.1000e-004	2.3000e-004	2.6100e-003	1.0000e-005	8.2000e-004	1.0000e-005	8.3000e-004	2.2000e-004	1.0000e-005	2.2000e-004	0.0000	0.7168	0.7168	2.0000e-005	0.0000	0.7172
Total	**4.3000e-004**	**5.3000e-003**	**3.4800e-003**	**2.0000e-005**	**9.8000e-004**	**2.0000e-005**	**1.0000e-003**	**2.6000e-004**	**2.0000e-005**	**2.7000e-004**	**0.0000**	**1.7048**	**1.7048**	**1.2000e-004**	**0.0000**	**1.7077**

3.3 Grading - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1412	0.0000	0.1412	0.0751	0.0000	0.0751	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.1634	1.7625	1.1722	2.6700e-003		0.0721	0.0721		0.0663	0.0663	0.0000	234.7323	234.7323	0.0759	0.0000	236.6302
Total	**0.1634**	**1.7625**	**1.1722**	**2.6700e-003**	**0.1412**	**0.0721**	**0.2133**	**0.0751**	**0.0663**	**0.1414**	**0.0000**	**234.7323**	**234.7323**	**0.0759**	**0.0000**	**236.6302**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					

Hauling	4.9000e-004	0.0254	3.6700e-003	3.0000e-005	2.2000e-004	2.0000e-005	2.4000e-004	6.0000e-005	2.0000e-005	8.0000e-005	0.0000	3.3656	3.3656	4.7000e-004	0.0000	3.3773
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.3400e-003	1.7300e-003	0.0196	6.0000e-005	6.1700e-003	5.0000e-005	6.2200e-003	1.6400e-003	4.0000e-005	1.6800e-003	0.0000	5.3756	5.3756	1.4000e-004	0.0000	5.3792
Total	**2.8300e-003**	**0.0272**	**0.0233**	**9.0000e-005**	**6.3900e-003**	**7.0000e-005**	**6.4600e-003**	**1.7000e-003**	**6.0000e-005**	**1.7600e-003**	**0.0000**	**8.7412**	**8.7412**	**6.1000e-004**	**0.0000**	**8.7565**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0523	0.0000	0.0523	0.0278	0.0000	0.0278	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.1634	1.7625	1.1722	2.6700e-003		0.0721	0.0721		0.0663	0.0663	0.0000	234.7320	234.7320	0.0759	0.0000	236.6299
Total	**0.1634**	**1.7625**	**1.1722**	**2.6700e-003**	**0.0523**	**0.0721**	**0.1244**	**0.0278**	**0.0663**	**0.0942**	**0.0000**	**234.7320**	**234.7320**	**0.0759**	**0.0000**	**236.6299**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	4.9000e-004	0.0254	3.6700e-003	3.0000e-005	2.2000e-004	2.0000e-005	2.4000e-004	6.0000e-005	2.0000e-005	8.0000e-005	0.0000	3.3656	3.3656	4.7000e-004	0.0000	3.3773
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.3400e-003	1.7300e-003	0.0196	6.0000e-005	6.1700e-003	5.0000e-005	6.2200e-003	1.6400e-003	4.0000e-005	1.6800e-003	0.0000	5.3756	5.3756	1.4000e-004	0.0000	5.3792

Total	**2.8300e-003**	**0.0272**	**0.0233**	**9.0000e-005**	**6.3900e-003**	**7.0000e-005**	**6.4600e-003**	**1.7000e-003**	**6.0000e-005**	**1.7600e-003**	**0.0000**	**8.7412**	**8.7412**	**6.1000e-004**	**0.0000**	**8.7565**

3.4 Building Construction - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.3530	3.3116	2.5034	5.5400e-003		0.1651	0.1651		0.1535	0.1535	0.0000	482.9907	482.9907	0.1410	0.0000	486.5153
Total	**0.3530**	**3.3116**	**2.5034**	**5.5400e-003**		**0.1651**	**0.1651**		**0.1535**	**0.1535**	**0.0000**	**482.9907**	**482.9907**	**0.1410**	**0.0000**	**486.5153**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	4.7800e-003	0.1626	0.0403	4.2000e-004	0.0106	3.3000e-004	0.0109	3.0600e-003	3.1000e-004	3.3700e-003	0.0000	41.0166	41.0166	2.5900e-003	0.0000	41.0815
Worker	0.0210	0.0155	0.1756	5.3000e-004	0.0553	4.1000e-004	0.0557	0.0147	3.8000e-004	0.0151	0.0000	48.1653	48.1653	1.2900e-003	0.0000	48.1976
Total	**0.0258**	**0.1781**	**0.2159**	**9.5000e-004**	**0.0659**	**7.4000e-004**	**0.0666**	**0.0178**	**6.9000e-004**	**0.0184**	**0.0000**	**89.1819**	**89.1819**	**3.8800e-003**	**0.0000**	**89.2790**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.3530	3.3116	2.5034	5.5400e-003		0.1651	0.1651		0.1535	0.1535	0.0000	482.9901	482.9901	0.1410	0.0000	486.5147
Total	**0.3530**	**3.3116**	**2.5034**	**5.5400e-003**		**0.1651**	**0.1651**		**0.1535**	**0.1535**	**0.0000**	**482.9901**	**482.9901**	**0.1410**	**0.0000**	**486.5147**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	4.7800e-003	0.1626	0.0403	4.2000e-004	0.0106	3.3000e-004	0.0109	3.0600e-003	3.1000e-004	3.3700e-003	0.0000	41.0166	41.0166	2.5900e-003	0.0000	41.0815
Worker	0.0210	0.0155	0.1756	5.3000e-004	0.0553	4.1000e-004	0.0557	0.0147	3.8000e-004	0.0151	0.0000	48.1653	48.1653	1.2900e-003	0.0000	48.1976
Total	**0.0258**	**0.1781**	**0.2159**	**9.5000e-004**	**0.0659**	**7.4000e-004**	**0.0666**	**0.0178**	**6.9000e-004**	**0.0184**	**0.0000**	**89.1819**	**89.1819**	**3.8800e-003**	**0.0000**	**89.2790**

3.4 Building Construction - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					

Off-Road	0.0394	0.3545	0.3050	6.9000e-004		0.0175	0.0175		0.0162	0.0162	0.0000	60.3984	60.3984	0.0176	0.0000	60.8382
Total	**0.0394**	**0.3545**	**0.3050**	**6.9000e-004**		**0.0175**	**0.0175**		**0.0162**	**0.0162**	**0.0000**	**60.3984**	**60.3984**	**0.0176**	**0.0000**	**60.8382**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	5.6000e-004	0.0193	4.7600e-003	5.0000e-005	1.3200e-003	4.0000e-005	1.3600e-003	3.8000e-004	3.0000e-005	4.2000e-004	0.0000	5.0819	5.0819	3.1000e-004	0.0000	5.0897
Worker	2.4700e-003	1.7500e-003	0.0203	6.0000e-005	6.9100e-003	5.0000e-005	6.9600e-003	1.8400e-003	5.0000e-005	1.8800e-003	0.0000	5.8048	5.8048	1.5000e-004	0.0000	5.8085
Total	**3.0300e-003**	**0.0210**	**0.0250**	**1.1000e-004**	**8.2300e-003**	**9.0000e-005**	**8.3200e-003**	**2.2200e-003**	**8.0000e-005**	**2.3000e-003**	**0.0000**	**10.8867**	**10.8867**	**4.6000e-004**	**0.0000**	**10.8982**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0394	0.3545	0.3050	6.9000e-004		0.0175	0.0175		0.0162	0.0162	0.0000	60.3983	60.3983	0.0176	0.0000	60.8381
Total	**0.0394**	**0.3545**	**0.3050**	**6.9000e-004**		**0.0175**	**0.0175**		**0.0162**	**0.0162**	**0.0000**	**60.3983**	**60.3983**	**0.0176**	**0.0000**	**60.8381**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	5.6000e-004	0.0193	4.7600e-003	5.0000e-005	1.3200e-003	4.0000e-005	1.3600e-003	3.8000e-004	3.0000e-005	4.2000e-004	0.0000	5.0819	5.0819	3.1000e-004	0.0000	5.0897
Worker	2.4700e-003	1.7500e-003	0.0203	6.0000e-005	6.9100e-003	5.0000e-005	6.9600e-003	1.8400e-003	5.0000e-005	1.8800e-003	0.0000	5.8048	5.8048	1.5000e-004	0.0000	5.8085
Total	**3.0300e-003**	**0.0210**	**0.0250**	**1.1000e-004**	**8.2300e-003**	**9.0000e-005**	**8.3200e-003**	**2.2200e-003**	**8.0000e-005**	**2.3000e-003**	**0.0000**	**10.8867**	**10.8867**	**4.6000e-004**	**0.0000**	**10.8982**

3.5 Paving - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0215	0.2337	0.1963	4.3000e-004		9.5600e-003	9.5600e-003		8.8000e-003	8.8000e-003	0.0000	37.3566	37.3566	0.0121	0.0000	37.6587
Paving	1.2600e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0228**	**0.2337**	**0.1963**	**4.3000e-004**		**9.5600e-003**	**9.5600e-003**		**8.8000e-003**	**8.8000e-003**	**0.0000**	**37.3566**	**37.3566**	**0.0121**	**0.0000**	**37.6587**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	8.8000e-004	6.3000e-004	7.2400e-003	2.0000e-005	2.4700e-003	2.0000e-005	2.4900e-003	6.6000e-004	2.0000e-005	6.7000e-004	0.0000	2.0731	2.0731	5.0000e-005	0.0000	2.0745
Total	**8.8000e-004**	**6.3000e-004**	**7.2400e-003**	**2.0000e-005**	**2.4700e-003**	**2.0000e-005**	**2.4900e-003**	**6.6000e-004**	**2.0000e-005**	**6.7000e-004**	**0.0000**	**2.0731**	**2.0731**	**5.0000e-005**	**0.0000**	**2.0745**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0215	0.2337	0.1963	4.3000e-004		9.5600e-003	9.5600e-003		8.8000e-003	8.8000e-003	0.0000	37.3566	37.3566	0.0121	0.0000	37.6586
Paving	1.2600e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0228**	**0.2337**	**0.1963**	**4.3000e-004**		**9.5600e-003**	**9.5600e-003**		**8.8000e-003**	**8.8000e-003**	**0.0000**	**37.3566**	**37.3566**	**0.0121**	**0.0000**	**37.6586**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	8.8000e-004	6.3000e-004	7.2400e-003	2.0000e-005	2.4700e-003	2.0000e-005	2.4900e-003	6.6000e-004	2.0000e-005	6.7000e-004	0.0000	2.0731	2.0731	5.0000e-005	0.0000	2.0745
Total	**8.8000e-004**	**6.3000e-004**	**7.2400e-003**	**2.0000e-005**	**2.4700e-003**	**2.0000e-005**	**2.4900e-003**	**6.6000e-004**	**2.0000e-005**	**6.7000e-004**	**0.0000**	**2.0731**	**2.0731**	**5.0000e-005**	**0.0000**	**2.0745**

3.6 Architectural Coating - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.6403					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	3.0700e-003	0.0211	0.0272	4.0000e-005		1.2300e-003	1.2300e-003		1.2300e-003	1.2300e-003	0.0000	3.8299	3.8299	2.5000e-004	0.0000	3.8361
Total	**0.6434**	**0.0211**	**0.0272**	**4.0000e-005**		**1.2300e-003**	**1.2300e-003**		**1.2300e-003**	**1.2300e-003**	**0.0000**	**3.8299**	**3.8299**	**2.5000e-004**	**0.0000**	**3.8361**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	7.6000e-004	5.4000e-004	6.2700e-003	2.0000e-005	2.1400e-003	2.0000e-005	2.1500e-003	5.7000e-004	1.0000e-005	5.8000e-004	0.0000	1.7967	1.7967	5.0000e-005	0.0000	1.7979
Total	**7.6000e-004**	**5.4000e-004**	**6.2700e-003**	**2.0000e-005**	**2.1400e-003**	**2.0000e-005**	**2.1500e-003**	**5.7000e-004**	**1.0000e-005**	**5.8000e-004**	**0.0000**	**1.7967**	**1.7967**	**5.0000e-005**	**0.0000**	**1.7979**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.6403					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	3.0700e-003	0.0211	0.0272	4.0000e-005		1.2300e-003	1.2300e-003		1.2300e-003	1.2300e-003	0.0000	3.8299	3.8299	2.5000e-004	0.0000	3.8361
Total	**0.6434**	**0.0211**	**0.0272**	**4.0000e-005**		**1.2300e-003**	**1.2300e-003**		**1.2300e-003**	**1.2300e-003**	**0.0000**	**3.8299**	**3.8299**	**2.5000e-004**	**0.0000**	**3.8361**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	7.6000e-004	5.4000e-004	6.2700e-003	2.0000e-005	2.1400e-003	2.0000e-005	2.1500e-003	5.7000e-004	1.0000e-005	5.8000e-004	0.0000	1.7967	1.7967	5.0000e-005	0.0000	1.7979
Total	**7.6000e-004**	**5.4000e-004**	**6.2700e-003**	**2.0000e-005**	**2.1400e-003**	**2.0000e-005**	**2.1500e-003**	**5.7000e-004**	**1.0000e-005**	**5.8000e-004**	**0.0000**	**1.7967**	**1.7967**	**5.0000e-005**	**0.0000**	**1.7979**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.2979	1.7000	4.0601	0.0156	1.3115	0.0124	1.3239	0.3515	0.0115	0.3630	0.0000	1,443.9224	1,443.9224	0.0686	0.0000	1,445.6371
Unmitigated	0.2979	1.7000	4.0601	0.0156	1.3115	0.0124	1.3239	0.3515	0.0115	0.3630	0.0000	1,443.9224	1,443.9224	0.0686	0.0000	1,445.6371

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
City Park	0.00	0.00	0.00		
Single Family Housing	1,010.08	1,010.08	1010.08	3,451,597	3,451,597
Parking Lot	0.00	0.00	0.00		
Total	1,010.08	1,010.08	1,010.08	3,451,597	3,451,597

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
City Park	16.60	8.40	6.90	33.00	48.00	19.00	66	28	6
Single Family Housing	14.70	5.90	8.70	40.20	19.20	40.60	86	11	3
Parking Lot	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
City Park	0.549559	0.042893	0.201564	0.118533	0.015569	0.005846	0.021394	0.034255	0.002099	0.001828	0.004855	0.000709	0.000896
Single Family Housing	0.549559	0.042893	0.201564	0.118533	0.015569	0.005846	0.021394	0.034255	0.002099	0.001828	0.004855	0.000709	0.000896
Parking Lot	0.549559	0.042893	0.201564	0.118533	0.015569	0.005846	0.021394	0.034255	0.002099	0.001828	0.004855	0.000709	0.000896

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	301.9395	301.9395	0.0125	2.5800e-003	303.0197
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	301.9395	301.9395	0.0125	2.5800e-003	303.0197
NaturalGas Mitigated	0.0177	0.1509	0.0642	9.6000e-004		0.0122	0.0122		0.0122	0.0122	0.0000	174.7018	174.7018	3.3500e-003	3.2000e-003	175.7400
NaturalGas Unmitigated	0.0177	0.1509	0.0642	9.6000e-004		0.0122	0.0122		0.0122	0.0122	0.0000	174.7018	174.7018	3.3500e-003	3.2000e-003	175.7400

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
City Park	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Single Family Housing	3.27379e+006	0.0177	0.1509	0.0642	9.6000e-004		0.0122	0.0122		0.0122	0.0122	0.0000	174.7018	174.7018	3.3500e-003	3.2000e-003	175.7400
Total		**0.0177**	**0.1509**	**0.0642**	**9.6000e-004**		**0.0122**	**0.0122**		**0.0122**	**0.0122**	**0.0000**	**174.7018**	**174.7018**	**3.3500e-003**	**3.2000e-003**	**175.7400**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
City Park	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Single Family Housing	3.27379e+006	0.0177	0.1509	0.0642	9.6000e-004		0.0122	0.0122		0.0122	0.0122	0.0000	174.7018	174.7018	3.3500e-003	3.2000e-003	175.7400
Total		**0.0177**	**0.1509**	**0.0642**	**9.6000e-004**		**0.0122**	**0.0122**		**0.0122**	**0.0122**	**0.0000**	**174.7018**	**174.7018**	**3.3500e-003**	**3.2000e-003**	**175.7400**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
City Park	0	0.0000	0.0000	0.0000	0.0000
Parking Lot	14980	4.7730	2.0000e-004	4.0000e-005	4.7900
Single Family Housing	932663	297.1665	0.0123	2.5400e-003	298.2297
Total		**301.9395**	**0.0125**	**2.5800e-003**	**303.0197**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
City Park	0	0.0000	0.0000	0.0000	0.0000
Parking Lot	14980	4.7730	2.0000e-004	4.0000e-005	4.7900
Single Family Housing	932663	297.1665	0.0123	2.5400e-003	298.2297
Total		**301.9395**	**0.0125**	**2.5800e-003**	**303.0197**

6.0 Area Detail

6.1 Mitigation Measures Area

Use only Natural Gas Hearths

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.8528	0.0327	1.1145	1.9000e-004		7.7200e-003	7.7200e-003		7.7200e-003	7.7200e-003	0.0000	24.9304	24.9304	2.1900e-003	4.2000e-004	25.1114
Unmitigated	1.2009	0.0405	1.7862	1.7900e-003		0.1083	0.1083		0.1083	0.1083	11.3654	23.6456	35.0111	0.0356	7.7000e-004	36.1319

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0640					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.7529					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	0.3505	0.0278	0.6802	1.7400e-003		0.1022	0.1022		0.1022	0.1022	11.3654	21.8405	33.2059	0.0339	7.7000e-004	34.2831
Landscaping	0.0335	0.0128	1.1060	6.0000e-005		6.1100e-003	6.1100e-003		6.1100e-003	6.1100e-003	0.0000	1.8051	1.8051	1.7500e-003	0.0000	1.8488
Total	**1.2009**	**0.0405**	**1.7862**	**1.8000e-003**		**0.1083**	**0.1083**		**0.1083**	**0.1083**	**11.3654**	**23.6456**	**35.0111**	**0.0356**	**7.7000e-004**	**36.1319**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0640					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.7529					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	2.3400e-003	0.0200	8.5000e-003	1.3000e-004		1.6100e-003	1.6100e-003		1.6100e-003	1.6100e-003	0.0000	23.1252	23.1252	4.4000e-004	4.2000e-004	23.2626
Landscaping	0.0335	0.0128	1.1060	6.0000e-005		6.1100e-003	6.1100e-003		6.1100e-003	6.1100e-003	0.0000	1.8051	1.8051	1.7500e-003	0.0000	1.8488
Total	**0.8528**	**0.0327**	**1.1145**	**1.9000e-004**		**7.7200e-003**	**7.7200e-003**		**7.7200e-003**	**7.7200e-003**	**0.0000**	**24.9304**	**24.9304**	**2.1900e-003**	**4.2000e-004**	**25.1114**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	48.2955	0.2291	5.7600e-003	55.7380
Unmitigated	48.2955	0.2291	5.7600e-003	55.7380

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
City Park	0 / 0.452763	1.6027	7.0000e-005	1.0000e-005	1.6085
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Single Family Housing	6.97148 / 4.39506	46.6928	0.2290	5.7400e-003	54.1295
Total		**48.2955**	**0.2291**	**5.7500e-003**	**55.7380**

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e

Land Use	Mgal	MT/yr			
City Park	0 / 0.452763	1.6027	7.0000e-005	1.0000e-005	1.6085
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Single Family Housing	6.97148 / 4.39506	46.6928	0.2290	5.7400e-003	54.1295
Total		**48.2955**	**0.2291**	**5.7500e-003**	**55.7380**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	25.4733	1.5054	0.0000	63.1091
Unmitigated	25.4733	1.5054	0.0000	63.1091

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			

City Park	0.03	6.0900e-003	3.6000e-004	0.0000	0.0151
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Single Family Housing	125.46	25.4673	1.5051	0.0000	63.0940
Total		**25.4733**	**1.5054**	**0.0000**	**63.1091**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
City Park	0.03	6.0900e-003	3.6000e-004	0.0000	0.0151
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Single Family Housing	125.46	25.4673	1.5051	0.0000	63.0940
Total		**25.4733**	**1.5054**	**0.0000**	**63.1091**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Highland Residential Project
Energy Calculations

Land Use	Natural Gas Use		Electricity Use	
	(kBTU/yr)	(Therms)	(kWh/yr)	(MWh/yr)
Parking Lot	0	0	410,605	411
City Park	0	0	14,980	15
Single Family Housing	3,273,790	32,738	932,663	933
Totals	**3,273,790**	**32,738**	**1,358,248**	**1,358**
Project Per capita usage	**7,424**	**74**	**3,080**	**3**

1 kBTU = 0.01 therms

Energy Type	Project Annual Energy Consumption	San Bernardino Annual Energy Consumption	County-wide Per Capita Energy Consumption	Project Per Capita Energy Consumption	Percent difference between County-wide and project
Electricity (MWh/YR)	1,358	15,633,660	7	3	57.9310%
Natural Gas (Therms)	32,738	500,082,474	234	74	68.3005%

County Population[1] = 2,135,413.00

Project Planned Population[2]= 441.00

Notes:

1. The Project would have 107 Multi-family units. Per the Department of Finance E-5 population estimates, the City of Fontana has 4.12 persons per house hold. As such, the project is anticipated to have a population of 441 residents.

Source: Refer to CalEEMod outputs for assumptions used in this analysis.

1. San Bernardino Population, https://data.census.gov/cedsci/profile?q=San%20Bernardino%20County,%20California&g=0500000US06071
2. Department of Finance, *E-5 Population and Housing Estimates for Cities, Counties, and the State, 2011-2019 with 2010 Census Benchmark*, http://dof.ca.gov/Forecasting/Demographics/Estimates/E-5/

Highland Residential Project
Energy Calculations

Vehicle Type	Percent of Vehicle Trips[1]	Daily Trips[2]	Annual Vehicle Miles Traveled[3]	Average Fuel Economy (miles per gallon)[4]	Total Annual Fuel Consumption (gallons)[5]
Passenger Cars	0.55	--	1882939.25	22	85,588
Light/Medium Trucks	0.36	--	1237114.43	17.3	71,510
Heavy Trucks/Other	0.10	--	331543.13	6.4	51,804
TOTAL [6]	***1.00***	--	***3,451,597***	--	***208,901***

Notes:

1. Percent of Vehicle Trip distribution based on trip characteristics within the CalEEMod model.
2. Daily Trips calculated by multiplying the total daily trips by percent vehicle trips (i.e., Daily Trips x percent of Vehicle Trips).
3. Daily Vehicle Miles Traveled (VMT) calculated by multiplying percent vehicle trips by total VMT (i.e., VMT x percent of Vehicle Trips).
4. Average fuel economy derived from the Department of Transportation.
5. Total Daily Fuel Consumption calculated by dividing the daily VMT by the average fuel economy (i.e., VMT/Average Fuel Economy).
6. Values may be slightly off due to rounding.

Source: Refer to CalEEMod outputs for assumptions used in this analysis.

Highland Residential Project
Energy Calculations

WORKER TRIPS

Phase	Phase Length (# days)	# Worker Trips	Worker Trip Length	Total VMT	Fuel Consumption Factor (Miles/Gallon/Day)	Total Fuel Consumption
Site Preparation	5	10	14.7	735		29.51
Grading	45	25	14.7	16538		664.08
Building Construction	180	63	14.7	166698	**24.90284233**	6693.93
Paving	30	15	14.7	6615		265.63
Architectural Coating	30	13	14.7	191		7.67
						7660.84

VENDOR TRIPS

Phase	Phase Length (# days)	# Vendor Trips	Vendor Trip Length	Total VMT	Fuel Consumption Factor (Miles/Gallon/Day)	Total Fuel Consumption
Site Preparation	5	0	6.9	0		0.00
Grading	45	0	6.9	0		0.00
Building Construction	180	21	6.9	145	**8.43886151**	17.17
Paving	30	0	6.9	0		0.00
Architectural Coating	30	0	6.9	0		0.00
						17.17

HAULING TRIPS

Phase	Phase Length (# days)	# Hauling Trips	Hauling Trip Length	Total VMT	Fuel Consumption Factor (Miles/Gallon/Day)[1]	Total Fuel Consumption
Site Preparation	5	75	5	375		44.92
Grading	45	500	1	500		59.89
Building Construction	180	0	20	0	**8.34886151**	0.00
Paving	30	0	20	0		0.00
Architectural Coating	30	0	20	0		0.00
						104.80

TOTAL OFF-SITE MOBILE GALLONS CONSUMED DURING CONSTRUCTION	**7,782.81**

Highland Residential Project
Energy Calculations

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor	Fuel Consumption Rate (gallons per hour)	Duration (total hours/day)	# days	Total Fuel Consumption (gallons)
Architectural Coating	Air Compressors	1	6.00	78	0.48	1.4976	6	30	269.57
Building Construction	Off-Highway Trucks	2	7.00	402	0.38	6.1104	14	180	15398.21
Building Construction	Rubber Tired Loaders	2	8.00	203	0.36	2.9232	16	180	8418.82
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37	1.4356	21	180	5426.57
Building Construction	Trenchers	2	8.00	78	0.50	1.56	16	180	4492.80
Building Construction	Cranes	1	7.00	231	0.29	2.6796	7	180	3376.30
Building Construction	Forklifts	3	8.00	89	0.20	0.712	24	180	3075.84
Building Construction	Generator Sets	1	8.00	84	0.74	2.4864	8	180	3580.42
Building Construction	Welders	1	8.00	46	0.45	0.828	8	180	1192.32
Grading	Excavators	2	8.00	158	0.38	2.4016	16	45	1729.15
Grading	Off-Highway Trucks	2	8.00	402	0.38	6.1104	16	45	4399.49
Grading	Scrapers	4	8.00	367	0.48	7.0464	32	45	10146.82
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37	1.4356	16	45	1033.63
Grading	Graders	1	8.00	187	0.41	3.0668	8	45	1104.05
Grading	Rubber Tired Dozers	1	8.00	247	0.40	3.952	8	45	1422.72
Paving	Graders	1	8.00	187	0.41	3.0668	8	30	736.03
Paving	Pavers	1	8.00	130	0.42	2.184	8	30	524.16
Paving	Paving Equipment	2	8.00	132	0.36	1.9008	16	30	912.38
Paving	Rollers	1	8.00	80	0.38	1.216	8	30	291.84
Paving	Rubber Tired Loaders	1	8.00	203	0.36	2.9232	8	30	701.57
Site Preparation	Excavators	1	8.00	158	0.38	2.4016	8	15	288.19
Site Preparation	Rubber Tired Loaders	2	8.00	203	0.36	2.9232	16	15	701.57
Site Preparation	Tractors/Loaders/Backhoes	1	8.00	97	0.37	1.4356	8	15	172.27
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40	3.952	24	15	1422.72
								Total:	78,600
								Off-Site Mobile Construction Total:	7,782.81
								TOTAL:	**86,383**

Notes:

Fuel Consumption Rate = Horsepower x Load Factor x Fuel Consumption Factor

Where:

Fuel Consumption Factor for a diesel engine is 0.04 gallons per horsepower per hour (gal/hp/hr) and a gasoline engine is 0.06 gal/hp/hr.

Source: Refer to CalEEMod outputs for assumptions used in this analysis.

Appendix F
Geotechnical Investigation

HIGHLAND RESIDENTIAL PROJECT
INITIAL STUDY

GEOTECHNICAL INVESTIGATION, PROPOSED RESIDENTIAL DEVELOPMENT, APN 0228-021-08 AND -09, NORTH OF HIGHLAND AVENUE AND EAST OF SAN SEVAINE ROAD, CITY OF FONTANA, CALIFORNIA

Prepared For:

STRATHAM HOMES, INC.
2201 Dupont Drive, Suite 300
Irvine, California 92612

Project No. 12282.001

March 7, 2019

Leighton and Associates, Inc.
A LEIGHTON GROUP COMPANY

Leighton and Associates, Inc.
A LEIGHTON GROUP COMPANY

March 7, 2019

Project No. 12282.001

Stratham Homes, Inc.
2201 Dupont Drive, Suite 300
Irvine, California 92612

Attention: Mr. Patrick E. Potts

Subject: Geotechnical Investigation, Proposed Residential Development, APN 0228-021-08 and -09, North of Highland Avenue and East of San Sevaine Road, City of Fontana, California

In accordance with your authorization, Leighton and Associates, Inc. (Leighton) has conducted this geotechnical investigation for the proposed residential development of Assessor Parcel Numbers (APNs) 0228-021-08 and -09, located north of Highland Avenue and east of San Sevaine Road in the City of Fontana, California. The purpose of this study has been to collect subsurface data at the site, evaluate the proposed development with respect to the site conditions and provide geotechnical recommendations for design and construction of the development.

Based on this investigation, construction of the proposed residential development is feasible from a geotechnical standpoint. The most significant geotechnical issues at the site are those related to the potential for strong seismic shaking, oversized material, the presence of artificial fill, and potentially compressible soils. Good planning and design of the project can limit the impact of these constraints. This report presents our findings, conclusions, and geotechnical recommendations for the project.

10532 Acacia Street, Suite B-6 ▪ Rancho Cucamonga, CA 91730-5455
909.484.2205 ▪ 909.484.2170 Fax

We appreciate the opportunity to work with you on the development of this project. If you have any questions regarding this report, please call us at your convenience.

Respectfully submitted,

LEIGHTON AND ASSOCIATES, INC.

Jason D. Hertzberg, GE 2711
Principal Engineer

Philip A. Buchiarelli, CEG 1715
Principal Geologist

MM/LP/JDH/PB/rsm

Distribution: (1) Addressee

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1.0 INTRODUCTION

1.1 Site Location and Description

The property consists of approximately 11.06 acres of land located south of the State Route (SR) 210 freeway, east of San Sevaine Road, north of Highland Avenue, and west of Hemlock Avenue in the City of Fontana, California. The eastern perimeter of the site is bordered by a property that consists of a building and parking lot.

The site is currently vacant with scattered vegetation throughout. Based on a review of historic aerial imagery, the site appears to have been previously used for agricultural purposes. A small building was previously located on the northeastern part of the site. Concrete debris and cobbles were encountered on this portion of the site during our field reconnaissance. Additionally, concrete slabs are located in this area and appear to cover a cistern system.

An elevation survey for the site was not available at the time of this report. Based on Google Earth elevations, the site drains to the southwest, the highest elevation is approximately 1,449 feet at the northeast corner of the site, and the lowest elevation is approximately 1,424 feet in the southwest corner of the site, an approximate elevation difference of 25 feet.

1.2 Proposed Development

The site layout of the proposed residential development is not available at the time of this report. However, we understand that the site will be developed similarly to the proposed Stratham Homes residential development located directly east of Hemlock Avenue, as shown on the Water Quality Managemnet Plan (WQMP) site exhibit for APN 0228-021-31. The WQMP site plan includes construction of a residential development, as well as the construction of several infiltration basins throughout the site. We assume residential units are planned with one to two story structures, in addition to drainage, utility, street, sidewalk, landscape and associated improvements.

Although grading plans for the project are not yet available, we would expect relatively shallow to moderate cuts and fills to achieve design grade (generally on the order of 5 feet). It is apparent that site grades were raised for the western side of APN 0228-021-31. We should be informed if significant grade changes

are planned for the proposed residential development in APNs 0228-021-08 and 0228-021-09.

1.3 Purpose of Investigation

The purpose of this study has been to evaluate the geotechnical conditions with respect to the proposed development and to provide geotechnical recommendations for design and construction of the development.

Our geotechnical exploration included excavation of test pits, laboratory testing, infiltration testing, and geotechnical analysis to evaluate existing geotechnical conditions and to develop the conclusions and recommendations contained in this report.

1.4 Scope of Investigation

The scope of our study has included the following tasks:

- Background Review: We reviewed available, relevant geotechnical geologic maps and reports and aerial photographs available from our in-house library or available online.

- Utility Coordination: We contacted Underground Services Alert (USA) prior to excavating test pits so that utility companies could mark utilities onsite.

- Field Exploration: Our field exploration included excavating test pits and infiltration testing. Logs of the geotechnical test pits and infiltration testing are presented in Appendix B.

  - A total of 9 exploratory test pits were logged and sampled onsite to evaluate subsurface conditions. The test pits were excavated to depths ranging from 5 to 9 feet below the existing ground surface (bgs). The test pits were logged and sampled by our field representative during excavation. Representative bulk soil samples were collected from the test pits for laboratory testing.

  - Percolation tests were conducted within 3 test pits (TP-2, TP-4, and TP-8) to evaluate general infiltration rates of subsurface soils at the depths and locations tested. Percolation tests were conducted in general accordance with the San Bernardino County Stormwater Program Technical Guidance

Document (San Bernardino County, 2011). Tests were conducted at depths of approximately 6 feet bgs to estimate the infiltration rate.

Excavations were backfilled with spoils and tamped with the excavator bucket. Logs of the geotechnical test pits are presented in Appendix B. Approximate test pit locations are shown on the accompanying Geotechnical Exploration Map, Figure 2.

- Geotechnical Laboratory Testing: Geotechnical laboratory tests were conducted on selected bulk soil samples obtained during our field investigation. This laboratory testing program was designed to evaluate engineering characteristics of site soils. Laboratory tests conducted during this investigation include:

  - In situ moisture content and dry density
  - Maximum dry density and optimum moisture content
  - Sieve analysis for grain-size distribution
  - Expansion index
  - Resistivity, sulfate content, chloride content and pH

  A description of test procedures and results are presented in Appendix C, *Laboratory Test Results*.

- Engineering Analysis: Data obtained from our background review, along with data from our field exploration and geotechnical laboratory testing was evaluated and analyzed to develop geotechnical conclusions and provide recommendations presented in this report.

- Report Preparation: Results of our geotechnical exploration have been summarized in this report, presenting our findings, conclusions and geotechnical recommendations for design and construction of the proposed development.

2.0 FINDINGS

2.1 Regional Geologic Conditions

The site is located on the gently sloping alluvial plain descending southward from the San Gabriel Mountains. It is located within the Chino Basin in the northern portion of the Peninsular Ranges geomorphic province of California. Major structural features surrounding the region include the Cucamonga Fault and the San Gabriel Mountains to the north, the Chino Fault and Puente (Chino) Hills to the southwest, and the San Jacinto Fault to the east. This is an area of large-scale crustal disturbance as the relatively northwestward-moving Peninsular Ranges Province collides with the Transverse Ranges Province (San Gabriel Mountains) to the north. Several active or potentially active faults have been mapped in the region and are believed to accommodate compression associated with this collision. The site is located approximately 3 miles south of the Cucamonga Fault Zone. This is a major, active fault zone forming the steep escarpment between the San Gabriel Mountains to the north and the basin floor to the south.

This site region is underlain by a thick accumulation of young alluvial gravel and sand soil deposits eroded from the San Gabriel Mountains and deposited in the site vicinity. Previous farming activities may have resulted in placement of undocumented fill throughout the site.

2.2 Subsurface Soil Conditions

Based upon our review of pertinent geotechnical literature and our subsurface exploration, the site is underlain by alluvial soil deposits mantled by undocumented artificial fill. Artificial fill was encountered on site and consisted of loose to medium dense silty sand to silty sand with gravel and was encountered to a maximum depth of about 3 feet (test pit TP-9).

The alluvial soil encountered within our excavations generally consisted of combinations of poorly graded gravel and sand, with some silty sand interspersed. These soils tended to be moist, with moisture contents in the range of 4 to 11 percent. The observed field moisture conditions could have been affected by recent rain events prior to field exploration.

More detailed descriptions of the subsurface soil are presented on the test pit logs (Appendix B).

2.2.1 Compressible and Collapsible Soil

Soil compressibility refers to a soil's potential for settlement when subjected to increased loads as from a fill surcharge. Based on this study, undocumented artificial fill and the upper portion of native soils are considered slightly compressible. Complete removal/recompaction of undocumented fill and partial removal/recompaction of near surface alluvium is recommended to reduce the potential for adverse total and differential settlement of the proposed improvements.

Collapse potential refers to the potential settlement of a soil under existing stresses upon being wetted. Based on this study, the onsite soils are anticipated to have a negligible collapse potential when inundated with water.

2.2.2 Expansive Soils

Expansive soils contain significant amounts of clay particles that swell considerably when wetted and shrink when dried. Foundations constructed on these soils are subjected to large uplifting forces caused by the swelling. Without proper measures taken, heaving and cracking of building foundations and slabs-on-grade could result.

A near surface sample of the soil was tested for expansion potential. The test result indicates an Expansion Index of 2. Based on our testing the onsite near-surface soil is expected to have a negligible to very low expansion potential.

2.2.3 Sulfate Content

Water-soluble sulfates in soil can react adversely with concrete. However, concrete in contact with soil containing sulfate concentrations of less than 0.1 percent by weight is considered to have negligible sulfate exposure based on American Concrete Institute (ACI) provisions, adopted by the 2016 CBC (CBC, 2016, Chapter 19, and ACI, 2014).

Near-surface soil samples were tested during this investigation for soluble sulfate content. The results of these tests indicate sulfate contents of less than 0.02 percent by weight, indicating negligible sulfate Exposure Class S0. Recommendations for concrete in contact with the soil are provided in Section 3.11.

2.2.4 Resistivity, Chloride and pH

Soil corrosivity to ferrous metals can be estimated by the soil's electrical resistivity, chloride content and pH. In general, soil having a minimum resistivity less than 1,000 ohm-cm is considered severely corrosive. Soil with a chloride content of 500 parts-per-million (ppm) or more is considered corrosive to ferrous metals.

As a screening for potentially corrosive soil, representative soil samples were tested during this investigation to determine minimum resistivity, chloride content, and pH. The tests indicated a minimum resistivity of 2,300 ohm-cm, chloride content of 0 ppm, and pH of 6.0. Based on these results, the onsite soil is considered corrosive to ferrous metals.

2.3 Groundwater

Groundwater was not encountered in any of our test pits excavated to a maximum depth of 9 feet bgs during our investigation. Regional groundwater data indicates that historically high groundwater at the site vicinity was in the order of 430 feet bgs in 1933 and 1960 (CDWR, 1970).

The California Department of Water Resources roughly estimates the historically shallowest groundwater at State Well 01N06W26K002S located approximately 0.5 mile north of the site to be approximately 372 feet bgs (CDWR, 2019).

2.4 Faulting and Seismicity

In general, the primary seismic hazards for sites in the region include surface rupture along active faults and strong ground shaking. The potential for fault rupture and seismic shaking are discussed below.

2.4.1 Surface Faulting

A State of California Earthquake Fault Zones Map has been prepared for this area of California. Based on this map and our research, no active faults appear to have been mapped on or trending toward the site. The closest mapped active or potentially active faults are presented in the following table.

Fault Name	Approximate Distance from Site
Cucamonga	3 miles to the north
San Jacinto	4 miles to the southeast
San Andreas-San Bernardino	9 miles to the northeast
San Jose	12 miles to the southwest

A listing of active faults within a 60-mile search radius is presented in Appendix D. Based on our understanding of the current geologic framework, the potential for future surface rupture of active faults onsite is considered very low.

2.4.2 Seismic Design Parameters

The principal seismic hazard that could affect the site is ground shaking resulting from an earthquake occurring along one of several major active or potentially active faults in southern California. Design of the proposed improvements in accordance with current California Building Code (CBC) requirements is intended to reduce the impact of seismic shaking on the proposed improvements. We have selected Site Class D for seismic analysis of the site (see Chapter 20 of ASCE 7-10).

Table 1 - 2016 CBC Seismic Design Parameters

Description (2016 CBC reference)	Parameter	Design Value
Site Latitude, degrees	34.1349	
Site Longitude, degrees	-117.4773	
Site Class Definition (1613A.3.2)	D	
Mapped MCE Spect Resp Accel at 0.2s (Fig 1613.3.1(1)), using USGS	S_S	1.9
Mapped MCE Spect Resp Accel at 1.0s (Fig 1613.3.1(2)) using USGS	S_1	0.677
Short Period Site Coefficient (Table 1613A.3.3(1))	F_a	1.0
Long Period Site Coefficient (Table 1613A.3.3(2))	F_v	1.5
Adjusted MCE Spectral Response Acceleration at 0.2s Period [$=F_aS_S$] (Eq. 16-37)	S_{MS}	1.9
Adjusted MCE Spectral Response Acceleration at 1s Period [$=F_vS_1$] (Eq. 16-38)	S_{M1}	1.016
Design Spectral Response Acceleration at 0.2s Period, 5% damped [$=2/3S_{MS}$] (Eq. 16-39)	S_{DS}	1.267
Design Spectral Response Acceleration at 1s Period, 5% damped [=2/3SM1] (Eq 16-40)	S_{D1}	0.677

2.4.3 Seismic Parameters for Geotechnical Evaluation

Based on ASCE 7-10 Equation 11.8-1, the F_{PGA} is 1.0, the PGA is 0.72g, and the PGA_M is 0.72g. Probabilistic magnitude was estimated using hazard deaggregation from using the United States Geological Survey's (USGS) 2008 Interactive Deaggregations utility. The results of this analysis indicate that the predominant modal earthquake has a magnitude of approximately 6.5 (M_W) at a distance on the order of 3.8 kilometers for the Maximum Considered Earthquake (2% probability of exceedance in 50 years).

2.5 Secondary Seismic Hazards

In general, secondary seismic hazards for sites in the region could include soil liquefaction, earthquake-induced settlement, lateral displacement, landsliding, and earthquake-induced flooding. The potential for secondary seismic hazards at the site is discussed below.

2.5.1 Liquefaction Potential

Liquefaction is the loss of soil strength or stiffness due to a buildup of pore-water pressure during severe ground shaking. Liquefaction is associated primarily with loose (low density), saturated, fine-to-medium

grained, cohesionless soils. As the shaking action of an earthquake progresses, the soil grains are rearranged and the soil densifies within a short period of time. Rapid densification of the soil results in a buildup of pore-water pressure. When the pore-water pressure approaches the total overburden pressure, the soil reduces greatly in strength and temporarily behaves similarly to a fluid. Effects of liquefaction can include sand boils, settlement, and bearing capacity failures below structural foundations.

The San Bernardino County Land Use Plan has not mapped the site for liquefaction potential. However, groundwater is currently and has historically been deep.

Based on the dense nature of the soil and the absence of shallow groundwater, the subsurface soils are not considered susceptible to liquefaction.

2.5.2 Seismically Induced Settlement

Seismically induced settlement consists of dry dynamic settlement (above groundwater) and liquefaction-induced settlement (below groundwater). During a strong seismic event, seismically induced settlement can occur within loose to moderately dense sandy soil due to reduction in volume during and shortly after an earthquake event. Settlement caused by ground shaking is often nonuniformly distributed, which can result in differential settlement. Based on the dense nature of the native soils in this area, we believe the onsite soils are susceptible to low seismic settlement (1.0 inch or less, with differential settlement of 0.5 inch over a horizontal distance of 40 feet based on the MCE).

2.6 Infiltration Testing

A total of three percolation tests were conducted in select locations throughout the proposed development to estimate the infiltration rate of native soils. Percolation tests were conducted in test pits TP-2, TP-4, and TP-8. The percolation tests were performed within poorly graded gravel and poorly graded sand with gravel at approximately 6 feet bgs.

The percolation tests generally consisted of excavating a 14- to 16-inch-deep, 8½- to 11-inch-diameter boring (varying hole upper and lower diameter due to gravels) in the bottom of the test pit, placing a perforated cylinder as a casing in the test hole and backfilling with gravel around the casing. The boring was then repeatedly filled with water and the drop in water level measured over time. The test results give a percolation rate which is converted to an infiltration rate. Infiltration test results are attached.

Infiltration rates were measured at the three percolation locations and ranged from approximately 7 to 26½ inches per hour (no factor of safety or correction factors applied) at the specific locations and depths tested. See Section 3.9 for recommendations for infiltration rates. No factor or safety or correction factor has been applied. See Section 3.7 for infiltration recommendations.

3.0 CONCLUSIONS AND RECOMMENDATIONS

Based on this study, construction of the proposed development is feasible from a geotechnical standpoint. No severe geologic or soils related issues were identified that would preclude development of the site for the proposed improvements. The most significant geotechnical issues at the site are those related to the potential for strong seismic shaking, oversized material, the presence of artificial fill, and potentially compressible soils. Good planning and design of the project can limit the impact of these constraints. Remedial recommendations for these and other geotechnical issues are provided in the following sections.

Although not identified during this investigation, abandoned septic tanks, seepage pits, or other buried structures, trash pits, or items related to past site uses may be present. As such items are encountered during grading, they will require further evaluation and special consideration.

3.1 General Earthwork and Grading

All grading should be performed in accordance with the General Earthwork and Grading Specifications presented in Appendix E, unless specifically revised or amended below or by future recommendations based on final development plans.

3.1.1 Site Preparation

Prior to construction, the site should be cleared of debris, which should be disposed of offsite. Any underground obstructions should be removed. Resulting cavities should be properly backfilled and compacted. Efforts should be made to locate existing utility lines. Those lines should be removed or rerouted if they interfere with the proposed construction, and the resulting cavities should be properly backfilled and compacted.

3.1.2 Removal of Uncontrolled Artificial Fill

Prior to overexcavation and recompaction of the onsite alluvial soil, any clean uncontrolled artificial fill should be removed and may be used as compacted fill for the project.

3.1.3 Overexcavation and Recompaction

To reduce the potential for adverse total and differential settlement of the proposed structures, the underlying subgrade soil should be prepared in such a manner that a uniform response to the applied loads is achieved.

All artificial fill should be removed to firm native soil. In addition, for the proposed structures, we recommend that the onsite soils be overexcavated to a minimum depth of 3 feet below the existing ground surface or 2 feet below the bottom of the proposed footings, whichever is deeper. Where possible, the removal bottom should extend horizontally a minimum of 5 feet from the outside edges of the footings (including columns connected to the buildings), or a distance equal to the depth of overexcavation below the footings, whichever is farther. During overexcavation, the soil conditions should be observed by Leighton to further evaluate these recommendations based on actual field conditions encountered. A firm removal bottom should be established across the building footprint to provide uniform foundation support for the proposed structure. Leighton should observe and test the removal bottom prior to placing fill. Deeper overexcavation and recompaction may be recommended locally until a firm removal bottom is achieved.

Areas outside the overexcavation limits of structures planned for asphalt or concrete pavement, flatwork, sidewalks, and areas to receive fill should be overexcavated a minimum depth of 18 inches below the existing ground surface or 12 inches below the proposed subgrade, whichever is deeper.

After completion of the overexcavation, and prior to fill placement, the exposed surfaces should be scarified to a minimum depth of 6 inches, moisture conditioned to or slightly above optimum moisture content, and recompacted to a minimum 90 percent relative compaction, relative to the ASTM D1557 laboratory maximum density.

These recommendations should be reviewed once grading plans for the development are available.

3.1.4 Fill Placement and Compaction

Onsite soil to be used for compacted structural fill should also be free of organic material debris and oversized material (greater than 12 inches in largest dimension). Any soil to be placed as fill, whether onsite or imported material, should be reviewed and possibly tested by Leighton.

All fill soil should be placed in thin, loose lifts, moisture conditioned, as necessary to near optimum moisture content, and compacted to a minimum 90 percent relative compaction. Relative compaction should be determined in accordance with ASTM Test Method D1557. Aggregate base for pavement should be compacted to a minimum of 95 percent relative compaction.

3.1.5 Import Fill Soil

Import soil to be placed as fill should be geotechnically accepted by Leighton. Preferably at least 3 working days prior to proposed import to the site, the contractor should provide Leighton pertinent information of the proposed import soil, such as location of the soil, whether stockpiled or native in place, and pertinent geotechnical reports if available. We recommend that a Leighton representative visit the proposed import site to observe the soil conditions and obtain representative soil samples. Potential issues may include soil that is more expansive than onsite soil, soil that is too wet, soil that is too rocky or too dissimilar to onsite soils, oversize material, organics, debris, etc.

3.1.6 Shrinkage and Subsidence

The change in volume of excavated and recompacted soil varies according to soil type and location. This volume change is represented as a percentage increase (bulking) or decrease (shrinkage) in volume of fill after removal and recompaction. This value does not factor in removal of debris or other materials. Subsidence occurs as in-place soil (e.g., natural ground) is moisture-conditioned and densified to receive fill, such as in processing an overexcavation bottom. Subsidence is in addition to shrinkage due to recompaction of fill soil. Field and laboratory data used in our calculations included laboratory-measured maximum dry densities for soil types encountered at the subject site, the measured in-place

densities of soils encountered and our experience. We preliminarily estimate the following earth volume changes will occur during grading:

Shrinkage	Approximately 10 to 15 percent
Subsidence (overexcavation bottom processing)	Approximately 0.1 foot

The level of fill compaction, variations in the dry density of the existing soils and other factors influence the amount of volume change. Some adjustments to earthwork volume should be anticipated during grading of the site.

3.1.7 Rippability and Oversized Material

Oversized material (rock or rock fragments greater than 12 inches in dimension) was observed during our investigation. Oversized material should not be used within structural fill areas.

Oversize material should not be buried unless specifically approved by Leighton. For this site we recommend that no rock larger than 12 inches in largest dimension be placed within the upper 3 feet of all fill areas. Rocks larger than 12 inches and up to 24 inches may be placed in fill at depths of 3 feet or more below finish grade. Rocks up to 36 inches may be placed in windrows below a depth of 5 feet. All larger rocks should be placed at depths 10 feet or more below finish grade. The owner may wish to further limit the amount of oversized material in planned utility trench areas, to facilitate the construction of utilities. Oversize material should be placed with copious amounts of water and sandy soils to fill voids. Nesting of rocks should not occur, where voids are created between individual particles.

3.2 Shallow Foundation Recommendations

Overexcavation and recompaction of the footing subgrade should be performed as detailed in Section 3.1. The following recommendations are based on the onsite soil conditions and soils with a very low expansion potential.

3.2.1 Minimum Embedment and Width

Based on our preliminary investigation, footings should have a minimum embedment per code requirements, with a minimum width of 24 and 12 inches for isolated and continuous footings, respectively.

3.2.2 Allowable Bearing

An allowable bearing pressure of 2,000 pounds-per-square-foot (psf) may be used, based on an assumed embedment depth of 18 inches and minimum width described above. This allowable bearing value may be increased by 300 psf per foot increase in depth or width to a maximum allowable bearing pressure of 4,000 psf. If higher bearing pressures are required, this should be reviewed on a case-by-case basis and may include additional overexcavation and/or soil reinforcement. These allowable bearing pressures are for total dead load and sustained live loads. Footing reinforcement should be designed by the structural engineer.

3.2.3 Lateral Load Resistance

Soil resistance available to withstand lateral loads on a shallow foundation is a function of the frictional resistance along the base of the footing and the passive resistance that may develop as the face of the structure tends to move into the soil. The frictional resistance between the base of the foundation and the subgrade soil may be computed using a coefficient of friction of 0.35. The passive resistance may be computed using an allowable equivalent fluid pressure of 250 pounds per cubic foot (pcf), assuming there is constant contact between the footing and undisturbed soil. The coefficient of friction and passive resistance may be combined without further reduction.

3.2.4 Increase in Bearing and Friction - Short Duration Loads

The allowable bearing pressure and coefficient of friction values may be increased by one-third when considering loads of short duration, such as those imposed by wind and seismic forces.

3.2.5 Settlement Estimates

The recommended allowable bearing pressure is generally based on a total allowable, post-construction static settlement of 1 inch. Differential settlement due to static loading is estimated at ½ inch over a horizontal distance of 40 feet. Since settlement is a function of footing sustained load, size and contact bearing pressure, differential settlement can be expected between adjacent columns or walls where a large differential loading condition exists.

3.3 Recommendations for Slabs-On-Grade

Concrete slabs-on-grade should be designed by the structural engineer in accordance with the current CBC for soil with a very low expansion potential. Where conventional light floor loading conditions exist, the following minimum recommendations should be used. More stringent requirements may be required by local agencies, the structural engineer, the architect, or the CBC. Laboratory testing should be conducted at finish grade to evaluate the expansion index of near-surface subgrade soils. In addition, slabs-on-grade should have the following minimum recommended components:

- Subgrade Moisture Conditioning: The subgrade soil should be moisture conditioned to at least 2 percentage points above optimum moisture content to a minimum depth of 12 inches prior to placing the moisture vapor retarder, steel or concrete.

- Moisture Retarder: A minimum of 10-mil moisture retarder should be placed below slabs where moisture-sensitive floor coverings or equipment is planned. The structural engineer should specify pertinent concrete design parameters and moisture migration prevention measures, such as whether a a sand blotter layer should be placed over the vapor retarder. The moisture barrier may be placed directly on subgrade provided gravel or other protruding objects that could puncture the moisture retarder are removed from the subgrade prior to placement. A heavier vapor retarder (such as 15 mil Stego Wrap) placed directly on prepared subgrade may also be used. Moisture retarders can reduce, but not eliminate moisture vapor rise from the underlying soils up through the slab. Moisture retarders should be designed and constructed in accordance with applicable American Concrete Institute,

Portland Cement Association, Post-Tensioning Institute, ASTM International, and California Building Code requirements and guidelines.

- Concrete and Structural Design Thickness: Slabs-on-grade should be designed by the structural engineer, but should be at least 4 inches thick (this is referring to the actual minimum thickness, not the nominal thickness). Reinforcing steel should be designed by the structural engineer, but as a minimum (for conventionally reinforced slabs) should be No. 3 rebar placed at 18 inches on center, each direction, mid-depth in the slab.

  Minor cracking of the concrete as it cures, due to drying and shrinkage, is normal and should be expected. However, cracking is often aggravated by a high water/cement ratio, high concrete temperature at the time of placement, small nominal aggregate size, and rapid moisture loss due to hot, dry, and/or windy weather conditions during placement and curing. Cracking due to temperature and moisture fluctuations can also be expected. Low slump concrete can reduce the potential for shrinkage cracking. Additionally, our experience indicates that reinforcement in slabs and foundations can generally reduce the potential for concrete cracking. The structural engineer should consider these components in slab design and specifications.

  Moisture retarders can reduce, but not eliminate moisture vapor rise from the underlying soils up through the slab. Floor covering manufacturers should be consulted for specific recommendations.

  Leighton does not practice in the field of moisture vapor transmission evaluation, since this is not specifically a geotechnical issue. Therefore, we recommend that a qualified person, such as the flooring subcontractor and/or structural engineer, be consulted with to evaluate the general and specific moisture vapor transmission paths and any impact on the proposed construction. That person should provide recommendations for mitigation of potential adverse impact of moisture vapor transmission on various components of the structures as deemed appropriate.

3.4 Seismic Design Parameters

Seismic parameters presented in this report should be considered during project design. In order to reduce the effects of ground shaking produced by regional seismic events, seismic design should be performed in accordance with the

current CBC. The CBC seismic design parameters listed in Section 2.4.2 of this report should be considered for the seismic analysis of the subject site.

3.5 Retaining Walls

We recommend that retaining walls be backfilled with very low expansive soil and constructed with a backdrain in accordance with the recommendations provided on Figure 3 (rear of text). Using expansive soil as retaining wall backfill will result in higher lateral earth pressures exerted on the wall. Based on these recommendations, the following parameters may be used for the design of conventional retaining walls:

Static Equivalent Fluid Weight (pcf)	
Condition	Level Backfill
Active	35 pcf
At-Rest	55 pcf
Passive	350 pcf (allowable) (Maximum of 5,000 psf)

The above values do not contain an appreciable factor of safety unless noted, so the structural engineer should apply the applicable factors of safety and/or load factors during design, as specified by the California Building Code.

Cantilever walls that are designed to yield at least 0.001H, where H is equal to the wall height, may be designed using the active condition. Rigid walls and walls braced at the top should be designed using the at-rest condition.

Passive pressure is used to compute soil resistance to lateral structural movement. In addition, for sliding resistance, a frictional resistance coefficient of 0.35 may be used at the concrete and soil interface. The lateral passive resistance should be taken into account only if it is ensured that the soil providing passive resistance, embedded against the foundation elements, will remain intact with time.

In addition to the above lateral forces due to retained earth, surcharge due to improvements, such as an adjacent structure or traffic loading, should be considered in the design of the retaining wall. Loads applied within a 1:1 projection from the surcharging structure on the stem of the wall should be considered in the design.

A seismic increment load of 28 pcf should be added to the active case when checking seismic stability of walls over 6 feet tall.

A soil unit weight of 120 pcf may be assumed for calculating the actual weight of the soil over the wall footing.

3.6 Pavement Design

Based on the design procedures outlined in the current Caltrans Highway Design Manual, and using an assumed design R-value of 50, flexible pavement sections may consist of the following for the Traffic Index indicated. Final pavement design should be based on the Traffic Index determined by the project civil engineer and R-value testing provided near the end of grading.

ASPHALT PAVEMENT SECTION THICKNESS		
Traffic Index	**Asphaltic Concrete (AC) Thickness (inches)**	**Class 2 Aggregate Base Thickness (inches)**
5 or less	3	4
7	4	4

If the pavement is to be constructed prior to construction of the structures, we recommend that the full depth of the pavement section be placed in order to support heavy construction traffic.

PCC sidewalks should be at least 4 inches thick over prepared subgrade soil, with construction joints no more than 8 feet on center each way, with sections as nearly square as possible. Use of reinforcing will help reduce severity of cracking.

All pavement construction should be performed in accordance with the Standard Specifications for Public Works Construction. Field observations and periodic testing, as needed during placement of the base course materials, should be undertaken to ensure that the requirements of the standard specifications are fulfilled. Prior to placement of aggregate base, the subgrade soil should be processed to a minimum depth of 6 inches, moisture-conditioned, as necessary, and recompacted to a minimum of 90 percent relative compaction. Aggregate base should be moisture conditioned, as necessary, and compacted to a minimum of 95 percent relative compaction.

3.7 Infiltration Recommendations

Infiltration Rate:

Infiltration testing performed on the onsite soils yielded favorable results. The test performed in test pit TP-2 was within a silty sand layer not commonly observed 6 feet bgs in the other test pits performed at this sit and sandier soils (such as those from the other percolation tests) are expected to be encountered below this silty sand layer.

For onsite alluvial soils that are granular with a low fines content and that are approximately 6 feet deep or deeper, we recommend an unfactored (small-scale) incremental infiltration rate of 5 inches per hour. For the silty sand layer encountered in the southeastern portion of the site (TP-2), we recommend an infiltration rate of 3 inches per hour at depths of 6 feet. These rates are applicable at the specific locations and depths indicated. Infiltration rates may vary significantly at various depths or locations across the site.

Deeper excavations for the infiltration chambers may be required to reach the more granular material for the higher infiltration rate. Deepening the infiltration facility to reach very granular soils may be accomplished with a trench in the bottom of the chamber excavation (the entire infiltration chamber bottom need not extend this deep); this trench should be backfilled with washed concrete sand. It should be confirmed during infiltration facility excavation that the excavation penetrates sufficiently into very granular soils.

We recommend that a correction factor/safety factor be applied to the infiltration rate in conformance with San Bernardino County guidelines, since monitoring of actual facility performance has shown that actual infiltration rates are lower than for small-scale tests. The small-scale infiltration rate should be divided by a correction factor of at least 2 for buried chambers, and at least 3 for open basins or for conditions where retained water will be exposed to the open atmosphere, but the correction/safety factor may be higher based on project-specific aspects. If open basins are planned, we recommend that a low-flow infiltration trench with minimum depth of 4 feet be constructed in the bottom of the basin; this low-flow trench should be backfilled with clean washed concrete sand with maximum fines content (passing the No. 200 sieve) of 2 percent by weight.

The infiltration rates described herein are for a clean, unsilted infiltration surface in native, sandy alluvial soil. These values may be reduced over time as silting of

the infiltration facility occurs. Furthermore, if the basin or chamber bottom is allowed to be compacted by heavy equipment, this value is expected to be significantly reduced. Infiltration of water through soil is highly dependent on such factors as grain size distribution of the soil particles, particle shape, fines content, clay content, and density. Small changes in soil conditions, including density, can cause large differences in observed infiltration rates. Infiltration is not suitable in compacted fill.

It should be noted that during periods of prolonged precipitation, the underlying soils tend to become saturated to greater and greater depths/extents. Therefore, infiltration rates tend to decrease with prolonged rainfall. It is difficult to extrapolate longer-term, full-scale infiltration rates from small-scale tests, and as such, this is a significant source of uncertainty in infiltration rates.

Additional Review and Evaluation:

Infiltration rates can vary significantly based on the location and depth. Infiltration concepts should be discussed with Leighton as infiltration plans are being developed. Leighton should review all infiltration plans, including specific locations and depths of proposed facilities. Further testing may be needed based on the design of infiltration facilities, particularly considering their type, depth and location.

General Design Considerations:

The periodic flow of water carrying sediments into the infiltration facility, plus the introduction of wind-blown sediments and sediments from erosion of basin side walls, can eventually cause the bottom of the facility to accumulate a layer of silt, which has the potential of significantly reducing the overall infiltration rate of the facility. Therefore, we recommend that significant amounts of silt/sediment not be allowed to flow into the facility within stormwater, especially during construction of the project and prior to achieving a mature landscape on site. We recommend that an easily maintained, robust silt/sediment removal system be installed to pretreat storm water before it enters the infiltration facility.

As infiltrating water can seep within the soil strata nearly horizontally for long distances, it is important to consider the impact that infiltration facilities can have on nearby subterranean structures, such as basement walls or open excavations, whether onsite or offsite, and whether existing or planned. Any such nearby features should be identified and evaluated as to whether infiltrating water can

impact these. Such features should be brought to Leighton's attention as they are identified.

Infiltration facilities should not be constructed adjacent to or under buildings. Setbacks should be discussed with Leighton during the planning process.

Infiltration facilities should be constructed with spillways or other appropriate means that would cause overfilling to not be a concern to the facility or nearby improvements.

For buried chambers, control/access manhole covers should not contain holes or should be screened to prevent mosquitos from entering the chambers.

Construction Considerations:

We recommend that Leighton evaluate the infiltration facility excavations, to confirm that granular, undisturbed alluvium is exposed in the bottoms and sides. Additional excavation or evaluation may be required if silty or clayey soils are exposed.

It is critical to infiltration that the basin or chamber bottom not be allowed to be compacted during construction or maintenance; rubber-tired equipment and vehicles should not be allowed to operate on the bottom. We recommend that at least the bottom 3 feet of the basins or chambers be excavated with an excavator or similar.

If fill material is needed to be placed in the basin, such as due to removal of uncontrolled artificial fill, the fill material should be select and free-draining sand, and should be observed and evaluated by Leighton.

Maintenance Considerations:

The infiltration facilities should be routinely monitored, especially before and during the rainy season, and corrective measures should be implemented as/when needed. Things to check for include proper upkeep, proper infiltration, absence of accumulated silt, and that de-silting filters/features are clean and functioning. Pretreatment desilting features should be cleaned and maintained per manufacturers' recommendations. Even with measures to prevent silt from flowing into the infiltration facility, accumulated silt may need to be removed occasionally as part of maintenance.

3.8 Temporary Excavations

All temporary excavations, including utility trenches, retaining wall excavations and other excavations should be performed in accordance with project plans, specifications and all OSHA requirements.

No surcharge loads should be permitted within a horizontal distance equal to the height of cut or 5 feet, whichever is greater from the top of the slope, unless the cut is shored appropriately. Excavations that extend below an imaginary plane inclined at 45 degrees below the edge of any adjacent existing site foundation should be properly shored to maintain support of the adjacent structures.

Cantilever shoring should be designed based on an active equivalent fluid pressure of 35 pcf. If excavations are braced at the top and at specific design intervals, the active pressure may then be approximated by a rectangular soil pressure distribution with the pressure per foot of width equal to 25H, where H is equal to the depth of the excavation being shored.

During construction, the soil conditions should be regularly evaluated to verify that conditions are as anticipated. The contractor should be responsible for providing the "competent person" required by OSHA, standards to evaluate soil conditions. Close coordination between the competent person and the geotechnical engineer should be maintained to facilitate construction while providing safe excavations.

3.9 Trench Backfill

Utility-type trenches onsite can be backfilled with the onsite material, provided it is free of debris, significant organic material and oversized material. Prior to backfilling the trench, pipes should be bedded and shaded in a granular material that has a sand equivalent of 30 or greater. The sand should extend 12 inches above the top of the pipe. The bedding/shading sand should be densified in-place by mechanical means, or in accordance with Greenbook specifications. The native backfill should be placed in loose layers, moisture conditioned, as necessary, and mechanically compacted using a minimum standard of 90 percent relative compaction. The thickness of layers should be based on the compaction equipment used in accordance with the Standard Specifications for Public Works Construction (Greenbook).

3.10 Surface Drainage

Inadequate control of runoff water and/or poorly controlled irrigation can cause the onsite soils to expand and/or shrink, producing heaving and/or settlement of foundations, flatwork, walls, and other improvements. Maintaining adequate surface drainage, proper disposal of runoff water, and control of irrigation should help reduce the potential for future soil moisture problems.

Positive surface drainage should be designed to be directed away from foundations and toward approved drainage devices, such as gutters, paved drainage swales, or watertight area drains and collector pipes.

Surface drainage should be provided to prevent ponding of water adjacent to the structures. In general, the area around the buildings should slope away from the building. We recommend that unpaved landscaped areas adjacent to the buildings be avoided. Roof runoff should be carried to suitable drainage outlets by watertight drain pipes or over paved areas.

3.11 Sulfate Attack and Corrosion Protection

Based on the results of laboratory testing, concrete structures in contact with the onsite soil will have negligible exposure to water-soluble sulfates in the soil (Exposure Class S0). There is no cement type restriction for Exposure Class S0 per ACI 318. Concrete should be designed in accordance with ACI 318-14, Section 19.3 (ACI, 2014), adopted by the 2016 CBC (Section 1904.2).

The onsite soil is considered to be corrosive to ferrous metals. It is recommended that any buried pipe be made of non-ferrous material, or that any ferrous pipe be protected by dielectric tape, polyethylene sleeves and/or other methods, with recommendations from a corrosion engineer. Corrosion information presented in this report should be provided to your underground utility subcontractors. Additional testing and evaluation by a corrosion engineer may be warranted if metallic utilities are planned.

3.12 Additional Geotechnical Services

The geotechnical recommendations presented in this report are based on subsurface conditions as interpreted from limited subsurface explorations and limited laboratory testing. Our supplemental geotechnical recommendations

provided in this report are based on information available at the time the report was prepared and may change as plans are developed. Additional geotechnical investigation and analysis may be required based on final improvement plans. Leighton should review the site and grading plans when available and comment further on the geotechnical aspects of the project. Geotechnical observation and testing should be conducted during excavation and all phases of grading operations. Our conclusions and preliminary recommendations should be reviewed and verified by Leighton and Associates, Inc. during construction and revised accordingly if geotechnical conditions encountered vary from our preliminary findings and interpretations.

Geotechnical observation and testing should be provided:

- After completion of site clearing.
- During overexcavation of compressible soil.
- During compaction of all fill materials.
- After excavation of all footings and prior to placement of concrete.
- During utility trench backfilling and compaction.
- During pavement subgrade and base preparation.
- When any unusual conditions are encountered.

4.0 LIMITATIONS

This report was based in part on data obtained from a limited number of observations, site visits, soil excavations, samples, and tests. Such information is, by necessity, incomplete. The nature of many sites is such that differing soil or geologic conditions can be present within small distances and under varying climatic conditions. Changes in subsurface conditions can and do occur over time. Therefore, our findings, conclusions, and recommendations presented in this report are based on the assumption that Leighton and Associates, Inc. Inc. will provide geotechnical observation and testing during construction.

This report was prepared for the sole use of Stratham Homes, Inc. for application to the design of the proposed residential development in accordance with generally accepted geotechnical engineering practices at this time in California.

See the GBA insert on the following page for important information about this geotechnical engineering report.

Important Information about This

Geotechnical-Engineering Report

Subsurface problems are a principal cause of construction delays, cost overruns, claims, and disputes.

While you cannot eliminate all such risks, you can manage them. The following information is provided to help.

The Geoprofessional Business Association (GBA) has prepared this advisory to help you – assumedly a client representative – interpret and apply this geotechnical-engineering report as effectively as possible. In that way, clients can benefit from a lowered exposure to the subsurface problems that, for decades, have been a principal cause of construction delays, cost overruns, claims, and disputes. If you have questions or want more information about any of the issues discussed below, contact your GBA-member geotechnical engineer. Active involvement in the Geoprofessional Business Association exposes geotechnical engineers to a wide array of risk-confrontation techniques that can be of genuine benefit for everyone involved with a construction project.

Geotechnical-Engineering Services Are Performed for Specific Purposes, Persons, and Projects

Geotechnical engineers structure their services to meet the specific needs of their clients. A geotechnical-engineering study conducted for a given civil engineer will not likely meet the needs of a civil-works constructor or even a different civil engineer. Because each geotechnical-engineering study is unique, each geotechnical-engineering report is unique, prepared *solely* for the client. *Those who rely on a geotechnical-engineering report prepared for a different client can be seriously misled*. No one except authorized client representatives should rely on this geotechnical-engineering report without first conferring with the geotechnical engineer who prepared it. *And no one – not even you – should apply this report for any purpose or project except the one originally contemplated.*

Read this Report in Full

Costly problems have occurred because those relying on a geotechnical-engineering report did not read it *in its entirety*. Do not rely on an executive summary. Do not read selected elements only. *Read this report in full.*

You Need to Inform Your Geotechnical Engineer about Change

Your geotechnical engineer considered unique, project-specific factors when designing the study behind this report and developing the confirmation-dependent recommendations the report conveys. A few typical factors include:

- the client's goals, objectives, budget, schedule, and risk-management preferences;
- the general nature of the structure involved, its size, configuration, and performance criteria;
- the structure's location and orientation on the site; and
- other planned or existing site improvements, such as retaining walls, access roads, parking lots, and underground utilities.

Typical changes that could erode the reliability of this report include those that affect:

- the site's size or shape;
- the function of the proposed structure, as when it's changed from a parking garage to an office building, or from a light-industrial plant to a refrigerated warehouse;
- the elevation, configuration, location, orientation, or weight of the proposed structure;
- the composition of the design team; or
- project ownership.

As a general rule, *always* inform your geotechnical engineer of project changes – even minor ones – and request an assessment of their impact. *The geotechnical engineer who prepared this report cannot accept responsibility or liability for problems that arise because the geotechnical engineer was not informed about developments the engineer otherwise would have considered.*

This Report May Not Be Reliable

Do not rely on this report if your geotechnical engineer prepared it:

- for a different client;
- for a different project;
- for a different site (that may or may not include all or a portion of the original site); or
- before important events occurred at the site or adjacent to it; e.g., man-made events like construction or environmental remediation, or natural events like floods, droughts, earthquakes, or groundwater fluctuations.

Note, too, that it could be unwise to rely on a geotechnical-engineering report whose reliability may have been affected by the passage of time, because of factors like changed subsurface conditions; new or modified codes, standards, or regulations; or new techniques or tools. *If your geotechnical engineer has not indicated an "apply-by" date on the report, ask what it should be*, and, in general, *if you are the least bit uncertain* about the continued reliability of this report, contact your geotechnical engineer before applying it. A minor amount of additional testing or analysis – if any is required at all – could prevent major problems.

Most of the "Findings" Related in This Report Are Professional Opinions

Before construction begins, geotechnical engineers explore a site's subsurface through various sampling and testing procedures. *Geotechnical engineers can observe actual subsurface conditions only at those specific locations where sampling and testing were performed*. The data derived from that sampling and testing were reviewed by your geotechnical engineer, who then applied professional judgment to form opinions about subsurface conditions throughout the site. Actual sitewide-subsurface conditions may differ – maybe significantly – from those indicated in this report. Confront that risk by retaining your geotechnical engineer to serve on the design team from project start to project finish, so the individual can provide informed guidance quickly, whenever needed.

This Report's Recommendations Are Confirmation-Dependent

The recommendations included in this report – including any options or alternatives – are confirmation-dependent. In other words, *they are not final*, because the geotechnical engineer who developed them relied heavily on judgment and opinion to do so. Your geotechnical engineer can finalize the recommendations *only after observing actual subsurface conditions* revealed during construction. If through observation your geotechnical engineer confirms that the conditions assumed to exist actually do exist, the recommendations can be relied upon, assuming no other changes have occurred. *The geotechnical engineer who prepared this report cannot assume responsibility or liability for confirmation-dependent recommendations if you fail to retain that engineer to perform construction observation*.

This Report Could Be Misinterpreted

Other design professionals' misinterpretation of geotechnical-engineering reports has resulted in costly problems. Confront that risk by having your geotechnical engineer serve as a full-time member of the design team, to:

- confer with other design-team members,
- help develop specifications,
- review pertinent elements of other design professionals' plans and specifications, and
- be on hand quickly whenever geotechnical-engineering guidance is needed.

You should also confront the risk of constructors misinterpreting this report. Do so by retaining your geotechnical engineer to participate in prebid and preconstruction conferences and to perform construction observation.

Give Constructors a Complete Report and Guidance

Some owners and design professionals mistakenly believe they can shift unanticipated-subsurface-conditions liability to constructors by limiting the information they provide for bid preparation. To help prevent the costly, contentious problems this practice has caused, include the complete geotechnical-engineering report, along with any attachments or appendices, with your contract documents, *but be certain to note conspicuously that you've included the material for informational purposes only*. To avoid misunderstanding, you may also want to note that "informational purposes" means constructors have no right to rely on the interpretations, opinions, conclusions, or recommendations in the report, but they may rely on the factual data relative to the specific times, locations, and depths/elevations referenced. Be certain that constructors know they may learn about specific project requirements, including options selected from the report, *only* from the design drawings and specifications. Remind constructors that they may perform their own studies if they want to, and *be sure to allow enough time* to permit them to do so. Only then might you be in a position to give constructors the information available to you, while requiring them to at least share some of the financial responsibilities stemming from unanticipated conditions. Conducting prebid and preconstruction conferences can also be valuable in this respect.

Read Responsibility Provisions Closely

Some client representatives, design professionals, and constructors do not realize that geotechnical engineering is far less exact than other engineering disciplines. That lack of understanding has nurtured unrealistic expectations that have resulted in disappointments, delays, cost overruns, claims, and disputes. To confront that risk, geotechnical engineers commonly include explanatory provisions in their reports. Sometimes labeled "limitations," many of these provisions indicate where geotechnical engineers' responsibilities begin and end, to help others recognize their own responsibilities and risks. *Read these provisions closely*. Ask questions. Your geotechnical engineer should respond fully and frankly.

Geoenvironmental Concerns Are Not Covered

The personnel, equipment, and techniques used to perform an environmental study – e.g., a "phase-one" or "phase-two" environmental site assessment – differ significantly from those used to perform a geotechnical-engineering study. For that reason, a geotechnical-engineering report does not usually relate any environmental findings, conclusions, or recommendations; e.g., about the likelihood of encountering underground storage tanks or regulated contaminants. *Unanticipated subsurface environmental problems have led to project failures*. If you have not yet obtained your own environmental information, ask your geotechnical consultant for risk-management guidance. As a general rule, *do not rely on an environmental report prepared for a different client, site, or project, or that is more than six months old.*

Obtain Professional Assistance to Deal with Moisture Infiltration and Mold

While your geotechnical engineer may have addressed groundwater, water infiltration, or similar issues in this report, none of the engineer's services were designed, conducted, or intended to prevent uncontrolled migration of moisture – including water vapor – from the soil through building slabs and walls and into the building interior, where it can cause mold growth and material-performance deficiencies. Accordingly, ***proper implementation of the geotechnical engineer's recommendations will not of itself be sufficient to prevent moisture infiltration.*** Confront the risk of moisture infiltration by including building-envelope or mold specialists on the design team. ***Geotechnical engineers are not building-envelope or mold specialists.***

GEOPROFESSIONAL BUSINESS ASSOCIATION

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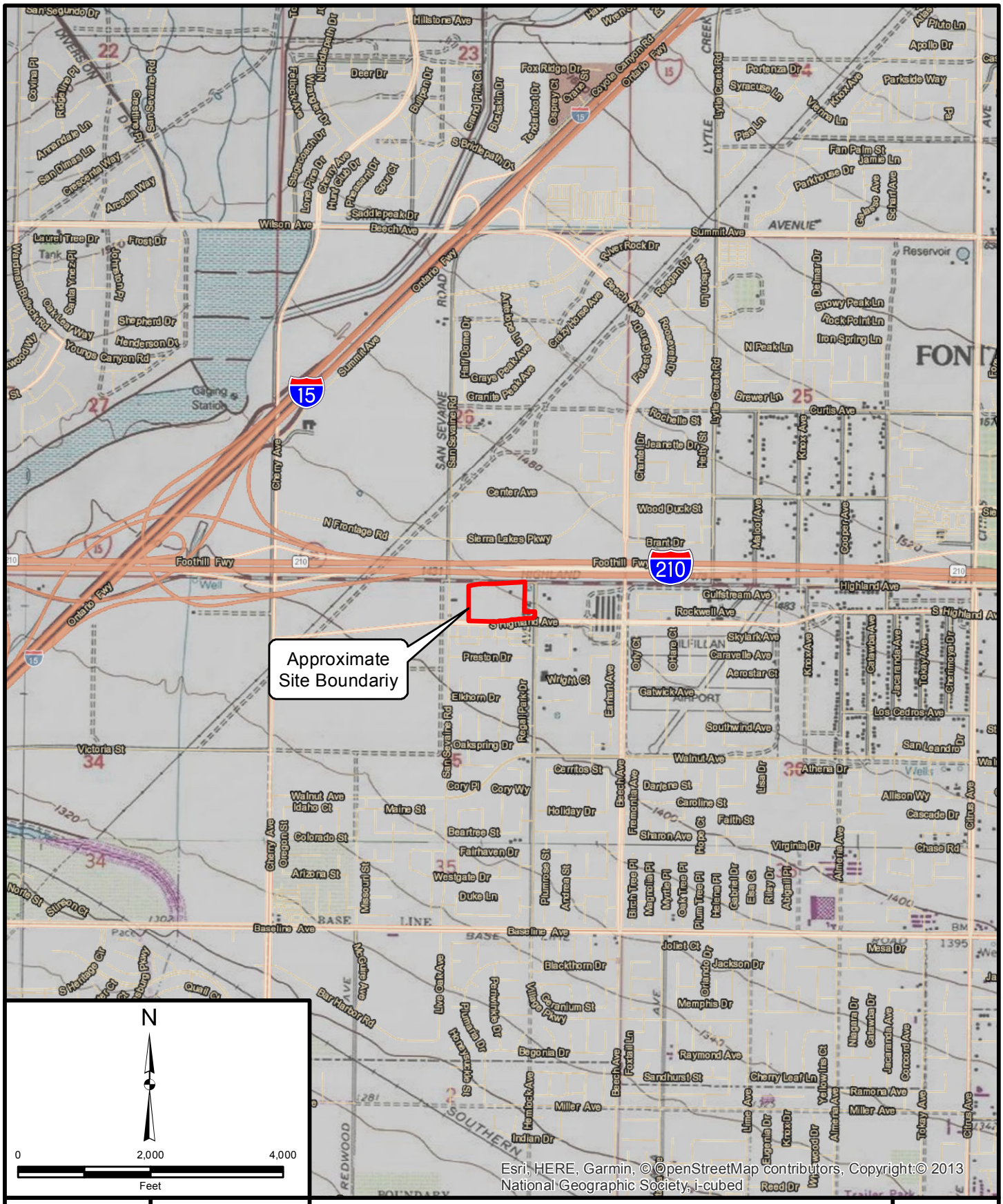

Project: 12282.001	Eng/Geol: JDH/PB
Scale: 1 " = 2,000 '	Date: March 2019

Base Map: ESRI ArcGIS Online 2019
Thematic Information: Leighton
Author: Leighton Geomatics (mmurphy)

SITE LOCATION MAP

Stratham Homes Fontana
Northeast of S Highland Avenue and San Sevaine Road
Fontana, California

Figure 1

Leighton

Map Saved as V:\Drafting\12282\001\Maps\12282-002_F01_SLM_2019-02-18.mxd on 2/18/2019 9:00:46 AM

Project: 12282.001	Eng/Geol: JDH/PB
Scale: 1 " = 200 '	Date: March 2019

Base Map: ESRI ArcGIS Online 2019
Thematic Information: Leighton
Author: Leighton Geomatics (mmurphy)

GEOTECHNICAL EXPLORATION MAP

Stratham Homes Fontana
Northeast of S Highland Avenue and San Sevaine Road
Fontana, California

Figure 2

Leighton

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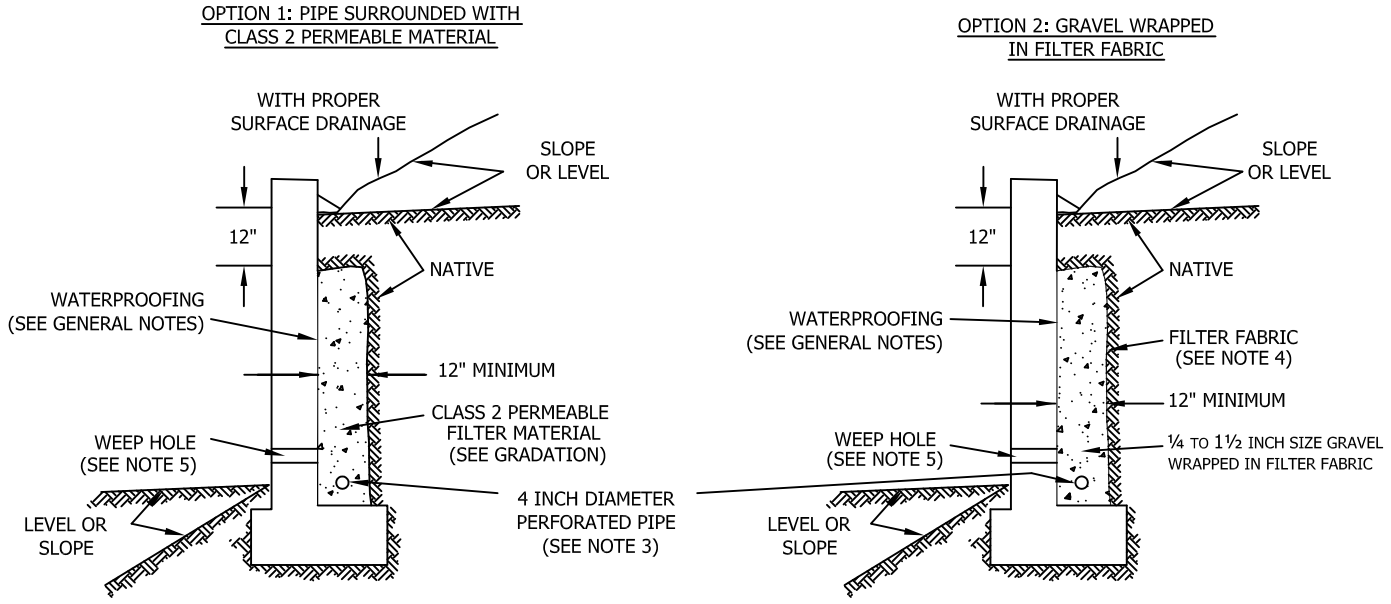
SUBDRAIN OPTIONS AND BACKFILL WHEN NATIVE MATERIAL HAS EXPANSION INDEX OF ≤50



Class 2 Filter Permeable Material Gradation
Per Caltrans Specifications

Sieve Size	Percent Passing
1"	100
3/4"	90-100
3/8"	40-100
No. 4	25-40
No. 8	18-33
No. 30	5-15
No. 50	0-7
No. 200	0-3

GENERAL NOTES:

* Waterproofing should be provided where moisture nuisance problem through the wall is undesirable.
* Water proofing of the walls is not under purview of the geotechnical engineer
* All drains should have a gradient of 1 percent minimum
*Outlet portion of the subdrain should have a 4-inch diameter solid pipe discharged into a suitable disposal area designed by the project engineer. The subdrain pipe should be accessible for maintenance (rodding)
*Other subdrain backfill options are subject to the review by the geotechnical engineer and modification of design parameters.

Notes:
1) Sand should have a sand equivalent of 30 or greater and may be densified by water jetting.
2) 1 Cu. ft. per ft. of 1/4- to 1 1/2-inch size gravel wrapped in filter fabric
3) Pipe type should be ASTM D1527 Acrylonitrile Butadiene Styrene (ABS) SDR35 or ASTM D1785 Polyvinyl Chloride plastic (PVC), Schedule 40, Armco A2000 PVC, or approved equivalent. Pipe should be installed with perforations down. Perforations should be 3/8 inch in diameter placed at the ends of a 120-degree arc in two rows at 3-inch on center (staggered)
4) Filter fabric should be Mirafi 140NC or approved equivalent.
5) Weephole should be 3-inch minimum diameter and provided at 10-foot maximum intervals. If exposure is permitted, weepholes should be located 12 inches above finished grade. If exposure is not permitted such as for a wall adjacent to a sidewalk/curb, a pipe under the sidewalk to be discharged through the curb face or equivalent should be provided. For a basement-type wall, a proper subdrain outlet system should be provided.
6) Retaining wall plans should be reviewed and approved by the geotechnical engineer.
7) Walls over six feet in height are subject to a special review by the geotechnical engineer and modifications to the above requirements.

RETAINING WALL BACKFILL AND SUBDRAIN DETAIL FOR WALLS 6 FEET OR LESS IN HEIGHT

WHEN NATIVE MATERIAL HAS EXPANSION INDEX OF ≤50

Leighton
Figure 3

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APPENDIX A

REFERENCES

Leighton

APPENDIX A

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APPENDIX B

GEOTECHNICAL LOGS

APPENDIX B

FIELD EXPLORATION

Our field investigation consisted of a surface reconnaissance and a subsurface exploration. Nine test pits (TP-1 through TP-9) were excavated and logged to a maximum depth of approximately 9 feet below the existing ground surface. These test pit logs are included as part of this appendix. Approximate test pit locations are shown on Figure 2, *Geotechnical Exploration Map*.

Test Pits: On February 11, 2019, 9 test pits were excavated, logged, and sampled to depths ranging from 5 feet to 8.5 feet below the ground surface. Encountered soils were logged in the field by our representative and described in accordance with the Unified Soil Classification System (ASTM D2488). Near surface bulk soil samples were also collected from the borings. Representative earth-material samples obtained from these subsurface explorations were transported to our geotechnical laboratory for evaluation and appropriate testing.

TEST PIT TP-1

Stratham Homes Fontana
Logged By: JDO
Sampled By: JDO
Location: (see Figure 2, *Geotechnical Exploration Map*)

Project No. 12282.001
Date Excavated: 02/11/2019
~Elevation: 1434'

This soil description applies only to a location of the exploration at the time of sampling. Subsurface conditions may differ at other locations and may change with time. This soil description (below) is a simplification of actual conditions encountered. Transitions between soil type may be gradual.

Depth (feet)		USCS Symbol	Soil Description	Geologic Unit	Laboratory Test Results			
Top	Bottom				Sample Number	Depth (feet)	Dry Density (pcf)	Moisture (%)
			surface: grasses					
0.0	2.0	SM	**Undocumented Artificial Fill (Afu):** SILTY SAND with clay, gravel and cobbles (SM): brown; moist; non-plastic; fine to coarse sand and gravel; approximately 30% fines (field estimate); no visible structure, no visable debris or trash, many rootlets.	**Afu**				
2.0	5.2	GP/SP	**Alluvial Fan Deposits (Qf):** GRAVEL with sand to SAND with gravel, with cobbles and trace boulders (GP/SP): interbedded sand and gravel lenses; light brown-gray; dense; moist; non-plastic; fine to coarse sand, gravel and cobbles; subangular to subrounded clasts; clean sand; rootlets to ~3.5'.	**Qf**				
5.2	7.0	SM/GM	SILTY GRAVEL with sand to SILTY SAND with gravel, with cobbles and trace boulders (GM/SM): Interbedded silty gravel and silty sand lenses; brown to olive; dense; moist; non-plastic, mostly fine to medium sand; fine to coarse gravel and cobbles; subangular to subrounded clasts; silty sand lenses are less coarse in clast size.		B-1	6-7		
			Approximately 5% oversized (+8") clasts (field estimate); 2-3 boulders (+12"), maximum dimension = 14"					

Total Depth = 7 feet
No groundwater encountered when excavating
Test pit back-filled and tamped with spoils on February 11, 2019

This log is a part of a report by Leighton and should not be used as a stand-alone document.

Leighton

TEST PIT TP-2

Stratham Homes Fontana
Logged By: JDO
Sampled By: JDO
Location: (see Figure 2, *Geotechnical Exploration Map*)

Project No. 12282.001
Date Excavated: 02/11/2019
~Elevation: 1426'

This soil description applies only to a location of the exploration at the time of sampling. Subsurface conditions may differ at other locations and may change with time. This soil description (below) is a simplification of actual conditions encountered. Transitions between soil type may be gradual.

Depth (feet)		USCS Symbol	Soil Description	Geologic Unit	Laboratory Test Results			
Top	Bottom				Sample Number	Depth (feet)	Dry Density (pcf)	Moisture (%)
0.0	1.5	(SM)g	surface: minor vegitation **Undocumented Artificial Fill (Afu):** SILTY SAND with gravel, clay and cobbles (SM)g: brown; moist; non-plastic; mostly fine to medium sand; fine to coarse gravel; approximately 30% fines (field estimate); no visible structure, no visable debris or trash, many rootlets; variable thickness from 1-1.5'.	**Afu**	B-1	0-5		11
1.5	5.0	SM/GM	**Alluvial Fan Deposits (Qf):** SILTY GRAVEL with sand to SILTY SAND with gravel, cobbles and trace boulders (GM): brown-olive; dense; moist; non-plastic; fine to coarse sand, gravel and cobbles; subangular to subrounded clasts; approximately 30% fines (field estimate); slight clast imbrication; rootlets to ~4'; east end of trench (N ans S walls) is interbedded with a lense of clean gravel with sand.	**Qf**				
			Approximately 5% oversized (+8") clasts (field estimate); 2-3 boulders (+12"), maximum dimension = 12"					

Total Depth = 5 feet
No groundwater encountered when excavating
Test pit back-filled and tamped with spoils on February 11, 2019

This log is a part of a report by Leighton and should not be used as a stand-alone document.

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TEST PIT TP-3

Stratham Homes Fontana
Logged By: JDO
Sampled By: JDO
Location: (see Figure 2, *Geotechnical Exploration Map*)

Project No. 12282.001
Date Excavated: 02/11/2019
~Elevation: 1433'

This soil description applies only to a location of the exploration at the time of sampling. Subsurface conditions may differ at other locations and may change with time. This soil description (below) is a simplification of actual conditions encountered. Transitions between soil type may be gradual.

Depth (feet)		USCS Symbol	Soil Description	Geologic Unit	Laboratory Test Results			
Top	Bottom				Sample Number	Depth (feet)	Dry Density (pcf)	Moisture (%)
			surface: minor vegitation					
0.0	1.5	SM	**Undocumented Artificial Fill (Afu):** SILTY SAND with gravel, clay and cobbles (SM): brown; moist; non-plastic; fine to coarse sand and gravel; approximately 30% fines (field estimate); no visible structure, no visable debris or trash, many rootlets; variable thickness from 1-1.5'.	**Afu**				
1.5	5.0	GP/SP	**Alluvial Fan Deposits (Qf):** GRAVEL with sand to SAND with gravel, with cobbles and trace boulders (GP/SP): interbedded gravel with sand and sand with gravel lenses; light brown-gray brown; dense; moist; non-plastic; fine to coarse sand, gravel and cobbles; subangular to subrounded clasts; trace fines; areas of imbricated clasts; rootlets to ~4'.	**Qf**				
			Approximately 5% oversized (+8") clasts (field estimate); 2-3 boulders (+12"), maximum dimension = 12"					

Total Depth = 5 feet
No groundwater encountered when excavating
Test pit back-filled and tamped with spoils on February 11, 2019

This log is a part of a report by Leighton and should not be used as a stand-alone document.

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TEST PIT TP-4

Stratham Homes Fontana
Logged By: JDO
Sampled By: JDO
Location: (see Figure 2, *Geotechnical Exploration Map*)

Project No. 12282.001
Date Excavated: 02/11/2019
~Elevation: 1438'

This soil description applies only to a location of the exploration at the time of sampling. Subsurface conditions may differ at other locations and may change with time. This soil description (below) is a simplification of actual conditions encountered. Transitions between soil type may be gradual.

Depth (feet)		USCS Symbol	Soil Description	Geologic Unit	Laboratory Test Results			
Top	Bottom				Sample Number	Depth (feet)	Dry Density (pcf)	Moisture (%)
0.0	1.5	SM	surface: minor vegitation **Undocumented Artificial Fill (Afu):** SILTY SAND with gravel, clay and cobbles (SM): brown; moist; non-plastic; fine to coarse sand and gravel; approximately 30% fines (field estimate); no visible structure, no visable debris or trash, many rootlets; variable thickness from 1-1.5'.	**Afu**				
1.5	5.0	(GP)s	**Alluvial Fan Deposits (Qf):** GRAVEL with sand and cobbles (GP)s: light brown-gray brown; dense; moist; non-plastic; fine to coarse sand and gravel; subangular to subrounded clasts; clean sand; areas of imbricated clasts; rootlets to ~4'.	**Qf**	B-1	2-5		4
			Approximately 5% oversized (+8") clasts (field estimate); 0 boulders (+12"), maximum dimension = 8"					

Total Depth = 5 feet
No groundwater encountered when excavating
Test pit back-filled and tamped with spoils on February 11, 2019

This log is a part of a report by Leighton and should not be used as a stand-alone document.

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TEST PIT TP-5

Stratham Homes Fontana
Logged By: JDO
Sampled By: JDO
Location: (see Figure 2, *Geotechnical Exploration Map*)

Project No. 12282.001
Date Excavated: 02/11/2019
~Elevation: 1430'

This soil description applies only to a location of the exploration at the time of sampling. Subsurface conditions may differ at other locations and may change with time. This soil description (below) is a simplification of actual conditions encountered. Transitions between soil type may be gradual.

Depth (feet)		USCS Symbol	Soil Description	Geologic Unit	Laboratory Test Results			
Top	Bottom				Sample Number	Depth (feet)	Dry Density (pcf)	Moisture (%)
			surface: minor vegitation					
0.0	1.5	SM	**Undocumented Artificial Fill (Afu):** SILTY SAND with gravel, clay and cobbles (SM): brown; moist; non-plastic; fine to coarse sand and gravel; approximately 30% fines (field estimate); no visible structure, no visable debris or trash, many rootlets; variable thickness from 1.5-2'.	**Afu**				
1.5	7.0	GM/SM	**Alluvial Fan Deposits (Qf):** SILTY GRAVEL with sand and cobbles (GM): mostly silty gravel with sand interbedded with clean sand and gravel lenses; olive to light brown-gray brown; dense; moist; non-plastic; fine to coarse sand and gravel; subangular to subrounded clasts; areas of imbricated clasts.	**Qf**				
			Approximately 5% oversized (+8") clasts (field estimate); 0 boulders (+12"), maximum dimension = 8"					

Total Depth = 7 feet
No groundwater encountered when excavating
Test pit back-filled and tamped with spoils on February 11, 2019

This log is a part of a report by Leighton and should not be used as a stand-alone document.

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TEST PIT TP-6

Stratham Homes Fontana
Logged By: JDO
Sampled By: JDO
Location: (see Figure 2, *Geotechnical Exploration Map*)

Project No. 12282.001
Date Excavated: 02/11/2019
~Elevation: 1436'

This soil description applies only to a location of the exploration at the time of sampling. Subsurface conditions may differ at other locations and may change with time. This soil description (below) is a simplification of actual conditions encountered. Transitions between soil type may be gradual.

Depth (feet)		USCS Symbol	Soil Description	Geologic Unit	Laboratory Test Results			
Top	Bottom				Sample Number	Depth (feet)	Dry Density (pcf)	Moisture (%)
			surface: minor vegitation					
0.0	1.0	(SM)g	**Undocumented Artificial Fill (Afu):** SILTY SAND with gravel, clay and cobbles (SM)g: brown; moist; non-plastic; fine to coarse sand and gravel; approximately 30% fines (field estimate); no visible structure, no visable debris or trash, many rootlets.	**Afu**	B-1	0-1		7
1.0	6.5	GP/SP	**Alluvial Fan Deposits (Qf):** GRAVEL with sand to SAND with gravel and cobbles (GP/SP): interbedded gravel with sand and sand with gravel lenses; light brown-gray brown; dense; moist; non-plastic; fine to coarse sand and gravel; subangular to subrounded clasts; clean sand; rootlets to ~4'; areas of imbricated clasts.	**Qf**				
6.5	9.0	SM/GM	SILTY SAND with gravel to SILTY GRAVEL with sand, with cobbles (SM/GM): similar to above but with ~15% silt (field estimate)					
			Approximately 5% oversized (+8") clasts (field estimate); 0 boulders (+12"), maximum dimension = 10"					

Total Depth = 9.0 feet
No groundwater encountered when excavating
Test pit back-filled and tamped with spoils on February 11, 2019

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TEST PIT TP-7

Stratham Homes Fontana

Logged By: JDO
Sampled By: JDO

Project No. 12282.001
Date Excavated: 02/11/2019
~Elevation: 1443'

Location: (see Figure 2, *Geotechnical Exploration Map*)

This soil description applies only to a location of the exploration at the time of sampling. Subsurface conditions may differ at other locations and may change with time. This soil description (below) is a simplification of actual conditions encountered. Transitions between soil type may be gradual.

Depth (feet)		USCS Symbol	Soil Description	Geologic Unit	Laboratory Test Results			
Top	Bottom				Sample Number	Depth (feet)	Dry Density (pcf)	Moisture (%)
0.0	1.5	SM	surface: minor vegitation **Undocumented Artificial Fill (Afu):** SILTY SAND with gravel, clay and cobbles (SM): brown; moist; non-plastic; fine to coarse sand and gravel; approximately 30% fines (field estimate); no visible structure, no visable debris or trash, many rootlets; variable thickness from 1-1.5'.	**Afu**				
1.5	5.0	SP/GP	**Alluvial Fan Deposits (Qf):** SAND with gravel to GRAVEL with sand, with cobbles (SP/GP): interbedded gravel with sand and sand with gravel lenses; light brown-gray brown; dense; moist; non-plastic; fine to coarse sand and gravel; subangular to subrounded clasts; trace fines.	**Qf**				
			Approximately 5% oversized (+8") clasts (field estimate); 0 boulders (+12"), maximum dimension = 8"					

Total Depth = 5 feet
No groundwater encountered when excavating
Test pit back-filled and tamped with spoils on February 11, 2019

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TEST PIT TP-8

Stratham Homes Fontana

Logged By: JDO
Sampled By: JDO

Project No. 12282.001
Date Excavated: 02/11/2019
~Elevation: 1435'

Location: (see Figure 2, *Geotechnical Exploration Map*)

This soil description applies only to a location of the exploration at the time of sampling. Subsurface conditions may differ at other locations and may change with time. This soil description (below) is a simplification of actual conditions encountered. Transitions between soil type may be gradual.

Depth (feet)		USCS Symbol	Soil Description	Geologic Unit	Laboratory Test Results			
Top	Bottom				Sample Number	Depth (feet)	Dry Density (pcf)	Moisture (%)
0.0	1.0	SM	surface: minor vegitation **Undocumented Artificial Fill (Afu):** SILTY SAND with gravel, clay and cobbles (SM): brown; moist; non-plastic; fine to coarse sand and gravel; approximately 30% fines (field estimate); no visible structure, no visable debris or trash, many rootlets.	**Afu**				
1.0	5.5	(SP)g	**Alluvial Fan Deposits (Qf):** SAND with gravel (SP)g: interbedded silty gravel with sand and gravel with sand lenses; olive-brown to light gray-brown; dense; moist; non-plastic; fine to coarse sand and gravel; subangular to subrounded clasts; areas of imbricated clasts.	**Qf**	B-1	4.5-5.5		4
			Approximately <5% oversized (+8") clasts (field estimate); 0 boulders (+12"), maximum dimension = 8"					

Total Depth = 5.5 feet
No groundwater encountered when excavating
Test pit back-filled and tamped with spoils on February 11, 2019

This log is a part of a report by Leighton and should not be used as a stand-alone document.

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TEST PIT TP-9

Stratham Homes Fontana
Logged By: JDO
Sampled By: JDO
Location: (see Figure 2, *Geotechnical Exploration Map*)

Project No. 12282.001
Date Excavated: 02/11/2019
~Elevation: 1436'

This soil description applies only to a location of the exploration at the time of sampling. Subsurface conditions may differ at other locations and may change with time. This soil description (below) is a simplification of actual conditions encountered. Transitions between soil type may be gradual.

Depth (feet)		USCS Symbol	Soil Description	Geologic Unit	Laboratory Test Results			
Top	Bottom				Sample Number	Depth (feet)	Dry Density (pcf)	Moisture (%)
0.0	3.0	SM	surface: minor vegitation **Undocumented Artificial Fill (Afu):** SILTY SAND with gravel, clay and cobbles (SM): brown; moist; non-plastic; fine to medium sand and gravel; approximately 30% fines (field estimate); no visible structure, no visable debris or trash, many rootlets.	**Afu**				
3.0	5.3	GM/SM	**Alluvial Fan Deposits (Qf):** SILTY GRAVEL with sand to SILTY SAND with gravel, with cobbles (GM/SM): brown-olive brown; dense; moist; non-plastic; fine to coarse sand and gravel; subangular to subrounded clasts; 15% fines (field estimate); rootlets to ~4'; areas of imbricated clasts.	**Qf**				
5.3	7.5	GP-GM	GRAVEL with sand, silt and cobbles (GP-GM): similar to above; transitions to coarser sand, gravel, and cobbles, with less silt.					
			Approximately 5% oversized (+8") clasts (field estimate); 0 boulders (+12"), maximum dimension = 10"					

Total Depth = 7.5 feet
No groundwater encountered when excavating
Test pit back-filled and tamped with spoils on February 11, 2019

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Results of Percolation Test

Leighton

Project: Stratham Homes Fontana

Exploration #/Location:	TP-2
Depth Boring drilled to (ft):	6
Tested by:	LP
USCS Soil Type in test zone:	(SM)g
Weather (start to finish)	Sunny
Liquid Used/pH:	Water
Measured boring diameter	10.75 in. Well Radius, "r"
Approx Depth to GW below GS	200 ft
Well Prep:	Hand augered to 14", set 2" of gravel, set perforated casing at 12", filled around casing with gravel

Initial estimated Depth to Water Surface (in.): 11.07
Average depth of water in well, "h" (in.): 0.9297
approx. h/r: 0.2
Tu (Fig. 8): 199.1 ft
Tu>3h?: yes, OK

	in.	*Total (in.)*	
Depth to Bot of well (or top of soil over Bentonite)	12. in.	12	Bottom of well about 6' below grade
Pilot Tube stickup (+ is above ground)	0. in.	0	Stickup above test pit excavation bottom
Depth to top of sand outside of casing from top of pilot tube			
Depth to top of float assembly from top of pilot tube		0	0 Depth below GS (in.)
Float Assembly ID			
Float assembly Extension length (in.)			

Field Data **Calculations**

Date	Time	Depth to WL in Boring (measured from top of pilot tube)		Comments	Δt (min)	Total Elapsed Time (min.)	Depth to WL in well (in.)	h, Height of Water in Well (in.)	Δh (in.)	Avg. h	Vol Change (in.^3)			Flow (in^3/ min)	q, Flow (in^3/ hr)	V (Fig 9)	K20, Coef. Of Perme-ability at 20 deg C (in./hr)	**Infiltration Rate [flow/surf area] (in./hr) (FS=1)**
Start Date	Start time:	ft	in.								from supply	from Δh	Total					
2/11/19	9:41																	
2/11/19	9:41:00		3.5			0	3.5	8.5										
2/11/19	9:52:10		12.0		11.17	11.1667	12.0	0.0	-8.5	4	0	456	456	41	2452	0.8		**7.89**
2/11/19	9:55:00		3.5			14	3.5	8.5										
2/11/19	10:07:00		12.0		12	26	12.0	0.0	-8.5	4	0	456	456	38	2282	0.8		**7.35**
2/11/19	10:10:00		3.5			29	3.5	8.5										
2/11/19	10:22:45		12.0		12.75	41.75	12.0	0.0	-8.5	4	0	456	456	36	2147	0.8		**6.91**
2/11/19	10:25:00		3.5			44	3.5	8.5										
2/11/19	10:37:40		12.0		12.67	56.6667	12.0	0.0	-8.5	4	0	456	456	36	2161	0.8		**6.96**

Results of Percolation Test

Leighton

Project: Stratham Homes Fontana

Exploration #/Location:	TP-4
Depth Boring drilled to (ft):	6
Tested by:	LP
USCS Soil Type in test zone:	(GP)s
Weather (start to finish)	Sunny
Liquid Used/pH:	Water
Measured boring diameter	8.75 in. Well Radius, "r"
Approx Depth to GW below GS	200 ft
Well Prep:	Hand augered to 16", set 2" of gravel, set perforated casing at 14", filled around casing with gravel

Initial estimated Depth to Water Surface (in.): 10.125
Average depth of water in well, "h" (in.): 3.875
approx. h/r: 0.9
Tu (Fig. 8): 199.2 ft
Tu>3h?: yes, OK

	in.	Total (in.)	
Depth to Bot of well (or top of soil over Bentonite)	14. in.	14	Bottom of well about 6' below grade
Pilot Tube stickup (+ is above ground)	0. in.	0	Stickup above test pit excavation bottom
Depth to top of sand outside of casing from top of pilot tube			
Depth to top of float assembly from top of pilot tube		0	0 Depth below GS (in.)
Float Assembly ID			
Float assembly Extension length (in.)			

Field Data / **Calculations**

Date	Time	Depth to WL in Boring (measured from top of pilot tube)		Comments	Δt (min)	Total Elapsed Time (min.)	Depth to WL in well (in.)	h, Height of Water in Well (in.)	Δh (in.)	Avg. h	Vol Change (in.^3)			Flow (in^3/ min)	q, Flow (in^3/ hr)	V (Fig 9)	K20, Coef. Of Perme-ability at 20 deg C (in./hr)	**Infiltration Rate [flow/surf area] (in./hr) (FS=1)**
Start Date	Start time:	ft	in.								from supply	from Δh	Total					
2/11/2019	11:30																	
2/11/19	11:30:00		4.0			0	4.0	10.0										
2/11/19	11:32:30		12.0		2.5	2.5	12.0	2.0	-8	6	0	332	332	133	7956	0.8	146.35	**26.67**
2/11/19	11:35:00		4.0			5	4.0	10.0										
2/11/19	11:37:50		12.0		2.833	7.83333	12.0	2.0	-8	6	0	332	332	117	7020	0.8	129.13	**23.53**
2/11/19	11:40:00		4.0			10	4.0	10.0										
2/11/19	11:43:00		12.0		3	13	12.0	2.0	-8	6	0	332	332	111	6630	0.8	121.96	**22.22**
2/11/19	11:45:00		4.0			15	4.0	10.0										
2/11/19	11:48:05		12.0		3.083	18.0833	12.0	2.0	-8	6	0	332	332	108	6451	0.8	118.66	**21.62**
2/11/19	11:50:00		4.0			20	4.0	10.0										
2/11/19	11:53:09		12.0		3.15	23.15	12.0	2.0	-8	6	0	332	332	105	6314	0.8	116.15	**21.16**
2/11/19	11:55:00		4.0			25	4.0	10.0										
2/11/19	11:57:53		12.0		2.883	27.8833	12.0	2.0	-8	6	0	332	332	115	6898	0.8	126.89	**23.12**
2/11/19	12:00:00		4.0			30	4.0	10.0										
2/11/19	12:03:08		12.0		3.133	33.1333	12.0	2.0	-8	6	0	332	332	106	6348	0.8	116.77	**21.28**
2/11/19	12:05:00		4.0			35	4.0	10.0										
2/11/19	12:08:15		12.0		3.25	38.25	12.0	2.0	-8	6	0	332	332	102	6120	0.8	112.57	**20.51**

Results of Percolation Test

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Project: Stratham Homes Fontana

Exploration #/Location:	TP-8
Depth Boring drilled to (ft):	6.5
Tested by:	LP
USCS Soil Type in test zone:	(SP)g
Weather (start to finish)	Sunny
Liquid Used/pH:	Water
Measured boring diameter	8.75 in. Well Radius, "r"
Approx Depth to GW below GS	200 ft
Well Prep:	Hand augered to 14", set 2" of gravel, set perforated casing at 12", filled around casing with gravel

Initial estimated Depth to Water Surface (in.):	10.125
Average depth of water in well, "h" (in.):	1.875
approx. h/r:	0.4
Tu (Fig. 8):	199.2 ft
Tu>3h?:	yes, OK

	in.	*Total (in.)*	
Depth to Bot of well (or top of soil over Bentonite)	12. in.	12	Bottom of well about 6' below grade
Pilot Tube stickup (+ is above ground)	0. in.	0	Stickup above test pit excavation bottom
Depth to top of sand outside of casing from top of pilot tube			
Depth to top of float assembly from top of pilot tube		0	0 Depth below GS (in.)
Float Assembly ID			
Float assembly Extension length (in.)			

Field Data **Calculations**

Date	Time	Depth to WL in Boring (measured from top of pilot tube)		Comments	Δt (min)	Total Elapsed Time (min.)	Depth to WL in well (in.)	h, Height of Water in Well (in.)	Δh (in.)	Avg. h	Vol Change (in.^3)			Flow (in^3/ min)	q, Flow (in^3/ hr)	V (Fig 9)	K20, Coef. Of Perme-ability at 20 deg C (in./hr)	**Infiltration Rate [flow/surf area] (in./hr) (FS=1)**
Start Date 2/11/2019	Start time: 13:00	ft	in.								from supply	from Δh	Total					
2/11/19	13:00:00		4.0			0	4.0	8.0										
2/11/19	13:04:12		12.0		4.2	4.2	12.0	0.0	-8	4	0	332	332	79	4736	0.8		**21.00**
2/11/19	13:05:00		4.0			5	4.0	8.0										
2/11/19	13:10:00		12.0		5	10	12.0	0.0	-8	4	0	332	332	66	3978	0.8		**17.64**
2/11/19	13:13:00		4.0			13	4.0	8.0										
2/11/19	13:18:00		12.0		5	18	12.0	0.0	-8	4	0	332	332	66	3978	0.8		**17.64**
2/11/19	13:20:00		4.0			20	4.0	8.0										
2/11/19	13:25:25		12.0		5.417	25.4167	12.0	0.0	-8	4	0	332	332	61	3672	0.8		**16.29**
2/11/19	13:26:00		4.0			26	4.0	8.0										
2/11/19	13:31:30		12.0		5.5	31.5	12.0	0.0	-8	4	0	332	332	60	3616	0.8		**16.04**
2/11/19	13:34:00		4.0			34	4.0	8.0										
2/11/19	13:40:40		12.0		6.667	40.6667	12.0	0.0	-8	4	0	332	332	50	2984	0.8		**13.23**
2/11/19	13:42:00		4.0			42	4.0	8.0										
2/11/19	13:47:40		12.0		5.667	47.6667	12.0	0.0	-8	4	0	332	332	59	3510	0.8		**15.57**
2/11/19	13:50:00		4.0			50	4.0	8.0										
2/11/19	13:55:50		12.0		5.833	55.8333	12.0	0.0	-8	4	0	332	332	57	3410	0.8		**15.12**

APPENDIX C

LABORATORY TEST RESULTS

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APPENDIX C

GEOTECHNICAL LABORATORY TESTING

The geotechnical laboratory testing program was directed toward a quantitative and qualitative evaluation of the physical and mechanical properties of the soils underlying the site and to aid in verifying soil classification.

In-Situ Moisture and Density: The natural water content (ASTM D 2216) and in-situ dry density (ASTM D 2937) were determined for recovered relatively undisturbed ring-lined barrel drive samples, from our subsurface explorations. Results of these tests are shown on the logs at the appropriate sample depths, in Appendix B.

Modified Proctor compaction Curve: A laboratory modified Proctor compaction test (ASTM D 1557) was performed on a bulk soil sample to determine maximum laboratory dry density and optimum moisture content. Result of this test is presented on the following "*Modified Proctor Compaction Test*" plot in this appendix.

Sieve Analysis: Sieve analyses (ASTM D 422) were performed on selected subsurface soil samples. These tests were performed to assist in the classification of the soil. Results of these tests are presented on the "*Particle Size Analysis of Soils*" figures.

Expansion Index: Expansion Index of a representative bulk sample was determined by the ASTM D 4829 standard test method to identify expansion potential. The expansion index is presented in this appendix.

Corrosivity Tests: To evaluate the corrosion potential of the subsurface soils at the site, we tested representative bulk samples collected during our subsurface investigation for pH, resistivity and soluble sulfate and chloride content testing. Results of these tests are presented at the end of this appendix.

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Moisture Content

ASTM D 2216

Project Name: Stratham Homes/Fontana/Geo Inv

Tested By: F. Mina

Project No. : 12282.001

Date: 2/13/2019

Container Number:	K	X	S	C		
Sample Type:	Bulk	Bulk	Bulk	Bulk		
Boring No.:	TP-2	TP-4	TP-8	TP-6		
Sample No.:	B-1	B-1	B-1	B-1		
Depth: (ft.)	0 - 5.0	2.0 - 5.0	4.5 - 5.5	0 - 1.0		
Soil Type:	(SM)g	(GP)s	(SP)g	SM		
Moisture Content (%)	**10.7**	**3.6**	**4.4**	**7.1**		
Wt. Wet Soil+Container (g)	246.4	1276.0	2951.4	775.6		
Wt. Dry Soil+Container (g)	227.5	1236.3	2855.4	751.7		
Weight Container (g)	50.5	140.0	696.3	415.2		

Leighton

MODIFIED PROCTOR COMPACTION TEST

ASTM D 1557

Project Name:	Stratham Homes/Fontana/Geo Inv	Tested By:	F. Mina	Date:	02/14/19
Project No.:	12282.001	Input By:	M. Vinet	Date:	02/18/19
Boring No.:	TP-2	Depth (ft.):	0 - 5.0		
Sample No.:	B-1				
Soil Identification:	Silty Sand with Gravel (SM)g, Dark Brown.				

Note: Corrected dry density calculation assumes specific gravity of 2.70 and moisture content of 1.0% for oversize particles

Preparation Method:	X	Moist	Scalp Fraction (%)		Rammer Weight (lb.) = 10.0
		Dry	#3/4		Height of Drop (in.) = 18.0
Compaction Method	X	Mechanical Ram	#3/8	35.0	
		Manual Ram	#4		Mold Volume (ft³) 0.03340

TEST NO.	1	2	3	4	5	6
Wt. Compacted Soil + Mold (g)	5542	5619	5629	5586		
Weight of Mold (g)	3525	3525	3525	3525		
Net Weight of Soil (g)	2017	2094	2104	2061		
Wet Weight of Soil + Cont. (g)	2220.6	2357.4	2338.9	2266.7		
Dry Weight of Soil + Cont. (g)	2105.4	2199.9	2145.9	2036.5		
Weight of Container (g)	218.1	278.2	277.9	215.9		
Moisture Content (%)	6.1	8.2	10.3	12.6		
Wet Density (pcf)	133.1	138.2	138.9	136.0		
Dry Density (pcf)	125.5	127.7	125.9	120.8		

Maximum Dry Density (pcf)	**127.7**	**Optimum Moisture Content (%)**	**8.2**
Corrected Dry Density (pcf)	**139.5**	**Corrected Moisture Content (%)**	**5.5**

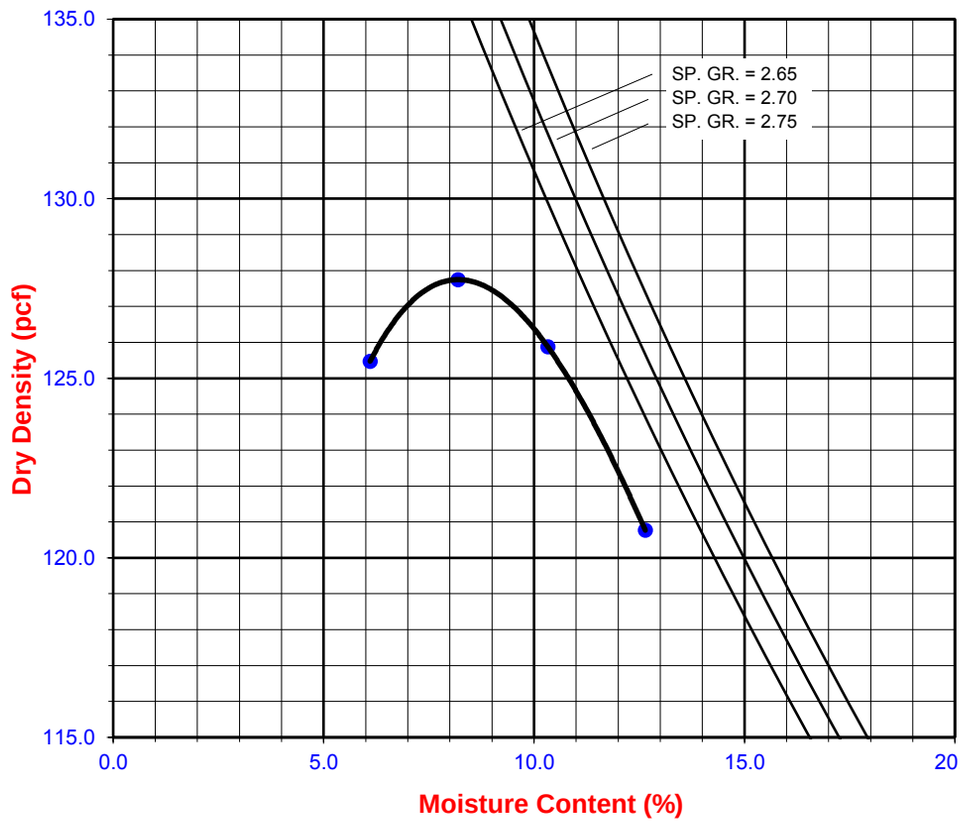
☐ **Procedure A**
Soil Passing No. 4 (4.75 mm) Sieve
Mold : 4 in. (101.6 mm) diameter
Layers : 5 (Five)
Blows per layer : 25 (twenty-five)
May be used if +#4 is 20% or less

☒ **Procedure B**
Soil Passing 3/8 in. (9.5 mm) Sieve
Mold : 4 in. (101.6 mm) diameter
Layers : 5 (Five)
Blows per layer : 25 (twenty-five)
Use if +#4 is >20% and +3/8 in. is 20% or less

☐ **Procedure C**
Soil Passing 3/4 in. (19.0 mm) Sieve
Mold : 6 in. (152.4 mm) diameter
Layers : 5 (Five)
Blows per layer : 56 (fifty-six)
Use if +3/8 in. is >20% and +¾ in. is <30%

Particle-Size Distribution:
39:47:14
GR:SA:FI

Atterberg Limits:
LL,PL,PI



Leighton

PARTICLE-SIZE DISTRIBUTION (GRADATION) of SOILS USING SIEVE ANALYSIS

ASTM D 6913

Project Name: Stratham Homes/Fontana/Geo Inv
Tested By: FLM Date: 02/14/19
Project No.: 12282.001
Checked By: MRV Date: 02/18/19
Boring No.: TP-2
Depth (feet): 0 - 5.0
Sample No.: B-1
Soil Identification: Silty Sand with Gravel (SM)g, Dark Brown.

Calculation of Dry Weights	Whole Sample	Sample Passing #4	Moisture Contents	Whole Sample	Sample passing #4
Container No.:	B	B	Wt. of Air-Dry Soil + Cont.(g)	2714.4	1022.4
Wt. Air-Dried Soil + Cont.(g)	2714.4	1022.4	Wt. of Dry Soil + Cont. (g)	2579.8	1022.4
Wt. of Container (g)	693.5	693.5	Wt. of Container No._____(g)	693.5	693.5
Dry Wt. of Soil (g)	1886.9	328.9	Moisture Content (%)	7.1	0.0

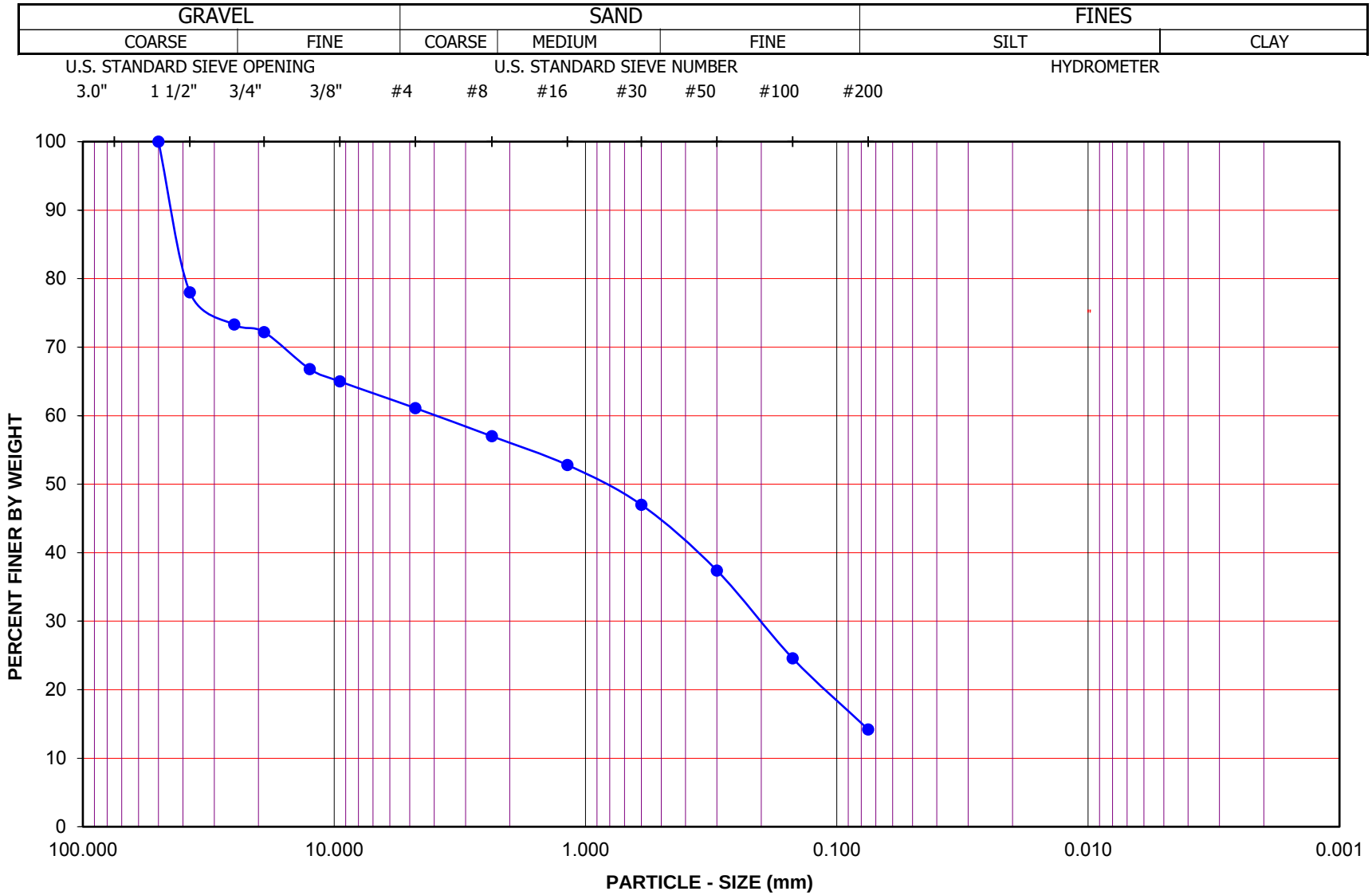
Passing #4 Material After Wet Sieve		
	Container No.	B
	Wt. of Dry Soil + Container (g)	946.5
	Wt. of Container (g)	693.5
	Dry Wt. of Soil Retained on # 200 Sieve (g)	253.0

U. S. Sieve Size		Cumulative Weight of Dry Soil Retained (g)		Percent Passing (%)
	(mm.)	Whole Sample	Sample Passing #4	
2"	50.000	0.0		100.0
1 1/2"	37.500	415.0		78.0
1"	25.000	504.6		73.3
3/4"	19.000	524.4		72.2
1/2"	12.500	626.3		66.8
3/8"	9.500	660.9		65.0
#4	4.750	733.8		61.1
#8	2.360		22.3	57.0
#16	1.180		44.8	52.8
#30	0.600		75.7	47.0
#50	0.300		127.7	37.4
#100	0.150		196.7	24.6
#200	0.075		252.5	14.2
PAN				

GRAVEL: **39 %**
SAND: **47 %**
FINES: **14 %**
GROUP SYMBOL: **(SM)g**

Cu = D60/D10 = N/A
Cc = $(D30)^2/(D60*D10)$ = N/A

Remarks:



Project Name: Stratham Homes/Fontana/Geo Inv

Project No.: 12282.001

Boring No.: TP-2 Sample No.: B-1

Depth (feet): 0 - 5.0 Soil Type : (SM)g

Soil Identification: Silty Sand with Gravel (SM)g, Dark Brown.

GR:SA:FI : (%) 39 : 47 : 14

Leighton

PARTICLE - SIZE DISTRIBUTION ASTM D 6913

Feb-19

Sieve; TP-2, B-1 (02-11-19)

Leighton

PARTICLE-SIZE DISTRIBUTION (GRADATION) of SOILS USING SIEVE ANALYSIS

ASTM D 6913

Project Name: Stratham Homes/Fontana/Geo Inv
Tested By: FLM Date: 02/14/19
Project No.: 12282.001
Checked By: MRV Date: 02/18/19
Boring No.: TP-4
Depth (feet): 2.5 - 5.0
Sample No.: B-1
Soil Identification: Poorly Graded Gravel with Sand (GP)s, Brown.

Calculation of Dry Weights	Whole Sample	Sample Passing #4	Moisture Contents	Whole Sample	Sample passing #4
Container No.:	S	S	Wt. of Air-Dry Soil + Cont.(g)	3265.1	1253.8
Wt. Air-Dried Soil + Cont.(g)	3265.1	1253.8	Wt. of Dry Soil + Cont. (g)	3186.9	1253.8
Wt. of Container (g)	946.7	946.7	Wt. of Container No._____(g)	946.7	946.7
Dry Wt. of Soil (g)	2240.0	307.1	Moisture Content (%)	3.5	0.0

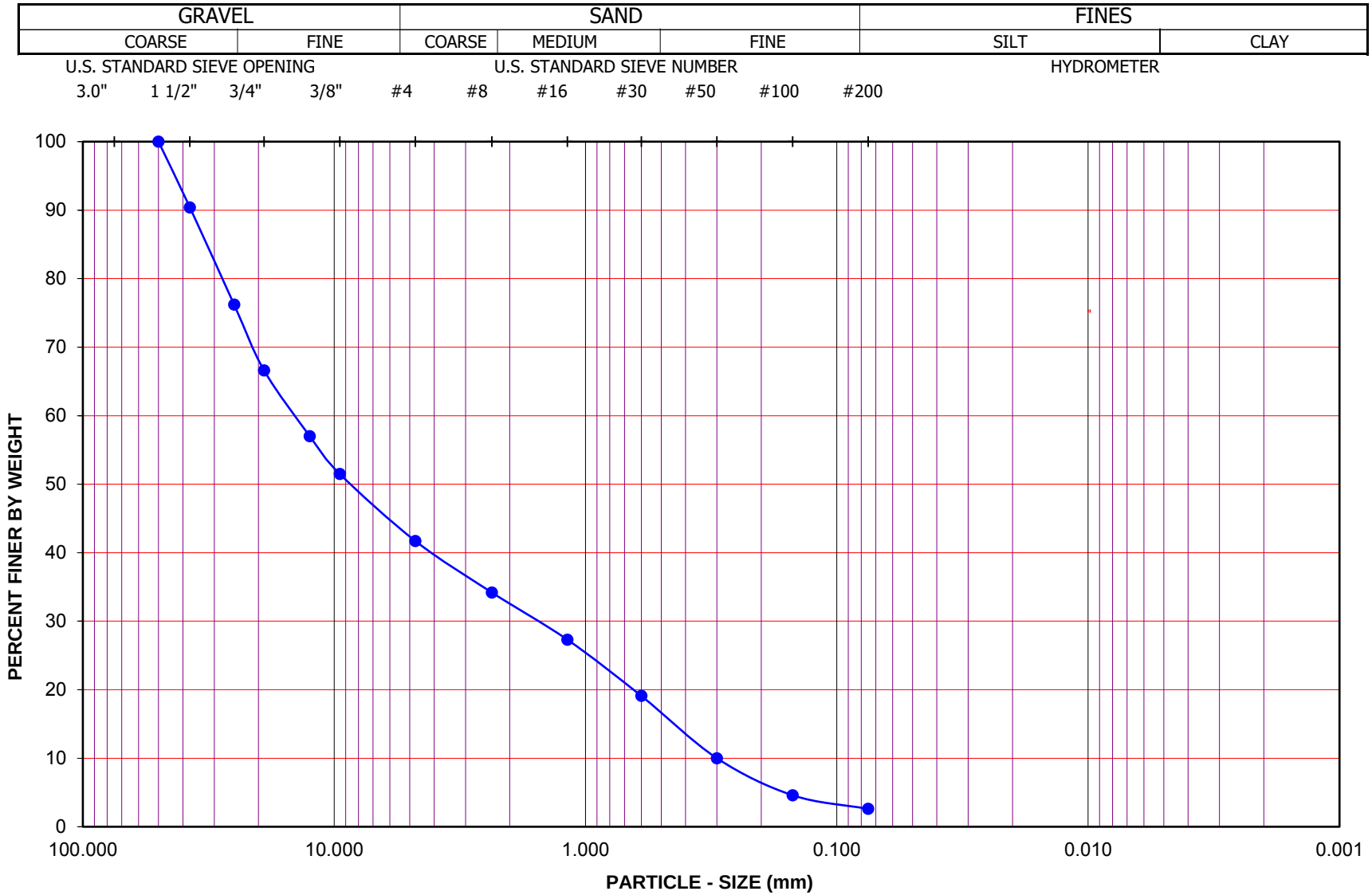
Passing #4 Material After Wet Sieve		
	Container No.	S
	Wt. of Dry Soil + Container (g)	1235.3
	Wt. of Container (g)	946.7
	Dry Wt. of Soil Retained on # 200 Sieve (g)	288.6

U. S. Sieve Size		Cumulative Weight of Dry Soil Retained (g)		Percent Passing (%)
	(mm.)	Whole Sample	Sample Passing #4	
2"	50.000	0.0		100.0
1 1/2"	37.500	214.2		90.4
1"	25.000	533.2		76.2
3/4"	19.000	747.7		66.6
1/2"	12.500	963.3		57.0
3/8"	9.500	1086.9		51.5
#4	4.750	1305.8		41.7
#8	2.360		55.0	34.2
#16	1.180		106.1	27.3
#30	0.600		166.6	19.1
#50	0.300		233.6	10.0
#100	0.150		273.3	4.6
#200	0.075		288.2	2.6
PAN				

GRAVEL: **58 %**
SAND: **39 %**
FINES: **3 %**
GROUP SYMBOL: **(GP)s**

Cu = D60/D10 = 50.00
Cc = $(D30)^2/(D60*D10)$ = 0.57

Remarks:



Project Name: Stratham Homes/Fontana/Geo Inv

Project No.: 12282.001

Boring No.: TP-4 Sample No.: B-1

Depth (feet): 2.5 - 5.0 Soil Type : (GP)s

Soil Identification: Poorly Graded Gravel with Sand (GP)s, Brown.

GR:SA:FI : (%) 58 : 39 : 3

Leighton

PARTICLE - SIZE DISTRIBUTION ASTM D 6913

Feb-19

Sieve; TP-4, B-1 (02-11-19)

Leighton

PARTICLE-SIZE DISTRIBUTION (GRADATION) of SOILS USING SIEVE ANALYSIS

ASTM D 6913

Project Name: Stratham Homes/Fontana/Geo Inv
Tested By: FLM Date: 02/14/19
Project No.: 12282.001
Checked By: MRV Date: 02/18/19
Boring No.: TP-8
Depth (feet): 4.5 - 5.5
Sample No.: B-1
Soil Identification: Poorly Graded Sand with Gravel (SP)g, Dark Yellowish Brown.

Calculation of Dry Weights	Whole Sample	Sample Passing #4	Moisture Contents	Whole Sample	Sample passing #4
Container No.:	SR	SR	Wt. of Air-Dry Soil + Cont.(g)	2951.4	1004.3
Wt. Air-Dried Soil + Cont.(g)	2951.4	1004.3	Wt. of Dry Soil + Cont. (g)	2855.4	1004.3
Wt. of Container (g)	696.3	696.3	Wt. of Container No._____(g)	696.3	696.3
Dry Wt. of Soil (g)	2160.1	308.0	Moisture Content (%)	4.4	0.0

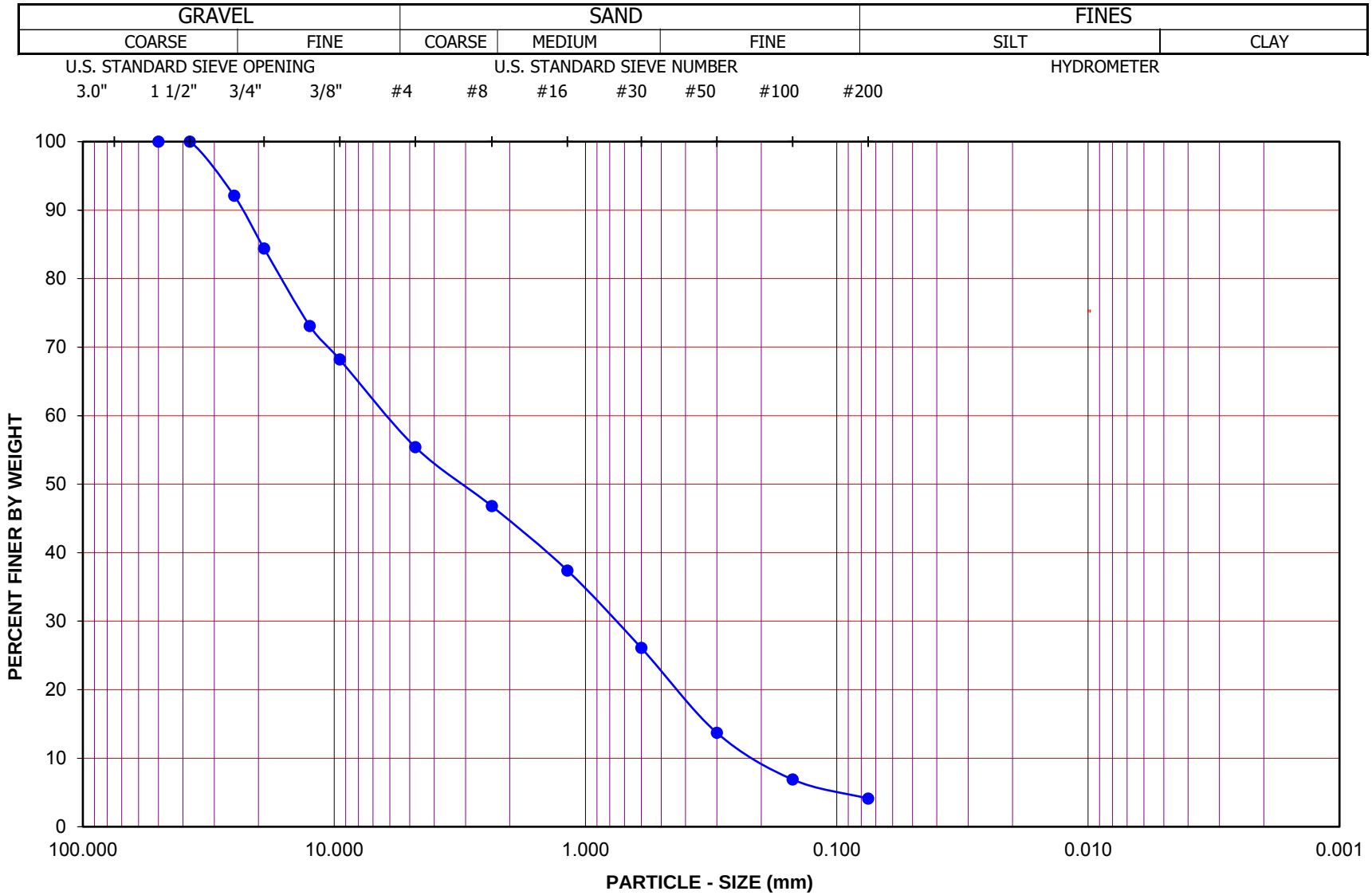
Passing #4 Material After Wet Sieve		
	Container No.	SR
	Wt. of Dry Soil + Container (g)	981.9
	Wt. of Container (g)	696.3
	Dry Wt. of Soil Retained on # 200 Sieve (g)	285.6

U. S. Sieve Size		Cumulative Weight of Dry Soil Retained (g)		Percent Passing (%)
	(mm.)	Whole Sample	Sample Passing #4	
2"	50.000			100.0
1 1/2"	37.500	0.0		100.0
1"	25.000	170.0		92.1
3/4"	19.000	337.3		84.4
1/2"	12.500	580.5		73.1
3/8"	9.500	687.1		68.2
#4	4.750	963.3		55.4
#8	2.360		47.9	46.8
#16	1.180		100.1	37.4
#30	0.600		163.1	26.1
#50	0.300		231.9	13.7
#100	0.150		269.7	6.9
#200	0.075		285.3	4.1
PAN				

GRAVEL: **45 %**
SAND: **51 %**
FINES: **4 %**
GROUP SYMBOL: **(SP)g**

Cu = D60/D10 = 27.73
Cc = $(D30)^2/(D60*D10)$ = 0.42

Remarks:



Project Name: Stratham Homes/Fontana/Geo Inv

Project No.: 12282.001

Boring No.: TP-8 Sample No.: B-1

Depth (feet): 4.5 - 5.5 Soil Type : (SP)g

Soil Identification: Poorly Graded Sand with Gravel (SP)g, Dark Yellowish Brown.

GR:SA:FI : (%) 45 : 51 : 4

Leighton

PARTICLE - SIZE DISTRIBUTION ASTM D 6913

Feb-19

Sieve; TP-8, B-1 (02-11-19)

Boring No.	TP-6							
Sample No.	B-1							
Depth (ft.)	0 - 1.0							
Sample Type	BULK							
Visual Soil Classification	(SM)g							
Moisture Correction								
Wet Weight of Soil + Container (gm.)	775.6							
Dry Weight of Soil + Container (gm.)	751.7							
Weight of Container (gm)	415.2							
Moisture Content (%)	7.1							
Container No.:	C							
Sample Dry Weight Determination								
Weight of Sample + Container (gm.)	751.7							
Weight of Container (gm.)	415.2							
Weight of Dry Sample (gm.)	336.5							
Container No.:	C							
After Wash								
Dry Weight of Sample + Container (gm)	701.1							
Weight of Container (gm)	415.2							
Dry Weight of Sample (gm)	285.9							
% Passing No. 200 Sieve	**15**							
% Retained No. 200 Sieve	85							

PERCENT PASSING No. 200 SIEVE
ASTM D 1140

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Project Name: Stratham Homes/Fontana/Geo Inv
Project No.: 12282.001
Client Name: Stratham Homes, Inc
Tested By: F. Mina Date: 2/13/19

Rev. 08-04

Leighton

EXPANSION INDEX of SOILS

ASTM D 4829

Project Name:	Stratham Homes/Fontana/Geo Inv	Tested By:	F. Mina	Date:	2/14/19
Project No. :	12282.001	Checked By:	M. Vinet	Date:	2/18/19
Boring No.:	TP-2	Depth:	0 - 5.0		
Sample No. :	B-1	Location:	N/A		
Sample Description:	Silty Sand with Gravel (SM)g, Dark Brown.				

Dry Wt. of Soil + Cont. (gm.)	14856.7
Wt. of Container No. (gm.)	0.0
Dry Wt. of Soil (gm.)	14856.7
Weight Soil Retained on #4 Sieve	5666.3
Percent Passing # 4	61.9

MOLDED SPECIMEN	Before Test	After Test
Specimen Diameter (in.)	4.01	4.01
Specimen Height (in.)	1.0000	1.0015
Wt. Comp. Soil + Mold (gm.)	595.3	608.8
Wt. of Mold (gm.)	180.9	180.9
Specific Gravity (Assumed)	2.70	2.70
Container No.	7	7
Wet Wt. of Soil + Cont. (gm.)	350.5	608.8
Dry Wt. of Soil + Cont. (gm.)	327.0	381.9
Wt. of Container (gm.)	50.5	180.9
Moisture Content (%)	8.5	12.0
Wet Density (pcf)	125.0	128.9
Dry Density (pcf)	115.2	115.0
Void Ratio	0.463	0.465
Total Porosity	0.317	0.318
Pore Volume (cc)	65.5	65.8
Degree of Saturation (%) [S meas]	**49.5**	**69.8**

SPECIMEN INUNDATION in distilled water for the period of 24 h or expansion rate < 0.0002 in./h.

Date	Time	Pressure (psi)	Elapsed Time (min.)	Dial Readings (in.)
2/14/19	13:00	1.0	0	0.5000
2/14/19	13:10	1.0	10	0.5000
	Add Distilled Water to the Specimen			
2/15/19	8:00	1.0	1130	0.5015
2/15/19	9:00	1.0	1190	0.5015

Expansion Index (EI meas) = ((Final Rdg - Initial Rdg) / Initial Thick.) x 1000	1.5
Expansion Index (Report) = Nearest Whole Number or Zero (0) if Initial Height is > than Final Height	**2**

Rev. 03-08

Leighton

TESTS for SULFATE CONTENT
CHLORIDE CONTENT and pH of SOILS

Project Name: Stratham Homes/Fontana/Geo Inv Tested By : M. Vinet Date: 02/15/19

Project No. : 12282.001 Data Input By: M. Vinet Date: 02/18/19

Boring No.	TP-4			
Sample No.	B-1			
Sample Depth (ft)	2.0 - 5.0			
Soil Identification:	(GP)s			
Wet Weight of Soil + Container (g)	100.0			
Dry Weight of Soil + Container (g)	100.0			
Weight of Container (g)	0.0			
Moisture Content (%)	0.0			
Weight of Soaked Soil (g)	100.0			

SULFATE CONTENT, Hach Kit Method

Dilution : 1	3			
Water Fraction (ml)	25			
Tube Reading	50			
PPM Sulfate	**150**			
% Sulfate	0.0150			

CHLORIDE CONTENT, DOT California Test 422

ml of Extract For Titration (B)	30			
ml of AgNO3 Soln. Used in Titration (C)	0.2			
PPM of Chloride (C -0.2) * 100 * 30 / B	0			
PPM of Chloride, Dry Wt. Basis	**0**			

pH TEST, DOT California Test 643

pH Value	**6.19**			
Temperature °C	21.0			

Leighton

SOIL RESISTIVITY TEST

DOT CA TEST 643

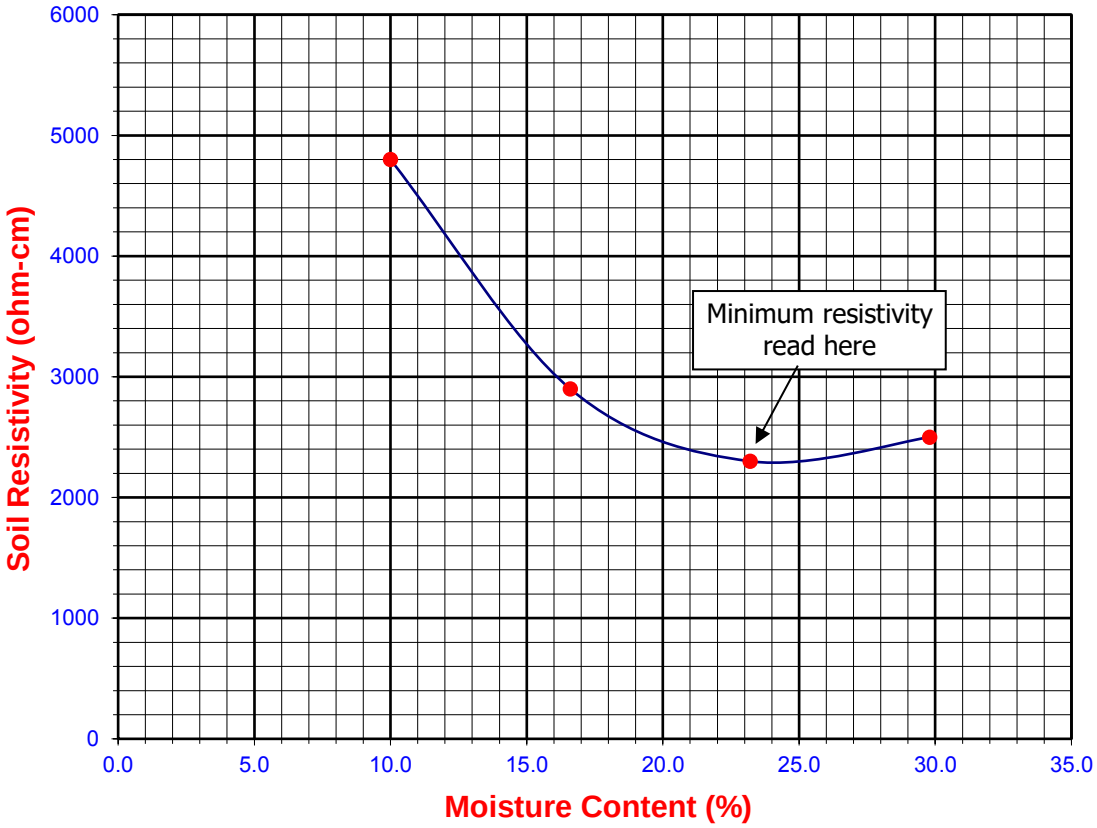
Project Name:	Stratham Homes/Fontana/Geo Inv	Tested By :	M. Vinet	Date:	02/15/19
Project No. :	12282.001	Data Input By:	M. Vinet	Date:	02/18/19
Boring No.:	TP-4	Depth (ft.) :	2.0 - 5.0		
Sample No. :	B-1				
Soil Identification:*	(GP)s				

*California Test 643 requires soil specimens to consist only of portions of samples passing through the No. 8 US Standard Sieve before resistivity testing. Therefore, this test method may not be representative for coarser materials.

Specimen No.	Water Added (ml) (Wa)	Adjusted Moisture Content (MC)	Resistance Reading (ohm)	Soil Resistivity (ohm-cm)
1	50	10.00	4800	4800
2	83	16.60	2900	2900
3	116	23.20	2300	2300
4	149	29.80	2500	2500
5				

Moisture Content (%) (MCi)	0.00
Wet Wt. of Soil + Cont. (g)	100.00
Dry Wt. of Soil + Cont. (g)	100.00
Wt. of Container (g)	0.00
Container No.	A
Initial Soil Wt. (g) (Wt)	500.00
Box Constant	1.000
MC =(((1+Mci/100)x(Wa/Wt+1))-1)x100	

Min. Resistivity (ohm-cm)	Moisture Content (%)	Sulfate Content (ppm)	Chloride Content (ppm)	Soil pH	
				pH	Temp. (°C)
DOT CA Test 643		Hach Kit	DOT CA Test 422	DOT CA Test 643	
2300	**23.2**	**150**	**0**	**6.19**	**21.0**



APPENDIX D

SUMMARY OF SEISMIC HAZARD ANALYSIS

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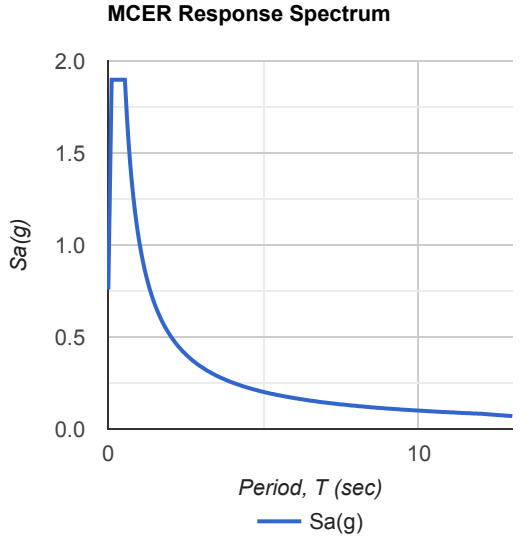
OSHPD

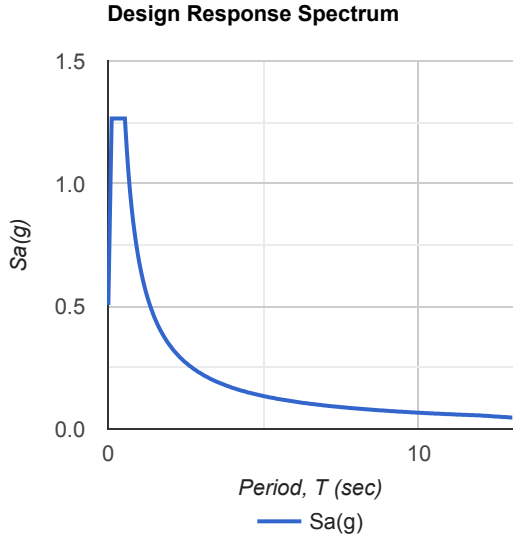
Latitude, Longitude: 34.1349, -117.4773

Date	2/18/2019, 11:57:31 AM
Design Code Reference Document	ASCE7-10
Risk Category	II
Site Class	D - Stiff Soil

Type	Value	Description
S_S	1.9	MCE_R ground motion. (for 0.2 second period)
S_1	0.677	MCE_R ground motion. (for 1.0s period)
S_{MS}	1.9	Site-modified spectral acceleration value
S_{M1}	1.016	Site-modified spectral acceleration value
S_{DS}	1.267	Numeric seismic design value at 0.2 second SA
S_{D1}	0.677	Numeric seismic design value at 1.0 second SA

Type	Value	Description
SDC	D	Seismic design category
F_a	1	Site amplification factor at 0.2 second
F_v	1.5	Site amplification factor at 1.0 second
PGA	0.719	MCE_G peak ground acceleration
F_{PGA}	1	Site amplification factor at PGA
PGA_M	0.719	Site modified peak ground acceleration
T_L	12	Long-period transition period in seconds
SsRT	2.937	Probabilistic risk-targeted ground motion. (0.2 second)
SsUH	2.805	Factored uniform-hazard (2% probability of exceedance in 50 years) spectral acceleration
SsD	1.9	Factored deterministic acceleration value. (0.2 second)
S1RT	1.14	Probabilistic risk-targeted ground motion. (1.0 second)
S1UH	1.116	Factored uniform-hazard (2% probability of exceedance in 50 years) spectral acceleration.
S1D	0.677	Factored deterministic acceleration value. (1.0 second)
PGAd	0.719	Factored deterministic acceleration value. (Peak Ground Acceleration)
C_{RS}	1.047	Mapped value of the risk coefficient at short periods
C_{R1}	1.022	Mapped value of the risk coefficient at a period of 1 s





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*    E Q F A U L T   *
*                    *
*    Version 3.00    *
*                    *
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DETERMINISTIC ESTIMATION OF
PEAK ACCELERATION FROM DIGITIZED FAULTS

JOB NUMBER: 12282.001

DATE: 02-21-2019

JOB NAME: Stratham Homes Fontana

CALCULATION NAME: Test Run Analysis

FAULT-DATA-FILE NAME: CDMGFLTE.DAT

SITE COORDINATES:
SITE LATITUDE: 34.1349
SITE LONGITUDE: 117.4773

SEARCH RADIUS: 100 mi

ATTENUATION RELATION: 20) Sadigh et al. (1997) Horiz. - Soil
UNCERTAINTY (M=Median, S=Sigma): M Number of Sigmas: 0.0
DISTANCE MEASURE: clodis
SCOND: 0
Basement Depth: 5.00 km Campbell SSR: Campbell SHR:
COMPUTE PEAK HORIZONTAL ACCELERATION

FAULT-DATA FILE USED: CDMGFLTE.DAT

MINIMUM DEPTH VALUE (km): 0.0

EQFAULT SUMMARY

DETERMINISTIC SITE PARAMETERS

Page 1

ABBREVIATED FAULT NAME	APPROXIMATE DISTANCE mi (km)	ESTIMATED MAX. EARTHQUAKE EVENT MAXIMUM EARTHQUAKE MAG.(Mw)	PEAK SITE ACCEL. g	EST. SITE INTENSITY MOD.MERC.
CUCAMONGA	2.9(4.7)	7.0	0.551	X
SAN JACINTO-SAN BERNARDINO	3.9(6.3)	6.7	0.365	IX
SAN ANDREAS - San Bernardino	9.0(14.5)	7.3	0.288	IX
SAN ANDREAS - Southern	9.0(14.5)	7.4	0.298	IX
CLEGHORN	11.6(18.6)	6.5	0.171	VIII
SAN JOSE	12.2(19.7)	6.5	0.209	VIII
SAN ANDREAS - 1857 Rupture	12.5(20.1)	7.8	0.283	IX
SAN ANDREAS - Mojave	12.5(20.1)	7.1	0.214	VIII
SIERRA MADRE	14.5(23.3)	7.0	0.233	IX
SAN JACINTO-SAN JACINTO VALLEY	16.0(25.7)	6.9	0.158	VIII
NORTH FRONTAL FAULT ZONE (West)	16.3(26.3)	7.0	0.209	VIII
CHINO-CENTRAL AVE. (Elsinore)	16.6(26.7)	6.7	0.175	VIII
WHITTIER	21.4(34.5)	6.8	0.111	VII
ELSINORE-GLEN IVY	21.4(34.5)	6.8	0.111	VII
CLAMSHELL-SAWPIT	22.3(35.9)	6.5	0.113	VII
ELYSIAN PARK THRUST	25.7(41.3)	6.7	0.110	VII
RAYMOND	30.3(48.7)	6.5	0.078	VII
ELSINORE-TEMECULA	34.8(56.0)	6.8	0.064	VI
VERDUGO	35.7(57.5)	6.7	0.074	VII
HELENDALE - S. LOCKHARDT	36.5(58.8)	7.1	0.075	VII
COMPTON THRUST	37.3(60.0)	6.8	0.075	VII
NORTH FRONTAL FAULT ZONE (East)	39.5(63.5)	6.7	0.065	VI
SAN JACINTO-ANZA	42.1(67.7)	7.2	0.067	VI
HOLLYWOOD	43.1(69.3)	6.4	0.045	VI
PINTO MOUNTAIN	43.5(70.0)	7.0	0.056	VI
NEWPORT-INGLEWOOD (L.A.Basin)	43.7(70.4)	6.9	0.051	VI
NEWPORT-INGLEWOOD (Offshore)	45.1(72.6)	6.9	0.049	VI
SAN GABRIEL	47.6(76.6)	7.0	0.050	VI
SIERRA MADRE (San Fernando)	47.7(76.8)	6.7	0.050	VI
LENWOOD-LOCKHART-OLD WOMAN SPRGS	49.6(79.9)	7.3	0.059	VI
PALOS VERDES	52.6(84.6)	7.1	0.047	VI
JOHNSON VALLEY (Northern)	53.1(85.4)	6.7	0.034	V
SANTA MONICA	53.4(85.9)	6.6	0.040	V
NORTHRIDGE (E. Oak Ridge)	54.2(87.3)	6.9	0.050	VI
LANDERS	57.7(92.8)	7.3	0.049	VI
ELSINORE-JULIAN	58.7(94.5)	7.1	0.041	V
SAN ANDREAS - Coachella	59.5(95.7)	7.1	0.040	V
SANTA SUSANA	59.7(96.0)	6.6	0.034	V
GRAVEL HILLS - HARPER LAKE	59.8(96.3)	6.9	0.034	V
EMERSON So. - COPPER MTN.	60.3(97.1)	6.9	0.033	V

DETERMINISTIC SITE PARAMETERS

ABBREVIATED FAULT NAME	APPROXIMATE DISTANCE mi (km)	ESTIMATED MAX. EARTHQUAKE EVENT MAXIMUM EARTHQUAKE MAG.(Mw)	PEAK SITE ACCEL. g	EST. SITE INTENSITY MOD.MERC.
MALIBU COAST	60.7(97.7)	6.7	0.036	V
BURNT MTN.	61.3(98.7)	6.4	0.021	IV
EUREKA PEAK	62.0(99.7)	6.4	0.021	IV
HOLSER	64.3(103.5)	6.5	0.028	V
CORONADO BANK	65.2(104.9)	7.4	0.045	VI
CALICO - HIDALGO	65.8(105.9)	7.1	0.035	V
BLACKWATER	66.9(107.6)	6.9	0.029	V
ROSE CANYON	69.5(111.9)	6.9	0.027	V
ANACAPA-DUME	70.4(113.3)	7.3	0.048	VI
SAN ANDREAS - Carrizo	70.7(113.8)	7.2	0.034	V
PISGAH-BULLION MTN.-MESQUITE LK	71.7(115.4)	7.1	0.031	V
SAN JACINTO-COYOTE CREEK	72.6(116.8)	6.8	0.024	IV
OAK RIDGE (Onshore)	73.4(118.1)	6.9	0.033	V
SIMI-SANTA ROSA	76.3(122.8)	6.7	0.026	V
SAN CAYETANO	76.4(122.9)	6.8	0.028	V
GARLOCK (West)	81.6(131.4)	7.1	0.026	V
EARTHQUAKE VALLEY	83.4(134.3)	6.5	0.015	IV
GARLOCK (East)	85.4(137.4)	7.3	0.029	V
SANTA YNEZ (East)	86.9(139.9)	7.0	0.022	IV
PLEITO THRUST	93.3(150.1)	7.2	0.030	V
VENTURA - PITAS POINT	96.3(154.9)	6.8	0.020	IV
WHITE WOLF	96.6(155.4)	7.2	0.028	V
SAN JACINTO - BORREGO	97.7(157.3)	6.6	0.013	III
So. SIERRA NEVADA	99.2(159.6)	7.1	0.025	V
M.RIDGE-ARROYO PARIDA-SANTA ANA	99.3(159.8)	6.7	0.018	IV
BIG PINE	99.5(160.1)	6.7	0.014	III

-END OF SEARCH- 66 FAULTS FOUND WITHIN THE SPECIFIED SEARCH RADIUS.

THE CUCAMONGA FAULT IS CLOSEST TO THE SITE.
IT IS ABOUT 2.9 MILES (4.7 km) AWAY.

LARGEST MAXIMUM-EARTHQUAKE SITE ACCELERATION: 0.5510 g

APPENDIX E

GENERAL EARTHWORK AND GRADING SPECIFICATIONS

Leighton

LEIGHTON AND ASSOCIATES, INC.

GENERAL EARTHWORK AND GRADING SPECIFICATIONS FOR ROUGH GRADING

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1.0 General

1.1 Intent: These General Earthwork and Grading Specifications are for the grading and earthwork shown on the approved grading plan(s) and/or indicated in the geotechnical report(s). These Specifications are a part of the recommendations contained in the geotechnical report(s). In case of conflict, the specific recommendations in the geotechnical report shall supersede these more general Specifications. Observations of the earthwork by the project Geotechnical Consultant during the course of grading may result in new or revised recommendations that could supersede these specifications or the recommendations in the geotechnical report(s).

1.2 The Geotechnical Consultant of Record: Prior to commencement of work, the owner shall employ the Geotechnical Consultant of Record (Geotechnical Consultant). The Geotechnical Consultants shall be responsible for reviewing the approved geotechnical report(s) and accepting the adequacy of the preliminary geotechnical findings, conclusions, and recommendations prior to the commencement of the grading.

Prior to commencement of grading, the Geotechnical Consultant shall review the "work plan" prepared by the Earthwork Contractor (Contractor) and schedule sufficient personnel to perform the appropriate level of observation, mapping, and compaction testing.

During the grading and earthwork operations, the Geotechnical Consultant shall observe, map, and document the subsurface exposures to verify the geotechnical design assumptions. If the observed conditions are found to be significantly different than the interpreted assumptions during the design phase, the Geotechnical Consultant shall inform the owner, recommend appropriate changes in design to accommodate the observed conditions, and notify the review agency where required. Subsurface areas to be geotechnically observed, mapped, elevations recorded, and/or tested include natural ground after it has been cleared for receiving fill but before fill is placed, bottoms of all "remedial removal" areas, all key bottoms, and benches made on sloping ground to receive fill.

The Geotechnical Consultant shall observe the moisture-conditioning and processing of the subgrade and fill materials and perform relative compaction testing of fill to determine the attained level of compaction. The Geotechnical Consultant shall provide the test results to the owner and the Contractor on a routine and frequent basis.

1.3 The Earthwork Contractor: The Earthwork Contractor (Contractor) shall be qualified, experienced, and knowledgeable in earthwork logistics, preparation and processing of ground to receive fill, moisture-conditioning and processing of fill, and compacting fill. The Contractor shall review and accept the plans, geotechnical report(s), and these Specifications prior to commencement of grading. The

Contractor shall be solely responsible for performing the grading in accordance with the plans and specifications.

The Contractor shall prepare and submit to the owner and the Geotechnical Consultant a work plan that indicates the sequence of earthwork grading, the number of "spreads" of work and the estimated quantities of daily earthwork contemplated for the site prior to commencement of grading. The Contractor shall inform the owner and the Geotechnical Consultant of changes in work schedules and updates to the work plan at least 24 hours in advance of such changes so that appropriate observations and tests can be planned and accomplished. The Contractor shall not assume that the Geotechnical Consultant is aware of all grading operations.

The Contractor shall have the sole responsibility to provide adequate equipment and methods to accomplish the earthwork in accordance with the applicable grading codes and agency ordinances, these Specifications, and the recommendations in the approved geotechnical report(s) and grading plan(s). If, in the opinion of the Geotechnical Consultant, unsatisfactory conditions, such as unsuitable soil, improper moisture condition, inadequate compaction, insufficient buttress key size, adverse weather, etc., are resulting in a quality of work less than required in these specifications, the Geotechnical Consultant shall reject the work and may recommend to the owner that construction be stopped until the conditions are rectified.

2.0 Preparation of Areas to be Filled

2.1 Clearing and Grubbing: Vegetation, such as brush, grass, roots, and other deleterious material shall be sufficiently removed and properly disposed of in a method acceptable to the owner, governing agencies, and the Geotechnical Consultant.

The Geotechnical Consultant shall evaluate the extent of these removals depending on specific site conditions. Earth fill material shall not contain more than 1 percent of organic materials (by volume). No fill lift shall contain more than 5 percent of organic matter. Nesting of the organic materials shall not be allowed.

If potentially hazardous materials are encountered, the Contractor shall stop work in the affected area, and a hazardous material specialist shall be informed immediately for proper evaluation and handling of these materials prior to continuing to work in that area.

As presently defined by the State of California, most refined petroleum products (gasoline, diesel fuel, motor oil, grease, coolant, etc.) have chemical constituents that are considered to be hazardous waste. As such, the indiscriminate dumping or spillage of these fluids onto the ground may constitute a misdemeanor, punishable by fines and/or imprisonment, and shall not be allowed.

2.2 Processing: Existing ground that has been declared satisfactory for support of fill by the Geotechnical Consultant shall be scarified to a minimum depth of 6 inches. Existing ground that is not satisfactory shall be overexcavated as specified in the following section. Scarification shall continue until soils are broken down and free of large clay lumps or clods and the working surface is reasonably uniform, flat, and free of uneven features that would inhibit uniform compaction.

2.3 Overexcavation: In addition to removals and overexcavations recommended in the approved geotechnical report(s) and the grading plan, soft, loose, dry, saturated, spongy, organic-rich, highly fractured or otherwise unsuitable ground shall be overexcavated to competent ground as evaluated by the Geotechnical Consultant during grading.

2.4 Benching: Where fills are to be placed on ground with slopes steeper than 5:1 (horizontal to vertical units), the ground shall be stepped or benched. Please see the Standard Details for a graphic illustration. The lowest bench or key shall be a minimum of 15 feet wide and at least 2 feet deep, into competent material as evaluated by the Geotechnical Consultant. Other benches shall be excavated a minimum height of 4 feet into competent material or as otherwise recommended by the Geotechnical Consultant. Fill placed on ground sloping flatter than 5:1 shall also be benched or otherwise overexcavated to provide a flat subgrade for the fill.

2.5 Evaluation/Acceptance of Fill Areas: All areas to receive fill, including removal and processed areas, key bottoms, and benches, shall be observed, mapped, elevations recorded, and/or tested prior to being accepted by the Geotechnical Consultant as suitable to receive fill. The Contractor shall obtain a written acceptance from the Geotechnical Consultant prior to fill placement. A licensed surveyor shall provide the survey control for determining elevations of processed areas, keys, and benches.

3.0 Fill Material

3.1 General: Material to be used as fill shall be essentially free of organic matter and other deleterious substances evaluated and accepted by the Geotechnical Consultant prior to placement. Soils of poor quality, such as those with unacceptable gradation, high expansion potential, or low strength shall be placed in areas acceptable to the Geotechnical Consultant or mixed with other soils to achieve satisfactory fill material.

3.2 Oversize: Oversize material defined as rock, or other irreducible material with a maximum dimension greater than 8 inches, shall not be buried or placed in fill unless location, materials, and placement methods are specifically accepted by the Geotechnical Consultant. Placement operations shall be such that nesting of oversized material does not occur and such that oversize material is completely surrounded by compacted or densified fill. Oversize material shall not be placed within 10 vertical feet of finish grade or within 2 feet of future utilities or underground construction.

3.3 Import: If importing of fill material is required for grading, proposed import material shall meet the requirements of Section 3.1. The potential import source shall be given to the Geotechnical Consultant at least 48 hours (2 working days) before importing begins so that its suitability can be determined and appropriate tests performed.

4.0 Fill Placement and Compaction

4.1 Fill Layers: Approved fill material shall be placed in areas prepared to receive fill (per Section 3.0) in near-horizontal layers not exceeding 8 inches in loose thickness. The Geotechnical Consultant may accept thicker layers if testing indicates the grading procedures can adequately compact the thicker layers. Each layer shall be spread evenly and mixed thoroughly to attain relative uniformity of material and moisture throughout.

4.2 Fill Moisture Conditioning: Fill soils shall be watered, dried back, blended, and/or mixed, as necessary to attain a relatively uniform moisture content at or slightly over optimum. Maximum density and optimum soil moisture content tests shall be performed in accordance with the American Society of Testing and Materials (ASTM Test Method D1557-91).

4.3 Compaction of Fill: After each layer has been moisture-conditioned, mixed, and evenly spread, it shall be uniformly compacted to not less than 90 percent of maximum dry density (ASTM Test Method D1557-91). Compaction equipment shall be adequately sized and be either specifically designed for soil compaction or of proven reliability to efficiently achieve the specified level of compaction with uniformity.

4.4 Compaction of Fill Slopes: In addition to normal compaction procedures specified above, compaction of slopes shall be accomplished by backrolling of slopes with sheepsfoot rollers at increments of 3 to 4 feet in fill elevation, or by other methods producing satisfactory results acceptable to the Geotechnical Consultant. Upon completion of grading, relative compaction of the fill, out to the slope face, shall be at least 90 percent of maximum density per ASTM Test Method D1557-91.

4.5 Compaction Testing: Field tests for moisture content and relative compaction of the fill soils shall be performed by the Geotechnical Consultant. Location and frequency of tests shall be at the Consultant's discretion based on field conditions encountered. Compaction test locations will not necessarily be selected on a random basis. Test locations shall be selected to verify adequacy of compaction levels in areas that are judged to be prone to inadequate compaction (such as close to slope faces and at the fill/bedrock benches).

4.6 Frequency of Compaction Testing: Tests shall be taken at intervals not exceeding 2 feet in vertical rise and/or 1,000 cubic yards of compacted fill soils embankment. In addition, as a guideline, at least one test shall be taken on slope faces for each 5,000 square feet of slope face and/or each 10 feet of vertical height of slope. The Contractor shall assure that fill construction is such that the testing schedule can be accomplished by the Geotechnical Consultant. The Contractor shall stop or slow down the earthwork construction if these minimum standards are not met.

4.7 Compaction Test Locations: The Geotechnical Consultant shall document the approximate elevation and horizontal coordinates of each test location. The Contractor shall coordinate with the project surveyor to assure that sufficient grade stakes are established so that the Geotechnical Consultant can determine the test locations with sufficient accuracy. At a minimum, two grade stakes within a horizontal distance of 100 feet and vertically less than 5 feet apart from potential test locations shall be provided.

5.0 Subdrain Installation

Subdrain systems shall be installed in accordance with the approved geotechnical report(s), the grading plan, and the Standard Details. The Geotechnical Consultant may recommend additional subdrains and/or changes in subdrain extent, location, grade, or material depending on conditions encountered during grading. All subdrains shall be surveyed by a land surveyor/civil engineer for line and grade after installation and prior to burial. Sufficient time should be allowed by the Contractor for these surveys.

6.0 Excavation

Excavations, as well as over-excavation for remedial purposes, shall be evaluated by the Geotechnical Consultant during grading. Remedial removal depths shown on geotechnical plans are estimates only. The actual extent of removal shall be determined by the Geotechnical Consultant based on the field evaluation of exposed conditions during grading. Where fill-over-cut slopes are to be graded, the cut portion of the slope shall be made, evaluated, and accepted by the Geotechnical Consultant prior to placement of materials for construction of the fill portion of the slope, unless otherwise recommended by the Geotechnical Consultant.

7.0 Trench Backfills

7.1 Safety: The Contractor shall follow all OHSA and Cal/OSHA requirements for safety of trench excavations.

7.2 Bedding and Backfill: All bedding and backfill of utility trenches shall be done in accordance with the applicable provisions of Standard Specifications of Public Works Construction. Bedding material shall have a Sand Equivalent greater than 30 (SE>30). The bedding shall be placed to 1 foot over the top of the conduit and densified by jetting. Backfill shall be placed and densified to a minimum of 90 percent of maximum from 1 foot above the top of the conduit to the surface.

The Geotechnical Consultant shall test the trench backfill for relative compaction. At least one test should be made for every 300 feet of trench and 2 feet of fill.

7.3 Lift Thickness: Lift thickness of trench backfill shall not exceed those allowed in the Standard Specifications of Public Works Construction unless the Contractor can demonstrate to the Geotechnical Consultant that the fill lift can be compacted to the minimum relative compaction by his alternative equipment and method.

7.4 Observation and Testing: The jetting of the bedding around the conduits shall be observed by the Geotechnical Consultant.

Appendix G
Geotechnical Investigation Peer Review

HIGHLAND RESIDENTIAL PROJECT
INITIAL STUDY

February 24, 2020
J.N. 19-368

MICHAEL BAKER INTERNATIONAL
3536 Concours Street, Suite 100
Ontario, California 91764

Attention: Ms. Emily Elliott

Subject: Peer Review of Geotechnical Investigation Report, City of Fontana Master Case 19-096, Tentative Tract 20297, Proposed 107 Condominium Units, 10.2-Acre Site off South Highland Drive near Hemlock Avenue, City of Fontana, County of San Bernardino, California

Reference: Leighton and Associates, Inc., 2019, Geotechnical Investigation, Proposed Residential Development, APN 0228-021-08 and -09, North of Highland Avenue and East of San Sevaine Road, City of Fontana, California, Project No. 12282.001, *prepared for Stratham Homes, Inc*., dated March 7

Dear Ms. Elliott:

Petra Geosciences, Inc. (Petra) is providing herein our geotechnical peer review of the previous geotechnical investigation report prepared by Leighton and Associates, Inc. (Leighton, 2019) for development the subject site. The purpose of our review was to evaluate and comment on the Leighton report with respect to the proposed development, as required in support of a Mitigated Negative Declaration. This report presents our findings and professional opinions with respect to the geotechnical feasibility of the proposed development and any constraints that should be taken into consideration during development of the site from a geotechnical engineering viewpoint.

It must be emphasized that that this report is intended as a preliminary-level geotechnical review only and is based solely on a review of the referenced geotechnical report and reported soil test data. It should be further noted that this geotechnical evaluation does not necessarily address soil contamination or other environmental issues affecting the property.

GEOTECHNICAL PEER REVIEW

Literature Review and Site Reconnaissance

Petra has reviewed the 2019 "Geotechnical Investigation" report prepared by Leighton (see reference). Additionally, we reviewed available online aerial imagery and published geologic maps and literature pertaining to the general vicinity of the project site. A representative of Petra conducted a site reconnaissance and performed photo documentation on January 8, 2020 to evaluate the current conditions of the property.

SITE RECONNAISSANCE AND PROPOSED DEVELOMPENT

The subject 10.2± acre site is located south of State Route (SR) 210, east of San Sevaine Road, north of Highland Avenue, and west of Hemlock Avenue in the city of Fontana, California. The site is bounded by the Inland Valley Islamic Society building and parking lot to the east. Residential development is further to the south and similar, vacant land to the west. A wrought iron fence is present on the east and chain link fencing separates the site with the freeway on the north. A row of mature trees is located along the northern edge, as well as a stand of trees in the northeastern corner. Several remnant concrete slabs, concrete/cobble wall rubble and a possible cistern, related to an abandoned residence, are also located in the northeastern corner.

We understand the proposed development of Tentative Tract 20297 will consist of 107 alley-loaded condominium residential building pads and a recreation center. The residences are assumed to be two stories and of wood-frame construction with first floor slabs constructed on-grade. The development will also be supported by in-tract streets, underground infrastructure including sewer, storm drain, water and dry utility lines, as well as concrete sidewalks/flatwork and landscaped areas. No significant slopes are anticipated.

FINDINGS

Literature Review

As noted, Petra has reviewed the 2019 geotechnical investigation report by Leighton. Noteworthy findings made from our review are discussed herein with any commentary Petra in parenthesis.

- The report concluded that based on the results of the exploration and analyses, the proposed improvements are considered feasible from a geotechnical standpoint, provided the recommendations presented are properly incorporated into design and construction. The existing fill is undocumented and deemed not to be suitable for support of foundations.

- The geotechnical study included: review of available geotechnical reports, historic aerial photographs and geologic data; subsurface exploration included nine exploratory test pits (TP-1 to TP-9) with three of the test pits (TP-2, TP-4 and TP-8) used for percolation testing; laboratory testing of selected soil samples; geotechnical evaluation/analyses of data; and report preparation.

- The nine test pits were excavated to depths ranging from 5 to 9 feet below ground surface (bgs). Bulk soil samples were collected. The test pit logs/photos are presented in Appendix B.

- Laboratory testing was performed for the following: in-situ moisture and density, consolidation, direct shear, expansion index, maximum dry density/optimum moisture content, sieve analysis for grain-size distribution, expansion index, sulfate concentration, chloride content, pH and resistivity. The laboratory data are presented in Appendix C.

- Three of the test pits (TP-2, TP-4 and TP-8) were utilized for percolation testing. In-situ shallow percolation testing was performed in general accordance with the 2011 San Bernardino County Stormwater Program Technical Guidance Document. Field test data is also presented in Appendix B.

- The site is underlain by alluvial soil deposits mantled by undocumented artificial fill, which is generally up to 3 feet thick and consists of silty sand and silty sand with gravel. The alluvial soil consisted of gravel, sand and silty sand. (*Petra: Two test pits encountered 1 foot of fill, five test pits encountered 1.5 feet of fill, one test pit encountered 2 feet of fill and one test pit encountered 3 feet of fill. It appears the average depth of fill is on the order of 1.5 feet across the site.)*

- Groundwater was not encountered to the maximum explored depth of 9 feet below bgs. California Department of Water resources roughly estimates that the historically high groundwater level to be approximately 372 feet bgs at 0.5 mile north of the site.

- Laboratory testing on one sample for expansion index indicated a negligible to very low expansion potential for onsite soils. Test for soil corrosivity indicated a soluble sulfate concentration of 0.02 percent by weight, chloride content of 0 ppm, pH of 6.0 and minimum resistivity of 2,300 ohm-cm. These results indicate the underlying soil are corrosive to buried ferrous metals, have a negligible exposure to sulfate attack to concrete materials and a low potential of corrosion of steel in concrete due to chlorides. Additional testing for expansion is recommended during site grading to confirm and further evaluation by a corrosion engineer may be warranted if mettalic utilities are planned. (*Petra: We concur that additional testing is recommended for both expansion and corrosion potential at the completion of site grading*.)

- Tested soils had a negligible collapse potential; however, the undocumented artificial fill and upper portion of native soils are considered slightly compressible and subject to remedial grading.

- The three measured infiltration rates ranged from 7 to 26.5 inches per hour (no factor of safety or correction factors applied). An infiltration rate of 3 to 5 inches per hour is recommended for preliminary design. The variance in measured infiltration rates can be attributed to slightly finer grained materials in the upper 10 feet and varying, non-continuous stratigraphy across the site. The measured infiltration rates may degrade over time due to complete saturation of underlying soils and fines build-up, and plugging if pretreatment of the storm water is not performed. As such, a reduction of the measured infiltration rates using a factor of safety of at least 2 for buried chambers and at least 3 for open basins or more should be considered.

- No active faults are mapped or know to cross the site and the site is not located within an Alquist-Priolo Earthquake Fault Zone. The potential for surface fault rupture at the site is expected to be low. The closest active fault is the Cucamonga Fault approximately 3 miles to the north.

- The principal seismic hazard to the site is ground shaking resulting from an earthquake along several major active and potential active faults in southern California. The peak horizontal ground acceleration (PGA_m) from the maximum considered earthquake is 0.72g for a Site Class D per USGS Seismic Design Parameter Calculator for the 2016 CBC design reference.

- The potential for seismic hazards due to secondary effects of earthquakes, including surface fault rupture, liquefaction, lateral spreading, landslides and flooding, is considered to be low.

- Prior to construction, the site should be cleared of vegetation, trash and/or debris in areas of proposed grading. Any existing utility lines within the construction area should be removed or rerouted and any resulting cavities should be properly backfilled and compacted. The geotechnical engineer should observe site soils during clearing.

- All unsuitable deposits and undocumented fill soils should be excavated and removed below the proposed structure footprints leaving a minimum of 2 feet of compacted fill below proposed building footings or a minimum depth of 3 feet bgs, whichever is deeper. Deeper over excavation and recompaction may be recommended locally until a firm bottom is achieved. After overexcavation and prior to fill placement the exposed bottom soils should be scarified to a minimum depth of 6 inches, moisture conditioned to at or slightly above optimum moisture and recompacted to at least 90 percent relative compaction based on ASTM D1557. Any soft or unsuitable material encountered at the bottom of the excavations should be removed and replaced with compacted fill.

- Onsite soils free of organics, debris and/or oversize material greater than 12 inches, are suitable for use as fill. All fill soils should be placed in thin loose lifts, moisture-conditioned to at least optimum moisture content and compacted to a minimum of 90 percent of the maximum dry density by ASTM D1557.

- Preliminary estimates for earth volume changes occurring during grading include shrinkage of approximately 10 to 15 percent and subsidence of overexcavation bottoms of approximately 0.1 foot.

- Oversize material (greater than 12 inches in dimension) should not be placed in the upper 3 feet of all fill areas. Rock larger than 12 inches and up to 24 inches may be placed in fill at depth of 3 feet or more below finish grades. Rock up to 36 inches may be placed in windrows below a depth of 5 feet, placed with copious amounts of water and sandy soils to fill voids. Nesting of rocks should not occur.

- The proposed structures may be supported on shallow spread-type foundations and floor slabs supported on-grade. Footings should have a minimum embedment depth per code requirements and have a minimum width of 12 inches for continues footings or 24 inches for isolated footings. Footings may be designed to impose an allowable bearing pressure of 2,000 pounds per square foot. The estimated total settlement of the structures supported on spread footings is less than 1 inch. Differential settlement is estimated to be less than 0.5 inch over a horizontal distance of 40 feet. (*Petra: In view of the recent code change, recommendations for foundation and seismic design should consider the current 2019 California Building Code*.)

- Based on an assumed R-value of 50 pavement design sections are as follows:

  - Traffic Index of 5 or less: 3 inches asphalt over 4 inches aggregate base
  - Traffic Index of 7: 4 inches asphalt over 4 inches aggregate base

  (*Petra: Final pavement design should be performed at the completion of site grading and the pavement sections could change from those presented*.)

CONCLUSIONS AND RECOMMENDATIONS

Primary Geotechnical Considerations

Our professional opinion from a geotechnical engineering viewpoint, regarding various aspects of site conditions and/or development, is in substantial agreement with those presented in the Leighton report. The following presents the salient points of our geotechnical review that we recommend be considered for future site development.

- Grading Plan Review - The final grading plans should be reviewed by the geotechnical consultant and provide any necessary modified geotechnical recommendations if applicable.

- Demolition, Clearing and Grubbing - Prior to site grading, any existing structures or improvements should be demolished and removed from the site. All areas to be graded should be cleared of vegetation, trash, construction debris or any other deleterious materials and hauled offsite.

- Remedial Grading - Based on the Leighton investigation report, all existing fills should be removed to natural soils, reported to be between 1 and 3 feet in depth. Additionally, the existing site soils should be overexcavated at least 3 feet below existing grades or 2 feet below the bottom of the proposed footings, whichever is deeper and at least 5 feet beyond the building footprint. Deeper overexcavation is possible if unsuitable soils are exposed in the excavation bottom and should be observed and approved by the geotechnical consultant. The bottom of overexcavation surfaces should be scarified at least 6 inches, moisture conditioned to or slightly above optimum moisture content and recompacted to at least 90 percent relative compaction prior to fill placement and compaction of fills to finish pad grades.

- Expansion and Corrosion Potential of Soils to Foundations - Based on previous testing by Leighton, site soils have a very low expansion potential, a negligible exposure to soluble sulfates and may be corrosive to buried metallic elements in direct contact with site soils. Additional sampling and testing are recommended during future site grading to confirm the soil expansion and corrosion potential at or below finish pad grades. A corrosion engineer may need to be consulted if mettalic elements are proposed in direct contact with site soils.

- Foundation Design - Following site grading, the seismic and foundation design recommendations for the structures should be updated to the current 2019 California Building Code (CBC) based on the as-graded soil conditions. Based on the reported soil types encountered within the site, conventional foundations may be utilized.

Site Suitability

Based on our site reconnaissance of the site and literature review of the Leighton geotechnical report, development of the proposed improvements within this project site, as currently understood, is feasible from a geotechnical standpoint. Geologic/geotechnical constraints identified in the Leighton report and/or identified by herein by Petra are of a nature that they may be mitigated by measures commensurate with the current state of the industry.

REPORT LIMITATIONS

This report is based on the subject site, the geotechnical observations made during our reconnaissance, and our literature review of the current consultant's preliminary geotechnical report. The reported soil materials and conditions are believed to be representative of the general site conditions; however, soil conditions can vary in characteristics between excavations, both laterally and vertically, especially considering the previous development and undocumented fills within the site.

The conclusions and opinions contained in this report are based on the results of the described geotechnical evaluations and represent our professional judgment. This report has been prepared consistent with that level of care being provided by other professionals providing similar services at the same locale and in the same time period.

The contents of this report are professional opinions and as such, are not to be considered a guaranty or warranty. This report should be reviewed and updated after a period of one year or if the site ownership or project concept changes from that described herein.

This report has not been prepared for use by parties or projects other than those named or described herein. This report may not contain sufficient information for other parties or other purposes.

This opportunity to be of service is sincerely appreciated. If you have any additional questions or concerns, please feel free contact this office.

Respectfully submitted,

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Appendix H
Greenhouse Gas Emissions Technical Memorandum

HIGHLAND RESIDENTIAL PROJECT
INITIAL STUDY

Michael Baker INTERNATIONAL

We Make a Difference

MEMORANDUM

To: Emily Elliott, Michael Baker International

From: Eddie Torres, Michael Baker International
Zhe Chen, Michael Baker International

Date: April 23, 2020

Subject: Highland Residential Project – Greenhouse Gas Emissions Technical Memorandum

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PURPOSE

The purpose of this technical memorandum is to evaluate potential greenhouse gas (GHG) impacts resulting from the construction and operation of the proposed Highland Residential Project (project), located in the City of Fontana (City), California.

PROJECT LOCATION

The project is located at 14973 South Highland Avenue, on the north side of South Highland Avenue between Hemlock Avenue and San Sevaine Road in the City. The City is located in the southwestern portion of San Bernardino County (County). The City is bounded by the San Bernardino National Forest to the north, the City of Rialto to the east, the Jurupa Hills to the south, and unincorporated San Bernardino County and the Cities of Rancho Cucamonga and Ontario to the west. The City's Sphere of Influence extends north to the San Bernardino National Forest and west to the Cities of Rancho Cucamonga and Ontario.

Regional access to the site is available via State Route 210 (SR-210) at the Cherry Avenue exit, which is approximately one-half mile to the west of the site, and via Interstate 15 (I-15) at the Sierra Avenue exit, which is approximately 2.2 miles to the southwest of the site. Local access to the site is provided via South Highland Avenue and San Sevaine Road.

The project includes two parcels (APNs: 0228-021-08 and 0228-021-09) totaling approximately 10.2 acres.

EXISTING SITE CONDITIONS

The proposed project site is located on the gently sloping alluvial plain descending southward from the San Gabriel Mountains within the northern portion of the City. The project site currently consists of vacant land and the site's natural vegetation has been largely removed. The site is unimproved and there are no existing structures onsite. The topography of the site is relatively flat. The site drains to the southwest, the highest elevation is approximately 1,449 feet at the northeast corner of the site, and the lowest elevation is approximately 1,424 feet in the southwest corner of the site, an approximate elevation

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difference of 25 feet. Concrete debris and cobbles and concrete slabs exist onsite, which appear to cover a cistern system.

The project site is surrounded by SR-210 to the north; a church facility to the east; residential development to the south; and vacant land to the west.

PROJECT DESCRIPTION

The project proposes development of a residential community involving construction of 107 multi-family detached units and associated infrastructure and improvements including private roads, sidewalks, landscaping, utilities, infiltration basins/drainage facilities, and parking. The community would be gate guarded and would construct on-site recreational facilities, including a community pool and clubhouse, tot lot, dog park, and exercise area. The dwelling units would be two-stories with two-car attached garages ranging in size from 1,400 square feet to 2,200 square feet. The project would also include General Plan Amendment No. 19-006 (General Commercial to Medium Density Residential) and Zone Change (General Commercial to Medium Density Residential).

Project construction would occur over approximately 14 months, beginning in March 2021. Construction of the project would include the following phases: site preparation, grading, building construction, paving, and architectural coating. It is anticipated that the project would be completed and operational by April 2022.

GLOBAL CLIMATE CHANGE

California is a substantial contributor of global greenhouse gases (GHGs), emitting over 420 million metric tons of carbon dioxide equivalent ($MMTCO_2e$) per year.[1] Methane (CH_4) is also an important GHG that potentially contributes to global climate change. GHGs are global in their effect, which is to increase the earth's ability to absorb heat in the atmosphere. As primary GHGs have a long lifetime in the atmosphere, accumulate over time, and are generally well-mixed, their impact on the atmosphere is mostly independent of the point of emission. Every nation emits GHGs and as a result makes an incremental cumulative contribution to global climate change; therefore, global cooperation will be required to reduce the rate of GHG emissions enough to slow or stop the human-caused increase in average global temperatures and associated changes in climatic conditions.

The impact of human activities on global climate change is apparent in the observational record. Air trapped by ice has been extracted from core samples taken from polar ice sheets to determine the global atmospheric variation of CO_2, CH_4, and nitrous oxide (N_2O) from before the start of industrialization (approximately 1750), to over 650,000 years ago. For that period, it was found that CO_2 concentrations ranged from 180 to 300 parts per million (ppm). For the period from approximately 1750 to the present, global CO_2 concentrations increased from a pre-industrialization period concentration of 280 to 379 ppm in 2005, with the 2005 value far exceeding the upper end of the pre-industrial period range. As of March 2020, the highest monthly average concentration of CO_2 in the atmosphere was recorded at 416 ppm.[2]

[1] California Air Resources Board, *California Greenhouse Gas Emissions for 2000 to 2017,* https://ww3.arb.ca.gov/cc/inventory/pubs/reports/2000_2017/ghg_inventory_trends_00-17.pdf, accessed March 30, 2020.

[2] Scripps Institution of Oceanography, *Carbon Dioxide Concentration at Mauna Loa Observatory*, https://scripps.ucsd.edu/programs/keelingcurve/, accessed March 30, 2020.

The Intergovernmental Panel on Climate Change (IPCC) constructed several emission trajectories of GHGs needed to stabilize global temperatures and climate change impacts. It concluded that a stabilization of GHGs at 400 to 450 ppm carbon dioxide equivalent (CO_2e)[3] concentration is required to keep global mean warming below 2 degrees Celsius (°C), which in turn is assumed to be necessary to avoid dangerous climate change.

REGULATORY SETTING

Federal

To date, no national standards have been established for nationwide GHG reduction targets, nor have any regulations or legislation been enacted specifically to address climate change and GHG emissions reduction at the project level. Various efforts have been promulgated at the federal level to improve fuel economy and energy efficiency to address climate change and its associated effects.

Energy Independence and Security Act of 2007. The Energy Independence and Security Act of 2007 (December 2007), among other key measures, requires the following, which would aid in the reduction of national GHG emissions:

- Increase the supply of alternative fuel sources by setting a mandatory Renewable Fuel Standard requiring fuel producers to use at least 36 billion gallons of biofuel in 2022.

- Set a target of 35 miles per gallon for the combined fleet of cars and light trucks by model year 2020 and direct the National Highway Traffic Safety Administration (NHTSA) to establish a fuel economy program for medium- and heavy-duty trucks and create a separate fuel economy standard for work trucks.

- Prescribe or revise standards affecting regional efficiency for heating and cooling products and procedures for new or amended standards, energy conservation, energy efficiency labeling for consumer electronic products, residential boiler efficiency, electric motor efficiency, and home appliances.

U.S. Environmental Protection Agency Endangerment Finding. The U.S. Environmental Protection Agency's (EPA) authority to regulate GHG emissions stems from the U.S. Supreme Court decision in *Massachusetts v. EPA* (2007). The Supreme Court ruled that GHGs meet the definition of air pollutants under the existing Clean Air Act and must be regulated if these gases could be reasonably anticipated to endanger public health or welfare. Responding to the Court's ruling, the EPA finalized an endangerment finding in December 2009. Based on scientific evidence it found that six GHGs (CO_2, CH_4, N_2O, hydrofluorocarbons [HFCs], perfluorocarbons [PFCs], and sulfur hexafluoride [SF_6]) constitute a threat to public health and welfare. Thus, it is the Supreme Court's interpretation of the existing Act and the EPA's assessment of the scientific evidence that form the basis for the EPA's regulatory actions.

Presidential Executive Order 13783. Presidential Executive Order 13783, Promoting Energy Independence and Economic Growth (March 28, 2017), orders all federal agencies to apply cost-benefit analyses to regulations of GHG emissions and evaluations of the social cost of carbon, nitrous oxide, and methane.

[3] Carbon Dioxide Equivalent (CO_2e) – A metric measure used to compare the emissions from various greenhouse gases based upon their global warming potential.

State

The State of California has adopted various administrative initiatives and legislation relating to climate change, much of which set aggressive goals for GHG emissions reductions statewide. Although lead agencies must evaluate climate change and GHG emissions of projects subject to California Environmental Quality Act (CEQA), the CEQA Guidelines do not require or suggest specific methodologies for performing an assessment or specific thresholds of significance and do not specify GHG reduction mitigation measures. Instead, the guidelines allow lead agencies to choose methodologies and make significance determinations based on substantial evidence, as discussed in further detail below. No state agency has promulgated binding regulations for analyzing GHG emissions, determining their significance, or mitigating significant effects in CEQA documents. Thus, lead agencies exercise their discretion in determining how to analyze GHGs.

California Global Warming Solutions Act (Assembly Bill 32). The primary act that has driven GHG regulation and analysis in California include the California Global Warming Solutions Act of 2006 (Assembly Bill [AB] 32) (Health and Safety Code Sections 38500, 38501, 28510, 38530, 38550, 38560, 38561–38565, 38570, 38571, 38574, 38580, 38590, 38592–38599), which instructs the California Air Resources Board (CARB) to develop and enforce regulations for the reporting and verifying of statewide GHG emissions. The act directed CARB to set a GHG emissions limit based on 1990 levels, to be achieved by 2020. The bill set a timeline for adopting a scoping plan for achieving GHG reductions in a technologically and economically feasible manner. The heart of the bill is the requirement that statewide GHG emissions be reduced to 1990 levels by 2020.

CARB Scoping Plan. On December 11, 2008, CARB adopted its Scoping Plan, which functions as a roadmap to achieve GHG reductions in California required by AB 32 through subsequently enacted regulations. CARB's Scoping Plan contains the main strategies California will implement to reduce GHG emissions by 174 $MMTCO_2e$, or approximately 30 percent, from the State's projected 2020 emissions level of 596 $MMTCO_2e$ under a business-as-usual (BAU)[4] scenario. This is a reduction of 42 $MMTCO_2e$, or almost ten percent, from 2002 to 2004 average emissions, but requires the reductions in the face of population and economic growth through 2020.

CARB's Scoping Plan calculates 2020 BAU emissions as the emissions that would be expected to occur in the absence of any GHG reduction measures. The 2020 BAU emissions estimate was derived by projecting emissions from a past baseline year using growth factors specific to each of the different economic sectors (e.g., transportation, electrical power, commercial and residential, industrial, etc.). CARB used three-year average emissions, by sector, for 2002 to 2004 to forecast emissions to 2020. The measures described in CARB's Scoping Plan are intended to reduce the projected 2020 BAU to 1990 levels, as required by AB 32.

AB 32 requires CARB to update the Scoping Plan at least once every five years. CARB adopted the first major update to the Scoping Plan on May 22, 2014. The updated Scoping Plan summarizes recent science related to climate change, including anticipated impacts to California and the levels of GHG reduction necessary to likely avoid risking irreparable damage. It identifies the actions California has already taken to reduce GHG emissions and focuses on areas where further reductions could be achieved to help meet

[4] "Business-as-Usual" refers to emissions that would be expected to occur in the absence of GHG reductions. See http://www.arb.ca.gov/cc/inventory/data/bau.htm. Note that there is significant controversy as to what BAU means. In determining the GHG 2020 limit, CARB used the above as the "definition." It is broad enough to allow for design features to be counted as reductions.

the 2020 target established by AB 32. The Scoping Plan update also looks beyond 2020 toward the 2050 goal, established in Executive Order S-3-05, and observes that "a mid-term statewide emission limit will ensure that the State stays on course to meet our long-term goal." The Scoping Plan update did not establish or propose any specific post-2020 goals, but identified such goals adopted by other governments or recommended by various scientific and policy organizations.

In December 2017, CARB approved the *California's 2017 Climate Change Scoping Plan: The Strategy for Achieving California's 2030 Greenhouse Gas Target*. This update focuses on implementation of a 40 percent reduction in GHGs by 2030 compared to 1990 levels. To achieve this the updated Scoping Plan draws on a decade of successful programs that addresses the major sources of climate changing gases in every sector of the economy:

- *More Clean Cars and Trucks:* The plan sets out far-reaching programs to incentivize the sale of millions of zero-emission vehicles, drive the deployment of zero-emission trucks, and shift to a cleaner system of handling freight statewide.

- *Increased Renewable Energy:* California's electric utilities are ahead of schedule meeting the requirement that 33 percent of electricity come from renewable sources by 2020. The Scoping Plan guides utilities to 50 percent renewables, as required under SB 350.

- *Slashing Super-Pollutants:* The plan calls for a significant cut in super-pollutants such as methane and HFC refrigerants, which are responsible for as much as 40 percent of global warming.

- *Cleaner Industry and Electricity:* California's renewed cap-and-trade program extends the declining cap on emissions from utilities and industries and the carbon allowance auctions. The auctions will continue to fund investments in clean energy and efficiency, particularly in disadvantaged communities.

- *Cleaner Fuels:* The Low Carbon Fuel Standard will drive further development of cleaner, renewable transportation fuels to replace fossil fuels.

- *Smart Community Planning:* Local communities will continue developing plans which will further link transportation and housing policies to create sustainable communities.

- *Improved Agriculture and Forests:* The Scoping Plan also outlines innovative programs to account for and reduce emissions from agriculture, as well as forests and other natural lands.

Achieving the 2030 target under the updated Scoping Plan will also spur the transformation of the California economy and fix its course securely on achieving an 80 percent reduction in GHG emissions by 2050, consistent with the global consensus of the scale of reductions needed to stabilize atmospheric GHG concentrations at 450 ppm CO_2e, and reduce the likelihood of catastrophic climate change. Currently, global levels are at just above 400 ppm. Table 1, *California State Climate Change Legislation*, provides a brief overview of other California legislation relating to climate change that may affect emissions associated with the proposed project.

Table 1
California State Climate Change Legislation

Legislation	Description
Assembly Bill 1493 and Advanced Clean Cars Program	Assembly Bill 1493 ("the Pavley Standard") (Health and Safety Code Sections 42823 and 43018.5) aims to reduce GHG emissions from noncommercial passenger vehicles and light-duty trucks of model years 2009 to 2016. By 2025, when all rules will be fully implemented, new automobiles will emit 34 percent fewer CO_2e emissions and 75 percent fewer smog-forming emissions.
Low Carbon Fuel Standard	Executive Order S-01-07 (2007) requires a 10 percent or greater reduction in the average fuel carbon intensity for transportation fuels in California. The regulation took effect in 2010 and is codified at Title 17, California Code of Regulations, Sections 95480–95490. The Low Carbon Fuel Standard will reduce GHG emissions by reducing the carbon intensity of transportation fuels used in California by at least 10 percent by 2020.
Renewables Portfolio Standard (Senate Bill X1-2, Senate Bill 350, and Senate Bill 100)	California's Renewables Portfolio Standard (RPS) requires retail sellers of electric services to increase procurement from eligible renewable energy resources to 33 percent of total retail sales by 2020. The 33 percent standard is consistent with the RPS goal established in the Scoping Plan. The passage of Senate Bill 350 in 2015 updates the RPS to require the amount of electricity generated and sold to retail customers per year from eligible renewable energy resources to be increased to 50 percent by December 31, 2030. The bill will make other revisions to the RPS program and to certain other requirements on public utilities and publicly owned electric utilities. The passage of Senate Bill 100 in 2018 further requires achieving 60 percent renewable energy resources target by 2030, and 100 percent renewable energy resources target by 2045.
Senate Bill 375*	SB 375 took effect in 2008 and provides a new planning process to coordinate land use planning, regional transportation plans, and funding priorities to help California meet the GHG reduction goals established in AB 32. SB 375 requires metropolitan planning organizations to incorporate a sustainable communities' strategy in their regional transportation plans that will achieve GHG emissions reduction targets by reducing vehicle miles traveled from light-duty vehicles through the development of more compact, complete, and efficient communities. SB 375 requires CARB to periodically update the targets, no later than every 8 years. CARB is in the process of updating targets, with the intent to make them effective in 2018. SCSs adopted in 2018 would be subject to the updated targets.
California Building Energy Efficiency Standards	In general, the California Building Energy Efficiency Standards require the design of building shells and building components to conserve energy. The California Energy Commission updates the Building Energy Efficiency Standards every three years by working with stakeholders in a public and transparent process. The 2019 Building Energy Efficiency Standards contained in the California Code of Regulations, Title 24, Part 6 (also known as the California Energy Code) took effect on January 1, 2019. The 2019 Building Energy Efficiency Standards are 7 percent more efficient than previous standards for residential construction and once rooftop solar electricity generation is factored in, homes built under the 2019 standards will use about 53 percent less energy than those under the 2016 standards.
California Green Building Standards	The California Green Building Standards Code (California Code of Regulations, Title 24, Part 11), commonly referred to as the CALGreen Code, is a statewide mandatory construction code developed and adopted by the California Building Standards Commission and the Department of Housing and Community Development. The CALGreen standards require new residential and commercial buildings to comply with mandatory measures under the topics of planning and design, energy efficiency, water efficiency/conservation, material conservation and resource efficiency, and environmental quality. CALGreen also provides voluntary tiers and measures that local governments may adopt that encourage or require additional measures in the five green building topics. The most recent update to the CALGreen Code went into effect January 1, 2020.
Senate Bill 32 (Amendments to California Global Warming Solutions Act of 2006: Emission Limit)	Signed into law in September 2016, SB 32 codifies the 2030 target in the recent Executive Order B-30-15. The bill authorizes the state board to adopt an interim GHG emissions level target to be achieved by 2030. SB 32 states that the intent is for the legislature and appropriate agencies to adopt complementary policies which ensure that the long-term emissions reductions advance specified criteria. In December 2017, CARB approved the *California's 2017 Climate Change Scoping Plan: The Strategy for Achieving California's 2030 Greenhouse Gas Target* that provides guidance for compliance with SB 32.

*Senate Bill 375 is codified at Government Code Sections 65080, 65400, 65583, 65584.01, 65584.02, 65584.04, 65587, 65588, 14522.1, 14522.2, and 65080.01, as well as at Public Resources Code Sections 21061.3 and 21159.28 and Chapter 4.2.

Regional

South Coast Air Quality Management District

In 2008, SCAQMD released draft guidance regarding interim CEQA GHG significance thresholds.[5] Within its October 2008 document, the SCAQMD proposed the use of a percent emission reduction target to determine significance for commercial/residential projects that emit greater than 3,000 metric tons carbon dioxide equivalent ($MTCO_2e$) per year. Under this proposal, commercial/residential projects that emit fewer than 3,000 $MTCO_2e$ per year would be assumed to have a less than significant impact on climate change. On December 5, 2008, the SCAQMD Governing Board adopted the staff proposal for an interim GHG significance threshold of 10,000 $MTCO_2e$ per year for stationary source/industrial projects where the SCAQMD is the lead agency. However, the SCAQMD has yet to adopt a GHG significance threshold for application by local lead agencies in their review of land use development projects (e.g., residential/commercial projects).

Local

City of Fontana

General Plan Update 2015-2035

The City of Fontana adopted the *General Plan Update 2015-2035* (General Plan Update) on November 13, 2018. Chapter 12 Sustainability and Resilience of the General Plan Update[6] identifies goals and policies to pursue sustainability and resilience by making resource-efficient choices to conserve water, energy, and materials, improve air quality, and adjust to changing conditions. The following goals and policies help reduce GHG emissions and are applicable to the proposed project:

- **Goal 3:** Renewable sources of energy, including solar and wind, and other energy-conservation strategies are available to city households and businesses.
    - Policy: Promote renewable energy programs for government, Fontana businesses, and Fontana residences.

- **Goal 5:** Green building techniques are used in new development and retrofits.
    - Policy: Promote green building through guidelines, awards and nonfinancial incentives.

- **Goal 6:** Fontana is a leader energy-efficient development and retrofits.
    - Policy 1: Promote energy-efficient development in Fontana.
    - Policy 2: Meet or exceed state goals for energy-efficient new construction.

- **Goal 7:** Conservation of water resources with best practices such as drought-tolerant plant species, recycled water, greywater systems, has become a way of life in Fontana.
    - Policy: Continue to promote and implement best practices to conserve water.

[5] South Coast Air Quality Management District, *Draft Guidance Document—Interim CEQA Greenhouse Gas (GHG) Significance Threshold*, October 2008.

[6] City of Fontana, *General Plan Update 2015-2035, Chapter 12 Sustainability and Resilience*, November 13, 2018, https://www.fontana.org/DocumentCenter/View/26751/Chapter-12---Sustainability-and-Resilience, accessed March 27, 2020.

CALIFORNIA ENVIRONMENTAL QUALITY ACT (CEQA) THRESHOLDS

The environmental analysis in this memorandum is patterned after the Initial Study Checklist recommended by the *CEQA Guidelines*, as amended. The issues presented in the Initial Study Checklist have been utilized as thresholds of significance in this section. Accordingly, a project may create a significant environmental impact if it causes one or more of the following to occur:

- Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment (refer to Impact GHG-1); and

- Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases (refer to Impact GHG-2).

GREENHOUSE GAS EMISSIONS IMPACTS

Impact GHG-1: Would the project generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?

Impact GHG-2: Would the project conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?

Project-Related Sources of Greenhouse Gases

Less Than Significant Impact. The City has not adopted a numerical significance threshold for assessing impacts related to GHG emissions. Similarly, the SCAQMD, CARB, or any other state or regional agency have not yet adopted a numerical significance threshold for assessing GHG emissions that is applicable to the project. Since there is no applicable adopted or accepted numerical threshold of significance for GHG emissions, the methodology for evaluating the project's impacts related to GHG emissions focuses on its consistency with statewide, regional, and local plans adopted for the purpose of reducing and/or mitigating GHG emissions. This evaluation of consistency with such plans is the sole basis for determining the significance of the project's GHG-related impacts on the environment.

Notwithstanding, for informational purposes, the analysis also calculates the amount of GHG emissions that would be attributable to the project using recommended air quality models, as described below. The primary purpose of quantifying the project's GHG emissions is to satisfy State CEQA Guidelines Section 15064.4(a), which calls for a good-faith effort to describe and calculate emissions. The estimated emissions inventory is also used to determine if there would be a reduction in the project's incremental contribution of GHG emissions as a result of compliance with regulations and requirements adopted to implement plans for the reduction or mitigation of GHG emissions. However, the significance of the project's GHG emissions impacts is not based on the amount of GHG emissions resulting from the project.

The proposed project would result in direct and indirect emissions of CO_2, N_2O, and CH_4, and would not result in other GHGs that would facilitate a meaningful analysis. Therefore, this analysis focuses on these three forms of GHG emissions. Direct project-related GHG emissions include emissions from construction activities, area sources, and mobile sources, while indirect sources include emissions from energy consumption, water demand, and solid waste generation. The most recent version of the California Emissions Estimator Model (CalEEMod), version 2016.3.2, was used to calculate direct and indirect project-related GHG emissions. Table 2, *Estimated Greenhouse Gas Emissions*, presents the estimated

CO_2, N_2O, and CH_4 emissions of the proposed project. CalEEMod outputs are contained within Appendix A, *Greenhouse Gas Emissions Data*.

Table 2
Estimated Greenhouse Gas Emissions

Source[6]	CO_2	CH_4		N_2O		Total Metric Tons of CO_2e[3]
	Metric Tons/year[1]	Metric Tons/year[1]	Metric Tons of CO_2e[2]	Metric Tons/year[1]	Metric Tons of CO_2e[2]	
Direct Emissions						
Construction[5]	32.14	0.01	0.22	<0.01	<0.01	32.36
Area Source	24.93	<0.01	0.05	<0.01	0.13	25.11
Mobile Source[4]	1,443.92	0.07	1.72	0.00	0.00	1,445.64
Total Direct Emissions[3]	1,500.99	0.08	1.99	<0.01	0.13	1,503.11
Indirect Emissions						
Energy	476.64	0.02	0.40	0.01	1.72	478.76
Solid Waste	25.47	1.51	37.64	0.00	0.00	63.11
Water Demand	48.30	0.23	5.73	0.01	1.72	55.74
Total Indirect Emissions[3]	550.41	1.75	43.76	0.01	3.44	597.61
Total Project-Related Emissions[3]	***2,100.72 $MTCO_2e$/yr***					

Notes:
$MTCO_2e$ = Metric Tons Carbon Dioxide Equivalent
1. Emissions calculated using the CalEEMod version 2016.3.2.
2. Consistent with CalEEMod version 2016.3.2, carbon dioxide equivalent values were calculated using global warming potentials from the 2007 Intergovernmental Panel on Climate Change (IPCC) Fourth Assessment Report, https://www.ghgprotocol.org/sites/default/files/ghgp/Global-Warming-Potential-Values%20%28Feb%2016%202016%29_1.pdf, accessed March 30, 2020.
3. Totals may be slightly off due to rounding.
4. The mobile source emissions were calculated using the trip generation data provided in the Urban Crossroads, *Highland Residential Focused Traffic Impact Analysis*, dated March 10, 2020.
5. Total project construction GHG emissions equate to 970.81 $MTCO_2e$. However, construction emissions are amortized over the lifetime of the project (assumed to be 30 years) and added to operational GHG emissions consistent with SCAQMD's guidance.

Refer to Appendix A, *Greenhouse Gas Emissions Data*, for detailed model input/output data.

Direct Project-Related Source of Greenhouse Gases

Construction Emissions. Construction GHG emissions are amortized (i.e., total construction emissions divided by the lifetime of the project, assumed to be 30 years),[7] then added to the operational emissions. As seen in Table 2, construction of the proposed project would result in a total of 32.36 $MTCO_2e$ (amortized over 30 years) which represents a total of approximately 970.81 $MTCO_2e$ from construction activities.

Area Source. The project would result in nominal area source emissions; refer to Table 2. Area source emissions would be generated due to an increased demand for natural gas associated with the development of the proposed project. The primary use of natural gas producing area source emissions by the project would be for consumer products, architectural coating, hearth, and landscaping.

Mobile Source Emissions. According to the *Highland Residential Focused Traffic Impact Analysis* (Traffic Impact Analysis) prepared by Urban Crossroads (dated March 10, 2020), the proposed project would

[7] In accordance with the SCAQMD guidance, projected GHGs from construction have been quantified and amortized over 30 years, which is the number of years considered to represent the life of the project. The amortized construction emissions are added to the annual average operational emissions.

result in a maximum of 1,010 peak daily trips, which equates to approximately 1,445.64 $MTCO_2e$/year of mobile source-generated GHG emissions as modeled in CalEEMod; refer to Table 2.

Indirect Project-Related Source of Greenhouse Gases

Energy Consumption. Energy consumption emissions were calculated using the CalEEMod model and project-specific land use data. Electricity would be provided to the project site via Southern California Edison (SCE). The project would indirectly result in 478.76 $MTCO_2e$/year of GHG emissions due to energy consumption; refer to Table 2.

Water Demand. The proposed project's operations would result in a demand of approximately 11.82 million gallons of water per year. Emissions from indirect energy impacts due to water supply would result in 55.74 $MTCO_2e$/year; refer to Table 2.

Solid Waste. Solid waste associated with operations of the proposed project would result in 63.11 $MTCO_2e$/year; refer to Table 2.

Total Project-Related Sources of Greenhouse Gases

As shown in Table 2, the total amount of proposed project-related GHG emissions from direct and indirect sources combined would total 2,100.72 $MTCO_2e$/yr.

Consistency with Applicable GHG Plans, Policies, or Regulations

Climate Change Scoping Plan

The goal to reduce GHG emissions to 1990 levels by 2020 (Executive Order S-3-05) was codified by the Legislature as the 2006 Global Warming Solutions Act (AB 32). In 2008, CARB approved a Scoping Plan as required by AB 32.[8] The Scoping Plan has a range of GHG reduction actions which include direct regulations, alternative compliance mechanisms, monetary and non-monetary incentives, voluntary actions, market-based mechanisms such as a cap-and-trade system, and an AB 32 implementation fee to fund the program. The 2017 Scoping Plan Update identifies additional GHG reduction measures necessary to achieve the 2030 target. These measures build upon those identified in the *First Update to the Scoping Plan* (2013). Although a number of these measures are currently established as policies and measures, some measures have not yet been formally proposed or adopted. It is expected that these measures or similar actions to reduce GHG emissions will be adopted as required to achieve statewide GHG emissions targets.

Table 3, Project Consistency with the Scoping Plan, provides an evaluation of applicable reduction actions/strategies by emissions source category to determine how the project would be consistent with or exceed reduction actions/strategies outlined in the *First Update to the Scoping Plan* (2013).

[8] Climate Change Proposed Scoping Plan was approved by the California Air Resources Board on December 11, 2008.

Table 3
Project Consistency with the Scoping Plan

Sector / Source	Category / Description	Project Consistency Analysis
Area		
SCAQMD Rule 445 (Wood Burning Devices)	Restricts the installation of wood-burning devices in new development.	**Consistent.** Approximately 15 percent of California's major anthropogenic sources of black carbon include fireplaces and woodstoves.[1] The project would only include natural gas hearths in the proposed residential units.
Energy		
California Renewables Portfolio Standard, Senate Bill 350 (SB 350) and Senate Bill 100 (SB 100)	Increases the proportion of electricity from renewable sources to 33 percent renewable power by 2020. SB 350 requires 50 percent by 2030. SB 100 requires 44 percent by 2024, 52 percent by 2027, and 60 percent by 2030. It also requires the State Energy Resources Conservation and Development Commission to double the energy efficiency savings in electricity and natural gas final end uses of retail customers through energy efficiency and conservation.	**No Conflict.** The project would utilize energy from Southern California Edison (SCE), which is required to meet the 2020, 2030, 2045, and 2050 performance standards. In 2018, 36 percent of SCE's electricity came from renewable resources.[2] By 2030 SCE plans to achieve 80 percent carbon-free energy.[3] The project would also meet the applicable requirements of the 2019 Title 24 Building Energy Efficiency Standards and CALGreen Code.
CCR, Title 24, Building Standards Code	Energy Efficiency Standards for Residential and Nonresidential Buildings.	**Mandatory Compliance.** The project would meet the 2019 Title 24 Building Energy Efficiency Standards and the applicable requirements of the CALGreen Code.
Assembly Bill 1109 (AB 1109)	The Lighting Efficiency and Toxics Reduction Act (AB 1109) prohibits manufacturing specified general purpose lights that contain levels of hazardous substances prohibited by the European Union. AB 1109 also requires a reduction in average statewide electrical energy consumption by not less than 50 percent from the 2007 levels for indoor residential lighting and not less than 25 percent from the 2007 levels for indoor commercial and outdoor lighting by 2018.	**No Conflict.** According to the CEC, energy savings from AB 1109 are achieved through codes and standards. Energy savings from AB 1109 are calculated as part of codes and standards savings.[4] The project would incorporate energy efficient lighting. As discussed above, the project would meet the 2019 Title 24 Building Energy Efficiency Standards and the applicable requirements of the CALGreen Code.
California Green Building Standards (CALGreen) Code Requirements	All bathroom exhaust fans shall be ENERGY STAR compliant.	**Mandatory Compliance.** The project construction plans must demonstrate that energy efficiency appliances, including bathroom exhaust fans, and equipment would meet the applicable energy standards in the 2019 Title 24 Building Energy Efficiency Standards and CALGreen Code.
	HVAC Systems will be designed to meet American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) standards.	**Mandatory Compliance.** The project construction plans must demonstrate that energy efficiency appliances and equipment would meet the applicable energy standards in ASHRAE 90.1-2013 Appendix G, the 2019 Title 24 Building Energy Efficiency Standards, and CALGreen Code.
	New construction shall facilitate future installation and use of electric vehicle (EV) chargers. Each dwelling unit shall install a listed raceway to accommodate a dedicated 208/240-volt branch circuit. Where common use parking is provided, at least one EV space shall be located in the common use parking area and shall be available for use by all residents.	**Mandatory Compliance.** The project construction plans must demonstrate that each dwelling unit would install necessary circuit for EV chargers in compliance with CALGreen Section 4.106.4.1. In addition, EV spaces would be provided in the common use parking area in compliance with CALGreen Section 4.106.4.2.1.
	Requires use of low VOC coatings consistent with SCAQMD Rule 1168.	**Consistent.** The project would be consistent with this regulation and would meet the low VOC coating requirements.

Table 3 (continued)
Project Consistency with the Scoping Plan

Sector / Source	Category / Description	Project Consistency Analysis
SB 1368, CCR Title 20, Cap-and-Trade Program	The Cap-and-Trade Program places an economy-wide "cap" on major sources of greenhouse gas emissions (i.e. refineries, power plants, industrial facilities and transportation fuels) and minimizes the compliance costs of achieving AB 32 goals. Electricity generators and large industrial facilities emitting 25,000 $MTCO_2e$ or more annually are subject to the Cap-and-Trade Program. Each year the cap is lowered by approximately 3 percent, ensuring that California is reducing greenhouse gases.	**Not Applicable.** As shown in Table 2, the project would generate approximately 2,100.72 $MTCO_2e$/yr, which is below the 25,000 $MTCO_2e$/yr Cap-and-Trade screening level. As such, the proposed project would not be subject to the requirements of the Cap-and-Trade Program.
Mobile Sources		
Mobile Source Strategy (Cleaner Technology and Fuels)	Reduce GHGs and other pollutants from the transportation sector through transition to zero-emission and low-emission vehicles, cleaner transit systems and reduction of vehicle miles traveled.	**Consistent.** The project would be consistent with this strategy by supporting the use of electric vehicles (EVs). The project would designate at least one parking space for EVs in the common use parking area in compliance with CALGreen Section 4.106.4.2.1. In addition, the project would be required to install necessary circuit for EV chargers in each dwelling unit in compliance with CALGreen Section 4.106.4.1.
AB 1493 (Pavley Regulations)	Reduces GHG emissions in new passenger vehicles from model year 2012 through 2016 (Phase I) and model years 2017–2025 (Phase II). Also reduces gasoline consumption to a rate of 31 percent of 1990 gasoline consumption (and associated GHG emissions) by 2020.	**Not Applicable.** These regulations apply to automobile manufacturers, not individual land uses. Mobile emissions associated with the project in Table 2 reflect compliance with this regulation. GHG emissions related to vehicular travel by the project would benefit from this regulation because vehicle trips associated with the project would be affected by AB 1493. Mobile source emissions generated by the project would be reduced with implementation of AB 1493 consistent with reduction of GHG emissions under AB 32.
Low Carbon Fuel Standard (Executive Order S-01-07)	Establishes protocols for measuring life-cycle carbon intensity of transportation fuels and helps to establish use of alternative fuels. This executive order establishes a statewide goal to reduce the carbon intensity of California's transportation fuels by at least 10 percent by 2020.	**Not Applicable.** The Low Carbon Fuel Standard (LCFS) applies to manufacturers of automotive fuels, not to individual land uses. Mobile emissions associated with the project in Table 2 reflect compliance with this regulation. GHG emissions related to vehicular travel by the project would benefit from this regulation and mobile source emissions generated by the project would be reduced with implementation of the LCFS consistent with reduction of GHG emissions under AB 32.
Advanced Clean Cars Program	In 2012, CARB adopted the Advanced Clean Cars (ACC) program to reduce criteria pollutants and GHG emissions for model year vehicles 2015 through 2025. ACC includes the Low-Emission Vehicle (LEV) regulations that reduce criteria pollutants and GHG emissions from light- and medium-duty vehicles, and the Zero-Emission Vehicle (ZEV) regulation, which requires manufacturers to produce an increasing number of pure ZEVs (meaning battery electric and fuel cell electric vehicles), with provisions to also produce plug-in hybrid electric vehicles (PHEV) in the 2018 through 2025 model years.	**Consistent.** The standards would apply to manufacturers of vehicles used by residences associated with the project. The project would designate at least one parking space for EVs in the common use parking area in compliance with CALGreen Section 4.106.4.2.1. In addition, the project would be required to install necessary circuit for EV chargers in each dwelling unit in compliance with CALGreen Section 4.106.4.1.

Table 3 (continued)
Project Consistency with the Scoping Plan

Sector / Source	Category / Description	Project Consistency Analysis
Senate Bill (SB) 375	SB 375 establishes mechanisms for the development of regional targets for reducing passenger vehicle GHG emissions. Under SB 375, CARB is required, in consultation with the state's Metropolitan Planning Organizations, to set regional GHG reduction targets for the passenger vehicle and light-duty truck sector for 2020 and 2035.	**Consistent.** The project would be consistent with SCAG RTP/SCS goals and objectives under SB 375 to implement "smart growth." The project would be in close proximity to off-site facilities in Fontana including schools, parks, retails, and restaurants. The project would also have access to modes of transportation that provide options for reducing reliance on automobiles and minimizing associated air pollutant emissions. As the project would comply with the 2016–2040 RTP/SCS, the project would be consistent with SB 375.
Water		
CCR, Title 24, Building Standards Code	Title 24 includes water efficiency requirements for new residential and non- residential uses.	**Mandatory Compliance.** See discussion under 2019 Title 24 Building Standards Code and CALGreen Code above.
Senate Bill X7-7	The Water Conservation Act of 2009 sets an overall goal of reducing per capita urban water use by 20 percent by December 31, 2020. Each urban retail water supplier shall develop water use targets to meet this goal. This is an implementing measure of the Water Sector of the AB 32 Scoping Plan. Reduction in water consumption directly reduces the energy necessary and the associated emissions to convene, treat, and distribute the water; it also reduces emissions from wastewater treatment.	**Consistent.** See discussion under 2019 Title 24 Building Standards Code and CALGreen Code.
Solid Waste		
California Integrated Waste Management Act (IWMA) of 1989 and Assembly Bill (AB) 341	The IWMA mandated that state agencies develop and implement an integrated waste management plan which outlines the steps to be taken to divert at least 50 percent of their solid waste from disposal facilities. AB 341 directs CalRecycle to develop and adopt regulations for mandatory commercial recycling and sets a statewide goal for 75 percent disposal reduction by the year 2020.	**Not Applicable.** These regulations apply to municipal agencies who are responsible for reducing landfill disposal of solid wastes collected in their jurisdictions. GHG emissions related to solid waste generation from the project would benefit from this regulation as it would decrease the overall amount of solid waste disposed of at landfills. The decrease in solid waste would then in return decrease the amount of methane released from the decomposing solid waste. Project-related GHG emissions from solid waste generation provided in Table 2 includes a 50-percent reduction in solid waste generation source emissions.

Notes:
1. California Air Resources Board, *California's 2017 Climate Change Scoping Plan, Figure 4: California 2013 Anthropogenic Black Carbon Emission Sources*, November 2017.
2. California Energy Commission, *2018 Power Content Label Southern California Edison*, https://www.energy.ca.gov/sites/default/files/2020-01/2018_PCL_Southern_California_Edison.pdf, accessed March 30, 2020.
3. Southern California Edison, *The Clean Power and Electrification Pathway*, https://newsroom.edison.com/internal_redirect/cms.ipressroom.com.s3.amazonaws.com/166/files/20187/g17-pathway-to-2030-white-paper.pdf, accessed March 30, 2020.
4. California Energy Commission, *2013 California Energy Efficiency Potential and Goals Study, Appendix Volume I*, August 15, 2013.

Source: California Air Resources Board, *California's 2017 Climate Change Scoping Plan*, November 2017.

City of Fontana General Plan Update

Chapter 12 Sustainability and Resilience of the City's General Plan Update identifies goals and policies to pursue sustainability and resilience by making resource-efficient choices to conserve water, energy, and materials, improve air quality, and adjust to changing conditions. Implementation of this chapter would

contribute to a reduction in the City's overall GHG emissions. Table 4, *Project Consistency with Applicable Goals and Policies of the City of Fontana General Plan Update* compares the proposed project to applicable policies from the General Plan Update.

Table 4
Project Consistency with Applicable Goals and Policies of the City of Fontana General Plan Update

Goal/Policy	Project Consistency
Goal 3: Renewable sources of energy, including solar and wind, and other energy-conservation strategies are available to city households and businesses. • Policy: Promote renewable energy programs for government, Fontana businesses, and Fontana residences.	**Consistent.** The project would comply with 2019 Title 24 Building Energy Efficiency Standards, which require solar photovoltaic systems for new homes and would be 53 percent more energy efficient than the 2016 standards.
Goal 5: Green building techniques are used in new development and retrofits. • Policy: Promote green building through guidelines, awards and nonfinancial incentives.	**Consistent.** The project would meet the 2019 Title 24 Building Energy Efficiency Standards and the applicable requirements of the CALGreen Code. Refer to Table 3 consistency with the AB 32 and the Scoping Plan.
Goal 6: Fontana is a leader energy-efficient development and retrofits. • Policy 1: Promote energy-efficient development in Fontana. • Policy 2: Meet or exceed state goals for energy-efficient new construction.	**Consistent.** The project would meet the 2019 Title 24 Building Energy Efficiency Standards and the applicable requirements of the CALGreen Code. Refer to Table 3 consistency with the AB 32 and the Scoping Plan.
Goal 7: Conservation of water resources with best practices such as drought-tolerant plant species, recycled water, greywater systems, has become a way of life in Fontana. • Policy: Continue to promote and implement best practices to conserve water.	**Consistent.** The project would meet the water efficiency requirements in the 2019 Title 24 Building Energy Efficiency Standards and the CALGreen Code. Refer to Table 3 consistency with the AB 32 and the Scoping Plan.
Source: City of Fontana, *General Plan Update 2015-2035, Chapter 12 Sustainability and Resilience,* November 13, 2018, https://www.fontana.org/DocumentCenter/View/26751/Chapter-12---Sustainability-and-Resilience, accessed March 27, 2020.	

Conclusion

In summary, the project's location and land use characteristics render it consistent with statewide and regional climate change mandates, plans, policies, and recommendations. More specifically, the GHG plan consistency analysis provided above demonstrates that the project complies with the regulations and GHG reduction actions/strategies outlined in the General Plan Update and Scoping Plan. Consistency with these plans would reduce the impact of the project's incremental contribution of GHG emissions. Accordingly, the project would not conflict with any applicable plan, policy, regulation, or recommendation adopted for the purpose of reducing GHG emissions. Therefore, impacts with regard to climate change would be less than significant.

Mitigation Measures: No mitigation is required.

REFERENCES

Documents

1. California Air Resources Board, *California's 2017 Climate Change Scoping Plan*, https://ww3.arb.ca.gov/cc/scopingplan/scoping_plan_2017.pdf, accessed March 30, 2020.

2. California Building Standards Commission, *Guide to the California Green Building Standards Code Residential*, January 1, 2020.

3. California Energy Commission, *2013 California Energy Efficiency Potential and Goals Study, Appendix Volume I*, August 15, 2013.

4. California Energy Commission, *2018 Power Content Label Southern California Edison*, https://www.energy.ca.gov/sites/default/files/2020-01/2018_PCL_Southern_California_Edison.pdf, accessed March 30, 2020.

5. California Energy Commission, *California Greenhouse Gas Emissions for 2000 to 2017*, https://ww3.arb.ca.gov/cc/inventory/pubs/reports/2000_2017/ghg_inventory_trends_00-17.pdf, accessed March 30, 2020.

6. City of Fontana, *General Plan Update 2015-2035, Chapter 12 Sustainability and Resilience*, November 13, 2018, https://www.fontana.org/DocumentCenter/View/26751/Chapter-12---Sustainability-and-Resilience, accessed March 27, 2020.

7. Intergovernmental Panel on Climate Change (IPCC), *Fourth Assessment Report*, https://www.ghgprotocol.org/sites/default/files/ghgp/Global-Warming-Potential-Values%20%28Feb%2016%202016%29_1.pdf, accessed March 30, 2020.

8. Scripps Institution of Oceanography, *Carbon Dioxide Concentration at Mauna Loa Observatory*, https://scripps.ucsd.edu/programs/keelingcurve/, accessed March 30, 2020.

9. Southern California Edison, *The Clean Power and Electrification Pathway*, https://newsroom.edison.com/internal_redirect/cms.ipressroom.com.s3.amazonaws.com/166/files/20187/g17-pathway-to-2030-white-paper.pdf, accessed March 30, 2020.

10. South Coast Air Quality Management District, *Draft Guidance Document—Interim CEQA Greenhouse Gas (GHG) Significance Threshold*, October 2008.

11. Urban Crossroads, *Highland Residential Focused Traffic Impact Analysis*, dated March 10, 2020.

Websites / Programs

1. Google Earth, 2019.

2. South Coast Air Quality Management District, California Emissions Estimator Model (CalEEMod), version 2016.3.2.

Appendix A

Greenhouse Gas Emissions Data

Highland Residential

South Coast AQMD Air District, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Parking Lot	107.00	Space	0.96	42,800.00	0
City Park	0.38	Acre	0.38	16,552.80	0
Single Family Housing	107.00	Dwelling Unit	8.88	192,600.00	306

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	31
Climate Zone	10			**Operational Year**	2022
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	702.44	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - 107 open guest parking spaces; park+recreation center area estimated from site plan; total site area 10.22 acres

Construction Phase - construction schedule provided by project applicant

Off-road Equipment -

Off-road Equipment - equipment list provided by project applicant

Off-road Equipment - equipment list provided by project applicant

Off-road Equipment - equipment list provided by project applicant

Off-road Equipment - equipment list provided by project applicant

Trips and VMT - project applicant estimated 10 cubic yards/truck, 5-mile roundtrip distance during site preparation and 1-mile roundtrip distance during grading

Grading - total site area 10.22

Architectural Coating - SCAQMD Rule 1113 - low VOC painting

Vehicle Trips - trip generation rate from TIA Table 4-1 dated March 10, 2020

Area Coating - SCAQMD Rule 1113 - low VOC painting

Construction Off-road Equipment Mitigation - SCAQMD Rule 403

Area Mitigation - SCAQMD Rule 445 - no wood-burning devices in new development

Table Name	Column Name	Default Value	New Value
tblArchitecturalCoating	EF_Nonresidential_Exterior	100.00	50.00
tblArchitecturalCoating	EF_Nonresidential_Interior	100.00	50.00
tblArchitecturalCoating	EF_Parking	100.00	50.00
tblAreaCoating	Area_EF_Nonresidential_Exterior	100	50
tblAreaCoating	Area_EF_Nonresidential_Interior	100	50
tblAreaCoating	Area_EF_Parking	100	50
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstructionPhase	NumDays	10.00	15.00
tblConstructionPhase	NumDays	30.00	45.00
tblConstructionPhase	NumDays	300.00	180.00
tblConstructionPhase	NumDays	20.00	30.00
tblConstructionPhase	NumDays	20.00	30.00
tblGrading	AcresOfGrading	202.50	10.22
tblGrading	MaterialExported	0.00	2.00
tblGrading	MaterialImported	0.00	5,000.00
tblLandUse	LotAcreage	34.74	8.88
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	4.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	1.00
tblTripsAndVMT	HaulingTripLength	20.00	5.00
tblTripsAndVMT	HaulingTripLength	20.00	1.00
tblTripsAndVMT	HaulingTripNumber	0.00	75.00

tblTripsAndVMT	HaulingTripNumber	625.00	500.00
tblTripsAndVMT	WorkerTripNumber	18.00	10.00
tblTripsAndVMT	WorkerTripNumber	30.00	25.00
tblVehicleTrips	ST_TR	22.75	0.00
tblVehicleTrips	ST_TR	9.91	9.44
tblVehicleTrips	SU_TR	16.74	0.00
tblVehicleTrips	SU_TR	8.62	9.44
tblVehicleTrips	WD_TR	1.89	0.00
tblVehicleTrips	WD_TR	9.52	9.44

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2021	0.5772	5.6198	4.0746	9.6300e-003	0.3500	0.2536	0.6035	0.1693	0.2349	0.4042	0.0000	847.9248	847.9248	0.2314	0.0000	853.7099
2022	0.7103	0.6316	0.5671	1.3200e-003	0.0128	0.0284	0.0412	3.4400e-003	0.0264	0.0298	0.0000	116.3415	116.3415	0.0305	0.0000	117.1035
Maximum	**0.7103**	**5.6198**	**4.0746**	**9.6300e-003**	**0.3500**	**0.2536**	**0.6035**	**0.1693**	**0.2349**	**0.4042**	**0.0000**	**847.9248**	**847.9248**	**0.2314**	**0.0000**	**853.7099**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					

2021	0.5772	5.6198	4.0746	9.6300e-003	0.1758	0.2536	0.4294	0.0751	0.2349	0.3100	0.0000	847.9239	847.9239	0.2314	0.0000	853.7090
2022	0.7103	0.6315	0.5671	1.3200e-003	0.0128	0.0284	0.0412	3.4400e-003	0.0264	0.0298	0.0000	116.3414	116.3414	0.0305	0.0000	117.1033
Maximum	**0.7103**	**5.6198**	**4.0746**	**9.6300e-003**	**0.1758**	**0.2536**	**0.4294**	**0.0751**	**0.2349**	**0.3100**	**0.0000**	**847.9239**	**847.9239**	**0.2314**	**0.0000**	**853.7090**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**48.01**	**0.00**	**27.02**	**54.51**	**0.00**	**21.70**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	**3-1-2021**	**5-31-2021**	2.4389	2.4389
2	**6-1-2021**	**8-31-2021**	1.5872	1.5872
3	**9-1-2021**	**11-30-2021**	1.5708	1.5708
4	**12-1-2021**	**2-28-2022**	1.1436	1.1436
5	**3-1-2022**	**5-31-2022**	0.7334	0.7334
		Highest	2.4389	2.4389

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	1.2009	0.0405	1.7862	1.7900e-003		0.1083	0.1083		0.1083	0.1083	11.3654	23.6456	35.0111	0.0356	7.7000e-004	36.1319
Energy	0.0177	0.1509	0.0642	9.6000e-004		0.0122	0.0122		0.0122	0.0122	0.0000	476.6413	476.6413	0.0158	5.7800e-003	478.7596
Mobile	0.2979	1.7000	4.0601	0.0156	1.3115	0.0124	1.3239	0.3515	0.0115	0.3630	0.0000	1,443.9224	1,443.9224	0.0686	0.0000	1,445.6371
Waste						0.0000	0.0000		0.0000	0.0000	25.4733	0.0000	25.4733	1.5054	0.0000	63.1091
Water						0.0000	0.0000		0.0000	0.0000	2.2117	46.0838	48.2955	0.2291	5.7600e-003	55.7380
Total	**1.5164**	**1.8913**	**5.9105**	**0.0184**	**1.3115**	**0.1328**	**1.4444**	**0.3515**	**0.1320**	**0.4835**	**39.0505**	**1,990.2931**	**2,029.3436**	**1.8545**	**0.0123**	**2,079.3758**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.8528	0.0327	1.1145	1.9000e-004		7.7200e-003	7.7200e-003		7.7200e-003	7.7200e-003	0.0000	24.9304	24.9304	2.1900e-003	4.2000e-004	25.1114
Energy	0.0177	0.1509	0.0642	9.6000e-004		0.0122	0.0122		0.0122	0.0122	0.0000	476.6413	476.6413	0.0158	5.7800e-003	478.7596
Mobile	0.2979	1.7000	4.0601	0.0156	1.3115	0.0124	1.3239	0.3515	0.0115	0.3630	0.0000	1,443.9224	1,443.9224	0.0686	0.0000	1,445.6371
Waste						0.0000	0.0000		0.0000	0.0000	25.4733	0.0000	25.4733	1.5054	0.0000	63.1091
Water						0.0000	0.0000		0.0000	0.0000	2.2117	46.0838	48.2955	0.2291	5.7600e-003	55.7380
Total	**1.1683**	**1.8835**	**5.2388**	**0.0168**	**1.3115**	**0.0323**	**1.3438**	**0.3515**	**0.0315**	**0.3829**	**27.6851**	**1,991.5778**	**2,019.2629**	**1.8211**	**0.0120**	**2,068.3553**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**22.96**	**0.41**	**11.36**	**8.71**	**0.00**	**75.70**	**6.96**	**0.00**	**76.17**	**20.80**	**29.10**	**-0.06**	**0.50**	**1.80**	**2.84**	**0.53**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	3/1/2021	3/21/2021	5	15	
2	Grading	Grading	3/22/2021	5/21/2021	5	45	
3	Building Construction	Building Construction	5/22/2021	1/28/2022	5	180	
4	Paving	Paving	1/29/2022	3/11/2022	5	30	
5	Architectural Coating	Architectural Coating	3/12/2022	4/22/2022	5	30	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 10.22

Acres of Paving: 0.96

Residential Indoor: 390,015; Residential Outdoor: 130,005; Non-Residential Indoor: 22,500; Non-Residential Outdoor: 7,500; Striped

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Excavators	1	8.00	158	0.38
Site Preparation	Rubber Tired Loaders	2	8.00	203	0.36
Site Preparation	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Grading	Excavators	2	8.00	158	0.38
Grading	Off-Highway Trucks	2	8.00	402	0.38
Grading	Scrapers	4	8.00	367	0.48
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Building Construction	Off-Highway Trucks	2	7.00	402	0.38
Building Construction	Rubber Tired Loaders	2	8.00	203	0.36
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction	Trenchers	2	8.00	78	0.50
Paving	Graders	1	8.00	187	0.41
Paving	Pavers	1	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	1	8.00	80	0.38
Paving	Rubber Tired Loaders	1	8.00	203	0.36
Architectural Coating	Air Compressors	1	6.00	78	0.48
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Building Construction	Welders	1	8.00	46	0.45

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	7	10.00	0.00	75.00	14.70	6.90	5.00	LD_Mix	HDT_Mix	HHDT
Grading	12	25.00	0.00	500.00	14.70	6.90	1.00	LD_Mix	HDT_Mix	HHDT
Building Construction	15	63.00	21.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	13.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Replace Ground Cover

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

3.2 Site Preparation - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1355	0.0000	0.1355	0.0745	0.0000	0.0745	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0318	0.3352	0.1563	3.5000e-004		0.0155	0.0155		0.0143	0.0143	0.0000	30.5740	30.5740	9.8900e-003	0.0000	30.8212
Total	**0.0318**	**0.3352**	**0.1563**	**3.5000e-004**	**0.1355**	**0.0155**	**0.1510**	**0.0745**	**0.0143**	**0.0888**	**0.0000**	**30.5740**	**30.5740**	**9.8900e-003**	**0.0000**	**30.8212**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					

Hauling	1.2000e-004	5.0700e-003	8.7000e-004	1.0000e-005	1.6000e-004	1.0000e-005	1.7000e-004	4.0000e-005	1.0000e-005	5.0000e-005	0.0000	0.9881	0.9881	1.0000e-004	0.0000	0.9905
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.1000e-004	2.3000e-004	2.6100e-003	1.0000e-005	8.2000e-004	1.0000e-005	8.3000e-004	2.2000e-004	1.0000e-005	2.2000e-004	0.0000	0.7168	0.7168	2.0000e-005	0.0000	0.7172
Total	**4.3000e-004**	**5.3000e-003**	**3.4800e-003**	**2.0000e-005**	**9.8000e-004**	**2.0000e-005**	**1.0000e-003**	**2.6000e-004**	**2.0000e-005**	**2.7000e-004**	**0.0000**	**1.7048**	**1.7048**	**1.2000e-004**	**0.0000**	**1.7077**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0502	0.0000	0.0502	0.0276	0.0000	0.0276	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0318	0.3352	0.1563	3.5000e-004		0.0155	0.0155		0.0143	0.0143	0.0000	30.5739	30.5739	9.8900e-003	0.0000	30.8211
Total	**0.0318**	**0.3352**	**0.1563**	**3.5000e-004**	**0.0502**	**0.0155**	**0.0657**	**0.0276**	**0.0143**	**0.0419**	**0.0000**	**30.5739**	**30.5739**	**9.8900e-003**	**0.0000**	**30.8211**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.2000e-004	5.0700e-003	8.7000e-004	1.0000e-005	1.6000e-004	1.0000e-005	1.7000e-004	4.0000e-005	1.0000e-005	5.0000e-005	0.0000	0.9881	0.9881	1.0000e-004	0.0000	0.9905
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.1000e-004	2.3000e-004	2.6100e-003	1.0000e-005	8.2000e-004	1.0000e-005	8.3000e-004	2.2000e-004	1.0000e-005	2.2000e-004	0.0000	0.7168	0.7168	2.0000e-005	0.0000	0.7172
Total	**4.3000e-004**	**5.3000e-003**	**3.4800e-003**	**2.0000e-005**	**9.8000e-004**	**2.0000e-005**	**1.0000e-003**	**2.6000e-004**	**2.0000e-005**	**2.7000e-004**	**0.0000**	**1.7048**	**1.7048**	**1.2000e-004**	**0.0000**	**1.7077**

3.3 Grading - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1412	0.0000	0.1412	0.0751	0.0000	0.0751	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.1634	1.7625	1.1722	2.6700e-003		0.0721	0.0721		0.0663	0.0663	0.0000	234.7323	234.7323	0.0759	0.0000	236.6302
Total	**0.1634**	**1.7625**	**1.1722**	**2.6700e-003**	**0.1412**	**0.0721**	**0.2133**	**0.0751**	**0.0663**	**0.1414**	**0.0000**	**234.7323**	**234.7323**	**0.0759**	**0.0000**	**236.6302**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	4.9000e-004	0.0254	3.6700e-003	3.0000e-005	2.2000e-004	2.0000e-005	2.4000e-004	6.0000e-005	2.0000e-005	8.0000e-005	0.0000	3.3656	3.3656	4.7000e-004	0.0000	3.3773
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.3400e-003	1.7300e-003	0.0196	6.0000e-005	6.1700e-003	5.0000e-005	6.2200e-003	1.6400e-003	4.0000e-005	1.6800e-003	0.0000	5.3756	5.3756	1.4000e-004	0.0000	5.3792
Total	**2.8300e-003**	**0.0272**	**0.0233**	**9.0000e-005**	**6.3900e-003**	**7.0000e-005**	**6.4600e-003**	**1.7000e-003**	**6.0000e-005**	**1.7600e-003**	**0.0000**	**8.7412**	**8.7412**	**6.1000e-004**	**0.0000**	**8.7565**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	tons/yr										MT/yr					
Fugitive Dust					0.0523	0.0000	0.0523	0.0278	0.0000	0.0278	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.1634	1.7625	1.1722	2.6700e-003		0.0721	0.0721		0.0663	0.0663	0.0000	234.7320	234.7320	0.0759	0.0000	236.6299
Total	**0.1634**	**1.7625**	**1.1722**	**2.6700e-003**	**0.0523**	**0.0721**	**0.1244**	**0.0278**	**0.0663**	**0.0942**	**0.0000**	**234.7320**	**234.7320**	**0.0759**	**0.0000**	**236.6299**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	4.9000e-004	0.0254	3.6700e-003	3.0000e-005	2.2000e-004	2.0000e-005	2.4000e-004	6.0000e-005	2.0000e-005	8.0000e-005	0.0000	3.3656	3.3656	4.7000e-004	0.0000	3.3773
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.3400e-003	1.7300e-003	0.0196	6.0000e-005	6.1700e-003	5.0000e-005	6.2200e-003	1.6400e-003	4.0000e-005	1.6800e-003	0.0000	5.3756	5.3756	1.4000e-004	0.0000	5.3792
Total	**2.8300e-003**	**0.0272**	**0.0233**	**9.0000e-005**	**6.3900e-003**	**7.0000e-005**	**6.4600e-003**	**1.7000e-003**	**6.0000e-005**	**1.7600e-003**	**0.0000**	**8.7412**	**8.7412**	**6.1000e-004**	**0.0000**	**8.7565**

3.4 Building Construction - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.3530	3.3116	2.5034	5.5400e-003		0.1651	0.1651		0.1535	0.1535	0.0000	482.9907	482.9907	0.1410	0.0000	486.5153
Total	**0.3530**	**3.3116**	**2.5034**	**5.5400e-003**		**0.1651**	**0.1651**		**0.1535**	**0.1535**	**0.0000**	**482.9907**	**482.9907**	**0.1410**	**0.0000**	**486.5153**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	4.7800e-003	0.1626	0.0403	4.2000e-004	0.0106	3.3000e-004	0.0109	3.0600e-003	3.1000e-004	3.3700e-003	0.0000	41.0166	41.0166	2.5900e-003	0.0000	41.0815
Worker	0.0210	0.0155	0.1756	5.3000e-004	0.0553	4.1000e-004	0.0557	0.0147	3.8000e-004	0.0151	0.0000	48.1653	48.1653	1.2900e-003	0.0000	48.1976
Total	**0.0258**	**0.1781**	**0.2159**	**9.5000e-004**	**0.0659**	**7.4000e-004**	**0.0666**	**0.0178**	**6.9000e-004**	**0.0184**	**0.0000**	**89.1819**	**89.1819**	**3.8800e-003**	**0.0000**	**89.2790**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.3530	3.3116	2.5034	5.5400e-003		0.1651	0.1651		0.1535	0.1535	0.0000	482.9901	482.9901	0.1410	0.0000	486.5147
Total	**0.3530**	**3.3116**	**2.5034**	**5.5400e-003**		**0.1651**	**0.1651**		**0.1535**	**0.1535**	**0.0000**	**482.9901**	**482.9901**	**0.1410**	**0.0000**	**486.5147**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	4.7800e-003	0.1626	0.0403	4.2000e-004	0.0106	3.3000e-004	0.0109	3.0600e-003	3.1000e-004	3.3700e-003	0.0000	41.0166	41.0166	2.5900e-003	0.0000	41.0815
Worker	0.0210	0.0155	0.1756	5.3000e-004	0.0553	4.1000e-004	0.0557	0.0147	3.8000e-004	0.0151	0.0000	48.1653	48.1653	1.2900e-003	0.0000	48.1976
Total	**0.0258**	**0.1781**	**0.2159**	**9.5000e-004**	**0.0659**	**7.4000e-004**	**0.0666**	**0.0178**	**6.9000e-004**	**0.0184**	**0.0000**	**89.1819**	**89.1819**	**3.8800e-003**	**0.0000**	**89.2790**

3.4 Building Construction - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0394	0.3545	0.3050	6.9000e-004		0.0175	0.0175		0.0162	0.0162	0.0000	60.3984	60.3984	0.0176	0.0000	60.8382
Total	**0.0394**	**0.3545**	**0.3050**	**6.9000e-004**		**0.0175**	**0.0175**		**0.0162**	**0.0162**	**0.0000**	**60.3984**	**60.3984**	**0.0176**	**0.0000**	**60.8382**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	5.6000e-004	0.0193	4.7600e-003	5.0000e-005	1.3200e-003	4.0000e-005	1.3600e-003	3.8000e-004	3.0000e-005	4.2000e-004	0.0000	5.0819	5.0819	3.1000e-004	0.0000	5.0897
Worker	2.4700e-003	1.7500e-003	0.0203	6.0000e-005	6.9100e-003	5.0000e-005	6.9600e-003	1.8400e-003	5.0000e-005	1.8800e-003	0.0000	5.8048	5.8048	1.5000e-004	0.0000	5.8085

Total	**3.0300e-003**	**0.0210**	**0.0250**	**1.1000e-004**	**8.2300e-003**	**9.0000e-005**	**8.3200e-003**	**2.2200e-003**	**8.0000e-005**	**2.3000e-003**	**0.0000**	**10.8867**	**10.8867**	**4.6000e-004**	**0.0000**	**10.8982**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0394	0.3545	0.3050	6.9000e-004		0.0175	0.0175		0.0162	0.0162	0.0000	60.3983	60.3983	0.0176	0.0000	60.8381
Total	**0.0394**	**0.3545**	**0.3050**	**6.9000e-004**		**0.0175**	**0.0175**		**0.0162**	**0.0162**	**0.0000**	**60.3983**	**60.3983**	**0.0176**	**0.0000**	**60.8381**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	5.6000e-004	0.0193	4.7600e-003	5.0000e-005	1.3200e-003	4.0000e-005	1.3600e-003	3.8000e-004	3.0000e-005	4.2000e-004	0.0000	5.0819	5.0819	3.1000e-004	0.0000	5.0897
Worker	2.4700e-003	1.7500e-003	0.0203	6.0000e-005	6.9100e-003	5.0000e-005	6.9600e-003	1.8400e-003	5.0000e-005	1.8800e-003	0.0000	5.8048	5.8048	1.5000e-004	0.0000	5.8085
Total	**3.0300e-003**	**0.0210**	**0.0250**	**1.1000e-004**	**8.2300e-003**	**9.0000e-005**	**8.3200e-003**	**2.2200e-003**	**8.0000e-005**	**2.3000e-003**	**0.0000**	**10.8867**	**10.8867**	**4.6000e-004**	**0.0000**	**10.8982**

3.5 Paving - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0215	0.2337	0.1963	4.3000e-004		9.5600e-003	9.5600e-003		8.8000e-003	8.8000e-003	0.0000	37.3566	37.3566	0.0121	0.0000	37.6587
Paving	1.2600e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0228**	**0.2337**	**0.1963**	**4.3000e-004**		**9.5600e-003**	**9.5600e-003**		**8.8000e-003**	**8.8000e-003**	**0.0000**	**37.3566**	**37.3566**	**0.0121**	**0.0000**	**37.6587**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	8.8000e-004	6.3000e-004	7.2400e-003	2.0000e-005	2.4700e-003	2.0000e-005	2.4900e-003	6.6000e-004	2.0000e-005	6.7000e-004	0.0000	2.0731	2.0731	5.0000e-005	0.0000	2.0745
Total	**8.8000e-004**	**6.3000e-004**	**7.2400e-003**	**2.0000e-005**	**2.4700e-003**	**2.0000e-005**	**2.4900e-003**	**6.6000e-004**	**2.0000e-005**	**6.7000e-004**	**0.0000**	**2.0731**	**2.0731**	**5.0000e-005**	**0.0000**	**2.0745**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0215	0.2337	0.1963	4.3000e-004		9.5600e-003	9.5600e-003		8.8000e-003	8.8000e-003	0.0000	37.3566	37.3566	0.0121	0.0000	37.6586
Paving	1.2600e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Total	**0.0228**	**0.2337**	**0.1963**	**4.3000e-004**		**9.5600e-003**	**9.5600e-003**		**8.8000e-003**	**8.8000e-003**	**0.0000**	**37.3566**	**37.3566**	**0.0121**	**0.0000**	**37.6586**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	8.8000e-004	6.3000e-004	7.2400e-003	2.0000e-005	2.4700e-003	2.0000e-005	2.4900e-003	6.6000e-004	2.0000e-005	6.7000e-004	0.0000	2.0731	2.0731	5.0000e-005	0.0000	2.0745
Total	**8.8000e-004**	**6.3000e-004**	**7.2400e-003**	**2.0000e-005**	**2.4700e-003**	**2.0000e-005**	**2.4900e-003**	**6.6000e-004**	**2.0000e-005**	**6.7000e-004**	**0.0000**	**2.0731**	**2.0731**	**5.0000e-005**	**0.0000**	**2.0745**

3.6 Architectural Coating - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.6403					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	3.0700e-003	0.0211	0.0272	4.0000e-005		1.2300e-003	1.2300e-003		1.2300e-003	1.2300e-003	0.0000	3.8299	3.8299	2.5000e-004	0.0000	3.8361
Total	**0.6434**	**0.0211**	**0.0272**	**4.0000e-005**		**1.2300e-003**	**1.2300e-003**		**1.2300e-003**	**1.2300e-003**	**0.0000**	**3.8299**	**3.8299**	**2.5000e-004**	**0.0000**	**3.8361**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	7.6000e-004	5.4000e-004	6.2700e-003	2.0000e-005	2.1400e-003	2.0000e-005	2.1500e-003	5.7000e-004	1.0000e-005	5.8000e-004	0.0000	1.7967	1.7967	5.0000e-005	0.0000	1.7979
Total	**7.6000e-004**	**5.4000e-004**	**6.2700e-003**	**2.0000e-005**	**2.1400e-003**	**2.0000e-005**	**2.1500e-003**	**5.7000e-004**	**1.0000e-005**	**5.8000e-004**	**0.0000**	**1.7967**	**1.7967**	**5.0000e-005**	**0.0000**	**1.7979**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.6403					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	3.0700e-003	0.0211	0.0272	4.0000e-005		1.2300e-003	1.2300e-003		1.2300e-003	1.2300e-003	0.0000	3.8299	3.8299	2.5000e-004	0.0000	3.8361
Total	**0.6434**	**0.0211**	**0.0272**	**4.0000e-005**		**1.2300e-003**	**1.2300e-003**		**1.2300e-003**	**1.2300e-003**	**0.0000**	**3.8299**	**3.8299**	**2.5000e-004**	**0.0000**	**3.8361**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Worker	7.6000e-004	5.4000e-004	6.2700e-003	2.0000e-005	2.1400e-003	2.0000e-005	2.1500e-003	5.7000e-004	1.0000e-005	5.8000e-004	0.0000	1.7967	1.7967	5.0000e-005	0.0000	1.7979
Total	**7.6000e-004**	**5.4000e-004**	**6.2700e-003**	**2.0000e-005**	**2.1400e-003**	**2.0000e-005**	**2.1500e-003**	**5.7000e-004**	**1.0000e-005**	**5.8000e-004**	**0.0000**	**1.7967**	**1.7967**	**5.0000e-005**	**0.0000**	**1.7979**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.2979	1.7000	4.0601	0.0156	1.3115	0.0124	1.3239	0.3515	0.0115	0.3630	0.0000	1,443.9224	1,443.9224	0.0686	0.0000	1,445.6371
Unmitigated	0.2979	1.7000	4.0601	0.0156	1.3115	0.0124	1.3239	0.3515	0.0115	0.3630	0.0000	1,443.9224	1,443.9224	0.0686	0.0000	1,445.6371

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
City Park	0.00	0.00	0.00		
Single Family Housing	1,010.08	1,010.08	1010.08	3,451,597	3,451,597
Parking Lot	0.00	0.00	0.00		
Total	1,010.08	1,010.08	1,010.08	3,451,597	3,451,597

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
City Park	16.60	8.40	6.90	33.00	48.00	19.00	66	28	6
Single Family Housing	14.70	5.90	8.70	40.20	19.20	40.60	86	11	3
Parking Lot	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
City Park	0.549559	0.042893	0.201564	0.118533	0.015569	0.005846	0.021394	0.034255	0.002099	0.001828	0.004855	0.000709	0.000896
Single Family Housing	0.549559	0.042893	0.201564	0.118533	0.015569	0.005846	0.021394	0.034255	0.002099	0.001828	0.004855	0.000709	0.000896
Parking Lot	0.549559	0.042893	0.201564	0.118533	0.015569	0.005846	0.021394	0.034255	0.002099	0.001828	0.004855	0.000709	0.000896

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	301.9395	301.9395	0.0125	2.5800e-003	303.0197
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	301.9395	301.9395	0.0125	2.5800e-003	303.0197
NaturalGas Mitigated	0.0177	0.1509	0.0642	9.6000e-004		0.0122	0.0122		0.0122	0.0122	0.0000	174.7018	174.7018	3.3500e-003	3.2000e-003	175.7400
NaturalGas Unmitigated	0.0177	0.1509	0.0642	9.6000e-004		0.0122	0.0122		0.0122	0.0122	0.0000	174.7018	174.7018	3.3500e-003	3.2000e-003	175.7400

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					

City Park	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Single Family Housing	3.27379e+006	0.0177	0.1509	0.0642	9.6000e-004		0.0122	0.0122		0.0122	0.0122	0.0000	174.7018	174.7018	3.3500e-003	3.2000e-003	175.7400
Total		**0.0177**	**0.1509**	**0.0642**	**9.6000e-004**		**0.0122**	**0.0122**		**0.0122**	**0.0122**	**0.0000**	**174.7018**	**174.7018**	**3.3500e-003**	**3.2000e-003**	**175.7400**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
City Park	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Single Family Housing	3.27379e+006	0.0177	0.1509	0.0642	9.6000e-004		0.0122	0.0122		0.0122	0.0122	0.0000	174.7018	174.7018	3.3500e-003	3.2000e-003	175.7400
Total		**0.0177**	**0.1509**	**0.0642**	**9.6000e-004**		**0.0122**	**0.0122**		**0.0122**	**0.0122**	**0.0000**	**174.7018**	**174.7018**	**3.3500e-003**	**3.2000e-003**	**175.7400**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
City Park	0	0.0000	0.0000	0.0000	0.0000
Parking Lot	14980	4.7730	2.0000e-004	4.0000e-005	4.7900
Single Family Housing	932663	297.1665	0.0123	2.5400e-003	298.2297
Total		**301.9395**	**0.0125**	**2.5800e-003**	**303.0197**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
City Park	0	0.0000	0.0000	0.0000	0.0000
Parking Lot	14980	4.7730	2.0000e-004	4.0000e-005	4.7900
Single Family Housing	932663	297.1665	0.0123	2.5400e-003	298.2297
Total		**301.9395**	**0.0125**	**2.5800e-003**	**303.0197**

6.0 Area Detail

6.1 Mitigation Measures Area

Use only Natural Gas Hearths

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.8528	0.0327	1.1145	1.9000e-004		7.7200e-003	7.7200e-003		7.7200e-003	7.7200e-003	0.0000	24.9304	24.9304	2.1900e-003	4.2000e-004	25.1114
Unmitigated	1.2009	0.0405	1.7862	1.7900e-003		0.1083	0.1083		0.1083	0.1083	11.3654	23.6456	35.0111	0.0356	7.7000e-004	36.1319

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0640					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.7529					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	0.3505	0.0278	0.6802	1.7400e-003		0.1022	0.1022		0.1022	0.1022	11.3654	21.8405	33.2059	0.0339	7.7000e-004	34.2831
Landscaping	0.0335	0.0128	1.1060	6.0000e-005		6.1100e-003	6.1100e-003		6.1100e-003	6.1100e-003	0.0000	1.8051	1.8051	1.7500e-003	0.0000	1.8488
Total	**1.2009**	**0.0405**	**1.7862**	**1.8000e-003**		**0.1083**	**0.1083**		**0.1083**	**0.1083**	**11.3654**	**23.6456**	**35.0111**	**0.0356**	**7.7000e-004**	**36.1319**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0640					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.7529					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	2.3400e-003	0.0200	8.5000e-003	1.3000e-004		1.6100e-003	1.6100e-003		1.6100e-003	1.6100e-003	0.0000	23.1252	23.1252	4.4000e-004	4.2000e-004	23.2626
Landscaping	0.0335	0.0128	1.1060	6.0000e-005		6.1100e-003	6.1100e-003		6.1100e-003	6.1100e-003	0.0000	1.8051	1.8051	1.7500e-003	0.0000	1.8488
Total	**0.8528**	**0.0327**	**1.1145**	**1.9000e-004**		**7.7200e-003**	**7.7200e-003**		**7.7200e-003**	**7.7200e-003**	**0.0000**	**24.9304**	**24.9304**	**2.1900e-003**	**4.2000e-004**	**25.1114**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	48.2955	0.2291	5.7600e-003	55.7380
Unmitigated	48.2955	0.2291	5.7600e-003	55.7380

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
City Park	0 / 0.452763	1.6027	7.0000e-005	1.0000e-005	1.6085
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Single Family Housing	6.97148 / 4.39506	46.6928	0.2290	5.7400e-003	54.1295
Total		**48.2955**	**0.2291**	**5.7500e-003**	**55.7380**

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			

City Park	0 / 0.452763	1.6027	7.0000e-005	1.0000e-005	1.6085
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Single Family Housing	6.97148 / 4.39506	46.6928	0.2290	5.7400e-003	54.1295
Total		**48.2955**	**0.2291**	**5.7500e-003**	**55.7380**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	25.4733	1.5054	0.0000	63.1091
Unmitigated	25.4733	1.5054	0.0000	63.1091

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
City Park	0.03	6.0900e-003	3.6000e-004	0.0000	0.0151
Parking Lot	0	0.0000	0.0000	0.0000	0.0000

Single Family Housing	125.46	25.4673	1.5051	0.0000	63.0940
Total		**25.4733**	**1.5054**	**0.0000**	**63.1091**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
City Park	0.03	6.0900e-003	3.6000e-004	0.0000	0.0151
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Single Family Housing	125.46	25.4673	1.5051	0.0000	63.0940
Total		**25.4733**	**1.5054**	**0.0000**	**63.1091**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Appendix I
Phase I Environmental Site Assessment

HIGHLAND RESIDENTIAL PROJECT
INITIAL STUDY

PHASE I ENVIRONMENTAL SITE ASSESSMENT REPORT
NW Corner of Hemlock and Highland Aves.
Fontana, CA 92336
ASSESSOR PARCEL NUMBER 0228-021-08 & 0228-021-09

Prepared For:

Stratham Development Company
2201 Dupont Drive, Suite 300
Irvine, CA 92612

Project No. 12282.002

February 28, 2019

Leighton and Associates, Inc.
A LEIGHTON GROUP COMPANY

Leighton and Associates, Inc.
A LEIGHTON GROUP COMPANY

February 28, 2019

Project No. 12282.002

Stratham Development Company
2201 Dupont Drive, Suite 300
Irvine, CA 92612

Attention: Mr. Pat Potts

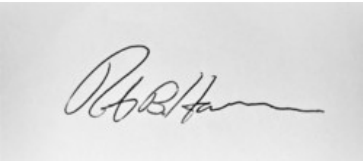
Subject: Phase I Environmental Site Assessment
NW Corner of Hemlock and Highland Aves.
Fontana, San Bernardino, CA 92336
APNs: 0228-021-08 & 0228-021-09

Leighton and Associates, Inc. (Leighton) is pleased to present this Phase I Environmental Site Assessment Report for the property located at NW Corner of Hemlock and Highland Aves., in the City of Fontana, San Bernardino County, California (Site). Leighton declares that, to the best of our professional knowledge and belief, we meet the definition of Environmental Professional as defined in §312.10 of 40 Code of Federal Regulations (CFR) 312, and the ASTM International (ASTM) Standard E1527-13. Leighton has the specific qualifications based on education, training, and experience to assess a property of the nature, history, and setting of the Site. Leighton has developed and performed the all appropriate inquiries in conformance with the standards and practices set forth in 40 CFR Part 312.

If you have questions regarding this report, please contact us. We appreciate the opportunity to be of service.

Respectfully submitted,

Leighton and Associates, Inc.



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Project Summary

Provided below for convenience, is a brief table summarizing the assessment results. Additional information, details and discussion are presented in the body of the report. This summary table is limited, and should not be relied upon as a stand-alone report.

Report Section		No Further Action	REC	CREC	HREC	Opinion
3.0	USER PROVIDED INFORMATION	✔				User provided information provided no obvious evidence to indicate a likely REC on the Site.
4.1	Standard Environmental Record Sources	✔				A review of Standard Records Sources revealed no listings for the Site itself. Listings for other properties or facilities within the Site vicinity indicated a low likelihood they have impacted the Site with a REC. In addition, none of the listed nearby properties/facilities are considered a Vapor Encroachment Condition (VEC) for the Site.
4.2	Physical Settings Source(s)	✔				The site is located on a gently sloping alluvial plain. Shallow soils at the Site are generally gravelly silty sand. Based on well data from the general Site vicinity, the depth to first major groundwater is expected to be approximately 400 feet. The flow direction of groundwater is anticipated to be toward the south to southwest.

Report Section		No Further Action	REC	CREC	HREC	Opinion
4.4	Historical Use Information on the Property		✔			Historical sources revealed the subject site was used for agricultural purposes (likely vineyards) from approximately the 1930s through 1980s. Small farm related structures (residence or outbuildings) were visible in the northeast Site corner in the 1930s through 1950s. What appears to be an above-ground tank, and possible small outbuildings, were also visible during this same time period in the northwest Site corner. Historical site usage for agriculture, and possible farm related outbuildings, are considered potential evidence of a REC due to likely former pesticide usage. A limited assessment of the shallow soil for Organochlorine Pesticides, Arsenic and Copper is recommended.
4.5	Historical Use Information on Adjacent Property	✔				The historical adjoining property information sources (aerial photos and topographic maps) do not indicate obvious visual evidence of a source that is likely to have caused a REC on the Site.
5.0	SITE RECONNAISSANCE	✔				The site reconnaissance revealed no obvious evidence to indicate a likely REC on the Site.
6.0	INTERVIEWS	✔				Interview/questionnaire information provided by the Owner / Site Contact (Susan Chow) revealed no information to indicate likely evidence of a REC.

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1.0 INTRODUCTION

Leighton Consulting Inc. (Leighton) has performed a Phase I Environmental Site Assessment (ESA) for the subject property located at NW Corner of Hemlock and Highland Aves. in Fontana, San Bernardino, CA (see Site Location Map – Figure 1). Provide below is information regarding the purpose, scope of work, assumptions and limitations associated with this is Phase I ESA.

1.1 Authorization

Leighton and Associates, Inc. (Leighton) performed this Phase I ESA for Stratham Development Company in accordance with Stratham Development Company's authorization No. C1025002.

1.2 Purpose

The purpose of the Phase I ESA was to identify, to the extent feasible and pursuant to the processes prescribed in ASTM International (ASTM) E1527-13, recognized environmental conditions (RECs), historical RECs (HRECs), or controlled RECs (CRECs) in connection with the subject site.

RECs are defined, according to ASTM E1527-13 as: "*the presence or likely presence of any hazardous substances or petroleum products in, on, or at a property: (1) due to any release to the environment; (2) under conditions indicative of a release to the environment; or (3) under conditions that pose a material threat of a future release to the environment. De minimis conditions are not RECs.*" Per ASTM 1527-13, a *de minimis* condition is defined as "*a condition that generally does not present a threat to human health or the environment and that generally would not be the subject of an enforcement action if brought to the attention of appropriate governmental agencies.*"

HRECs are defined, according to ASTM E1527-13 as: "*a past release of any hazardous substances or petroleum products that has occurred in connection with the property and has been addressed to the satisfaction of the applicable regulatory authority or meeting unrestricted use criteria established by a regulatory authority, without subjecting the property to any required controls.*"

CRECs are defined, according to ASTM E1527-13 as: "*a REC resulting from a past release of hazardous substances or petroleum products that has been addressed to the satisfaction of the applicable regulatory authority, with hazardous substances or petroleum products allowed to remain in place subject to the implementation of required*

controls" (ASTM 1527-13, 2013).

1.3 Scope of Work

The scope of work was performed in accordance with Leighton's proposal and included the following tasks:

- A reconnaissance-level visit of the Site for evidence of the release(s) of hazardous substances and/or petroleum products and to assess the potential for onsite releases of hazardous substances and petroleum products;
- Records review (including review of any previous environmental reports, selected governmental databases, and historical site usage review);
- Interviews; and
- Preparation of a report presenting our findings.

1.4 Significant Assumptions

Leighton assumes that the purpose of this Phase I ESA is to provide appropriate inquiry into the previous ownership and use of the subject site so that the Client may qualify for the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) landowner liability protections as defined in CERCLA, 42USC §9601(35)(B). Leighton also assumes that the information provided by the Client and its agents, regulatory database provider, and regulatory agencies is true and reliable.

1.5 Limitations and Exceptions

Leighton performed the Phase I ESA in conformance with the scope and limitations of ASTM Practice E1527-13 of the Site. There were no exceptions to, or deletions from, this practice.

Property-specific activities performed by Leighton and information collected regarding these activities are summarized in the following sections. The findings of this Phase I ESA are presented in Section 7.0. Opinions and Conclusions drawn by Leighton, based on the information collected as part of the Phase I ESA, are presented in Sections 8.0 and 9.0, respectively. References are included as Appendix A. Site Photographs are presented in Appendix B. Client Supplied documentation is included as Appendix C. Research of environmental liens is documented in Appendix D. The Environmental Database Report is included as Appendix E. Regulatory

records requests and responses are included as Appendix F. Historical documentation is provided in Appendix G. The GBA Geoenvironmental Report is provided in Appendix H.

This Phase I ESA was conducted in a manner consistent with the level of care and skill ordinarily exercised by members of the profession currently practicing in the same locality under similar conditions.

The observations and conclusions presented in this report are professional opinions based on the scope of activities, work schedule, and information obtained through the Phase I ESA described herein. Opinions presented herein apply to property conditions existing at the time of our study and cannot necessarily be taken to apply to property conditions or changes that we are not aware of or have not had the opportunity to evaluate. It must be recognized that conclusions drawn from these data are limited to the amount, type, distribution,and integrity of the information collected at the time of the investigation, and the methods utilized to collect and evaluate the data. Although Leighton has taken steps to obtain true copies of available information, we make no representation or warranty with respect to the accuracy or completeness of the information provided by others.

This practice does not address whether requirements in addition to all appropriate inquiry have been met in order to qualify for the landowner liability protections including the continuing obligation not to impede the integrity and effectiveness of activity and use limitations, or the duty to take reasonable steps to prevent releases, or the duty to comply with legally required release reporting obligations. Users should also be aware that there are likely to be other legal obligations with regard to hazardous substances or petroleum products discovered on the subject site that are not addressed in this practice and that may pose risks of civil and/or criminal sanctions for non-compliance.

1.6 Special Terms and Conditions

Unless otherwise indicated, the scope of work for this Phase I ESA did not include items such as testing of electrical equipment for the presence of polychlorinated biphenyls (PCBs), or the collection of environmental samples, such as soil, soil vapor, water, suspected asbestos-containing building materials, or lead-based paint. Also not included was an assessment for potential methane gas, mold, radionuclides, biological agents, lead in drinking water, indoor air quality, or assessment of nonchemical hazards such as the potential for damage from earthquakes or floods, or the presence of endangered species or wildlife habitats. This Phase I ESA also did

not include an assessment of the environmental compliance status of the subject site or of businesses operating at the subject site, or a health-based risk assessment.

1.7 User Reliance

This report has been completed for the exclusive use of Stratham Development Company. Use of this report by any other party shall be for informational purposes only at such party's sole risk. If other persons or entities wish to rely upon this report, Leighton will require that such parties agree in writing to Leighton's contract terms.

1.8 Important Information about Geoenvironmental Reports

Stratham Development Company is referred to **Appendix H** regarding important information provided by the Geoprofessional Business Association (GBA) on geoenvironmental studies and reports.

2.0 SITE DESCRIPTION

The Site is a vacant, unfenced lot with low weed growth, scattered areas with larger trees, and evidence of some former, older structures (old foundations) in its northeastern-most corner.

2.1 General Description

The Site is located at NW Corner of Hemlock and Highland Aves., in Fontana, CA 92336 (**Figure 1** – Site Location Map). The San Bernardino Assessor's Parcel Numbers (APNs) assigned to the Site are 0228-021-08 & 0228-021-09. The Site is approximately 11.06 in size and is currently Vacant land. The surrounding vicinity is occupied mostly by vacant land, the 210 freeway, and newer multi-family residential apartments/townhomes.

Property Description Summary	
Property Address	NW Corner of Hemlock and Highland Aves., Fontana, CA 92336
Historical Address(es)	There are no known addresses associated with the Site.
Legal Description	A legal description is provided within the lien search report in Appendix D.
Owner Name	Susan Chow, Susan Chow / John Chow
Property Parcel Numbers	San Bernardino County APN nos. 0228-021-08 & 0228-021-09
Building Area	There are no buildings on the Site.
Building Construction	N/A - The site is vacant with no surface structures
Units	N/A
Year Built	N/A
Number of Floors	N/A
Parcel(s) Area	11.06
Current Tenant(s)	N/A
Suspected Release	No suspected releases were reported or identified.
Environmental Liens	No environmental liens were reported by the Property owner or identified.

Property Description Summary	
AULs	No Activity and Use Limitations were reported or identified.
Description of Structures, Roads and Other Site Improvements	
Number of Buildings	None
Potable Water Supply	N/A - Property is vacant
Septic/Sewage	N/A - Property is vacant
Waste Disposal	N/A - Property is vacant.
Other Public Utilities	N/A - Property is vacant.
Road/alleys/parking	The site is bound to the south by S. Highland Avenue, and partially to the east by Hemlock Avenue.

2.2 Current Uses of Adjoining Properties

Leighton observed the adjoining property uses. None of these observations indicated a likely REC for the Site.

Direction from Site	Current Use
North	The property adjoining north is a small drainage culvert and a hillside sloping upward to the 210 Freeway (**see Appendix B, Photos 1 and 2**).
East	The property adjoining east is a private islamic school for kindergarden/elementary age , and Hemlock Avenue (**see Appendix B, Photos 3 and 4**).
South	The property adjoining south is occupied by newer, multi-family residential apartments/townhomes (across S. Highland Avenue) (see **Appendix B, Photo 5**).
West	The property adjoining west is vacant and undeveloped (**see Appendix B, Photo 6**)

Adjacent Property Photos

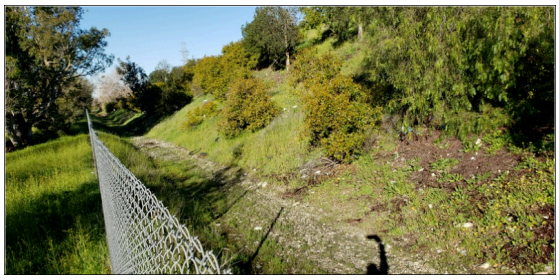

Photo 1: (lookin W-NW) Adjoining North Property - drainage culvert and slope up to 210 Freeway (at right)

Photo 2: (looking N) Adjoining North Property - slope up to 210 Freeway

Photo 3: (looking N) Adjoining East Property - Private Islamic School (at right)

Photo 4: (looking N-NW) Adjoining East Property - Private Islamic School and Hemlock Ave (lower right). Eastern most portion of subject Site is in lower left foreground.

Photo 5: (looking SW) Adjoining South Property - Apartment / Townhomes (across S. Highland Ave)

Photo 6 (looking SW) Adjoining West Property - Vacant undeveloped property (at right of wooden posts)

3.0 USER PROVIDED INFORMATION

User Provided Information	Issue Identified	Comments
Environmental Liens or Activity and Use Limitations	No	A questionnaire completed by the User (Stratham Development Company) is provided in **Appendix C**. Stratham Development Company indicated that they were not aware of environmental liens or activity and use limitations (AULs) filed or recorded for the subject site. In addition, a review of the National Environmental Title Research Environmental Lien and AUL Search report revealed no detected environmental liens or AULs. A copy of the National Environmental Title Research Environmental Lien and AUL Search Report is provided in **Appendix D.**
Specialized Knowledge	No	Stratham Development Company indicated that they do not have specialized knowledge or experience related to Site.
Commonly Known or Reasonably Ascertainable Information	No	Stratham Development Company indicated that they are not aware of the past uses of the Site, are not aware of any specific chemicals that were once present on the Site, and are not aware any environmental cleanups that may have occurred on the Site.
Valuation Reduction for Environmental Issues	No	Stratham Development Company has yet to acquired the Site; however, they have indicated the purchase price reflects the fair market value.
Owner, Property Manager, and Occupant Information	No	Susan Chow is the current owner of the Site. Refer to Section 6.0 for owner interview information.

User Provided Information	Issue Identified	Comments
Reason for Performing Phase I ESA	No	Stratham Development Company indicated the reason for performing this Phase I ESA is to assess environmental conditions prior to Site purchase and development with residential housing.
Other	No	Leighton did not conduct other interviews for this Phase I ESA with the exception of the Owner Interview described in Section 6.0.

4.0 RECORDS REVIEW

Leighton Consulting, Inc. completed a search/review of numerous sources of records related to the Site and nearby properties, in regards to their potential to assess for evidence of a likely REC. Provided below is a summary discussion of the results of these record searches/reviews.

4.1 Standard Environmental Record Sources

A search of selected government databases was conducted by Leighton Consulting, Inc. using the ERIS Database Search Report, dated February 11, 2019. A copy of this database search report is in **Appendix E**. The database search meets the government records search requirements of ASTM E1527-13 Standard Practice for Phase I Environmental Site Assessments.

Provided in the table below is a summary of the more applicable searched databases, the radii searched for each of these databases, and the number and distances of detected listings within each database.

Regulatory Report Summary

Database	Search Radius	Target Property	Within 0.12mi	0.12mi to 0.25mi	0.25mi to 0.50mi	0.50mi to 1.00mi	Total
AST	0.25	0	0	0	-	-	0
CERCLIS	0.5	0	0	0	0	-	0
CERCLIS LIENS	0.02	0	-	-	-	-	0
CERCLIS NFRAP	0.5	0	0	0	0	-	0
CERS HAZ	0.125	0	3	-	-	-	3
CERS TANK	0.25	0	1	0	-	-	1
CHMIRS	0.02	0	-	-	-	-	0
CLEANUP SITES	0.5	0	1	1	0	-	2
DEED	0.5	0	0	0	0	-	0
DELETED NPL	0.5	0	0	0	0	-	0
DELISTED CTNK	0.25	0	0	0	-	-	0
DELISTED DRYCLEANERS	0.25	0	0	0	-	-	0

Database	Search Radius	Target Property	Within 0.12mi	0.12mi to 0.25mi	0.25mi to 0.50mi	0.50mi to 1.00mi	Total
DELISTED ENVS	1.0	0	0	0	0	0	0
DELISTED FED DRY	0.25	0	0	0	-	-	0
DELISTED HAZ	0.5	0	0	0	0	-	0
DELISTED ILST	0.5	0	0	0	0	-	0
DELISTED IUST	0.25	0	0	0	-	-	0
DELISTED LST	0.5	0	0	0	0	-	0
DELISTED TNK	0.25	0	0	0	-	-	0
DRYC GRANT	0.25	0	0	0	-	-	0
DRYCLEANERS	0.25	0	0	0	-	-	0
DTSC HWF	0.5	0	0	0	0	-	0
EMISSIONS	0.25	0	0	0	-	-	0
ENVIROSTOR	1.0	0	1	1	3	5	10
ERNS	0.02	0	-	-	-	-	0
ERNS 1982 TO 1986	0.02	0	-	-	-	-	0
ERNS 1987 TO 1989	0.02	0	-	-	-	-	0
FED BROWNFIELDS	0.5	0	0	0	0	-	0
FED DRYCLEANERS	0.25	0	0	0	-	-	0
FINDS/FRS	0.02	0	-	-	-	-	0
FTTS ADMIN	0.02	0	-	-	-	-	0
FUDS	1.0	0	0	0	0	0	0
HAZNET	0.02	5	1	-	-	-	6
HHSS	0.25	0	2	0	-	-	2
HIST CHMIRS	0.02	0	-	-	-	-	0
HIST CORTESE	0.5	0	1	0	0	-	1
HIST MANIFEST	0.02	0	-	-	-	-	0
HIST MLTS	0.02	0	-	-	-	-	0
HIST TANK	0.25	0	2	0	-	-	2
HIST TSCA	0.125	0	0	-	-	-	0

Database	Search Radius	Target Property	Within 0.12mi	0.12mi to 0.25mi	0.25mi to 0.50mi	0.50mi to 1.00mi	Total
HMIRS	0.125	0	0	-	-	-	0
HWP	1.0	0	0	0	0	0	0
HWSS CLEANUP	0.5	0	0	0	0	-	0
ICIS	0.02	0	-	-	-	-	0
INSP COMP ENF	1.0	0	0	0	0	0	0
LUST	0.5	0	3	1	8	-	12
NPL	1.0	0	0	0	0	0	0
ODI	0.5	0	0	0	0	-	0
SWRCB SWF	0.5	0	0	0	0	-	0
TRIS	0.02	0	-	-	-	-	0
TSCA	0.125	0	0	-	-	-	0
UST	0.25	0	0	0	-	-	0
UST CLOSURE	0.5	0	1	0	0	-	1
WASTE DISCHG	0.25	0	0	0	-	-	0
PCB	0.5	0	0	0	0	-	0
PROPOSED NPL	1.0	0	0	0	0	0	0
PRP	0.02	0	-	-	-	-	0
RCRA CESQG	0.25	0	0	0	-	-	0
RCRA CORRACTS	1.0	0	0	0	0	0	0
RCRA LQG	0.25	0	0	0	-	-	0
RCRA NON GEN	0.25	0	1	0	-	-	1
RCRA SQG	0.25	0	2	0	-	-	2
RCRA TSD	0.5	0	0	0	0	-	0
RESPONSE	1.0	0	1	0	0	1	2
SC SML	0.02	-	-	-	-	-	-
SCH	1.0	0	0	1	0	3	4
SCRD DRYCLEANER	0.5	0	0	0	0	-	0
SUPERFUND ROD	1.0	0	0	0	0	0	0
SWAT	0.5	0	0	0	0	-	0
SWF/LF	0.5	0	1	1	1	-	3

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Database	Search Radius	Target Property	Within 0.12mi	0.12mi to 0.25mi	0.25mi to 0.50mi	0.50mi to 1.00mi	Total
SC SML	0.02	-	-	-	-	-	-
SCH	1.0	0	0	0	1	2	3
SCRD DRYCLEANER	0.5	0	0	0	0	-	0
SEMS	0.5	0	0	0	0	-	0
SEMS ARCHIVE	0.5	0	0	0	0	-	0
SEMS LIEN	0.02	0	-	-	-	-	0
SUPERFUND ROD	1.0	0	0	0	0	0	0
SWAT	0.5	0	0	0	0	-	0
SWF/LF	0.5	0	0	0	0	-	0
SWRCB SWF	0.5	0	0	0	0	-	0
TRIS	0.02	0	-	-	-	-	0
TSCA	0.125	0	0	-	-	-	0
UST	0.25	0	0	0	-	-	0
UST CLEANUP	0.5	0	0	0	0	-	0
UST CLOSURE	0.5	0	0	0	0	-	0
AST	0.25	0	0	0	-	-	0
CERCLIS	0.5	0	0	0	0	-	0
CERCLIS LIENS	0.02	0	-	-	-	-	0
CERCLIS NFRAP	0.5	0	0	0	0	-	0
CERS HAZ	0.125	0	0	-	-	-	0
CERS TANK	0.25	0	0	0	-	-	0
CHMIRS	0.02	0	-	-	-	-	0
CLEANUP SITES	0.5	0	0	0	0	-	0
DEED	0.5	0	0	0	0	-	0
DELETED NPL	0.5	0	0	0	0	-	0
DELISTED COUNTY	0.25	0	0	0	-	-	0
DELISTED CTNK	0.25	0	0	0	-	-	0
DELISTED DRYCLEANERS	0.25	0	0	0	-	-	0
DELISTED ENVS	1.0	0	0	0	0	0	0

Database	Search Radius	Target Property	Within 0.12mi	0.12mi to 0.25mi	0.25mi to 0.50mi	0.50mi to 1.00mi	Total
DELISTED FED DRY	0.25	0	0	0	-	-	0
DELISTED HAZ	0.5	0	0	0	0	-	0
DELISTED ILST	0.5	0	0	0	0	-	0
DELISTED IUST	0.25	0	0	0	-	-	0
DELISTED LST	0.5	0	0	0	0	-	0
DELISTED TNK	0.25	0	0	0	-	-	0
DELNORTE CUPA	0.02	-	-	-	-	-	-
DRYC GRANT	0.25	0	0	0	-	-	0
DRYCLEANERS	0.25	0	0	0	-	-	0
DTSC HWF	0.5	0	0	0	0	-	0
EMISSIONS	0.25	0	0	0	-	-	0
ENVIROSTOR	1.0	0	0	0	1	2	3
ERNS	0.02	0	-	-	-	-	0
ERNS 1982 TO 1986	0.02	0	-	-	-	-	0
ERNS 1987 TO 1989	0.02	0	-	-	-	-	0
FED BROWNFIELDS	0.5	0	0	0	0	-	0
FED DRYCLEANERS	0.25	0	0	0	-	-	0
FED ENG	0.5	0	0	0	0	-	0
FED INST	0.5	0	0	0	0	-	0
FEMA UST	0.25	0	0	0	-	-	0
FINDS/FRS	0.02	0	-	-	-	-	0
FTTS ADMIN	0.02	0	-	-	-	-	0
FTTS INSP	0.02	0	-	-	-	-	0
FUDS	1.0	0	0	0	0	0	0
HAZNET	0.02	0	-	-	-	-	0
HHSS	0.25	0	0	0	-	-	0
HIST CHMIRS	0.02	0	-	-	-	-	0

Database	Search Radius	Target Property	Within 0.12mi	0.12mi to 0.25mi	0.25mi to 0.50mi	0.50mi to 1.00mi	Total
HIST CORTESE	0.5	0	0	0	0	-	0
HIST MANIFEST	0.02	0	-	-	-	-	0
HIST MLTS	0.02	0	-	-	-	-	0
HIST TANK	0.25	0	0	0	-	-	0
HIST TSCA	0.125	0	0	-	-	-	0
HLUR	0.5	0	0	0	0	-	0
HMIRS	0.125	0	0	-	-	-	0
HWP	1.0	0	0	0	0	0	0
HWSS CLEANUP	0.5	0	0	0	0	-	0
ICIS	0.02	0	-	-	-	-	0
INDIAN LUST	0.5	0	0	0	0	-	0
INDIAN UST	0.25	0	0	0	-	-	0
INSP COMP ENF	1.0	0	0	0	0	0	0
NPL	1.0	0	0	0	0	0	0
PCB	0.5	0	0	0	0	-	0
PROPOSED NPL	1.0	0	0	0	0	0	0
PRP	0.02	0	-	-	-	-	0
RCRA CESQG	0.25	0	0	0	-	-	0
RCRA CORRACTS	1.0	0	0	0	0	0	0
RCRA LQG	0.25	0	0	0	-	-	0
RCRA NON GEN	0.25	0	0	0	-	-	0
RCRA SQG	0.25	0	0	0	-	-	0
RCRA TSD	0.5	0	0	0	0	-	0
RESPONSE	1.0	0	0	0	0	0	0

4.1.1 Subject site

No listings are reported for the Site itself in the ERIS Database Search Report.

4.1.2 Offsite

The complete database search report is provided in **Appendix E**; however,

discussed below are the closest notable listings to the Site.

Surrounding Properties Summary

Database	Site Name	Address	Dist. (mi) / Dir.	Elev. diff. (ft)	Comments
SCH, ENVIROSTOR	HIGH SCHOOL #9	SAN SAVAINE ROAD/ WALNUT AVE., FONTANA	0.30/SW	-46	Not a Concern. See section 4.1.4 (DTSC) below.
ENVIROSTOR	HIGHLAND AVENUE AUXILIARY FIELD	5 MILES WEST OF SAN BERNARDINO, CA	0.26/SE	19	Not a Concern. See section 4.1.4 (DTSC) below.
HAZNET	YOUNG HOMES	9.22 ACRES BETWEEN LIVE OAK & HEMLOCK	UNPLOTTABLE LOCATION (ORPHAN SITE)		Not a concern based on database in which listed.
HAZNET	LANDINGS 750 LLC	ON HEMLOCK AVE, 1/4 MI. S OF HIGHLAND AVE.	UNPLOTTABLE LOCATION (ORPHAN SITE)		Not a concern based on database in which listed.

4.1.3 Vapor Encroachment

A vapor encroachment assessment was completed in general accordance with Tier 1 of the ASTM Standard Practice for E2600-15. Results indicate no listings which are a vapor encroachment condition (VEC) for the Site.

4.1.4 Regulatory Agency Contacts

Leighton also contacted various regulatory agencies directly, requesting records searches for the Site. Following is a discussion of these search results.

Regulatory Records Reviewed		
Agency	**Comments**	**Records Found**
Department of Toxic Substances Control (DTSC)	A records search request was submitted the to the DTSC-Cypress and DTSC-Chatsworth offices. Both DTSC offices responded that no records were found. The requests/responses are provided in **Appendix F**. EnviroStor, an online database maintained by the DTSC, was also reviewed (EnviroStor, 2019). This database contains listed locations with known or potential contamination, and which may have, or had, oversight by DTSC. EnviroStor showed no listings on the subject Site. The two closest nearby listed facilities were as follows: ▪ **High School #9 (San Sevaine Road and Walnut Ave, Fontana)** – This potential school location is plotted approximately 1,600 feet southwest of the subject Site. It is a former vineyard. Potential contaminants of concern are listed as Arsenic and DDT. It is our judgement there is a very low likelihood this potential future school location has impacted the Site with a REC. ▪ **Highland Avenue Auxiliary Field (military site) -** This listed property is plotted approximately 2,300 feet southeast of the Site, but may have been as close as 1,400 feet southeast of the Site. Envirostor reports is was part of a pilot training facility acquired in 1943. It had two paved landing strips and a privy (i.e. restroom). It was quitclaimed to the County of San Bernardino in 1947. Based on the available information, and the distance and direction of this listed facility from the Site, it is our judgement there is a low likelihood that it has	No

Leighton

Regulatory Records Reviewed		
Agency	**Comments**	**Records Found**
	impacted the Site with a REC.	
State Water Resources Control Board (SWRCB)	GeoTracker is an online database maintained by the State Water Quality Control Board (SWQCB). This database lists underground storage tanks (USTs), leaking USTs, military cleanup facilities, land disposal facilities, and other types of cleanup facilities (Geotracker, 2019). The review of Geotracker revealed no facilities on the Site, or within 0.5 miles.	No
Regional Water Quality Control Board – Los Angeles Region (SARWQCB)	A records search request was submitted via email to the Santa Ana Regional Water Quality Control Board (SARWQCB) using the site APNs as the Site identifier. The SARWQCB responded by indicating records could not be searched for without a street address. The request and response is provided in **Appendix F**.	No
South Coast Air Quality Management District (AQMD)	Leighton searched for records on South Coast AQMD's FINDS website. No records were found pertaining to the Site (SCAQMD, 2019).	No
San Bernardino County Fire Protection District	A records search request was submitted via fax to the SBCFPD on February 8, 2019. The SBCFPD responded with a letter indicating no records were found for the Site. The records search response is provided in **Appendix F**.	No
California Dept. of Conservation, Division of Oil & Gas (DOGGR)	The DOGGR well finder database was reviewed for evidence of potential active or abandoned oil/gas wells on or adjoining the Site (DOGGR, 2019). No wells were reported within 0.5 miles of the Site.	No

Regulatory Records Reviewed		
Agency	**Comments**	**Records Found**
National Pipeline Mapping System (NPMS)	The NPMS, an online database that plots pipelines or related accidents/incidents, was reviewed. No pipelines or accidents/incidents were listed on or immediately adjoining the Site. The closest feature (a gas tranmission line) is reported approximately 1,000 feet NW of the Site (NPMS, 2019), and is not considered evidence of a likely REC for the Site.	No
City of Fontana	A request was submitted to the City of Fontana for records associated with the site. They responded with an email indicating no records were found.	
Radon	Radon is not regulated within the State of California. Nonetheless, the California Department of Health Services (CDPH) and the United States Environmental Protection Agency (US EPA) both recommend a threshold of 4 picocuries per liter (pCi/L) above which certain precautions be taken to mitigate radon buildup in structures. The Site region is reported to be in EPA Radon Zone 2, which corresponds to an indoor average radon level between 2 pCi/L to 4 pCi/L.	No

4.1.5 Previous Environmental Assessment Reports

Neither the Owner or User reported, or provided, any prior environmental assessment reports in connection with the Site.

4.2 Physical Settings Source(s)

General Site Settings	
Topography	The elevation of the Site is approximately 1,437 feet above mean sea level. The Site is relatively flat, and slopes gently to the south and southwest. The Site is located in Section 35 of Township 1 North, Range 6 West of the San Bernardino Baseline and Meridian. Topographic map coverage of the Site vicinity is provided by the United States Geological Survey (USGS) “Devore" Quadrangle (1988).
Surface Water	Surface water was not observed on or adjoining the Site.
Geology and Soils	The site is located on the gently sloping alluvial plain descending southward from the San Gabriel Mountains. It is located within the Chino Basin, in the northern portion of the Peninsular Ranges geomorphic province of California. Major structural features surrounding the region include the Cucamonga Fault and the San Gabriel Mountains to the north, the Chino Fault and Puente (Chino) Hills to the southwest, and the San Jacinto Fault to the east. This is an area of large-scale crustal disturbance, as the northwestward-moving Peninsular Ranges Province collides with the Transverse Ranges Province (San Gabriel Mountains). Several active or potentially active faults have been mapped in the region and are believed to accommodate compression associated with this collision. Shallow soils in the Site region are reported to be gravelly loamy sand. Trenching completed at the Site in the upper six feet (during unrelated geotechnical investigation) generally encountered gravelly silty sand.

General Site Settings	
Hydrogeology	Based on well data from the general Site vicinity, the depth to first major groundwater is expected to be approximately 400 feet (WMWD, 2014). The flow direction of groundwater is anticipated to be toward the south to southwest. The site is located in the Upper Santa Ana River Groundwater Basin, within the Chino 2 groundwater subbasin. Existing beneficial uses designated in this subbasin include: municipal, agricultural, and industrial supply (SARWQCB, 2016).

4.3 Historical Resources Reviewed

Reviewed historical sources of information on the subject site usage included: aerial photographs, topographic maps, and city directories. The scope of these reviewed records is summarized below.

Historical Resources Reviewed	
Historical Resource	**Years Reviewed**
Aerial Photographs	1938, 1948, 1954, 1959, 1966, 1975, 1980, 1985, 1994, 2002, 2005, 2010, 2012, 2016
Historical Topographic Maps	1896, 1898, 1901, 1936, 1941, 1954, 1966, 1980, 1988, 1996, 2015
Fire Insurance Maps	No Coverage
Historical City Directories	1971, 1975, 1980, 1985, 1990, 1995, 2000, 2005, 2010, 2014, 2018
Recorded Land Title Records	Lien Search No environmental liens or AULs were reported.
Other Historical Sources	Other Historical Sources were not reviewed during the preparation of this Phase I ESA.

4.4 Historical Use Information on the Property

Historical Summary Table		
Dates	**Uses**	**Source(s)**
1896-1901	Topographic maps show no evidence of development on the Site or adjoining properties.	Topographic Maps
1938-1954	The northeastern Site corner appears to be occupied by a residence or small farm related building(s). The remainder of the site is being used for agriculture (likely vineyards). The northwestern site corner also appear to have some farm related features (above ground tank and small outbuildings). The 1948 and 1954 photos are blurry. The 1954 topographic map indicates the Site as being covered by agriculture.	Aerial Photos, Topograhic Map
1959-1966	The Site is mostly used for agriculture. Buildings formerly viewed in the NE Site corner are no longer visible, but remnants (foundations) remain. A small residence, or farm related building, is visible in the extreme NW Site corner.	Aerial Photos, Topographic Map
1975-1988	Site appears to be used partially for agriculture (eastern half). No structures remain visible in the NW Site corner. In the NE Site corner, remnants of former structure(s) (old foundations) remain visible.	Aerial Photos, Topographic Map
1994-2016	Site appears vacant and undeveloped. Remnants of former structure(s) (old foundations) remain visible in the NE Site corner.	Aerial Photos

4.5 Historical Use Information on Adjacent Property

Historical Summary Table		
Dates	**Uses**	**Source(s)**
1896-1901	Maps do not indicate evidence of development on properties surrounding Site.	Topographic Maps

Historical Summary Table		
Dates	**Uses**	**Source(s)**
1938-1959	A square concrete reservoir exists adjoining the NE site corner. Surrounding properties are generally agricultural usage. Highland Avenue (before it was re-routed) runs along the north side edge, and provides access to the Site. A farm residence is located adjoining both east and west of the Site.	Aerial Photographs, Topographic Maps
1966-1975	Adjoining properties appear similar to prior air photos, except the residence west of the Site is no longer visible.	Aerial Photographs, Topographic Maps
1980-1994	Adjoining properties are largely agricultural usage. Reservoir is still visible adjoining NE Site corner. A new structure has been built on property adjoining east (present day private school) and appears to be a small business or residence with circular driveway. A new building (large rectangular barn or stable like building?) is now also visible on adjoining west property.	Aerial Photographs, Topographic Maps
2002	210 Freeway has been constructed (replaced former Highland Avenue) adjoining north of site. Rectangular barn or stable building on adjoining west property has been removed. Reservoir remains visible adjoining NE Site corner. West and South adjoining property are undeveloped and vacant. Present day S. Highland Ave. now runs along southern Site boundary.	Aerial Photographs, Topograhic Maps
2005-2016	Adjoing properties remain similar to 2002 photos, except present-day residential has been constructed adjoining south of Site by 2010.	Aerial Photographs, Topographic Maps

5.0 SITE RECONNAISSANCE

5.1 Methodology and Limiting Conditions

On February 11, 2019, a representative of Leighton conducted a reconnaissance of the subject site. Photographs of the Site are presented in **Appendix B**, and their numbering and locations are depicted in **Figure 2**.

5.2 Exterior and Interior Observations

The Site is an approximate 11.06 acre property that is roughly rectangular, and is currently vacant (no buildings) (see **Appendix B, Photo 7**); therefore, no interior observations were possible. The site has a low weed cover and some scattered larger tree growth (see **Appendix B, Photo 8**). No evidence indicating a likely REC was observed.

Issue	Observed	Property	Adjacent Properties
Hazardous Substances, Drums, and Other Chemical Containers	No	Hazardous substances were not observed at the Site.	Not observed.
Storage Tanks	No	Evidence of USTs or ASTs (such as vent lines, fill or overfill ports) were not observed on the Site.	Not observed.
Polychlorinated Biphenyls (PCBs)	No	No evidence of likely PCB sources were observed.	Not observed.
Waste Disposal	No	Minor scattered trash. None indicated evidence of a likely REC.	Not observed.
Dumping	No	Dumped debris was viewed on the Site, including: asphalt, rocks, a fiberglass boat hull (**see Appendix B, Photo 9**), ceramic tiles (**see Appendix B - Photos 10 & 11**), and a few tires. None of the observed debris indicated evidence of a likely REC.	Not observed.

Issue	Observed	Property	Adjacent Properties
Pits, Ponds, Lagoons, Septic Systems, Wastewater, Drains, Cisterns, and Sumps	No	In the NE corner of the Site, a few older concrete pads and stone features were observed. They appear to be old foundations, possibly a former cellar or reservoir. The former cellar or reservoir has been partially demolished (see **Appendix B, Photos 12, 13, 14**).	Not observed.
Pesticide Use	No	Current evidence of pesticide use was not observed on the Site.	Not observed.
Staining, Discolored Soils, Corrosion	No	No evidence of unusual staining, discolored soils, or corrosion was observed on the Site.	Not observed.
Stressed Vegetation	No	No obvious stressed vegetation was observed on the Site.	Not observed.
Unusual Odors	No	No unusual odors were detected on the Site.	Not observed.
Onsite Wells	No	No evidence of current groundwater wells and/or oil and gas wells was observed on-site.	Not observed.
Other Observations	No	No other observations were made during the site reconnaissance that indicate a likely REC.	Not observed.

6.0 INTERVIEWS

Title	Name	Comments
Owner	Susan Chow Susan Chow / John Chow	Susan Chow and Susan Chow / John Chow are indicated as the current Owners of Site. The Owner/Site Contact interview form was completed by Ms. Susan Chow. The questionnaire was only partially completed, but the information provided did not indicate likely evidence of a REC. In consideration of all other information obtained during completion of the Phase I ESA, the partially completed questionnaire is considered a data gap not likely to be significant. The completed Owner/Site Contact Interview Form is provided in **Appendix C**.
Site/Property Manager	Susan Chow	The site is vacant, therefore there is no specific on-site property manager. The Site Contact Interview form was completed by Susan Chow. The questionnaire was only partially completed, but the information provided did not indicate likely evidence of a REC. In consideration of all other information obtained during completion of the Phase I ESA, the partially completed questionnaire is considered a data gap not likely to be significant. The completed Owner/Site Contact Interview Form is provided in **Appendix C**.
Occupants	None - site vacant	There are no current occupants of the Site. It is vacant.
Local Government Officials	None	Leighton did not interview employees of any other local government agencies.

Title	Name	Comments
Others	None	Leighton did not conduct other interviews for this Phase I ESA, with the exception those already mentioned above.

7.0 FINDINGS

Leighton performed a Phase I ESA for the property located at NW Corner of Hemlock and Highland Aves., in the City of Fontana, San Bernardino County, CA (see Site Location Map - **Figure 1**) in accordance with Stratham Development Company's authorization.

7.1 Onsite

The Site is an approximate 11.06 acre vacant, unfenced lot with low weed growth, scattered areas with larger trees, and evidence of some former, older structures (old foundations) in its northeastern-most corner. The Site is relatively flat and slopes gently to the south and southwest. The approximate site elevation is 1,437 feet above mean sea level.

Based on well data from the general Site vicinity, the depth to first major groundwater is expected to be approximately 400 feet. The flow direction of groundwater is anticipated to be toward the south to southwest.

A review of Standard Records Sources revealed no listings for the Site itself. No previous environmental reports for the Site were identified or reviewed.

Historical sources revealed the subject site was used for agricultural purposes (likely vineyards) from approximately the 1930s through 1980s. Small farm related structures (residences or outbuildings) were visible in the northeast Site corner in the 1930s through 1950s. What appears to be an above-ground tank, and possible small outbuildings, were also visible during this same time period in the northwest Site corner. During the past couple of decades, the Site has remained a vacant, undeveloped lot.

The Site reconnaissance revealed no evidence to indicate a likely REC.

A completed questionnaire received from the User revealed no information to indicate a likely REC on the Site. A questionnaire from the Owner/Site Manager was only partially completed, but revealed no information to indicate a REC on the Site. This partially completed questionnaire is a data gap.

7.2 Offsite

Properties adjoining the Site include: a hillside sloping up to the adjoining 210

Freeway (north), a private Islamic school and Hemlock Ave (east), S. Highland Ave & newer multi-family residential (south), and vacant/undeveloped property (west). Leighton observed these adjoining properties and found no evidence indicating a likely REC for the Site.

A review of Standard Records Sources revealed several listings for properties or facilities within the Site vicinity, none of which indicate they have likely caused a REC on the subject Site.

Leighton observed the adjoining property uses. None of these observations indicated they have likely contributed to a REC on the subject Site.

7.3 Data Gaps

The following data gaps were identified by Leighton:

- The Owner / Site Manager questionnaire was only partially completed. In consideration of all other information obtained during completion of the Phase I ESA, the partially completed questionnaire is considered a data gap not likely to be significant.

8.0 OPINION

The following opinion is provided regarding the Phase I ESA findings.

8.1 Onsite

This assessment has identified a potential REC in connection with the Site, based on former site usage for agriculture, and likely associated pesticide usage.

8.2 Offsite

No off-Site sources were identified which are likely to have created a REC on the Site.

9.0 CONCLUSIONS AND RECOMMENDATIONS

Historical site usage for agriculture, and possible farm related outbuildings, are considered evidence of a potential REC due to likely pesticide usage. A limited assessment of the shallow soil for Organochlorine Pesticides, Arsenic and Copper is recommended, especially given the proposed future residential development.

Leighton has performed this Phase I ESA in conformance with the scope and limitations of ASTM E1527-13, which satisfies the all appropriate inquiry for purposes of 42 USC §9601(35) (B) 40 CFR Part 312, for the property located at NW Corner of Hemlock and Highland Aves., Fontana, CA, APNs 0228-021-08 & 0228-021-09. Any exceptions to, or deletions from, this practice are described in Section 1.5 of this report.

10.0 DEVIATIONS

Leighton did not deviate from or alter the scope of work, as defined in Section 1.3 of this report. A few data gaps were identified, and are discussed above in section 7.3.

11.0 ADDITIONAL SERVICES

Leighton did not perform any other additional services outside the scope of work as defined in Section 1.3 of this report.

12.0 QUALIFICATIONS OF ENVIRONMENTAL PROFESSIONALS

12.1 Corporate

Leighton is a California corporation, providing geotechnical and environmental consulting services throughout California. We are solely a consulting firm without interests in real property other than our office locations in Southern California. We provide professional environmental consulting services including application of science and engineering to environmental compliance, hazardous materials/waste assessment and cleanup, and management of hazardous, solid and industrial waste. Phase I Environmental Property Assessments are a part of this practice area and have been conducted by us.

12.2 Individual

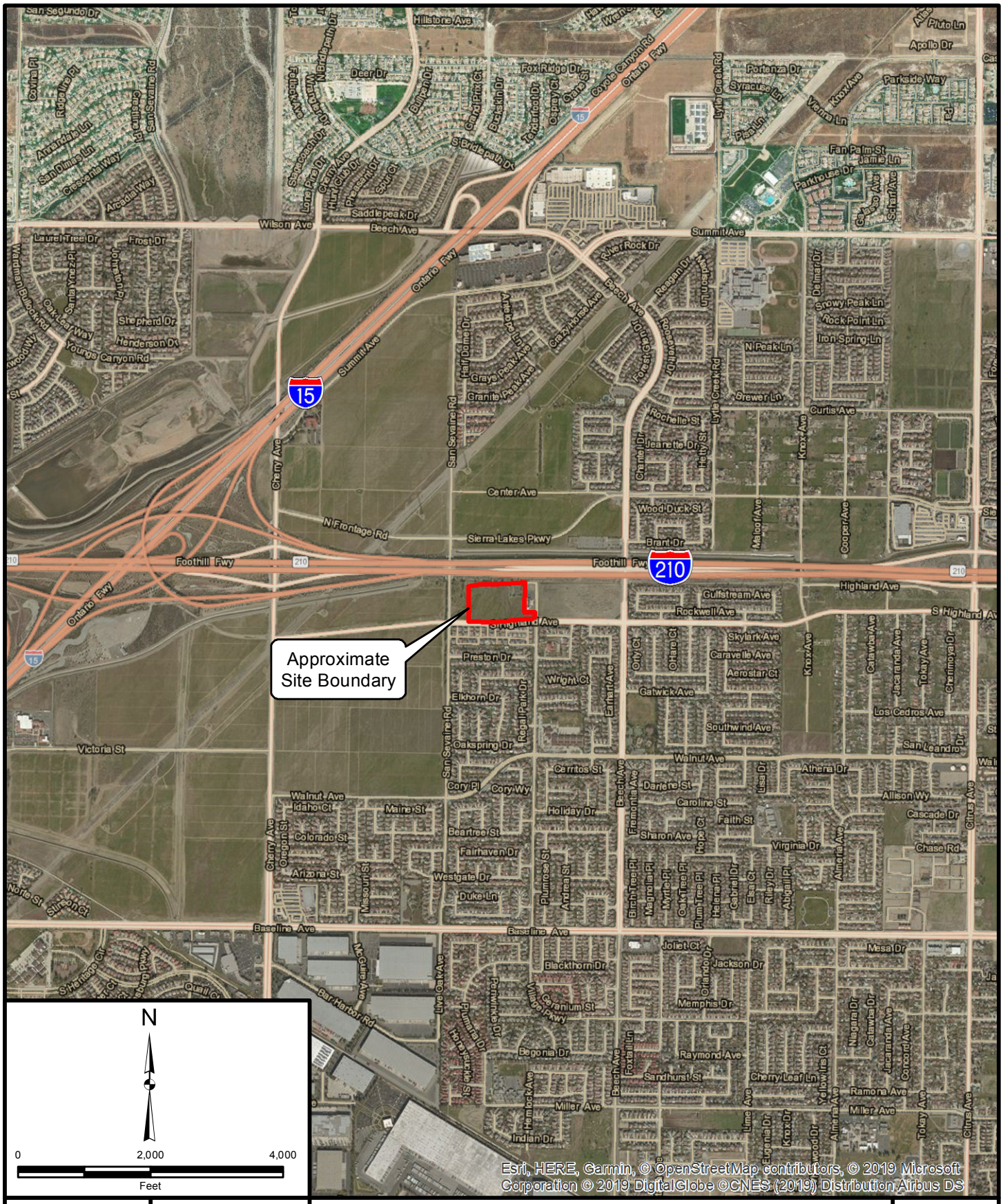
The qualifications of the Project Manager and the other Leighton environmental professionals involved in this Phase I ESA meet the Leighton corporate requirements for performing Phase I ESAs as specified by ASTM E1527-13.

12.3 Environmental Professional Statement

We declare that, to the best of our professional knowledge and belief, we meet the definition of Environmental Professional, as defined by §312.10 of 40 CFR Part 312. We have the specific qualifications based on education, training, and experience to assess a property of the nature, history, and setting of the subject site. We have developed and performed all the appropriate inquiries in conformance with the standards and practices set forth in 40 CFR Part 312.

Site Location Map

Leighton



Project: 12282.002	Eng/Geol: RH
Scale: 1 " = 2,000 '	Date: February 2019

Base Map: ESRI ArcGIS Online 2019
Thematic Information: Leighton
Author: Leighton Geomatics (mmurphy)

SITE LOCATION MAP

Stratham Homes
Near NW Corner of S. Highland and Hemlock Avenue
Fontana, California

Figure 1

Leighton

Map Saved as V:\Drafting\12282\002\Maps\12282-002_F01_SLM_2019-02-15.mxd on 2/15/2019 8:53:27 AM

Site & Adjoining Properties

Project: 12282.002	Eng/Geol: RH
Scale: 1 " = 200 '	Date: February 2019

Base Map: ESRI ArcGIS Online 2019
Thematic Information: Leighton
Author: Leighton Geomatics (mmurphy)

SITE AND ADJOINING LOCATIONS

Stratham Homes
Near NW Corner of S. Highland and Hemlock Avenue
Fontana, California

Figure 2

Leighton

Map Saved as P:\Drafting\12282\002\Maps\12282-002_F02_SAL_2019-02-14A.mxd on 2/15/2019 9:00:02 AM

Appendix A - References

DOGGR (California Department of Conservation, Division of Oil, Gas, and Geothermal Resources), 2018, DOGGR Well Finder, Accessed February 11, 2019.

Envirostor, 2019, https://www.envirostor.dtsc.ca.gov/public/, accessed February 11, 2019.

Geotracker, 2019, https://geotracker.waterboards.ca.gov/, accessed February 11, 2019.

NPMS (National Pipeline Management System), 2019, https://www.npms.phmsa.dot.gov/, accessed February 11, 2019.

SARWQCB, 2016, Water Quality Control Plan for the Satan Ana River Basin (Region 8), dated 1999, updated February 2016.

SCAQMD (South Coast Air Quality Management District), 2019, F.I.N.D. website: http://www3.aqmd.gov/webappl/fim/prog/search.aspx, access February 18, 2019.

USGS (United States Geological Survey), 1988, Devore Quadrangle, 7.5-minute series topographic map; dated 1966, photorevised 1988.

WMWD (Western Municipal Water District), 2014, Cooperative Well Measuring Program, Upper Santa Ana River Watershed, Spring 2014.

Appendix B - Site Reconnaissance Photos

1

Photo 1: (looking W-NW) Adjoining North Property - swale and slope up to 210 Freeway (at right)

2

Photo 2: (looking N) Adjoining North Property - slope up to 210 Freeway

3

Photo 3: (looking N) Adjoining East Property - Private Islamic School (at right)

4

Photo 4: (looking N-NW) Adjoining East Property - Private Islamic School and Hemlock Ave (lower right). Eastern most portion of subject Site is in lower left foreground.

5

Photo 5: (looking SW) Adjoining South Property - Apartment / Townhomes (across S. Highland Ave)

6

Photo 6 (looking SW) Adjoining West Property - Vacant undeveloped property (at right of wooden posts)

7

Photo 7 (looking N) Central Portion of subject Site - low weed cover and scattered trees in background)

8

Photo 8 (looking W) Northern portion of Site - with low weed cover and scattered large trees

9

Photo 9 (looking W-NW) asphalt and rock debris piles (at right) and fiberglass boat hull (far left in shadow of tree)

10

Photo 10: (looking N) pile of dumped ceramic tile in southeast portion of site

11

Photo 11: Dumped ceramic tile close up.

12

Photo 12: (looking W) In NE corner of Site - Old building foundation?

13

Photo 13: (looking W) in NE corner of Site - old concrete pad/foundation

14

Photo 14: (looking NW) In NE corner of Site - Demolished stone feature that may be below grade basement or small reservoir?

15

Photo 15: (looking S-SW). subject Site - Central Portion

16

Photo 16: (looking NW) Property NW of subject site - 210 Freeway

17

Photo 17 (looking W) Line of wooden post on property adjoining west of Site.

18

Photo 18 (looking W) Concrete curbed features on property adjoining west of Site.

Appendix C - Client-supplied Documentation

Leighton

Phase I ESA Users Questionnaire

Project Name: Chow Property

Complete and Correct Address(es) of the Property and APN(s):

14973 S. Highland Ave., Fontana CA APN 0228-021-08, APN 0228-021-09

User Company Name:	**User Name/Title:**
Stratham Development Company	Patrick Potts / Project Manager

User Phone/Email: (949) 833-1554 / ppotts@strathamhomes.com

Interviewee Name and Relationship to Project:

Patrick Potts, Project Manager

Site Owner: Susan Chow, et al

Reason Phase I is required:

Purchase agreement due diligence

Type of property:

Vacant land

Type of property transaction (e.g., Sale, purchase, exchange):

Purchase

Any scope of services beyond the ASTM Practice E 1527:

All Parties that will rely on the Phase I report:

Stratham Development Company, City of Fontana

Name and Contact Information for Site Contact:

Gary Dou / dcl2689@yahoo.com, or Winn Galloway / wgalloway@legatolandco.com

Any special terms or conditions:

None

Any other pertinent knowledge or experience with the property (e.g., prior reports, documents, correspondence concerning the environmental conditions of the property):

None

(1). Environmental cleanup liens that are filed or recorded against the site (40 CFR 312.25).

Did a search of recorded land title records (or judicial records where appropriate identify any environmental liens filed or recorded against the property under federal, tribal, state or local law? Yes | ✓ No

If Yes, Describe:

(2). Activity and land use limitations (AULs) that are in place on the site or that have been filed or recorded in a registry (40 CFR 312.26).

Did a search of recorded land title records (or judicial records where appropriate) identify any AULs, such as engineering controls, land use restrictions or institutional controls that are in place at the property and/or have been filed or recorded against the property under federal, tribal, state or local law? Yes | ✓ No

If Yes, Describe:

(3). Specialized knowledge or experience of the person seeking to qualify for the Landowners Liability Protections (LLP) (40 CFR 312.28).

Do you have any specialized knowledge or experience related to the property or the property or nearby properties? For example, are you involved in the same line of business as the current or former occupants of the property or an adjoining property so that you would have specialized knowledge of the chemicals and processes used by this type of business?

Yes | ✓ No

If Yes, Describe:

(4). Relationship of the purchase price to the fair market value of the property if it were not contaminated (40 DRF 312.29).

Does the purchase price being paid for this property reasonably reflect the fair market value of the property?

✓ Yes | No

If you conclude that there is a difference, have you considered whether the lower purchase price is because contamination is known or believed to be present at the property? Yes | No

If Yes, Describe:

(5). Commonly known or reasonable ascertainable information about the property (40 CFR 312.30).

Are you aware of commonly known or *reasonably ascertainable* information about the property that would help the *environmental professional* to identify conditions indicative of releases or threatened releases? For example, as user,

(a.) Do you know the past uses of the property? Yes | ✓ No

(b.) Do you know of specific chemicals that are present or once were present at the property? Yes | ✓ No

(c.) Do you know of spills or other chemical releases that have taken place at the property? Yes | ✓ No

(d.) Do you know of any environmental cleanups that have taken place at the property? Yes | ✓ No

If Yes, Describe:

(6). The degree of obviousness of the presence of likely presence of contamination at the property, and the ability to detect the contamination by appropriate investigation (40 CFR 312.31).

Based on your knowledge and experience related to the *property*, are there any *obvious* indicators that point to the presence or likely presence of contamination at the *property?* Yes | ✓ No

If Yes, Describe:

Signature

02-22-19

Date

Leighton

Leighton

Phase I ESA Owner/Site Contact Interview Form

Interviewee Name: Susan Chow **Title:** Owner Rep

Address: 7045 E. Fuero Dr., Walnut, CA 91789 **Phone:**

Relationship to Property: Owner Rep

Name of Property Owner: Susan Chow, John D. Chow, Charles L. Chow, Tom G. Chow, Amy G. Chow

Address of Property Owner: 7045 E. Fuero Dr., Walnut, CA 91789

Site Name: Chow

Property Address: 15035 S. Highland Ave., Fontana, CA 91739

Previous Street Names/Numbers:

General Business Type/Present Property Use: Vacant

Property Utilization during Ownership:

Assessor Parcel #: 0228-021-08,09 **Grant Total Square Footage:**

Total # of Buildings: 0 **Date Built:**

Name and Address of Past Owners (include dates of ownership):

Past Property Uses (include dates):

Source of Potable Water Supply (municipal/groundwater wells): CVWD

Sewage Disposal (municipal/septic) (provide name of utility): City of Fontana

Means of Heating/Cooling (gas, electric, heating oil, etc.): NA

Fuel Source for Heating/Air Conditioning (provide name of utility): NA

Neighboring Property Types (commercial/industrial/residential): Commercial, Residential

Current Uses of Adjoining Properties: **North: 210 Freeway**

South: Residential Subdivisions

East: Vacant

West: Vaant

ARE THERE NOW, OR HAVE THERE BEEN IN THE PAST, ANY OF THESE ITEMS ONSITE OR ON ADJACENT PROPERTIES:

ITEM	YES	NO	UNK	ADJACENT PROPERTY
• Hazardous Materials		✓		
• Hazardous Waste		✓		
• MSDS Sheets		✓		
• Underground Storage Tanks (USTs)		✓		
• Aboveground Storage Tanks (ASTs)		✓		
• Vent Pipes, fill pipes, or access ways indicating a fill pipe to an underground storage area		✓		
• Odors		✓		
• Drums		✓		
• Electrical or hydraulic equipment known to contain Polychlorinated Biphenyls (PCBs)		✓		
• Stained soil or surfaces		✓		
• Drains		✓		
• Sumps		✓		

• Clarifier		✓		
• Pits, ponds, or lagoons		✓		
• Stressed vegetation		✓		
• Areas for dumping solid waste (landfill)		✓		
• Wastewater		✓		
• Wells (groundwater, oil, and/or gas)		✓		
• Septic Systems		✓		
• Fill Material (if fill material is on site, please state source of fill)		✓		

Phase I ESA Owner/Site Contact Interview Form

ADDITIONAL QUESTIONS:	YES	NO	UNK	REMARKS
Has the Site been used as any of the following: gas station, motor repair facility, commercial printing facility, metal plating, dry cleaners, photo developing laboratory, junkyard, or landfill, or as a waste treatment, storage, disposal, processing, or recycling facility? If so, state which type of facility.		✓		
Are you aware of any Phase I or Phase II environmental site assessments, soil sampling reports, geotechnical or geologic reports, environmental compliance audit reports, environmental permits, registrations for USTs or ASTs, community right-to-know plans, environmental safety plans or reports regarding hazardous waste generation for the Site?		✓		
Do you know of any notices or correspondence from any government agency relating to past or current violations of environmental laws with respect to the Site or relating to environmental liens encumbering the Site?		✓		
Do you know of any pending, threatened, or past litigation or administrative proceedings relevant to hazardous substances or petroleum products in, on or from the Site?		✓		
Do you know of any notices from any governmental entity regarding any possible violation of environmental laws or possible liability relating to hazardous substances or petroleum products?		✓		
Do you know of any environmental concerns associated with the Site? If so please state in remarks column.		✓		
Do you know of any environmental concerns associated with any adjacent or nearby properties? If so please state in remarks column.		✓		

Additional Comments:

Lennton

Based on your knowledge and experience related to the *property*, are there any *obvious* indicators that point to the

☐ Yes | ☐ No

If Yes, Describe:

presence or likely presence of contamination at the *property*?

Signature

Date

Leighton

Appendix D - Environmental Lien and AUL Search

The NETR Environmental Lien and AUL Search Report

S. HIGHLAND AVENUE
FONTANA, CALIFORNIA

Monday, February 11, 2019

Project Number: L19-00250

2055 East Rio Salado Parkway
Tempe, Arizona 85281

Telephone: 480-967-6752
Fax: 480-966-9422

ENVIRONMENTAL LIEN AND AUL REPORT

The NETR Environmental LienSearch Report provides results from a search of available current land title records for environmental cleanup liens and other activity and use limitations, such as engineering controls and institutional controls.

A network of professional, trained researchers, following established procedures, uses client supplied property information to:

- search for parcel information and/or legal description;
- search for ownership information;
- research official land title documents recorded at jurisdictional agencies such as recorders' office, registries of deed, county clerks' offices, etc.;
- access a copy of the deed;
- search for environmental encumbering instrument(s) associated with the deed;
- provide a copy of any environmental encumbrance(s) based upon a review of key words in the instrument(s) (title, parties involved and description); and
- provide a copy of the deed or cite documents reviewed;

Thank you for your business
Please contact NETR at 480-967-6752
with any questions or comments

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ENVIRONMENTAL LIEN AND AUL REPORT

The NETR Environmental Lien Search Report is intended to assist in the search for environmental liens filed in land title records.

TARGET PROPERTY INFORMATION

ADDRESS

S. Highland Avenue
Fontana, California

RESEARCH SOURCE

Source: San Bernardino County Assessor
San Bernardino County Recorder

DEED INFORMATION

Type of Instrument: Grant Deed

Grantor: John M. Tedeschi and Mary Louise Tedeschi and Iola M. Tedeschi

Grantee: John D.C. Chow and Susan Chow, husband and wife, as to an undivided 55% interest; Charles L. Chow, as to an undivided 15% interest; Tom G. Chow, as to an undivided 15% interest; and Amy G. Chow, as to an undivided 15% interest

Deed Dated: 03/30/1987
Deed Recorded: 05/15/1987
Instrument: 87-16226

Type of Instrument: Grant Deed

Grantor: John D.C. Chow and Susan Chow, husband and wife, as to an undivided 55% interest

Grantee: John Ding-Chung Chow and Susan Wai-Sen Pien Chow, Trustees of the Chow Family Trust dated 12/2/2000, as to an undivided 55% interest

Deed Dated: 12/02/2000
Deed Recorded: 12/13/2000
Instrument: 20000457789

LEGAL DESCRIPTION

All that certain piece or parcel of land situated and lying in the Northwest Quarter of the Northeast Quarter of Section 35, Township 1 North, Range 6 West, in the City of Fontana, San Bernardino County, State of California

Assessor's Parcel Number(s): 0228-021-08

ENVIRONMENTAL LIEN

Environmental Lien: Found ☐ Not Found ☒

ENVIRONMENTAL LIEN AND AUL REPORT

OTHER ACTIVITY AND USE LIMITATIONS (AULs)

Other AULs: Found ☐ Not Found ☒

ENVIRONMENTAL LIEN AND AUL REPORT

TARGET PROPERTY INFORMATION

ADDRESS

S. Highland Avenue
Fontana, California

RESEARCH SOURCE

Source: San Bernardino County Assessor
San Bernardino County Recorder

DEED INFORMATION

Type of Instrument: Grant Deed

Grantor: John Ding-Chung Chow and Susan Wai-Sen Pien Chow, Trustees of the Chow Family Trust dated 12/2/2000

Grantee: Susan Wai-Sen Pien Chow, a married woman as her sole and separate property

Deed Dated: 07/29/2016
Deed Recorded: 09/27/2016
Instrument: 2016-0401778

Type of Instrument: Interspousal Deed

Grantor: John Ding-Chung Chow, husband of grantee

Grantee: Susan Wai-Sen Pien Chow, a married woman as her sole and separate property

Deed Dated: 06/28/2017
Deed Recorded: 09/06/2017
Instrument: 2017-0363751

LEGAL DESCRIPTION

All that certain piece or parcel of land situated and lying in the Northwest Quarter of the Northeast Quarter of Section 35, Township 1 North, Range 6 West, in the City of Fontana, San Bernardino County, State of California

Assessor's Parcel Number(s): 0228-021-09

ENVIRONMENTAL LIEN

Environmental Lien: Found ☐ Not Found ☒

OTHER ACTIVITY AND USE LIMITATIONS (AULs)

Other AULs: Found ☐ Not Found ☒

RECORDING REQUESTED BY

Chicago

AND WHEN RECORDED MAIL THIS DEED AND UNLESS OTHERWISE SHOWN BELOW MAIL TAX STATEMENT TO

Name SUSAN CHOW
Street Address 20745 E. Fuero Dr.
City & State Walnut, Ca. 91789

MAIL TAX STATEMENTS TO

Name
Street Address MAIL TAX STATEMENTS AS DIRECTED ABOVE
City & State

TITLE ORDER NO. ESCROW NO. 7589-N

RECORDED IN OFFICIAL RECORDS
MAY 15 1987 AT 8:00 AM
SAN BERNARDINO COUNTY, CALIF.

1FEE	2MSYS	3PLOR	4UNIT
6	3	20	
5 SVY	5 12 DTT		8 07
10	159.50	H	

87-162226

SPACE ABOVE THIS LINE FOR RECORDER'S USE

GRANT DEED

THE UNDERSIGNED GRANTOR(S) DECLARE(S)

DOCUMENTARY TRANSFER TAX is $ 159.50
X ☐ computed on full value of property conveyed, or
☐ computed on full value less value of liens or encumbrances remaining at time of sale
X ☐ unincorporated area
☒ city of FONTANA , AND

FOR A VALUABLE CONSIDERATION, receipt of which is hereby acknowledged,
JOHN M. TEDESCHI AND MARY LOUISE TEDESCHI AND IOLA M. TEDESCHI

hereby GRANT(s) to
JOHN D.C. CHOW AND SUSAN CHOW, husband and wife, as joint tenatns, as to an undivided 55% interest; and CHARLES L. CHOW, a single man, as to an undivided 15% interest, and TOM G. CHOW, a single man, as to an undivided 15% interest and AMY G. CHOW, a single woman, as to an undivided 15% interest

the following described real property in the
County of SAN BERNARDINO , State of California:
AS PER LEGAL DESCRIPTION ATTACHED HERETO AND MADE PART HEREOF ON PARCEL NO. 228-021-6

Dated March 30, 1987

JOHN M. TEDESCHI
MARY LOUISE TEDESCHI
IOLA M. TEDESCHI
(X) Iola M. Tedeschi

STATE OF FLORIDA
COUNTY OF LEE } SS
On this 30th day of March, in the year 19 87
before me, the undersigned, a Notary Public in and for said State, personally appeared Iola M. Tedeschi
, personally known to me (or proved to me on the basis of satisfactory evidence) to be the person whose name subscribed to the within instrument, and acknowledged to me that he executed it

WITNESS my hand and official seal.

Signature Eva M. Boyce
NOTARY PUBLIC IN AND FOR SAID STATE

EVA M. BOYCE
Notary Public, State of Florida at Large
My Commission Expires October 20, 1990.
(This area for official notarial seal)

CO-441 (4/85)

MAIL TAX STATEMENTS AS DIRECTED ABOVE.

228-021-6 696649-7

STATE OF OREGON,

County of Jackson } ss.

FORM NO. 23 — ACKNOWLEDGMENT
STEVENS-NESS LAW PUB. CO., PORTLAND, ORE.

87-162226

BE IT REMEMBERED, That on this 2nd day of April, 1987, before me, the undersigned, a Notary Public in and for said County and State, personally appeared the within named ** Mary Louise Tedeschi and John M. Tedeschi **

known to me to be the identical individual described in and who executed the within instrument and acknowledged to me that executed the same freely and voluntarily.

IN TESTIMONY WHEREOF, I have hereunto set my hand and affixed my official seal the day and year last above written.

Kathleen A. Moore
Notary Public for Oregon.
My Commission expires 5/27/89

87-162226

The East 1/2 of the Northwest 1/4 of the Northwest 1/4 of the Northeast 1/4 of Section 35, Township 1 North, Range 6 West, San Bernardino Base and Meridian, according to Official Government Township Plat.

RECORDING REQUESTED BY

GARRETT H. SUEMORI, Esq.

AND WHEN RECORDING MAIL TO:

GARRETT H. SUEMORI
A PROFESSIONAL CORPORATION
3820 Del Amo Boulevard, Suite 352
Torrance, CA 90503

Recorded in Official Records, County of San Bernardino, Larry Walker, Recorder

10.00

Doc No. 20000457789
10:27am 12/13/00

205 40254228 01 21

1	2	3	4	5	6	7	8	9	0
PG	FEE	APF	GIMS	PH CPY	CRT CPY	ADD NM	PEN PR	PCOR	
2	7	3							
			5				6	4	
NON ST	LN	SVY	CIT-CO	TRANS TAX		DA	CHRG	EXAM	

Grant Deed

0228021080000

The undersigned Grantor(s) declare(s) under penalty of perjury that the following is true and correct:

( ) Documentary transfer tax is $ None This conveyance transfers the grantors' interest into their revocable
( ) Computed on full value of property conveyed, or living trust, R&T 11911.
( ) Computed on full value less value of liens and encumbrances remaining at time of sale.
( ) Unincorporated area: ☐ City of _____, and

FOR A VALUABLE CONSIDERATION, receipt of which is hereby acknowledged

JOHN D.C. CHOW and SUSAN CHOW, husband and wife, as joint tenants

hereby GRANT(S) TO JOHN DING-CHUNG CHOW and SUSAN WAI-SEN PIEN CHOW, Trustees of the CHOW FAMILY TRUST Dated December 2, 2000, an undivided 55% interest in

the following described real property in the County of San Bernardino, State of California:

See Exhibit "A" Attached

THIS PROPERTY IS EXEMPT FROM REAPPRAISAL UNDER CALIFORNIA REVENUE & TAXATION CODE §§ 62 & 63.

Date December 2, 2000
State of California
County of Los Angeles

On December 2, 2000

before me, JUNE L. MIYATA

John D. C. Chow
JOHN D.C. CHOW

Susan
SUSAN CHOW

personally appeared JOHN D.C. CHOW and SUSAN CHOW
personally known to me (or proved to me on the basis of satisfactory evidence) to be the person(s) whose name(s) is/are subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies), and that by his/her/their signatures(s) on the instrument the person(s), or the entity upon behalf of which the person(s) acted, executed the instrument.

WITNESS my hand and official seal.

Signature June L. Miyata

JUNE L. MIYATA
Commission # 1258240
Notary Public — California
Los Angeles County
My Comm. Expires Mar 25, 2004

MAIL TAX
STATEMENTS TO: JOHN DING-CHUNG CHOW & SUSAN WAI-SEN PIEN CHOW, 19940 Palomino Circle, Walnut, CA 91789
NAME ADDRESS CITY, STATE, ZIP

EXHIBIT "A"

The East 1/2 of the Northwest 1/4 of the Northwest 1/4 of the Northeast 1/4 of Section 35, Township 1 North, Range 6 West, San Bernardino Base and Meridian, according to Official Government Township Plat.

RECORDING REQUESTED BY

WHEN RECORDED MAIL TO
AND MAIL TAXES TO:

MRS SUSAN WAI-SEN PIEN CHOW
P.O. BOX 180
WALNUT, CA 91788

Electronically Recorded in Official Records, County of San Bernardino

9/27/2016
04:41 PM
NC

BOB DUTTON
ASSESSOR - RECORDER - CLERK
979 Advantage Title, Inc

Doc #: 2016-0401778

Titles: 1 Pages: 3

Fees	21.00
Taxes	.00
Other	.00
PAID	21.00

SPACE ABOVE THIS LINE RESERVED FOR RECORDER'S USE

Title

GRANT DEED

MAIL TAXES TO ABOVE ADDRESS

RECORDING REQUESTED BY:

AND WHEN RECORDED MAIL TO:

Mrs. Susan Wai-Sen Pien Chow

P.O.Box 180
Walnut, CA 91788

THIS SPACE FOR RECORDER'S USE ONLY:

AP#: 0228-021-09-0000

GRANT DEED

THE UNDERSIGNED GRANTOR(S) DECLARE(S)
DOCUMENTARY TRANSFER TAX is $0.00 CITY TRANSFER TAX $None
[X] computed on full value of property conveyed, or
[ ] computed on full value less value of liens or encumbrances remaining at time of sale.
[ ] Unincorporated area [X] City of Etiwanda **AND**

ACCOMMODATION
This Document delivered to Recorder as an accommodation only at the express request of the parties hereto. It has not been examined as to its effect or validity.

FOR A VALUABLE CONSIDERATION, receipt of which is hereby acknowledged,

John Ding-Chung Chow and Susan Wai-Sen Pien Chow, Trustees of the Chow Family Trust dated December 2, 2000

hereby GRANT(s) to:

Susan Wai-Sen Pien Chow, a Married Woman, as her sole and separate property

the real property in the City of Etiwanda, County of San Bernardino, State of California, described as:
LEGAL DESCRIPTION ATTACHED HERETO AS EXHIBIT "A" AND MADE A PART HEREOF
Also Known as: 15035 Highland Ave, Etiwanda, CA91739
"This conveyance transfers an interest into or out of a Living Trust, R & T 11930."

Dated July 29, 2016

John Ding-Chung Chow and Susan Wai-Sen Pien Chow, Trustees of the Chow Family Trust dated December 2, 2000

BY: John Ding Chung Chow
John Ding-Chung Chow, Trustee

BY: Susan Wai-Sen Pien Chow
Susan Wai-Sen Pien Chow, Trustee

A notary public or other officer completing this certificate verifies only the identity of the individual who signed the document to which this certificate is attached, and not the truthfulness, accuracy, or validity of that document.

STATE OF CALIFORNIA
COUNTY OF Los Angeles
On July 29, 2016 before me, Christine M. Ramirez A Notary Public personally appeared John Ding-Chung Chow, Susan Wai-Sen Pien Chow who proved to me on the basis of satisfactory evidence to be the person(s) whose name(s) is/are subscribed to the within instrument and acknowledged to me that ~~he/she~~/they executed the same in ~~his/her~~/their authorized capacity(ies), and that by ~~his/her~~/their signature(s) on the instrument the person(s), or the entity upon behalf of which the person(s) acted, executed the instrument.
I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing paragraph is true and correct.
WITNESS my hand and official seal.

Signature Christine M. Ramirez (Seal)

NCC1 **CHRISTINE M. RAMIREZ** NCC1
Commission No. 2051663
NOTARY PUBLIC-CALIFORNIA
LOS ANGELES COUNTY
My Comm. Expires DECEMBER 13, 2017

MAIL TAX STATEMENTS TO PARTY SHOWN BELOW; IF NO PARTY SHOWN, MAIL AS SHOWN ABOVE:

EXHIBIT "A"

The Northeast 1/4 of the Northwest 1/4 of the Northeast 1/4 of Section 35, Township 1 North, Range 6 West, San Bernardino Base and Meridian, according to United States Government Township Plat thereof approved by the surveyor general April 23, 1887.

Except therefrom the North 471 feet of the East 185 feet.

Also except therefrom that portion described in a deed to the State of California recorded October 24, 1973, in Book 8293, Page 202, official records.

APN: 0228-021-09-0000

RECORDING REQUESTED BY:

MAIL TAX STATEMENTS AND
WHEN RECORDED MAIL TO:
Mrs. Susan Wai-Sen Pien Chow
PO Box 180
Walnut, CA 91788

Order No.: n/a
Escrow No.: n/a
APN: 0228-021-09-000

Electronically Recorded in Official Records, County of San Bernardino 9/06/2017 09:43 AM FV

BOB DUTTON
ASSESSOR - RECORDER - CLERK
681 Ticor Title

Doc #: 2017-0363751

Titles: 1 Pages: 2

Fees	18.00
Taxes	.00
Other	.00
PAID	18.00

SPACE ABOVE THIS LINE IS FOR RECORDER'S USE

INTERSPOUSAL DEED

THE UNDERSIGNED GRANTOR(S) DECLARE(S): DOCUMENTARY TRANSFER TAX IS $0.00*

_____ Computed on full value of property conveyed, or
_____ Computed on full value less liens and encumbrances remaining at time of sale.
_____ Unincorporated area __x__ City of Etiwanda

For valuable consideration, receipt of which is hereby acknowledged, **ACCOMODATION**

John Ding-Chung Chow, husband of grantee

hereby GRANTS to Susan Wai-Sen Pien Chow, a married woman as her sole and separate property.

as grantee's sole and separate property, the real property situated in the County of San Bernardino, State of California, more particularly described as follows:

LEGAL DESCRIPTION ATTACHED HERETO AS EXHIBIT "A" AND MADE A PART HEREOF.
Also Known As: 15035 Highland Ave., Etiwanda, CA 91739
"It is the express of the Grantor, being the spouse of the Grantee to convey all right, title and interest of the Grantor, community or otherwise, in and to the herein described property to the Grantee as his/her sole and separate property."

Dated: June 28, 2017

John Ding Chung Chow
John Ding-Chung Chow

A notary public or other officer completing this certificate verifies only the identity of the individual who signed the document to which this certificate is attached, and not the truthfulness, accuracy, or validity of that document.

STATE OF CALIFORNIA)
) SS.
COUNTY OF Los Angeles)

On June 28, 2017 before me, Christine M. Ramirez, Notary Public, personally appeared John Ding-Chung Chow,
who proved to me on the basis of satisfactory evidence) to be the person(s) whose name(s) is/~~are~~ subscribed to the within instrument and acknowledged to me that he/~~she/they~~ executed the same in his/~~her/their~~ authorized capacity(~~ies~~), and that by his/~~her/their~~ signature(s) on the instrument the person(s), or the entity upon behalf of which the person(s) acted, executed the instrument.

I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing paragraph is true and correct.

Signature Christine M. Ramirez

NCC1 CHRISTINE M. RAMIREZ
Commission No. 2051663
NOTARY PUBLIC-CALIFORNIA
LOS ANGELES COUNTY
My Comm. Expires DECEMBER 13, 2017 NCC1

MAIL TAX STATEMENTS AS DIRECTED ABOVE

EXHIBIT "A"

THE NORTHEAST ¼ OF THE NORTHWEST ¼ OF THE NORTHEAST ¼ OF SECTION 35, TOWNSHIP 1 NORTH, RANGE 6 WEST, SAN BERNARDINO BASE AND MERIDIAN, ACCORDING TO UNITED STATES GOVERNMENT TOWNSHIP PLAT THEREOF APPROVED BY THE SURVEYOR GENERAL APRIL 23, 1887.

EXCEPT THHEREFROM THE NORTH 471 FEET OF THE EAST 185 FEET.

ALSO EXCEPT THEREFROM THAT PORTION DESCRIBED IN A DEED TO THE STATE OF CALIFORNIA RECORDED OCTOBER 24, 1973, IN BOOK 8293, PAGAE 202, OFFICIAL RECORDS.

ALSO MADE PART OF ON THAT CERTAIN GRANT DEED RECORDED APRIL 07, 1998 WITH INSTRUMENT NO. 19980128203.

End of Exhibit "A".
APN: 0228-021-09-0000

Appendix E - Database and Property Settings Reports

ENVIRONMENTAL RISK INFORMATION SERVICES

DATABASE REPORT

Project Property:	*Stratham Homes - NW Corner of S. Highland & Hemlock Avenues* *NW Corner of Hemlock and Highland Aves.* *Fontana CA 92336*
Project No:	*12282.002*
Report Type:	*Database Report*
Order No:	*20190211126*
Requested by:	*Leighton and Associates, Inc.*
Date Completed:	*February 13, 2019*

Environmental Risk Information Services
A division of Glacier Media Inc.
1.866.517.5204 | info@erisinfo.com | erisinfo.com

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Notice: IMPORTANT LIMITATIONS and YOUR LIABILITY

Reliance on information in Report: This report DOES NOT replace a full Phase I Environmental Site Assessment but is solely intended to be used as database review of environmental records.

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Executive Summary

Property Information:

Project Property:	*Stratham Homes - NW Corner of S. Highland & Hemlock Avenues* *NW Corner of Hemlock and Highland Aves. Fontana CA 92336*
Project No:	*12282.002*

Coordinates:

Latitude:	*34.134992*
Longitude:	*-117.477241*
UTM Northing:	*3,777,226.62*
UTM Easting:	*455,997.46*
UTM Zone:	*UTM Zone 11S*

Elevation: *1,437 FT*

Order Information:

Order No:	*20190211126*
Date Requested:	*February 11, 2019*
Requested by:	*Leighton and Associates, Inc.*
Report Type:	*Database Report*

Historicals/Products:

Executive Summary: Report Summary

Database	Searched	Search Radius	Project Property	Within 0.12mi	.125mi to 0.25mi	0.25mi to 0.50mi	0.50mi to 1.00mi	Total
Standard Environmental Records								
Federal								
NPL	Y	1	0	0	0	0	0	0
PROPOSED NPL	Y	1	0	0	0	0	0	0
DELETED NPL	Y	.5	0	0	0	0	-	0
SEMS	Y	.5	0	0	0	0	-	0
SEMS ARCHIVE	Y	.5	0	0	0	0	-	0
ODI	Y	.5	0	0	0	0	-	0
CERCLIS	Y	.5	0	0	0	0	-	0
IODI	Y	.5	0	0	0	0	-	0
CERCLIS NFRAP	Y	.5	0	0	0	0	-	0
CERCLIS LIENS	Y	PO	0	-	-	-	-	0
RCRA CORRACTS	Y	1	0	0	0	0	0	0
RCRA TSD	Y	.5	0	0	0	0	-	0
RCRA LQG	Y	.25	0	0	0	-	-	0
RCRA SQG	Y	.25	0	0	0	-	-	0
RCRA CESQG	Y	.25	0	0	0	-	-	0
RCRA NON GEN	Y	.25	0	0	0	-	-	0
FED ENG	Y	.5	0	0	0	0	-	0
FED INST	Y	.5	0	0	0	0	-	0
ERNS 1982 TO 1986	Y	PO	0	-	-	-	-	0
ERNS 1987 TO 1989	Y	PO	0	-	-	-	-	0
ERNS	Y	PO	0	-	-	-	-	0
FED BROWNFIELDS	Y	.5	0	0	0	0	-	0
FEMA UST	Y	.25	0	0	0	-	-	0
SEMS LIEN	Y	PO	0	-	-	-	-	0
SUPERFUND ROD	Y	1	0	0	0	0	0	0
State								
RESPONSE	Y	1	0	0	0	0	0	0

Database	Searched	Search Radius	Project Property	Within 0.12mi	.125mi to 0.25mi	0.25mi to 0.50mi	0.50mi to 1.00mi	Total
ENVIROSTOR	Y	1	0	0	0	1	2	3
DELISTED ENVS	Y	1	0	0	0	0	0	0
SWF/LF	Y	.5	0	0	0	0	-	0
HWP	Y	1	0	0	0	0	0	0
SWAT	Y	.5	0	0	0	0	-	0
LDS	Y	.5	0	0	0	0	-	0
LUST	Y	.5	0	0	0	0	-	0
DELISTED LST	Y	.5	0	0	0	0	-	0
SWRCB SWF	Y	.5	0	0	0	0	-	0
UST	Y	.25	0	0	0	-	-	0
UST CLOSURE	Y	.5	0	0	0	0	-	0
HHSS	Y	.25	0	0	0	-	-	0
AST	Y	.25	0	0	0	-	-	0
DELISTED TNK	Y	.25	0	0	0	-	-	0
CERS TANK	Y	.25	0	0	0	-	-	0
LUR	Y	.5	0	0	0	0	-	0
HLUR	Y	.5	0	0	0	0	-	0
DEED	Y	.5	0	0	0	0	-	0
VCP	Y	.5	0	0	0	0	-	0
CLEANUP SITES	Y	.5	0	0	0	0	-	0
DELISTED CTNK	Y	.25	0	0	0	-	-	0
HIST TANK	Y	.25	0	0	0	-	-	0
Tribal								
INDIAN LUST	Y	.5	0	0	0	0	-	0
INDIAN UST	Y	.25	0	0	0	-	-	0
DELISTED ILST	Y	.5	0	0	0	0	-	0
DELISTED IUST	Y	.25	0	0	0	-	-	0
County								
DELISTED COUNTY	Y	.25	0	0	0	-	-	0
UST CLEANUP	Y	.5	0	0	0	0	-	0
SANBERN CUPA	Y	.25	0	0	0	-	-	0
MAHER SF	Y	.5	0	0	0	0	-	0
Additional Environmental Records								
Federal								
FINDS/FRS	Y	PO	0	-	-	-	-	0
TRIS	Y	PO	0	-	-	-	-	0
HMIRS	Y	.125	0	0	-	-	-	0
NCDL	Y	PO	0	-	-	-	-	0
TSCA	Y	.125	0	0	-	-	-	0

Database	Searched	Search Radius	Project Property	Within 0.12mi	.125mi to 0.25mi	0.25mi to 0.50mi	0.50mi to 1.00mi	Total
HIST TSCA	Y	.125	0	0	-	-	-	0
FTTS ADMIN	Y	PO	0	-	-	-	-	0
FTTS INSP	Y	PO	0	-	-	-	-	0
PRP	Y	PO	0	-	-	-	-	0
SCRD DRYCLEANER	Y	.5	0	0	0	0	-	0
ICIS	Y	PO	0	-	-	-	-	0
FED DRYCLEANERS	Y	.25	0	0	0	-	-	0
DELISTED FED DRY	Y	.25	0	0	0	-	-	0
FUDS	Y	1	0	0	0	0	0	0
MLTS	Y	PO	0	-	-	-	-	0
HIST MLTS	Y	PO	0	-	-	-	-	0
MINES	Y	.25	0	0	0	-	-	0
ALT FUELS	Y	.25	0	0	0	-	-	0
SSTS	Y	.25	0	0	0	-	-	0
PCB	Y	.5	0	0	0	0	-	0
State								
DRYCLEANERS	Y	.25	0	0	0	-	-	0
DELISTED DRYCLEANERS	Y	.25	0	0	0	-	-	0
DRYC GRANT	Y	.25	0	0	0	-	-	0
HWSS CLEANUP	Y	.5	0	0	0	0	-	0
DTSC HWF	Y	.5	0	0	0	0	-	0
INSP COMP ENF	Y	1	0	0	0	0	0	0
SCH	Y	1	0	0	0	1	2	3
CHMIRS	Y	PO	0	-	-	-	-	0
HAZNET	Y	PO	0	-	-	-	-	0
HIST CHMIRS	Y	PO	0	-	-	-	-	0
HIST MANIFEST	Y	PO	0	-	-	-	-	0
HIST CORTESE	Y	.5	0	0	0	0	-	0
CDO/CAO	Y	.5	0	0	0	0	-	0
CERS HAZ	Y	.125	0	0	-	-	-	0
DELISTED HAZ	Y	.5	0	0	0	0	-	0
WASTE DISCHG	Y	.25	0	0	0	-	-	0
EMISSIONS	Y	.25	0	0	0	-	-	0
CDL	Y	.125	0	0	-	-	-	0
Tribal	***No Tribal additional environmental record sources available for this State.***							
County	***No County additional environmental databases were selected to be included in the search.***							
	Total:		0	0	0	2	4	6

**** PO – Property Only***
**** 'Property and adjoining properties' database search radii are set at 0.25 miles.***

Executive Summary: Site Report Summary - Project Property

Map Key	DB	Company/Site Name	Address	Direction	Distance (mi/ft)	Elev Diff (ft)	Page Number

No records found in the selected databases for the project property.

Executive Summary: Site Report Summary - Surrounding Properties

Map Key	DB	Company/Site Name	Address	Direction	Distance (mi/ft)	Elev Diff (ft)	Page Number
1	SCH	HIGH SCHOOL NO. 9	SAN SEVAINE ROAD/WALNUT AVENUE FONTANA CA 92336 ***Estor/EPA ID | Cleanup Status:*** 36010054 | NO FURTHER ACTION AS OF 3/2/2004	SW	0.29 / 1,547.63	-46	16
2	ENVIROSTOR	HIGHLAND AVENUE AUXILIARY FIELD	(5 MILES W OF) SAN BERNARDINO CA ***Estor/EPA ID | Cleanup Status:*** 80001017 | INACTIVE - NEEDS EVALUATION AS OF 7/1/2005	ESE	0.44 / 2,345.18	19	17
3	ENVIROSTOR	HIGH SCHOOL NO. 9	SAN SEVAINE ROAD/WALNUT AVENUE FONTANA CA 92336 ***Estor/EPA ID | Cleanup Status:*** 36010054 | NO FURTHER ACTION AS OF 3/2/2004	SSW	0.51 / 2,686.75	-63	18
4	ENVIROSTOR	PROPOSED MIDDLE SCHOOL NO. 8.75	BETWEEN SOUTH HIGHLAND AND WALNUT AVENUE FONTANA CA 92336 ***Estor/EPA ID | Cleanup Status:*** 60000957 | NO FURTHER ACTION AS OF 10/20/2008	ESE	0.83 / 4,393.94	10	19
4	SCH	PROPOSED MIDDLE SCHOOL NO. 8.75	BETWEEN SOUTH HIGHLAND AND WALNUT AVENUE FONTANA CA 92336 ***Estor/EPA ID | Cleanup Status:*** 60000957 | NO FURTHER ACTION AS OF 10/20/2008	ESE	0.83 / 4,393.94	10	20
5	SCH	LYTLE CREEK HIGH SCHOOL NO. 4 ADDITION	LYTLE CREEK ROAD/SUMMIT AVENUE FONTANA CA 92336 ***Estor/EPA ID | Cleanup Status:*** 36010066 | NO ACTION REQUIRED AS OF 11/29/2001	NE	0.86 / 4,552.95	121	21

Executive Summary: Summary by Data Source

Standard

State

ENVIROSTOR - EnviroStor Database

A search of the ENVIROSTOR database, dated Dec 20, 2018 has found that there are 3 ENVIROSTOR site(s) within approximately 1.00 miles of the project property.

Equal/Higher Elevation	Address	Direction	Distance (mi/ft)	Map Key
HIGHLAND AVENUE AUXILIARY FIELD	(5 MILES W OF) SAN BERNARDINO CA	ESE	0.44 / 2,345.18	2
	***Estor/EPA ID | Cleanup Status**: 80001017 | INACTIVE - NEEDS EVALUATION AS OF 7/1/2005*			
PROPOSED MIDDLE SCHOOL NO. 8.75	BETWEEN SOUTH HIGHLAND AND WALNUT AVENUE FONTANA CA 92336 ***Estor/EPA ID | Cleanup Status**: 60000957 | NO FURTHER ACTION AS OF 10/20/2008*	ESE	0.83 / 4,393.94	4

Lower Elevation	Address	Direction	Distance (mi/ft)	Map Key
HIGH SCHOOL NO. 9	SAN SEVAINE ROAD/WALNUT AVENUE FONTANA CA 92336 ***Estor/EPA ID | Cleanup Status**: 36010054 | NO FURTHER ACTION AS OF 3/2/2004*	SSW	0.51 / 2,686.75	3

Non Standard

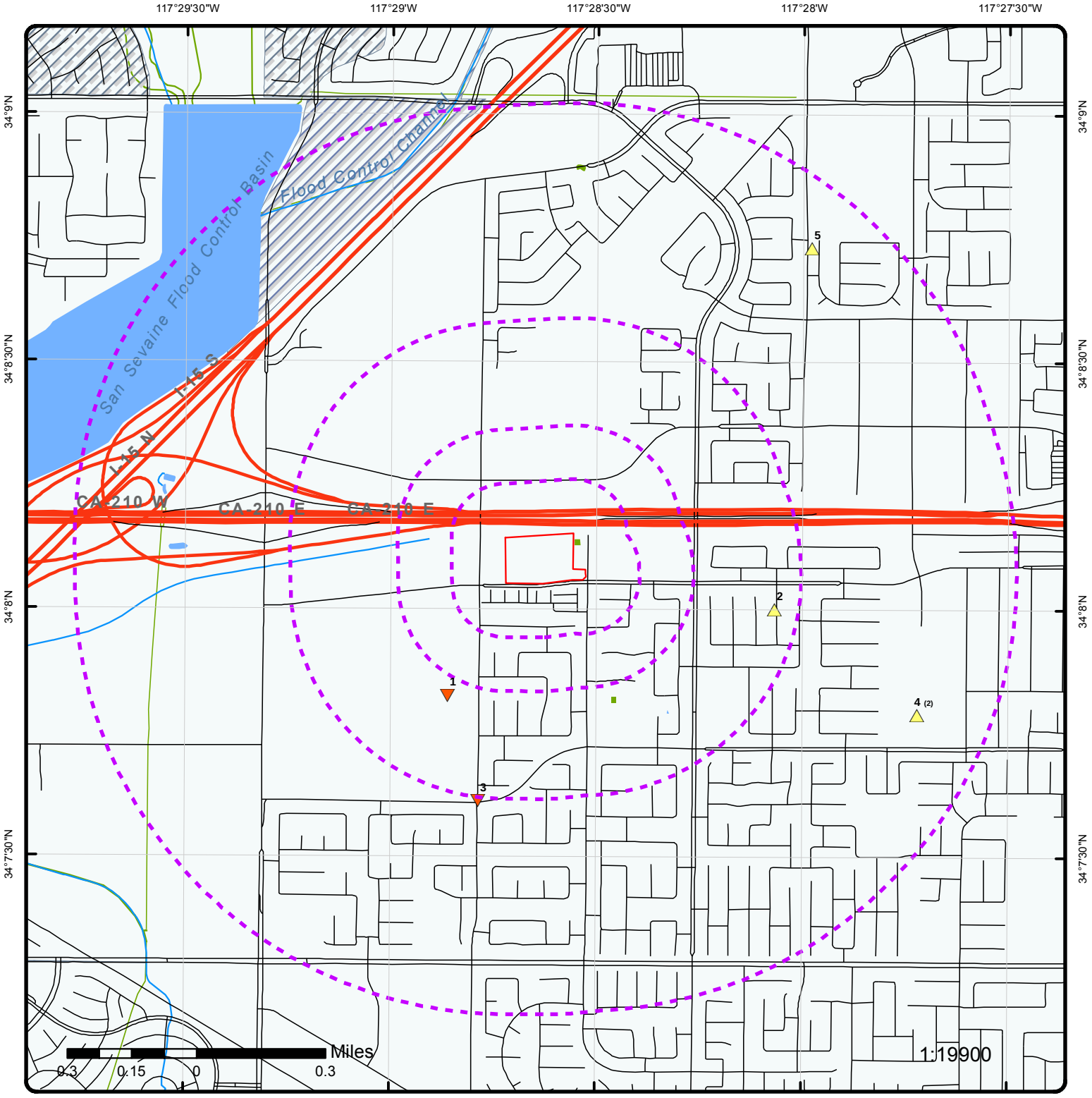
State

SCH - School Property Evaluation Program Sites

A search of the SCH database, dated Dec 20, 2018 has found that there are 3 SCH site(s) within approximately 1.00 miles of the project property.

Equal/Higher Elevation	Address	Direction	Distance (mi/ft)	Map Key
PROPOSED MIDDLE SCHOOL NO. 8.75	BETWEEN SOUTH HIGHLAND AND WALNUT AVENUE FONTANA CA 92336 ***Estor/EPA ID | Cleanup Status**: 60000957 | NO FURTHER ACTION AS OF 10/20/2008*	ESE	0.83 / 4,393.94	4
LYTLE CREEK HIGH SCHOOL NO. 4 ADDITION	LYTLE CREEK ROAD/SUMMIT AVENUE FONTANA CA 92336 ***Estor/EPA ID | Cleanup Status**: 36010066 | NO ACTION REQUIRED AS OF 11/29/2001*	NE	0.86 / 4,552.95	5

Lower Elevation	Address	Direction	Distance (mi/ft)	Map Key
HIGH SCHOOL NO. 9	SAN SEVAINE ROAD/WALNUT AVENUE FONTANA CA 92336 ***Estor/EPA ID | Cleanup Status**: 36010054 | NO FURTHER ACTION AS OF 3/2/2004*	SW	0.29 / 1,547.63	1



Map : 1 Mile Radius

Order No: 20190211126

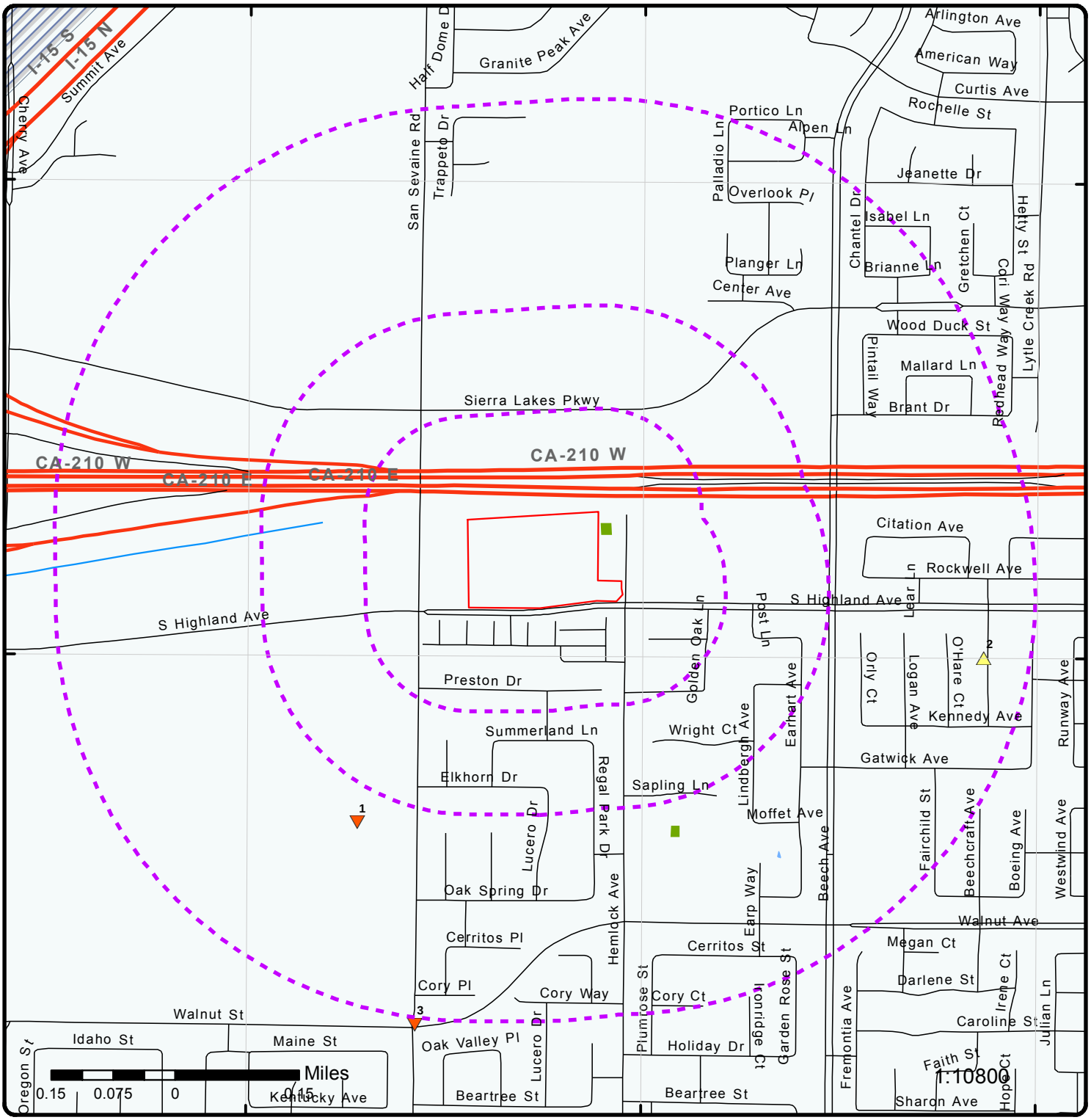
Address: NW Corner of Hemlock and Highland Aves., Fontana, CA, 92336

ERIS
ENVIRONMENTAL RISK INFORMATION SERVICES

Project Property	Rails	State Boundary	FWS Special Designation Areas
Buffer Outline	Major Highways	National Priority List Sites	State Brownfield Sites
Eris Sites with Higher Elevation	Major Highways Ramps	National Wetland	State Brownfield Areas
Eris Sites with Same Elevation	Major Roads	Indian Reserve Land	State Superfund Areas:Dept. of Defense
Eris Sites with Lower Elevation	Major Roads Ramps	Historic Fill	State Superfund Areas:NPL
Eris Sites with Unknown Elevation	Secondary Roads	100 Year Flood Zone	WQARF Areas
County Boundary	Secondary Roads Ramps	500 Year Flood Zone	Federal Lands: Dept. of Defense (owned/administered areas)
	Local Roads and Ramps		

Source: © 2016 ESRI

© ERIS Information Inc.



Map : 0.5 Mile Radius

Order No: 20190211126

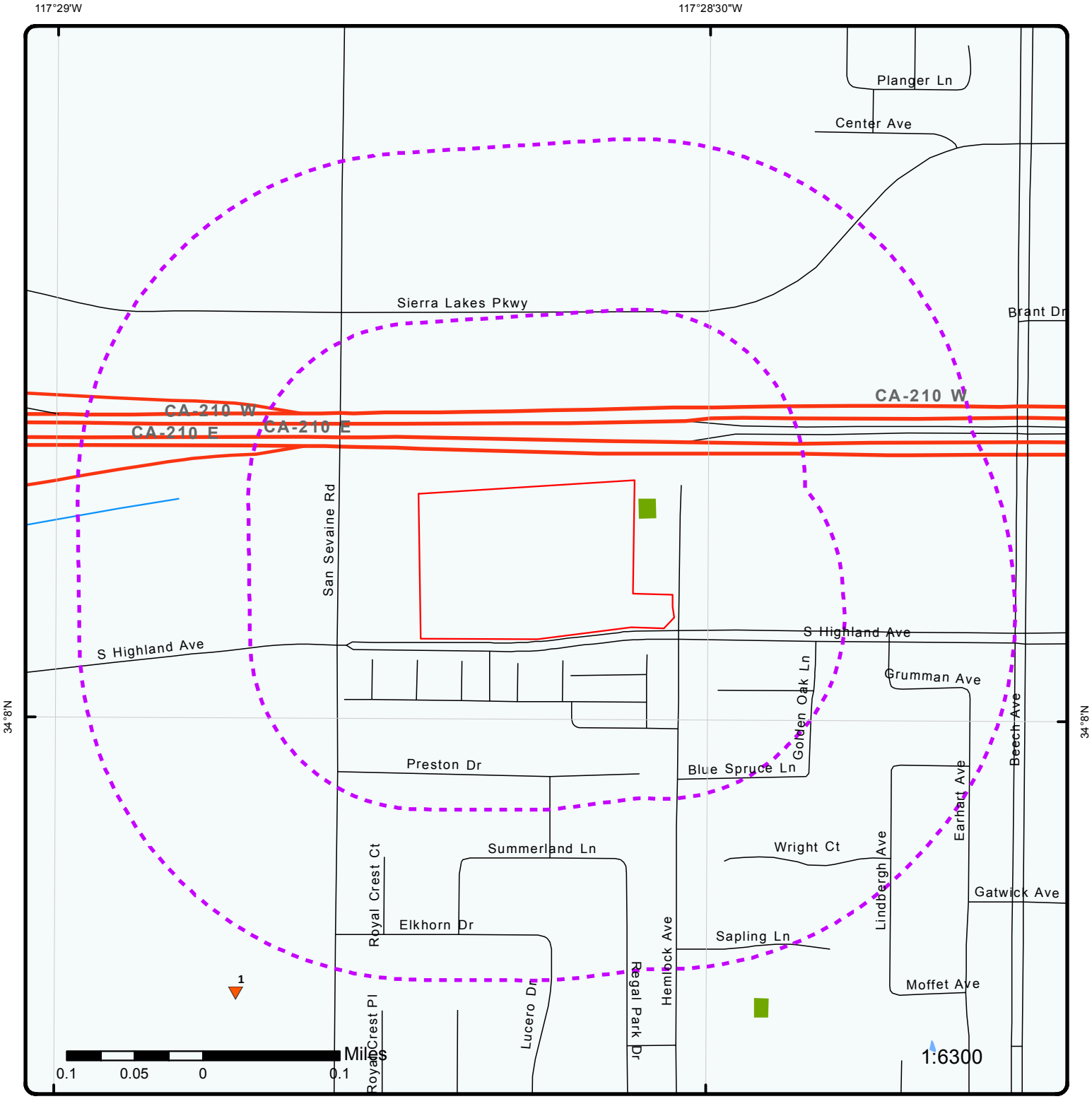
Address: NW Corner of Hemlock and Highland Aves., Fontana, CA, 92336

ERIS
ENVIRONMENTAL RISK INFORMATION SERVICES

Project Property	Rails	State Boundary	FWS Special Designation Areas
Buffer Outline	Major Highways	National Priority List Sites	State Brownfield Sites
Eris Sites with Higher Elevation	Major Highways Ramps	National Wetland	State Brownfield Areas
Eris Sites with Same Elevation	Major Roads	Indian Reserve Land	State Superfund Areas:Dept. of Defense
Eris Sites with Lower Elevation	Major Roads Ramps	Historic Fill	State Superfund Areas:NPL
Eris Sites with Unknown Elevation	Secondary Roads	100 Year Flood Zone	WQARF Areas
County Boundary	Secondary Roads Ramps	500 Year Flood Zone	Federal Lands: Dept. of Defense (owned/administered areas)
	Local Roads and Ramps		

Source: © 2016 ESRI

© ERIS Information Inc.



Map : 0.25 Mile Radius

Order No: 20190211126

Address: NW Corner of Hemlock and Highland Aves., Fontana, CA, 92336

ENVIRONMENTAL RISK INFORMATION SERVICES

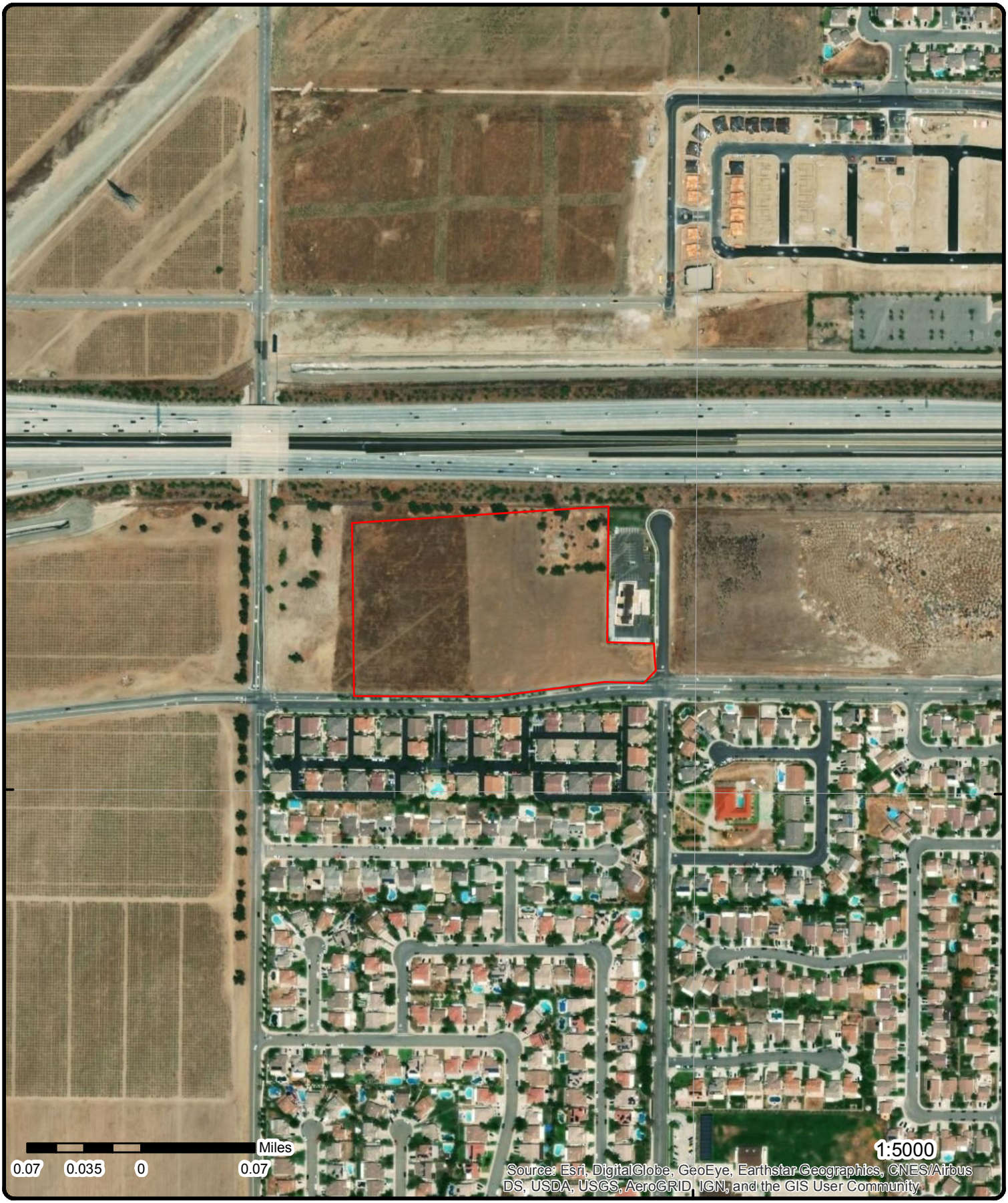
Project Property	Rails	State Boundary	FWS Special Designation Areas
Buffer Outline	Major Highways	National Priority List Sites	State Brownfield Sites
Eris Sites with Higher Elevation	Major Highways Ramps	National Wetland	State Brownfield Areas
Eris Sites with Same Elevation	Major Roads	Indian Reserve Land	State Superfund Areas:Dept. of Defense
Eris Sites with Lower Elevation	Major Roads Ramps	Historic Fill	State Superfund Areas:NPL
Eris Sites with Unknown Elevation	Secondary Roads	100 Year Flood Zone	WQARF Areas
County Boundary	Secondary Roads Ramps	500 Year Flood Zone	Federal Lands: Dept. of Defense (owned/administered areas)
	Local Roads and Ramps		

Source: © 2016 ESRI

© ERIS Information Inc.

117°28'30"W

34°8'N



34°8'N

Aerial (2017)

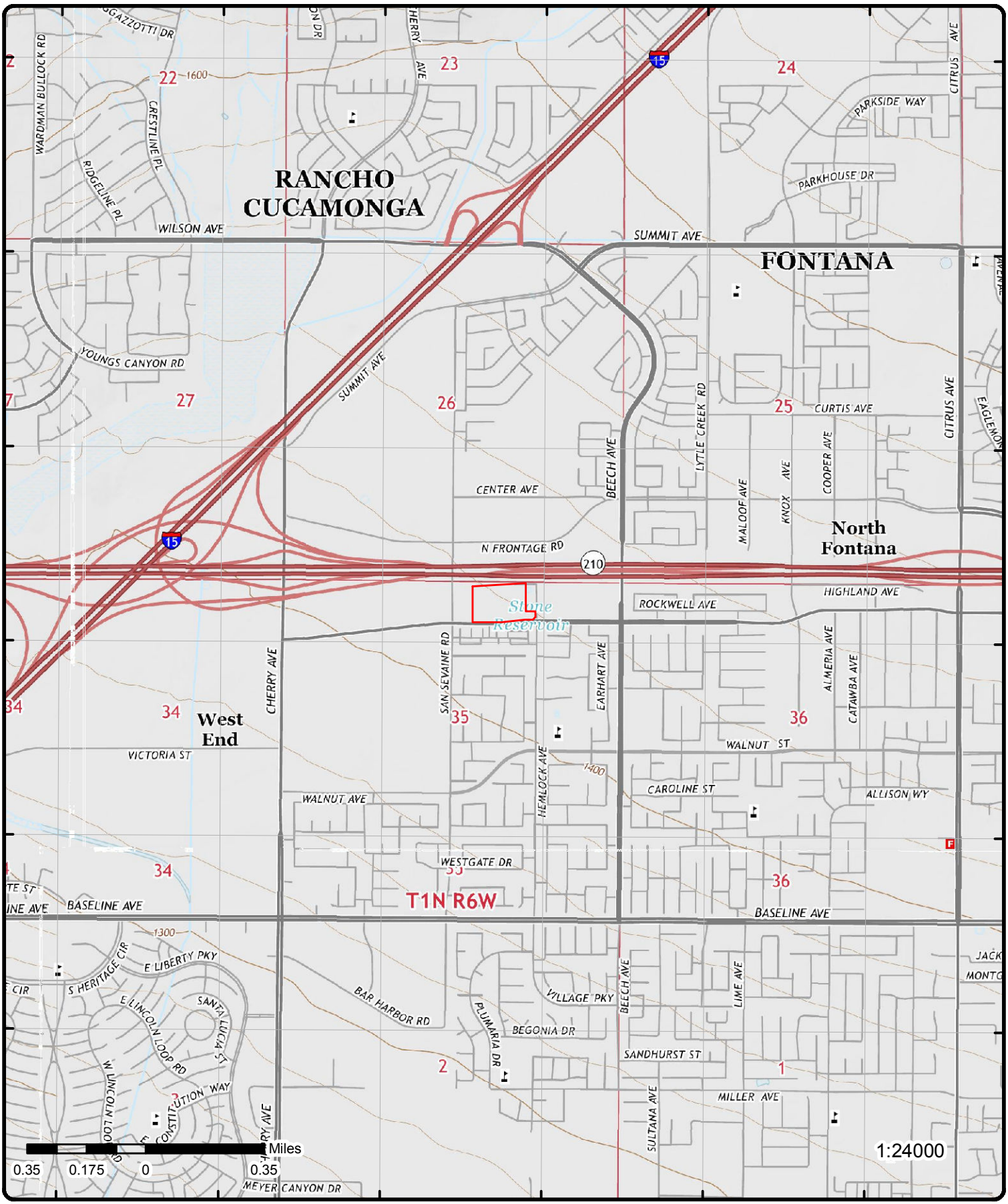
Order No: 20190211126

Address: NW Corner of Hemlock and Highland Aves., Fontana, CA, 923

Source: ESRI World Imagery

ERIS ENVIRONMENTAL RISK INFORMATION SERVICES

© ERIS Information Inc.



Topographic Map (2015)

Order No: 20190211126

Address: NW Corner of Hemlock and Highland Aves., Fontana, CA, 923

Quadrangle(s): Guasti, CA; Fontana, CA; Devore, CA; Cucamonga Peak, CA;

Source: USGS Topographic Map

ERIS
ENVIRONMENTAL RISK INFORMATION SERVICES
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Detail Report

Map Key	Number of Records	Direction	Distance (mi/ft)	Elev/Diff (ft)	Site	DB
1	1 of 1	SW	0.29 / 1,547.63	1,391.71 / -46	HIGH SCHOOL NO. 9 SAN SEVAINE ROAD/WALNUT AVENUE FONTANA CA 92336	SCH

Estor/EPA ID:	36010054	**Permit Renewal Lead:**	
Site Code:	404523	**Project Manager:**	
Nat Priority List:	NO	**Supervisor:**	SHAHIR HADDAD
Acres:	60 ACRES	**Public Partici Spclst:**	
Special Program:		**Census Tract:**	6071002304
Funding:	SCHOOL DISTRICT	**County:**	SAN BERNARDINO
Assembly District:	47	**Latitude:**	34.130402
Senate District:	20	**Longitude:**	-117.481003

School District: CHAFFEY JOINT UNION HIGH SCHOOL DISTRICT
APN: NONE SPECIFIED
Cleanup Status: NO FURTHER ACTION AS OF 3/2/2004
Cleanup Oversight Agencies: DTSC - LEAD AGENCY
Site Type: SCHOOL
Office: SOUTHERN CALIFORNIA SCHOOLS & BROWNFIELDS OUTREACH
Past Use that Caused Contam: AGRICULTURAL - ROW CROPS
Potential Media Affected: SOIL
Potential Contamin of Concern:

ARSENIC, DDT

SITE HISTORY:

Portions of the property are currently used as a vineyard. There are no land use in the remaining vacant portions of the site. Historical aerial photographs show that the property had been a vineyard. Adjoining and nearby properties has been agricultural (vineyards) and residential.

Status: NO FURTHER ACTION
Program Type: SCHOOL EVALUATION
CalEnviroScreen Score: 61-65%
Summary Link: http://www.envirostor.dtsc.ca.gov/public/profile_report?global_id=36010054

Completed Activities

Title: Technical Memorandums
Title Link:
Area Name:
Area Link:
Sub Area:
Sub Area Link:
Document Type: Technical Report
Date Completed: 5/12/2004
Comments:

Title: Site Visit - Site Inspections/visit
Title Link:
Area Name:
Area Link:
Sub Area:
Sub Area Link:
Document Type: Site Inspections/Visit (Non LUR)
Date Completed: 5/19/2004
Comments:

Title: Environmental Oversight Agreement

Map Key	Number of Records	Direction	Distance (mi/ft)	Elev/Diff (ft)	Site	DB

Title Link: http://www.envirostor.dtsc.ca.gov/public/final_documents2?global_id=36010054&enforcement_id=6004933
Area Name:
Area Link:
Sub Area:
Sub Area Link:
Document Type: Environmental Oversight Agreement
Date Completed: 3/2/2004
Comments:

Title: Phase 1
Title Link: http://www.envirostor.dtsc.ca.gov/public/final_documents2?global_id=36010054&doc_id=6004936
Area Name:
Area Link:
Sub Area:
Sub Area Link:
Document Type: Phase 1
Date Completed: 2/20/2004
Comments:

Title: Preliminary Endangerment Assessment Report
Title Link: http://www.envirostor.dtsc.ca.gov/public/final_documents2?global_id=36010054&doc_id=6004935
Area Name:
Area Link:
Sub Area:
Sub Area Link:
Document Type: Preliminary Endangerment Assessment Report
Date Completed: 9/16/2004
Comments:

2	1 of 1	ESE	0.44 / 2,345.18	1,455.95 / 19	HIGHLAND AVENUE AUXILIARY FIELD (5 MILES W OF) SAN BERNARDINO CA	ENVIROSTOR

Estor/EPA ID: 80001017
Site Code:
Nat Priority List: NO
Acres: 0 ACRES
Special Program:
Funding: DERA
Assembly District: 47
Senate District: 20
School District:
Permit Renewal Lead:
Project Manager:
Supervisor: DOUGLAS BAUTISTA
Public Partici Spclst:
Census Tract: 6071002304
County: SAN BERNARDINO
Latitude: 34.1333333333333
Longitude: -117.467777777778
APN: NONE SPECIFIED
Cleanup Status: INACTIVE - NEEDS EVALUATION AS OF 7/1/2005
Cleanup Oversight Agencies: DTSC - SITE CLEANUP PROGRAM - LEAD AGENCY
Site Type: FUDS
Office: CLEANUP CYPRESS
Past Use that Caused Contam: NONE SPECIFIED
Potential Media Affected: NONE SPECIFIED
Potential Contamin of Concern:

NONE SPECIFIED

Site History:

Status: INACTIVE - NEEDS EVALUATION
Program Type: MILITARY EVALUATION
CalEnviroScreen Score: 61-65%
Summary Link: http://www.envirostor.dtsc.ca.gov/public/profile_report?global_id=80001017

Completed Activities

Title: USACE INPR Summary J0CA738000 29 July 1999
Title Link: http://www.envirostor.dtsc.ca.gov/public/final_documents2?global_id=80001017&doc_id=5011329
Area Name:

Map Key	Number of Records	Direction	Distance (mi/ft)	Elev/Diff (ft)	Site	DB

Area Link:
Sub Area:
Sub Area Link:
Document Type: Inventory Project Report (INPR)
Date Completed: 7/29/1999
Comments:

3	1 of 1	SSW	0.51 / 2,686.75	1,373.93 / -63	HIGH SCHOOL NO. 9 SAN SEVAINE ROAD/WALNUT AVENUE FONTANA CA 92336	ENVIROSTOR

Estor/EPA ID: 36010054
Site Code: 404523
Nat Priority List: NO
Acres: 60 ACRES
Special Program:
Funding: SCHOOL DISTRICT
Assembly District: 47
Senate District: 20
Permit Renewal Lead:
Project Manager:
Supervisor: SHAHIR HADDAD
Public Partici Spclst:
Census Tract: 6071002304
County: SAN BERNARDINO
Latitude: 34.130402
Longitude: -117.481003
School District: CHAFFEY JOINT UNION HIGH SCHOOL DISTRICT
APN: NONE SPECIFIED
Cleanup Status: NO FURTHER ACTION AS OF 3/2/2004
Cleanup Oversight Agencies: DTSC - LEAD AGENCY
Site Type: SCHOOL
Office: SOUTHERN CALIFORNIA SCHOOLS & BROWNFIELDS OUTREACH
Past Use that Caused Contam: AGRICULTURAL - ROW CROPS
Potential Media Affected: SOIL
Potential Contamin of Concern:

ARSENIC, DDT

Site History:

Portions of the property are currently used as a vineyard. There are no land use in the remaining vacant portions of the site. Historical aerial photographs show that the property had been a vineyard. Adjoining and nearby properties has been agricultural (vineyards) and residential.

Status: NO FURTHER ACTION
Program Type: SCHOOL EVALUATION
CalEnviroScreen Score: 61-65%
Summary Link: http://www.envirostor.dtsc.ca.gov/public/profile_report?global_id=36010054

Completed Activities

Title: Site Visit - Site Inspections/visit
Title Link:
Area Name:
Area Link:
Sub Area:
Sub Area Link:
Document Type: Site Inspections/Visit (Non LUR)
Date Completed: 5/19/2004
Comments:

Title: Phase 1
Title Link: http://www.envirostor.dtsc.ca.gov/public/final_documents2?global_id=36010054&doc_id=6004936
Area Name:
Area Link:
Sub Area:
Sub Area Link:
Document Type: Phase 1
Date Completed: 2/20/2004
Comments:

Title: Environmental Oversight Agreement
Title Link: http://www.envirostor.dtsc.ca.gov/public/final_documents2?global_id=36010054&enforcement_id=6004933

Map Key	Number of Records	Direction	Distance (mi/ft)	Elev/Diff (ft)	Site	DB

Area Name:
Area Link:
Sub Area:
Sub Area Link:
Document Type: Environmental Oversight Agreement
Date Completed: 3/2/2004
Comments:

Title: Preliminary Endangerment Assessment Report
Title Link: http://www.envirostor.dtsc.ca.gov/public/final_documents2?global_id=36010054&doc_id=6004935
Area Name:
Area Link:
Sub Area:
Sub Area Link:
Document Type: Preliminary Endangerment Assessment Report
Date Completed: 9/16/2004
Comments:

Title: Technical Memorandums
Title Link:
Area Name:
Area Link:
Sub Area:
Sub Area Link:
Document Type: Technical Report
Date Completed: 5/12/2004
Comments:

4	1 of 2	ESE	0.83 / 4,393.94	1,447.17 / 10	PROPOSED MIDDLE SCHOOL NO. 8.75 BETWEEN SOUTH HIGHLAND AND WALNUT AVENUE FONTANA CA 92336	ENVIROSTOR

Estor/EPA ID:	60000957	**Permit Renewal Lead:**	
Site Code:	404813	**Project Manager:**	
Nat Priority List:	NO	**Supervisor:**	JAVIER HINOJOSA
Acres:	40 ACRES	**Public Partici Spclst:**	
Special Program:		**Census Tract:**	6071002304
Funding:	SCHOOL DISTRICT	**County:**	SAN BERNARDINO
Assembly District:	47	**Latitude:**	34.1298
Senate District:	20	**Longitude:**	-117.462

School District: FONTANA UNIFIED SCHOOL DISTRICT
APN: NONE SPECIFIED
Cleanup Status: NO FURTHER ACTION AS OF 10/20/2008
Cleanup Oversight Agencies: DTSC - SITE CLEANUP PROGRAM - LEAD AGENCY
Site Type: SCHOOL
Office: SOUTHERN CALIFORNIA SCHOOLS & BROWNFIELDS OUTREACH
Past Use that Caused Contam: RESIDENTIAL AREA
Potential Media Affected: SOIL
Potential Contamin of Concern:

CHLORDANE, DDT, LEAD

Site History:

The Site is primarily vacant land with three single-family residential dwellings located west of Almeria Avenue. The Site had not been used for agricultural purposes.

As part of the Phase I requirements, DTSC conducted a site visit and reviewed the Phase I and Phase I Addendum submitted. Since there was no agricultural use of the site, DTSC review the data submitted for LBP and OCPs and issued an no further action approval letter on 10/20/2008.

Status: NO FURTHER ACTION
Program Type: SCHOOL EVALUATION
CalEnviroScreen Score: 61-65%
Summary Link: http://www.envirostor.dtsc.ca.gov/public/profile_report?global_id=60000957

Map Key	Number of Records	Direction	Distance (mi/ft)	Elev/Diff (ft)	Site	DB

Completed Activities

Title: Request for approval of Form 4.14
Title Link: http://www.envirostor.dtsc.ca.gov/public/final_documents2?global_id=60000957&doc_id=6021604
Area Name:
Area Link:
Sub Area:
Sub Area Link:
Document Type: 4.14 Request
Date Completed: 10/24/2008
Comments: The 4.14 form was requested by the District and approved by DTSC on 10/24/2008.

Title: Operable Units (Area A and C)
Title Link: http://www.envirostor.dtsc.ca.gov/public/final_documents2?global_id=60000957&enforcement_id=6013238
Area Name:
Area Link:
Sub Area:
Sub Area Link:
Document Type: Partial Site Approval
Date Completed: 10/20/2008
Comments:

Title: Phase I Environmental Assessment Addendum (LBP)
Title Link: http://www.envirostor.dtsc.ca.gov/public/final_documents2?global_id=60000957&doc_id=6020806
Area Name:
Area Link:
Sub Area:
Sub Area Link:
Document Type: Phase 1 Addendum
Date Completed: 10/20/2008
Comments: The Phase I and addendum is now approved.

Title: Phase I Environmental site Assessment
Title Link: http://www.envirostor.dtsc.ca.gov/public/final_documents2?global_id=60000957&doc_id=6020312
Area Name:
Area Link:
Sub Area:
Sub Area Link:
Document Type: Phase 1
Date Completed: 10/20/2008
Comments: For purposes of the Phase I, the site was divided into Areas A, B and C. A Phase I Addendum is required for Area B.

4	2 of 2	ESE	0.83 / 4,393.94	1,447.17 / 10	PROPOSED MIDDLE SCHOOL NO. 8.75 BETWEEN SOUTH HIGHLAND AND WALNUT AVENUE FONTANA CA 92336	SCH

Estor/EPA ID: 60000957
Site Code: 404813
Nat Priority List: NO
Acres: 40 ACRES
Special Program:
Funding: SCHOOL DISTRICT
Assembly District: 47
Senate District: 20
Permit Renewal Lead:
Project Manager:
Supervisor: JAVIER HINOJOSA
Public Partici Spclst:
Census Tract: 6071002304
County: SAN BERNARDINO
Latitude: 34.1298
Longitude: -117.462
School District: FONTANA UNIFIED SCHOOL DISTRICT
APN: NONE SPECIFIED
Cleanup Status: NO FURTHER ACTION AS OF 10/20/2008
Cleanup Oversight Agencies: DTSC - SITE CLEANUP PROGRAM - LEAD AGENCY
Site Type: SCHOOL
Office: SOUTHERN CALIFORNIA SCHOOLS & BROWNFIELDS OUTREACH
Past Use that Caused Contam: RESIDENTIAL AREA
Potential Media Affected: SOIL
Potential Contamin of Concern:

CHLORDANE, DDT, LEAD

SITE HISTORY:

The Site is primarily vacant land with three single-family residential dwellings located west of Almeria Avenue. The Site had not been used for agricultural purposes.

As part of the Phase I requirements, DTSC conducted a site visit and reviewed the Phase I and Phase I Addendum submitted. Since there was no agricultural use of the site, DTSC review the data submitted for LBP and OCPs and issued an no further action approval letter on 10/20/2008.

Status: NO FURTHER ACTION
Program Type: SCHOOL EVALUATION
CalEnviroScreen Score: 61-65%
Summary Link: http://www.envirostor.dtsc.ca.gov/public/profile_report?global_id=60000957

Completed Activities

Title: Phase I Environmental site Assessment
Title Link: http://www.envirostor.dtsc.ca.gov/public/final_documents2?global_id=60000957&doc_id=6020312
Area Name:
Area Link:
Sub Area:
Sub Area Link:
Document Type: Phase 1
Date Completed: 10/20/2008
Comments: For purposes of the Phase I, the site was divided into Areas A, B and C. A Phase I Addendum is required for Area B.

Title: Phase I Environmental Assessment Addendum (LBP)
Title Link: http://www.envirostor.dtsc.ca.gov/public/final_documents2?global_id=60000957&doc_id=6020806
Area Name:
Area Link:
Sub Area:
Sub Area Link:
Document Type: Phase 1 Addendum
Date Completed: 10/20/2008
Comments: The Phase I and addendum is now approved.

Title: Request for approval of Form 4.14
Title Link: http://www.envirostor.dtsc.ca.gov/public/final_documents2?global_id=60000957&doc_id=6021604
Area Name:
Area Link:
Sub Area:
Sub Area Link:
Document Type: 4.14 Request
Date Completed: 10/24/2008
Comments: The 4.14 form was requested by the District and approved by DTSC on 10/24/2008.

Title: Operable Units (Area A and C)
Title Link: http://www.envirostor.dtsc.ca.gov/public/final_documents2?global_id=60000957&enforcement_id=6013238
Area Name:
Area Link:
Sub Area:
Sub Area Link:
Document Type: Partial Site Approval
Date Completed: 10/20/2008
Comments:

5	1 of 1	NE	0.86 / 4,552.95	1,558.70 / 121	LYTLE CREEK HIGH SCHOOL NO. 4 ADDITION LYTLE CREEK ROAD/SUMMIT AVENUE FONTANA CA 92336	SCH

Estor/EPA ID: 36010066
Site Code: 404296
Nat Priority List: NO
Permit Renewal Lead:
Project Manager:
Supervisor: YOLANDA GARZA

Acres:	9.18 ACRES	***Public Partici Spclst:***	
Special Program:		***Census Tract:***	6071002304
Funding:	SCHOOL DISTRICT	***County:***	SAN BERNARDINO
Assembly District:	47	***Latitude:***	34.1455
Senate District:	20	***Longitude:***	-117.4663

School District: FONTANA UNIFIED SCHOOL DISTRICT
APN: NONE SPECIFIED
Cleanup Status: NO ACTION REQUIRED AS OF 11/29/2001
Cleanup Oversight Agencies: DTSC - LEAD AGENCY
Site Type: SCHOOL
Office: SOUTHERN CALIFORNIA SCHOOLS & BROWNFIELDS OUTREACH
Past Use that Caused Contam: AGRICULTURAL - ROW CROPS
Potential Media Affected: SOIL
Potential Contamin of Concern:

CHLORDANE, DDD, DDE, DDT

SITE HISTORY:

The proposed site is located on the east side of Lytle Creek Road and south of Summit Avenue in Fontana, California. The site is currently unoccupied with the exception of natural vegetation. The site has been vacant since 1933. The site is located in a historically agricultural region.

Status: NO ACTION REQUIRED
Program Type: SCHOOL EVALUATION
CalEnviroScreen Score: 61-65%
Summary Link: http://www.envirostor.dtsc.ca.gov/public/profile_report?global_id=36010066

Completed Activities

Title: Phase 1
Title Link:
Area Name:
Area Link:
Sub Area:
Sub Area Link:
Document Type: Phase 1
Date Completed: 11/29/2001
Comments:

Title: * Site Visit - Site Inspections/visit
Title Link:
Area Name:
Area Link:
Sub Area:
Sub Area Link:
Document Type: Site Inspections/Visit (Non LUR)
Date Completed: 11/28/2001
Comments:

Unplottable Summary

Total: 16 Unplottable sites

DB	Company Name/Site Name	Address	City	Zip	ERIS ID
CDL		HILTON DR (BETW REDWOOD & HEMLOCK)	FONTANA CA	92336	820117870
CHMIRS	Caltrans	Eastbound Interstate 210 at Post Mile 20.19	San Bernardino CA	92401	821817124
CHMIRS	San Bernardino CHP Dispatch	EB 210 at the Highland Exit	San Bernardino CA		821753080
CHMIRS	CHP	EB 210 on the Sierra Ave Off ramp	Fontana CA		821875245
CHMIRS	Caltrans	Interstate 210 eastbound at I 215, post 21.97	San Bernardino CA		867287163
CHMIRS	San Bernardino County Fire Dept HazMat	San Sevaine Flood Control Channel below the 10 freeway, nearest cross of Etiwanda.	Fontana CA		821816186
CHMIRS	Caltrans	WB I- 210 MPM 13.412	Fontana CA		821804713
CHMIRS	CHP	East bound 210 at the 215 connection	San Bernardino CA		857766523
FINDS/FRS	TRACT NO. 15620/4	ARROW/LIVEOAK/WHITTRAM/HEMLOCK	FONTANA CA	92335	840111673
HAZNET	YOUNG HOMES	9.22 ACRES BETWEEN LIVE OAK & HEMLOCK	FONTANA CA	923350000	826755496

HAZNET	PANELLA TRUCKING LLC	E BOUND I-210 @ HIGHLAND AVE EXIT	SAN BERNARDINO CA	92407	826881849
HAZNET	LANDINGS 750 LLC	ON HEMLOCK AVE 1/4 MI S OF HIGHLAND AVE	FONTANA CA	900000000	826878312
HAZNET	EAST VALLEY WATER DISTRICT	HIGHLAND AVE AT PATTON STATE HOSPITAL	SAN BERNARDINO CA	923460000	826653974
RCRA NON GEN	RIVERSIDE COUNTY TRANSPORTATON COMMISSION	I 15 - POST MILE RIV 34.7 TO SBD 1.3 (SR-60 - WEIRCK RD)	SAN BERNARDINO CA	92401	873965152
SANBERN CUPA	SHEA-KENNY	NE FRONTAGE RD	SAN BERNARDINO CA	92404	820060868
SWAT	SAN BERNARDINO COUNTY-FONTANA LANDFILL	1/2 MI N OF HIGHLAND AVE 1/4 MI E OF SITE FONTANA, CA 92335	CA		822570514

Unplottable Report

Site:
HILTON DR (BETW REDWOOD & HEMLOCK) FONTANA CA 92336 CDL

Clue:	2001-11-091
Date:	11/14/2001
County:	SAN BERNARDINO
Lab Type:	A
Lab Type Description:	Abandoned Drug Lab Waste - location away from an actual illegal drug lab where drug lab waste and/or equipment were abandoned.

Site: ***Caltrans***
Eastbound Interstate 210 at Post Mile 20.19 San Bernardino CA 92401 CHMIRS

ID:	13-5874	***Notified Date:***	9/18/2013 17:00
Control No:	'13-5874	***Notified Date Time:***	
Year:	2013	***County:***	San Bernardino County

California Hazardous Material Incident Report System

Contained:	Yes	***3 Vessel >= 300 Tons:***	No
1 Substance:	Gasoline	***Incident Date:***	9/18/2013
1 Measure:	Gal(s)	***Incident Time:***	1600
1 Other:		***Spill Site:***	Road
1 Quantity:	10	***Injuries?:***	No
1 Type:	PETROLEUM	***No of Injuries:***	
1 Pipeline:	No	***Fatals?:***	No
1 Vessel >= 300 Tons:	No	***No of Fatals:***	
2 Substance:		***Evacs?:***	No
2 Quantity:		***No of Evacs:***	
2 Measure:		***Cleanup:***	CalTrans
2 Type:		***Site:***	
2 Other:		***Cause:***	Collision
2 Pipeline:	No	***Cause Other:***	
2 Vessel >= 300 Tons:	No	***Dog No:***	
3 Substance:		***Water:***	No
3 Quantity:		***Water Way:***	
3 Measure:		***City:***	San Bernardino
3 Type:		***County:***	San Bernardino County
3 Other:		***Zip:***	92401
3 Pipeline:	No		

Admin Agency:	San Bernardino County Fire Department
Notification Area:	AA/CUPA,DFG-OSPR,DTSC,RWQCB,US EPA,USFWS
Location:	Eastbound Interstate 210 at Post Mile 20.19
Description:	Caller states a passenger vehicle hit debris which resulted in the release of 10 gallons of gasoline onto the highway paved shoulder. Caltrans completed clean up and the release will be taken back to the Caltrans yard for proper disposal.

Main Page Information

On Scene:	
Other on Scene:	
Other Notified:	
Admin Agency:	San Bernardino County Fire Department
Admin Agency 2:	
Additional County:	
Document Title:	SPILL Report
Creation Date:	09/18/2013 05:00 PM
Received By:	

Person Notifying Cal OES:	
Phone No:	
Ext:	
Pag Cell:	
Water:	PETROLEUM
Cause Description for Other:	
Amount 1:	10
Amount 2:	
Amount 3:	
Doc URL:	https://w3.calema.ca.gov/operational/malhaz.nsf/f1841a103c102734882563e200760c4a/3c5c2fa58f8b460388257beb000004f5?OpenDocument
Spill Site:	
Type:	

Site: ***San Bernardino CHP Dispatch***
EB 210 at the Highland Exit San Bernardino CA

CHMIRS

ID:	08-3852	***Notified Date:***	5/29/2008 16:37
Control No:	'08-3852	***Notified Date Time:***	
Year:	2008	***County:***	San Bernardino County

California Hazardous Material Incident Report System

Contained:	Yes	***3 Vessel >= 300 Tons:***	
1 Substance:	Diesel	***Incident Date:***	5/29/2008
1 Measure:	Gal(s)	***Incident Time:***	1538
1 Other:		***Spill Site:***	Road
1 Quantity:	50	***Injuries?:***	
1 Type:	PETROLEUM	***No of Injuries:***	0
1 Pipeline:		***Fatals?:***	
1 Vessel >= 300 Tons:		***No of Fatals:***	0
2 Substance:		***Evacs?:***	
2 Quantity:		***No of Evacs:***	0
2 Measure:		***Cleanup:***	Unknown
2 Type:		***Site:***	Storm Drain
2 Other:		***Cause:***	
2 Pipeline:		***Cause Other:***	
2 Vessel >= 300 Tons:		***Dog No:***	
3 Substance:		***Water:***	Yes
3 Quantity:		***Water Way:***	Storm Drain
3 Measure:		***City:***	San Bernardino
3 Type:		***County:***	San Bernardino County
3 Other:		***Zip:***	
3 Pipeline:			

Admin Agency:	San Bernardino County Health Department
Notification Area:	AA/CUPA,DFG-OSPR,DTSC,RWQCB,US EPA,USFWS,COASTAL COM,LANDS,PARKS & REC,USCG
Location:	EB 210 at the Highland Exit
Description:	A big-rig jack-knifed causing this release.

Main Page Information

On Scene:	
Other on Scene:	
Other Notified:	
Admin Agency:	San Bernardino County Health Department
Admin Agency 2:	
Additional County:	
Document Title:	SPILL Report
Creation Date:	05/29/2008 04:37 PM
Received By:	
Person Notifying Cal OES:	
Phone No:	
Ext:	
Pag Cell:	
Water:	PETROLEUM
Cause Description for Other:	
Amount 1:	50
Amount 2:	

Amount 3:	
Doc URL:	https://w3.calema.ca.gov/operational/malhaz.nsf/f1841a103c102734882563e200760c4a/26e5ac2b75b6cdc7882574580081cf6e?OpenDocument
Spill Site:	
Type:	

Site: ***CHP***
EB 210 on the Sierra Ave Off ramp Fontana CA

CHMIRS

ID:	02-3047	***Notified Date:***	6/3/200206:23:03 PM
Control No:	02-3047	***Notified Date Time:***	
Year:	2002	***County:***	San Bernardino County

California Hazardous Material Incident Report System

Contained:	Yes	***Bbls:***	0
Substance:	2672 Ammonia Hydroxide 30%	***Cups:***	0
Incident Date:	6/3/200212:00:00 AM	***Cuft:***	0
No of Injuries:	0	***Gals:***	400
No of Fatals:	0	***Grams:***	0
No of Evacs:	0	***Lbs:***	0
Cleanup:	Unknown	***Liters:***	0
Water:	Yes	***Oz:***	0
Water Way:	Storm Drain	***Pts:***	0
City:	Fontana	***Qts:***	0
County:	San Bernardino County	***Sheen:***	0
Zip:		***Tons:***	0
Site:	Road	***Unknown:***	0
Admin Agency:	San Bernardino County Health Department		
Location:	EB 210 on the Sierra Ave Off ramp		
Description:	CHP # 1131, a container fell off the back of a truck., multiple people calling in with burning eyes and skin. Possible evac's in area 160 ft perimeter, checking downwind for homes that may be affected. Lt. Brunet, CHP, 909-532-1498		

Site: ***Caltrans***
Interstate 210 eastbound at I 215, post 21.97 San Bernardino CA

CHMIRS

ID:	18-0818	***Notified Date:***	2/6/2018 8:53
Control No:	'18-0818	***Notified Date Time:***	
Year:	2018	***County:***	San Bernardino County

California Hazardous Material Incident Report System

Contained:	Yes	***Incident Date:***	2/6/2018
1 Substance:	Diesel	***Incident Time:***	514
1 Quantity:	15	***Spill Site:***	Road
1 Measure:	Gal(s)	***Injuries?:***	Yes
1 Type:	PETROLEUM	***No of Injuries:***	1
1 Pipeline:	No	***Fatals?:***	No
1 Vessel >= 300 Tons:	No	***No of Fatals:***	
1 Other:		***Evacs?:***	No
2 Substance:		***No of Evacs:***	
2 Quantity:		***Cleanup:***	Caltrans
2 Measure:		***Site:***	
2 Type:		***Cause:***	Collision
2 Other:		***Cause Other:***	
2 Pipeline:	No	***Drinking Wtr Imp:***	No
2 Vessel >= 300 Tons:	No	***Known Impact:***	None
3 Substance:		***Water:***	No
3 Quantity:		***Water Way:***	
3 Measure:		***City:***	San Bernardino
3 Type:		***County:***	San Bernardino County
3 Other:		***Zip:***	
3 Pipeline:	No	***DOG No:***	
3 Vessel >= 300 Tons:	No		
Admin Agency:	San Bernardino County Fire Department		
Notification Area:	AA/CUPA,DTSC,RWQCB,US EPA,USFWS,Co/WP,Co/E-Hlth		
Location:	Interstate 210 eastbound at I 215, post 21.97		

Description:	Caller states a tractor trailer was involved in a collision resulting in the release of 15 gallons of diesel on to asphalt. No waterways impacted. Caltrans will handle the clean up.

Main Page Information

On Scene:	
Other on Scene:	
Other Notified:	
Admin Agency:	
Admin Agency 2:	
Additional County:	
Document Title:	SPILL Report
Creation Date:	02/06/2018 08:53 AM
Received By:	
Person Notifying Cal OES:	
Phone No:	
Ext:	
Pag Cell:	
Water:	PETROLEUM
Cause Description for Other:	
Amount 1:	
Amount 2:	
Amount 3:	
Doc URL:	https://w3.calema.ca.gov/operational/malhaz.nsf/f1841a103c102734882563e200760c4a/f028a88c2ce5ab888825822c005cc47c?OpenDocument
Spill Site:	Road
Type:	

Site: ***San Bernardino County Fire Dept HazMat***
San Sevaine Flood Control Channel below the 10 freeway, nearest cross of Etiwanda. Fontana CA CHMIRS

ID:	07-7457	***Notified Date:***	12/3/2007 11:19
Control No:	'07-7457	***Notified Date Time:***	
Year:	2007	***County:***	San Bernardino County

California Hazardous Material Incident Report System

Contained:	Yes	***3 Vessel >= 300 Tons:***	
1 Substance:	Waste Oil	***Incident Date:***	12/3/2007
1 Measure:	Gal(s)	***Incident Time:***	915
1 Other:		***Spill Site:***	Waterways,Other
1 Quantity:	500	***Injuries?:***	
1 Type:	PETROLEUM	***No of Injuries:***	0
1 Pipeline:		***Fatals?:***	
1 Vessel >= 300 Tons:		***No of Fatals:***	0
2 Substance:		***Evacs?:***	
2 Quantity:		***No of Evacs:***	0
2 Measure:		***Cleanup:***	Unknown
2 Type:		***Site:***	San Sevaine Flood Control Channel
2 Other:		***Cause:***	
2 Pipeline:		***Cause Other:***	
2 Vessel >= 300 Tons:		***Dog No:***	
3 Substance:		***Water:***	Yes
3 Quantity:		***Water Way:***	San Sevaine Flood Control Channel
3 Measure:		***City:***	Fontana
3 Type:		***County:***	San Bernardino County
3 Other:		***Zip:***	
3 Pipeline:			

Admin Agency:	San Bernardino County Health Department
Notification Area:	AA/CUPA,DFG-OSPR,DTSC,RWQCB,US EPA,USFWS,COASTAL COM,LANDS,PARKS & REC,USCG
Location:	San Sevaine Flood Control Channel below the 10 freeway, nearest cross of Etiwanda.
Description:	Release is into the San Sevaine Flood Control Channel. It is a potential purposeful release; unknown how release occurred. Unknown when release occurred.

California OES Update

Notify Date:	12/03/2007
Notify Time:	1119

Occurence Date: 12/03/2007
Occurence Time:
Upd Known Impact:
Update Cause:
Pers Notifying Upd Place: Person Notifying Update
Pers Notifying Upd Nme:
Phone No.:
Ext:
Pag Cell:
Fax Notifi List:
Person Notifying Cal Oes Agenc:
Person Reporting Spill Agency:
Op Area:
Unknown Header:
Substance 1:
Qty Amount 1:
Measure 1:
Type 1:
Other 1:
Pipeline 1:
Vessel 1:
Substance 2:
Qty Amount 2:
Measure 2:
Type 2:
Other 2:
Pipeline 2:
Vessel 2:
Substance 3:
Qty Amount 3:
Measure 3:
Type 3:
Other 3:
Pipeline 3:
Vessel 3:
Administering Agency:
Secondary Agency:
Additional Counties:
Additional Admin Agency:
Other Notified:
RWQCB Unit:
Confirmation Request:
Fax Notification List 2:
Administering Agency 2:
Additional Admin Agency 2:
Secondary Agency 2:
Additional Counties 2:
DOG Unit:
RWQCB Unit 2:
Doc URL: https://w3.calema.ca.gov/operational/malhaz.nsf/f1841a103c102734882563e200760c4a/be9b0bf53a952eba882573a6006bed7e?OpenDocument

Update Description:

Situation Update:

12/03/07 1139hrs. Received NRC report #856188.

Original Description:

California OES Update Quantities

Amount:
Measure: Gal(s)

Main Page Information

On Scene:
Other on Scene:

Other Notified:	
Admin Agency:	San Bernardino County Health Department
Admin Agency 2:	
Additional County:	
Document Title:	SPILL Report
Creation Date:	12/03/2007 11:19 AM
Received By:	
Person Notifying Cal OES:	
Phone No:	
Ext:	
Pag Cell:	
Water:	PETROLEUM
Cause Description for Other:	
Amount 1:	500
Amount 2:	
Amount 3:	
Doc URL:	https://w3.calema.ca.gov/operational/malhaz.nsf/f1841a103c102734882563e200760c4a/76847a234e93dea3882573a6006a1ef0?OpenDocument
Spill Site:	
Type:	

Site: ***Caltrans***
WB I- 210 MPM 13.412 Fontana CA

CHMIRS

ID:	13-5883	***Notified Date:***	9/19/2013 8:41
Control No:	'13-5883	***Notified Date Time:***	
Year:	2013	***County:***	San Bernardino County

California Hazardous Material Incident Report System

Contained:	Yes	***3 Vessel >= 300 Tons:***	No
1 Substance:	Diesel	***Incident Date:***	9/19/2013
1 Measure:	Gal(s)	***Incident Time:***	645
1 Other:		***Spill Site:***	Road
1 Quantity:	35	***Injuries?:***	Yes
1 Type:	PETROLEUM	***No of Injuries:***	2
1 Pipeline:	No	***Fatals?:***	No
1 Vessel >= 300 Tons:	No	***No of Fatals:***	
2 Substance:		***Evacs?:***	No
2 Quantity:		***No of Evacs:***	
2 Measure:		***Cleanup:***	Contractor
2 Type:		***Site:***	
2 Other:		***Cause:***	Human Error
2 Pipeline:	No	***Cause Other:***	
2 Vessel >= 300 Tons:	No	***Dog No:***	
3 Substance:		***Water:***	No
3 Quantity:		***Water Way:***	
3 Measure:		***City:***	Fontana
3 Type:		***County:***	San Bernardino County
3 Other:		***Zip:***	
3 Pipeline:	No		

Admin Agency:	San Bernardino County Fire Department
Notification Area:	AA/CUPA,DFG-OSPR,DTSC,RWQCB,US EPA,USFWS,Co/Hlth,Co/E-Hlth
Location:	WB I- 210 MPM 13.412
Description:	Caller states substance released from a saddle tank on a big rig due to a traffic collision. Caller states substance released to the roadway and shoulder. Contractor will handle clean-up.

Main Page Information

On Scene:	
Other on Scene:	
Other Notified:	
Admin Agency:	San Bernardino County Fire Department
Admin Agency 2:	
Additional County:	
Document Title:	SPILL Report
Creation Date:	09/19/2013 08:41 AM
Received By:	

Person Notifying Cal OES:	
Phone No:	
Ext:	
Pag Cell:	
Water:	PETROLEUM
Cause Description for Other:	
Amount 1:	35
Amount 2:	
Amount 3:	
Doc URL:	https://w3.calema.ca.gov/operational/malhaz.nsf/f1841a103c102734882563e200760c4a/784f50e066061af388257beb00562968?OpenDocument
Spill Site:	
Type:	

Site: ***CHP***
East bound 210 at the 215 connection San Bernardino CA CHMIRS

ID:	16-4941	***Notified Date:***	8/13/2016 10:15
Control No:	'16-4941	***Notified Date Time:***	
Year:	2016	***County:***	San Bernardino County

California Hazardous Material Incident Report System

Contained:	Yes	***Incident Date:***	8/13/2016
1 Substance:	Diesel Fuel	***Incident Time:***	757
1 Quantity:	40	***Spill Site:***	Road
1 Measure:	Gal(s)	***Injuries?:***	No
1 Type:	PETROLEUM	***No of Injuries:***	
1 Pipeline:	No	***Fatals?:***	No
1 Vessel >= 300 Tons:	No	***No of Fatals:***	
1 Other:		***Evacs?:***	No
2 Substance:		***No of Evacs:***	
2 Quantity:		***Cleanup:***	CalTrans
2 Measure:		***Site:***	
2 Type:		***Cause:***	Collision
2 Other:		***Cause Other:***	
2 Pipeline:	No	***Drinking Wtr Imp:***	No
2 Vessel >= 300 Tons:	No	***Known Impact:***	Road Closure
3 Substance:		***Water:***	No
3 Quantity:		***Water Way:***	
3 Measure:		***City:***	San Bernardino
3 Type:		***County:***	San Bernardino County
3 Other:		***Zip:***	
3 Pipeline:	No	***DOG No:***	
3 Vessel >= 300 Tons:	No		

Admin Agency:	San Bernardino County Fire Department
Notification Area:	AA/CUPA,DFG-OSPR,DTSC,RWQCB,US EPA,USFWS,CALTRANS,Co/Hlth,Co/E-Hlth
Location:	East bound 210 at the 215 connection
Description:	RP States: Due to a single vehicle accident, a semi-truck released 30 gallons from its side saddle tank, and 10 gallons from a fuel tank on its trailer which powers a refrigeration unit. The release impacted the soil on the I210 shoulder at the Northbound 215 connection. The Northbound I215 connection is closed for the clean-up. The release is contained, and CalTrans is on-scene conducting the clean-up at the time of this report. No waterways were impacted.

Main Page Information

On Scene:	
Other on Scene:	
Other Notified:	
Admin Agency:	San Bernardino County Fire Department
Admin Agency 2:	
Additional County:	
Document Title:	SPILL Report
Creation Date:	08/13/2016 10:15 AM
Received By:	
Person Notifying Cal OES:	
Phone No:	
Ext:	
Pag Cell:	

Water:	PETROLEUM
Cause Description for Other:	
Amount 1:	40
Amount 2:	
Amount 3:	
Doc URL:	https://w3.calema.ca.gov/operational/malhaz.nsf/f1841a103c102734882563e200760c4a/40ec47ac4ecab53d8825800e005ecc47?OpenDocument
Spill Site:	
Type:	

Site: ***TRACT NO. 15620/4***
ARROW/LIVEOAK/WHITTRAM/HEMLOCK FONTANA CA 92335 FINDS/FRS

Registry ID:	110066703829
FIPS Code:	
Program Acronyms:	CA-ENVIROVIEW
HUC Code:	
Site Type Name:	STATIONARY
Location Description:	
Supplemental Location:	
Create Date:	14-OCT-2015 12:42:00
Update Date:	
Interest Types:	STATE MASTER
SIC Codes:	1541
SIC Code Descriptions:	GENERAL CONTRACTORS-INDUSTRIAL BUILDINGS AND WAREHOUSES
NAICS Codes:	
NAICS Code Descriptions:	
Conveyor:	
Federal Facility Code:	
Federal Agency Name:	
Tribal Land Code:	
Tribal Land Name:	
Congressional Dist No.:	
Census Block Code:	
EPA Region Code:	09
County Name:	SAN BERNARDINO COUNTY
US/Mexico Border Ind:	
Latitude:	
Longitude:	
Reference Point:	
Coord Collection Method:	
Accuracy Value:	
Datum:	NAD83
Source:	
Facility Detail Rprt URL:	http://ofmpub.epa.gov/enviro/fii_query_detail.disp_program_facility?p_registry_id=110066703829

Site: ***YOUNG HOMES***
9.22 ACRES BETWEEN LIVE OAK & HEMLOCK FONTANA CA 923350000 HAZNET

SIC Code:		***Mailing City:***	RANCHO CUCAMONGA
NAICS Code:		***Mailing State:***	CA
EPA ID:	CAC002350503	***Mailing Zip:***	917300000
Create Date:	6/14/2001	***Region Code:***	4
Fac Act Ind:	No	***Owner Name:***	YOUNG HOMES
Inact Date:	1/11/2002	***Owner Addr 1:***	10390 COMMERCE CENTER DR 250
County Code:	36	***Owner Addr 2:***	
County Name:	San Bernardino	***Owner City:***	RANCHO CUCAMONGA
Mail Name:		***Owner State:***	CA
Mailing Addr 1:	10390 COMMERCE CENTER DR 250	***Owner Zip:***	917300000
Mailing Addr 2:		***Owner Phone:***	9094776724
Owner Fax:			

Contact Information

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Contact Name:	SUSAN COLON
Street Address 1:	10390 COMMERCE CENTER DR 250
Street Address 2:	
City:	RANCHO CUCAMONGA

State:	CA
Zip:	917300000
Phone:	9094776724
--	--

Site: ***PANELLA TRUCKING LLC***
E BOUND I-210 @ HIGHLAND AVE EXIT SAN BERNARDINO CA 92407

HAZNET

SIC Code:		***Mailing City:***	STOCKTON
NAICS Code:		***Mailing State:***	CA
EPA ID:	CAC002187811	***Mailing Zip:***	952154025
Create Date:	6/3/2008	***Region Code:***	4
Fac Act Ind:	No	***Owner Name:***	MARELA HERN MOSS
Inact Date:	12/1/2008	***Owner Addr 1:***	5000 E FREMONT ST
County Code:	36	***Owner Addr 2:***	
County Name:	San Bernardino	***Owner City:***	STOCKTON
Mail Name:	MARELA HERN MOSS	***Owner State:***	CA
Mailing Addr 1:	5000 E FREMONT ST	***Owner Zip:***	952154025
Mailing Addr 2:		***Owner Phone:***	5596745000
Owner Fax:	5596745000		

Contact Information

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Contact Name:	MARELA HERN MOSS
Street Address 1:	5000 E FREMONT ST
Street Address 2:	
City:	STOCKTON
State:	CA
Zip:	952154025
Phone:	5596745000
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Tanner Information

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Generator EPA ID:	CAC002187811
Generator County Code:	36
Generator County:	San Bernardino
TSD EPA ID:	CAD982444481
TSD County Code:	36
TSD County:	San Bernardino
State Waste Code:	352
State Waste Code Desc.:	Other organic solids
Method Code:	H129
Method Description:	OTHER TREATMENT
Tons:	0.7
Year:	2008
--	--
Generator EPA ID:	CAC002187811
Generator County Code:	36
Generator County:	San Bernardino
TSD EPA ID:	CAD982444481
TSD County Code:	36
TSD County:	San Bernardino
State Waste Code:	343
State Waste Code Desc.:	Unspecified organic liquid mixture
Method Code:	H141
Method Description:	STORAGE, BULKING, AND/OR TRANSFER OFF SITE--NO TREATMENT/REOVERY (H010-H129) OR (H131-H135)
Tons:	2.38
Year:	2008
--	--
Generator EPA ID:	CAC002187811
Generator County Code:	36
Generator County:	San Bernardino
TSD EPA ID:	CAT080013352
TSD County Code:	19
TSD County:	Los Angeles
State Waste Code:	343
State Waste Code Desc.:	Unspecified organic liquid mixture
Method Code:	H039

Method Description:	OTHER RECOVERY OF RECLAMATION FOR REUSE INCLUDING ACID REGENERATION, ORGANICS RECOVERY ECT
Tons:	2.72
Year:	2008
--	--

Site: ***LANDINGS 750 LLC***
ON HEMLOCK AVE 1/4 MI S OF HIGHLAND AVE FONTANA CA 900000000

HAZNET

SIC Code:		***Mailing City:***	ANAHEIM
NAICS Code:		***Mailing State:***	CA
EPA ID:	CAC001395072	***Mailing Zip:***	928070000
Create Date:	4/13/1998	***Region Code:***	4
Fac Act Ind:	No	***Owner Name:***	LANDINGS 750 LLC
Inact Date:	10/25/2000	***Owner Addr 1:***	5109 E LA PALMA AVE STE D
County Code:	36	***Owner Addr 2:***	
County Name:	San Bernardino	***Owner City:***	ANAHEIM
Mail Name:		***Owner State:***	CA
Mailing Addr 1:	5109 E LA PALMA AVE STE D	***Owner Zip:***	928070000
Mailing Addr 2:		***Owner Phone:***	0000000000
Owner Fax:			

Contact Information

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Contact Name:	BEN ANDERSON-PROJ MGR
Street Address 1:	5109 E LA PALMA AVE STE D
Street Address 2:	
City:	ANAHEIM
State:	CA
Zip:	928070000
Phone:	7146936700
--	--

Site: ***EAST VALLEY WATER DISTRICT***
HIGHLAND AVE AT PATTON STATE HOSPITAL SAN BERNARDINO CA 923460000

HAZNET

SIC Code:		***Mailing City:***	SAN BERNARDINO
NAICS Code:		***Mailing State:***	CA
EPA ID:	CAC001316784	***Mailing Zip:***	924130000
Create Date:	12/23/1998	***Region Code:***	4
Fac Act Ind:	No	***Owner Name:***	EAST VALLEY WATER DISTRICT
Inact Date:	10/25/2000	***Owner Addr 1:***	PO BOX 3427
County Code:	36	***Owner Addr 2:***	
County Name:	San Bernardino	***Owner City:***	SAN BERNARDINO
Mail Name:		***Owner State:***	CA
Mailing Addr 1:	PO BOX 3427	***Owner Zip:***	924130000
Mailing Addr 2:		***Owner Phone:***	9098854900
Owner Fax:			

Contact Information

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Contact Name:	JIM BROWNING - RAC
Street Address 1:	PO BOX 3427
Street Address 2:	
City:	SAN BERNARDINO
State:	CA
Zip:	924130000
Phone:	9098854900
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Tanner Information

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Generator EPA ID:	CAC001316784
Generator County Code:	36
Generator County:	San Bernardino
TSD EPA ID:	CAD009007626
TSD County Code:	19
TSD County:	Los Angeles
State Waste Code:	151

State Waste Code Desc.:	Asbestos containing waste
Method Code:	D80
Method Description:	Disposal, landfill
Tons:	15.1704
Year:	1999
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Site: ***RIVERSIDE COUNTY TRANSPORTATON COMMISSION***
I 15 - POST MILE RIV 34.7 TO SBD 1.3 (SR-60 - WEIRCK RD) SAN BERNARDINO CA 92401 RCRA NON GEN

EPA Handler ID:	CAL000440430
Gen Status Universe:	No Report
Contact Name:	DAVID K THOMAS
Contact Address:	4080 LEMON ST 3RD FL , , RIVERSIDE , CA, 92501 ,
Contact Phone No and Ext:	951-393-6894
Contact Email:	DTHOMAS@RCTC.ORG
Contact Country:	
County Name:	SAN BERNARDINO
EPA Region:	09
Land Type:	
Receive Date:	20181030

Violation/Evaluation Summary

Note:	NO RECORDS: As of Dec 2018, there are no Compliance Monitoring and Enforcement (violation) records associated with this facility (EPA ID).

Handler Summary

Importer Activity:	No
Mixed Waste Generator:	No
Transporter Activity:	Yes
Transfer Facility:	No
Onsite Burner Exemption:	No
Furnace Exemption:	No
Underground Injection Activity:	No
Commercial TSD:	No
Used Oil Transporter:	No
Used Oil Transfer Facility:	No
Used Oil Processor:	No
Used Oil Refiner:	No
Used Oil Burner:	No
Used Oil Market Burner:	No
Used Oil Spec Marketer:	No

Hazardous Waste Handler Details

Sequence No:	1
Receive Date:	20181030
Handler Name:	RIVERSIDE COUNTY TRANSPORTATON COMMISSION
Generator Status Universe:	No Report
Source Type:	Implementer

Owner/Operator Details

Owner/Operator Ind:	Current Owner	***Street No:***	
Type:	Other	***Street 1:***	464 W 4TH ST
Name:	CA DEPT OF TRANSPORT DISTRICT 8	***Street 2:***	
Date Became Current:		***City:***	SAN BERNARDINO
Date Ended Current:		***State:***	CA
Phone:	909-383-4631	***Country:***	
Source Type:	Implementer	***Zip Code:***	92401

Owner/Operator Ind:	Current Operator	***Street No:***	
Type:	Other	***Street 1:***	4080 LEMON ST 3RD FL
Name:	DAVID K THOMAS	***Street 2:***	
Date Became Current:		***City:***	RIVERSIDE

Date Ended Current:		***State:***	CA
Phone:	951-393-6894	***Country:***	
Source Type:	Implementer	***Zip Code:***	92501

Site: ***SHEA-KENNY***
NE FRONTAGE RD SAN BERNARDINO CA 92404

SANBERN CUPA

Facility ID:	FA0009580
Owner Info:	SHEA-KENNY II JV
Mailing Care of:	
Mailing Address 1:	PO BOX 30780
Mailing Address 2:	
Mailing City:	SAN BERNARDINO
Mailing State:	CA
Mailing Zip:	92413

--Details--

Permit ID:	PT0018830
Program Element Code:	4221
Status:	INACTIVE
Permit Desc:	HAZMAT HANDLER 0-10 EMPLOYEES
To:	7/31/2010

Site: ***SAN BERNARDINO COUNTY-FONTANA LANDFILL***
1/2 MI N OF HIGHLAND AVE 1/4 MI E OF SITE FONTANA, CA 92335 CA

SWAT

Rank:	1
SWIS Number:	36-AA-0055
Report Status Code:	A
Report Status:	FOUND TO PROVIDE "A RELIABLE INDICATION OF WHETHER OR NOT THERE IS HAZARDOUS WASTE LEAKAGE"
Transcribe Source:	Solid Waste Assessment Test (SWAT) Program Report to the Legislature 1989-1990
Site Classification Code:	
Site Classification:	
Activity Status Code:	
Activity Description:	
Character of Site Code:	
Character of Site:	
Size of Site Code:	
Size of Site:	
Proposal Status:	
Site Leak:	
Site Leak Desc:	
Type of Leak:	
Enforce Action:	
Enforce Action Desc:	
Waste Management Unit:	
Waste Discharger Sys NO:	8 360304009
Initial Notif Date:	
Proposal Due Date:	
Report Due Date:	07/01/87
Anticipated Rprt Submit Dt:	02/01/88
Report Received Date:	12/30/87
Report Target Review Date:	02/15/89
Report Resubmitted Due Date:	08/01/88
Report Resubmitted Rcvd Dt:	07/01/89
Report Approval Date:	11/30/89
Anticip Proposal Submit Dt:	
Proposal Received Date:	
Proposal Target Review Date:	
Proposal Status Code:	
Proposal Resubmitted Due Dt:	
Proposal Resubmitted Received Due Date:	
Proposal Accepted Date:	
Exemption Questionnaire Approved Date:	

Waiver Approved Date:
Type of Leak Code:
DHS & CWMB Notif Date:
Report Summ Sent Date:
Monitor Program Revise Date:
Revise WDR Target Date:
Hazardous Waste Surface:
Above Reg Level Surface:
Below Reg Level Surface:
Hazardous Waste Ground:
Above Reg Level Ground:
Below Reg Level Ground:
Hazardous Waste Vadose:
Above Reg Level Vadose:
Below Reg Level Vadose:
Surface:
Ground:
Vadose:
Operator Name: SAN BERNARDINO COUNTY
Agency Name:
County Number:
County Name: SAN BERNARDINO
Regional Board Contact:
Region: SANTA ANA REGION 8
Remarks:

Appendix: Database Descriptions

Environmental Risk Information Services (ERIS) can search the following databases. The extent of historical information varies with each database and current information is determined by what is publicly available to ERIS at the time of update. ERIS updates databases as set out in ASTM Standard E1527-13, Section 8.1.8 Sources of Standard Source Information:

"Government information from nongovernmental sources may be considered current if the source updates the information at least every 90 days, or, for information that is updated less frequently than quarterly by the government agency, within 90 days of the date the government agency makes the information available to the public."

Standard Environmental Record Sources

Federal

National Priority List: NPL

National Priorities List (Superfund)-NPL: EPA's (United States Environmental Protection Agency) list of the most serious uncontrolled or abandoned hazardous waste sites identified for possible long-term remedial action under the Superfund program. The NPL, which EPA is required to update at least once a year, is based primarily on the score a site receives from EPA's Hazard Ranking System. A site must be on the NPL to receive money from the Superfund Trust Fund for remedial action.

Government Publication Date: Dec 12, 2018

National Priority List - Proposed: PROPOSED NPL

Includes sites proposed (by the EPA, the state, or concerned citizens) for addition to the NPL due to contamination by hazardous waste and identified by the Environmental Protection Agency (EPA) as a candidate for cleanup because it poses a risk to human health and/or the environment.

Government Publication Date: Dec 12, 2018

Deleted NPL: DELETED NPL

The National Oil and Hazardous Substances Pollution Contingency Plan (NCP) establishes the criteria that the EPA uses to delete sites from the NPL. In accordance with 40 CFR 300.425.(e), sites may be deleted from the NPL where no further response is appropriate.

Government Publication Date: Dec 12, 2018

SEMS List 8R Active Site Inventory: SEMS

The Superfund Program has deployed the Superfund Enterprise Management System (SEMS), which integrates multiple legacy systems into a comprehensive tracking and reporting tool. This inventory contains active sites evaluated by the Superfund program that are either proposed to be or are on the National Priorities List (NPL) as well as sites that are in the screening and assessment phase for possible inclusion on the NPL. The Active Site Inventory Report displays site and location information at active SEMS sites. An active site is one at which site assessment, removal, remedial, enforcement, cost recovery, or oversight activities are being planned or conducted.

Government Publication Date: Nov 14, 2018

SEMS List 8R Archive Sites: SEMS ARCHIVE

The Superfund Enterprise Management System (SEMS) Archived Site Inventory displays site and location information at sites archived from SEMS. An archived site is one at which EPA has determined that assessment has been completed and no further remedial action is planned under the Superfund program at this time.

Government Publication Date: Nov 14, 2018

Inventory of Open Dumps, June 1985: ODI

The Resource Conservation and Recovery Act (RCRA) provides for publication of an inventory of open dumps. The Act defines "open dumps" as facilities which do not comply with EPA's "Criteria for Classification of Solid Waste Disposal Facilities and Practices" (40 CFR 257).

Government Publication Date: Jun 1985

Comprehensive Environmental Response, Compensation and Liability Information System - CERCLIS: CERCLIS

Superfund is a program administered by the United States Environmental Protection Agency (EPA) to locate, investigate, and clean up the worst hazardous waste sites throughout the United States. CERCLIS is a database of potential and confirmed hazardous waste sites at which the EPA Superfund program has some involvement. It contains sites that are either proposed to be or are on the National Priorities List (NPL) as well as sites that are in the screening and assessment phase for possible inclusion on the NPL. The EPA administers the Superfund program in cooperation with individual states and tribal governments; this database is made available by the EPA.

Government Publication Date: Oct 25, 2013

EPA Report on the Status of Open Dumps on Indian Lands: IODI

Public Law 103-399, The Indian Lands Open Dump Cleanup Act of 1994, enacted October 22, 1994, identified congressional concerns that solid waste open dump sites located on American Indian or Alaska Native (AI/AN) lands threaten the health and safety of residents of those lands and contiguous areas. The purpose of the Act is to identify the location of open dumps on Indian lands, assess the relative health and environment hazards posed by those sites, and provide financial and technical assistance to Indian tribal governments to close such dumps in compliance with Federal standards and regulations or standards promulgated by Indian Tribal governments or Alaska Native entities.

Government Publication Date: Dec 31, 1998

CERCLIS - No Further Remedial Action Planned: CERCLIS NFRAP

An archived site is one at which EPA has determined that assessment has been completed and no further remedial action is planned under the Superfund program at this time. The Archive designation means that, to the best of EPA's knowledge, assessment at a site has been completed and that EPA has determined no further steps will be taken to list this site on the National Priorities List (NPL). This decision does not necessarily mean that there is no hazard associated with a given site; it only means that, based upon available information, the location is not judged to be a potential NPL site.

Government Publication Date: Oct 25, 2013

CERCLIS Liens: CERCLIS LIENS

A Federal Superfund lien exists at any property where EPA has incurred Superfund costs to address contamination ("Superfund site") and has provided notice of liability to the property owner. A Federal CERCLA ("Superfund") lien can exist by operation of law at any site or property at which EPA has spent Superfund monies. This database is made available by the United States Environmental Protection Agency (EPA).

Government Publication Date: Jan 30, 2014

RCRA CORRACTS-Corrective Action: RCRA CORRACTS

RCRA Info is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. At these sites, the Corrective Action Program ensures that cleanups occur. EPA and state regulators work with facilities and communities to design remedies based on the contamination, geology, and anticipated use unique to each site.

Government Publication Date: Dec 17, 2018

RCRA non-CORRACTS TSD Facilities: RCRA TSD

RCRA Info is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. This database includes Non-Corrective Action sites listed as treatment, storage and/or disposal facilities of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA).

Government Publication Date: Dec 17, 2018

RCRA Generator List: RCRA LQG

RCRA Info is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. RCRA Info replaces the data recording and reporting abilities of the Resource Conservation and Recovery Information System (RCRIS) and the Biennial Reporting System (BRS). A hazardous waste generator is any person or site whose processes and actions create hazardous waste (see 40 CFR 260.10). Large Quantity Generators (LQGs) generate 1,000 kilograms per month or more of hazardous waste or more than one kilogram per month of acutely hazardous waste.

Government Publication Date: Dec 17, 2018

RCRA Small Quantity Generators List: RCRA SQG

RCRA Info is the EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. RCRA Info replaces the data recording and reporting abilities of the Resource Conservation and Recovery Information System (RCRIS) and the Biennial Reporting System (BRS). A hazardous waste generator is any person or site whose processes and actions create hazardous waste (see 40 CFR 260.10). Small Quantity Generators (SQGs) generate more than 100 kilograms, but less than 1,000 kilograms, of hazardous waste per month.

Government Publication Date: Dec 17, 2018

RCRA Conditionally Exempt Small Quantity Generators List: RCRA CESQG

RCRA Info is the EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. RCRA Info replaces the data recording and reporting abilities of the Resource Conservation and Recovery Information System (RCRIS) and the Biennial Reporting System (BRS). A hazardous waste generator is any person or site whose processes and actions create hazardous waste (see 40 CFR 260.10). Conditionally Exempt Small Quantity Generators (CESQG) generate 100 kilograms or less per month of hazardous waste or one kilogram or less per month of acutely hazardous waste.

Government Publication Date: Dec 17, 2018

RCRA Non-Generators: RCRA NON GEN

RCRA Info is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. RCRA Info replaces the data recording and reporting abilities of the Resource Conservation and Recovery Information System (RCRIS) and the Biennial Reporting System (BRS). A hazardous waste generator is any person or site whose processes and actions create hazardous waste (see 40 CFR 260.10). Non-Generators do not presently generate hazardous waste.

Government Publication Date: Dec 17, 2018

Federal Engineering Controls-ECs: FED ENG

Engineering controls (ECs) encompass a variety of engineered and constructed physical barriers (e.g., soil capping, sub-surface venting systems, mitigation barriers, fences) to contain and/or prevent exposure to contamination on a property. This database is made available by the United States Environmental Protection Agency (EPA).

Government Publication Date: Jan 20, 2016

Federal Institutional Controls- ICs: FED INST

Institutional controls are non-engineered instruments, such as administrative and legal controls, that help minimize the potential for human exposure to contamination and/or protect the integrity of the remedy. Although it is EPA's (United States Environmental Protection Agency) expectation that treatment or engineering controls will be used to address principal threat wastes and that groundwater will be returned to its beneficial use whenever practicable, ICs play an important role in site remedies because they reduce exposure to contamination by limiting land or resource use and guide human behavior at a site.

Government Publication Date: Jan 20, 2016

Emergency Response Notification System: ERNS 1982 TO 1986

Database of oil and hazardous substances spill reports controlled by the National Response Center. The primary function of the National Response Center is to serve as the sole national point of contact for reporting oil, chemical, radiological, biological, and etiological discharges into the environment anywhere in the United States and its territories.

Government Publication Date: 1982-1986

Emergency Response Notification System: ERNS 1987 TO 1989

Database of oil and hazardous substances spill reports controlled by the National Response Center. The primary function of the National Response Center is to serve as the sole national point of contact for reporting oil, chemical, radiological, biological, and etiological discharges into the environment anywhere in the United States and its territories.

Government Publication Date: 1987-1989

Emergency Response Notification System: ERNS

Database of oil and hazardous substances spill reports controlled by the National Response Center. The primary function of the National Response Center is to serve as the sole national point of contact for reporting oil, chemical, radiological, biological, and etiological discharges into the environment anywhere in the United States and its territories. This database is made available by the United States Environmental Protection Agency (EPA).

Government Publication Date: Sep 24, 2018

The Assessment, Cleanup and Redevelopment Exchange System (ACRES) Brownfield Database: FED BROWNFIELDS

Brownfields are real property, the expansion, redevelopment, or reuse of which may be complicated by the presence or potential presence of a hazardous substance, pollutant, or contaminant. Cleaning up and reinvesting in these properties protects the environment, reduces blight, and takes development pressures off greenspaces and working lands. This database is made available by the United States Environmental Protection Agency (EPA).

Government Publication Date: Jan 11, 2019

FEMA Underground Storage Tank Listing: FEMA UST

The Federal Emergency Management Agency (FEMA) of the Department of Homeland Security maintains a list of FEMA owned underground storage tanks.

Government Publication Date: Dec 31, 2017

LIEN on Property: SEMS LIEN

The EPA Superfund Enterprise Management System (SEMS) provides LIEN information on properties under the EPA Superfund Program.

Government Publication Date: Nov 14, 2018

Superfund Decision Documents: SUPERFUND ROD

This database contains a listing of decision documents for Superfund sites. Decision documents serve to provide the reasoning for the choice of (or) changes to a Superfund Site cleanup plan. The decision documents include Records of Decision (ROD), ROD Amendments, Explanations of Significant Differences (ESD), along with other associated memos and files. This information is maintained and made available by the US EPA (Environmental Protection Agency).

Government Publication Date: Nov 14, 2018

State

State Response Sites: RESPONSE

A list of identified confirmed release sites where the Department of Toxic Substances Control (DTSC) is involved in remediation, either in a lead or oversight capacity. These confirmed release sites are generally high-priority and high potential risk. This database is state equivalent NPL.

Government Publication Date: Dec 20, 2018

EnviroStor Database: ENVIROSTOR

The EnviroStor Data Management System is made available by the Department of Toxic Substances Control (DTSC). Includes Corrective Action sites, Tiered Permit sites, Historical Sites and Evaluation/Investigation sites. This database is state equivalent CERCLIS.

Government Publication Date: Dec 20, 2018

Delisted State Response Sites: DELISTED ENVS

Sites removed from the list of State Response Sites made available by the EnviroStor Data Management System, Department of Toxic Substances Control (DTSC).

Government Publication Date: Dec 20, 2018

Solid Waste Information System (SWIS): SWF/LF

The Solid Waste Information System (SWIS) database made available by the Department of Resources Recycling and Recovery (CalRecycle) contains information on solid waste facilities, operations, and disposal sites throughout the State of California. The types of facilities found in this database include landfills, transfer stations, material recovery facilities, composting sites, transformation facilities, waste tire sites, and closed disposal sites.

Government Publication Date: Nov 23, 2018

EnviroStor Hazardous Waste Facilities: HWP

A list of hazardous waste facilities including permitted, post-closure and historical facilities found in the Department of Toxic Substances Control (DTSC) EnviroStor database.

Government Publication Date: Dec 20, 2018

Sites Listed in the Solid Waste Assessment Test (SWAT) Program Report: SWAT

In a 1993 Memorandum of Understanding, the State Water Resources Control Board (SWRCB) agreed to submit a comprehensive report on the Solid Waste Assessment Test (SWAT) Program to the California Integrated Waste Management Board (CIWMB). This report summarizes the work completed to date on the SWAT Program, and addresses both the impacts that leakage from solid waste disposal sites (SWDS) may have upon waters of the State and the actions taken to address such leakage.

Government Publication Date: Dec 31, 1995

Land Disposal Sites: LDS

Land Disposal Sites in GeoTracker, the State Water Resources Control Board (SWRCB)'s data management system. The Land Disposal program regulates of waste discharge to land for treatment, storage and disposal in waste management units. Waste management units include waste piles, surface impoundments, and landfills.

Government Publication Date: Nov 30, 2018

Leaking Underground Fuel Tank Reports: LUST

List of Leaking Underground Storage Tanks within the Cleanup Sites data in GeoTracker database. GeoTracker is the State Water Resources Control Board's (SWRCB) data management system for managing sites that impact groundwater, especially those that require groundwater cleanup (Underground Storage Tanks, Department of Defense and Site Cleanup Program) as well as permitted facilities such as operating Underground Storage Tanks. The Leak Prevention Program that overlooks LUST sites is the SWRCB in California's Environmental Protection Agency.

Government Publication Date: Nov 30, 2018

Delisted Leaking Storage Tanks: DELISTED LST

List of Leaking Underground Storage Tanks (LUST) cleanup sites removed from GeoTracker, the State Water Resources Control Board (SWRCB)'s database system, as well as sites removed from the SWRCB's list of UST Case closures.

Government Publication Date: Nov 30, 2018

Solid Waste Disposal Sites with Waste Constituents Above Hazardous Waste Levels: SWRCB SWF

This is a list of solid waste disposal sites identified by California State Water Resources Control Board with waste constituents above hazardous waste levels outside the waste management unit.

Government Publication Date: Sep 20, 2006

Permitted Underground Storage Tank (UST) in GeoTracker: UST

List of Permitted Underground Storage Tank (UST) sites made available by the State Water Resources Control Board (SWRCB) in California's Environmental Protection Agency (EPA).

Government Publication Date: Nov 30, 2018

Proposed Closure of Underground Storage Tank Cases: UST CLOSURE

List of UST cases that are being considered for closure by either the California Environmental Protection Agency, State Water Resources Control Board or the Executive Director that have been posted for a 60-day public comment period.

Government Publication Date: Dec 11, 2018

Historical Hazardous Substance Storage Information Database: HHSS

The Historical Hazardous Substance Storage database contains information collected in the 1980s from facilities that stored hazardous substances. The information was originally collected on paper forms, was later transferred to microfiche, and recently indexed as a searchable database. When using this database, please be aware that it is based upon self-reported information submitted by facilities which has not been independently verified. It is unlikely that every facility responded to the survey and the database should not be expected to be a complete inventory of all facilities that were operating at that time. This database is maintained by the California State Water Resources Control Board's (SWRCB) Geotracker.

Government Publication Date: Aug 27, 2015

Aboveground Storage Tanks: AST

A statewide list from 2009 of aboveground storage tanks (ASTs) made available by the Cal FIRE Office of the State Fire Marshal (OSFM). This list is no longer maintained or updated by the Cal FIRE OSFM.

Government Publication Date: Aug 31, 2009

Delisted Storage Tanks: DELISTED TNK

This database contains a list of storage tank sites that were removed by the State Water Resources Control Board (SWRCB) in California's Environmental Protection Agency (EPA) and the Cal FIRE Office of State Fire Marshal (OSFM).

Government Publication Date: Nov 30, 2018

California Environmental Reporting System (CERS) Tanks: CERS TANK

List of sites in the California Environmental Protection Agency (CalEPA) Regulated Site Portal which fall under the Aboveground Petroleum Storage and Underground Storage Tank regulatory programs. The CalEPA oversees the statewide implementation of the Unified Program which applies regulatory standards to protect Californians from hazardous waste and materials.

Government Publication Date: Nov 29, 2018

Site Mitigation and Brownfields Reuse Program Facility Sites with Land Use Restrictions: LUR

The Department of Toxic Substances Control (DTSC) Site Mitigation and Brownfields Reuse Program (SMBRP) list includes sites cleaned up under the program's oversight and generally does not include current or former hazardous waste facilities that required a hazardous waste facility permit. The list represents land use restrictions that are active. Some sites have multiple land use restrictions.

Government Publication Date: Dec 20, 2018

Hazardous Waste Management Program Facility Sites with Deed / Land Use Restrictions: HLUR

The Department of Toxic Substances Control (DTSC) Hazardous Waste Management Program (HWMP) has developed a list of current or former hazardous waste facilities that have a recorded land use restriction at the local county recorder's office. The land use restrictions on this list were required by the DTSC HWMP as a result of the presence of hazardous substances that remain on site after the facility (or part of the facility) has been closed or cleaned up. The types of land use restriction include deed notice, deed restriction, or a land use restriction that binds current and future owners.

Government Publication Date: Jan 21, 2019

Deed Restrictions and Land Use Restrictions: DEED

List of Deed Restrictions, Land Use Restrictions and Covenants in GeoTracker made available by the State Water Resources Control Board (SWRCB) in California's Environmental Protection Agency. A deed restriction (land use covenant) may be required to facilitate the remediation of past environmental contamination and to protect human health and the environment by reducing the risk of exposure to residual hazardous materials.

Government Publication Date: Nov 30, 2018

Voluntary Cleanup Program: VCP

List of sites in the Voluntary Cleanup Program made available by the Department of Toxic Substances and Control (DTSC). The Voluntary Cleanup Program was designed to respond to lower priority sites. Under the Voluntary Cleanup Program, DTSC enters site-specific agreements with project proponents for DTSC oversight of site assessment, investigation, and/or removal or remediation activities, and the project proponents agree to pay DTSC's reasonable costs for those services.

Government Publication Date: Dec 20, 2018

GeoTracker Cleanup Sites Data: CLEANUP SITES

A list of cleanup sites in the state of California made available by The State Water Resources Control Board (SWRCB) of the California Environmental Protection Agency (EPA). SWRCB tracks leaking underground storage tank cleanups as well as other water board cleanups.

Government Publication Date: Nov 30, 2018

Delisted California Environmental Reporting System (CERS) Tanks: DELISTED CTNK

This database contains a list of Aboveground Petroleum Storage and Underground Storage Tank sites that were removed from in the California Environmental Protection Agency (CalEPA) Regulated Site Portal.

Government Publication Date: Nov 29, 2018

Historical Hazardous Substance Storage Container Information - Facility Summary: HIST TANK

The State Water Resources Control Board maintained the Hazardous Substance Storage Containers listing and inventory in th 1980s. This facility summary lists historic tank sites where the following container types were present: farm motor vehicle fuel tanks; waste tanks; sumps; pits, ponds, lagoons, and others; and all other product tanks. This set, published in May 1988, lists facility and owner information, as well as the number of containers. This data is historic and will not be updated.

Government Publication Date: May 27, 1988

Tribal

Leaking Underground Storage Tanks (LUSTs) on Indian Lands: INDIAN LUST

LUSTs on Tribal/Indian Lands in Region 9, which includes California.

Government Publication Date: Dec 31, 2017

Underground Storage Tanks (USTs) on Indian Lands: INDIAN UST

USTs on Tribal/Indian Lands in Region 9, which includes California.

Government Publication Date: Dec 31, 2017

Delisted Tribal Leaking Storage Tanks: DELISTED ILST

Leaking Underground Storage Tank facilities which have been removed from the Regional Tribal LUST lists made available by the EPA.

Government Publication Date: Oct 14, 2017

Delisted Tribal Underground Storage Tanks: DELISTED IUST

Underground Storage Tank facilities which have been removed from the Regional Tribal UST lists made available by the EPA.

Government Publication Date: Oct 14, 2017

County

Delisted County Records: DELISTED COUNTY

Records removed from county or CUPA databases. Records may be removed from the county lists made available by the respective county departments because they are inactive, or because they have been deemed to be below reportable thresholds.

Government Publication Date: Feb 4, 2019

Orange County - Anaheim City UST Cleanup Cases: UST CLEANUP

A list of UST Cleanup Cases in the City of Anaheim in Orange County. As part of its Groundwater Protection Program, the City of Anaheim managed the UST Cleanup Oversight Program from April 1991 to June 2014. This list is published by the City of Anaheim Underground Storage Tank Cleanup Program.

Government Publication Date: May 26, 2015

San Bernardino County - CUPA List: SANBERN CUPA

A list of facilities associated with various Certified Unified Program Agency (CUPA) programs in San Bernardino County. This list is made available by San Bernardino County Fire Department which is the CUPA for all areas of the County except the city of Victorville.

Government Publication Date: Jan 16, 2019

San Francisco County - Maher Ordinance: MAHER SF

List of development projects that are located on sites with known or suspected soil and/or groundwater contamination are subject to the provisions of Health Code Article 22A, which is administered by the San Francisco County Department of Public Health (DPH).

Government Publication Date: Jan 23, 2019

Additional Environmental Record Sources

Federal

Facility Registry Service/Facility Index: FINDS/FRS

The US Environmental Protection Agency (EPA)'s Facility Registry System (FRS) is a centrally managed database that identifies facilities, sites or places subject to environmental regulations or of environmental interest. FRS creates high-quality, accurate, and authoritative facility identification records through rigorous verification and management procedures that incorporate information from program national systems, state master facility records, data collected from EPA's Central Data Exchange registrations and data management personnel.

Government Publication Date: Oct 17, 2018

Toxics Release Inventory (TRI) Program: TRIS

The EPA's Toxics Release Inventory (TRI) is a database containing data on disposal or other releases of over 650 toxic chemicals from thousands of U.S. facilities and information about how facilities manage those chemicals through recycling, energy recovery, and treatment. One of TRI's primary purposes is to inform communities about toxic chemical releases to the environment.

Government Publication Date: Dec 31, 2017

Hazardous Materials Information Reporting System: HMIRS

US DOT - Department of Transportation Pipeline and Hazardous Materials Safety Administration (PHMSA) Incidents Reports Database taken from Hazmat Intelligence Portal, U.S. Department of Transportation.

Government Publication Date: May 23, 2018

National Clandestine Drug Labs: NCDL

The U.S. Department of Justice ("the Department") provides this data as a public service. It contains addresses of some locations where law enforcement agencies reported they found chemicals or other items that indicated the presence of either clandestine drug laboratories or dumpsites. In most cases, the source of the entries is not the Department, and the Department has not verified the entry and does not guarantee its accuracy.

Government Publication Date: Jul 18, 2018

Toxic Substances Control Act: TSCA

The Environmental Protection Agency (EPA) is amending the Toxic Substances Control Act (TSCA) section 8(a) Inventory Update Reporting (IUR) rule and changing its name to the Chemical Data Reporting (CDR) rule.

The CDR enables EPA to collect and publish information on the manufacturing, processing, and use of commercial chemical substances and mixtures (referred to hereafter as chemical substances) on the TSCA Chemical Substance Inventory (TSCA Inventory). This includes current information on chemical substance production volumes, manufacturing sites, and how the chemical substances are used. This information helps the Agency determine whether people or the environment are potentially exposed to reported chemical substances. EPA publishes submitted CDR data that is not Confidential Business Information (CBI).

Government Publication Date: Jun 30, 2017

Hist TSCA: HIST TSCA

The Environmental Protection Agency (EPA) is amending the Toxic Substances Control Act (TSCA) section 8(a) Inventory Update Reporting (IUR) rule and changing its name to the Chemical Data Reporting (CDR) rule.
The 2006 IUR data summary report includes information about chemicals manufactured or imported in quantities of 25,000 pounds or more at a single site during calendar year 2005. In addition to the basic manufacturing information collected in previous reporting cycles, the 2006 cycle is the first time EPA collected information to characterize exposure during manufacturing, processing and use of organic chemicals. The 2006 cycle also is the first time manufacturers of inorganic chemicals were required to report basic manufacturing information.

Government Publication Date: Dec 31, 2006

FTTS Administrative Case Listing: FTTS ADMIN

An administrative case listing from the Federal Insecticide, Fungicide, & Rodenticide Act (FIFRA) and Toxic Substances Control Act (TSCA), together known as FTTS. This database was obtained from the Environmental Protection Agency's (EPA) National Compliance Database (NCDB). The FTTS and NCDB was shut down in 2006.

Government Publication Date: Jan 19, 2007

FTTS Inspection Case Listing: FTTS INSP

An inspection case listing from the Federal Insecticide, Fungicide, & Rodenticide Act (FIFRA) and Toxic Substances Control Act (TSCA), together known as FTTS. This database was obtained from the Environmental Protection Agency's (EPA) National Compliance Database (NCDB). The FTTS and NCDB was shut down in 2006.

Government Publication Date: Jan 19, 2007

Potentially Responsible Parties List: PRP

Early in the cleanup process, the Environmental Protection Agency (EPA) conducts a search to find the potentially responsible parties (PRPs). EPA looks for evidence to determine liability by matching wastes found at the site with parties that may have contributed wastes to the site.

Government Publication Date: Dec 20, 2018

State Coalition for Remediation of Drycleaners Listing: SCRD DRYCLEANER

The State Coalition for Remediation of Drycleaners (SCRD) was established in 1998, with support from the U.S. Environmental Protection Agency (EPA) Office of Superfund Remediation and Technology Innovation. Coalition members are states with mandated programs and funding for drycleaner site remediation. Current members are Alabama, Connecticut, Florida, Illinois, Kansas, Minnesota, Missouri, North Carolina, Oregon, South Carolina, Tennessee, Texas, and Wisconsin.

Government Publication Date: Nov 08, 2017

Integrated Compliance Information System (ICIS): ICIS

The Integrated Compliance Information System (ICIS) is a system that provides information for the Federal Enforcement and Compliance (FE&C) and the National Pollutant Discharge Elimination System (NPDES) programs. The FE&C component supports the Environmental Protection Agency's (EPA) Civil Enforcement and Compliance program activities. These activities include Compliance Assistance, Compliance Monitoring and Enforcement. The NPDES program supports tracking of NPDES permits, limits, discharge monitoring data and other program reports.

Government Publication Date: Nov 18, 2016

Drycleaner Facilities: FED DRYCLEANERS

A list of drycleaner facilities from the Integrated Compliance Information System (ICIS). The Environmental Protection Agency (EPA) tracks facilities that possess NAIC and SIC codes that classify businesses as drycleaner establishments.

Government Publication Date: May 29, 2018

Delisted Drycleaner Facilities: DELISTED FED DRY

List of sites removed from the list of Drycleaner Facilities (sites in the EPA's Integrated Compliance Information System (ICIS) with NAIC or SIC codes identifying the business as a drycleaner establishment).

Government Publication Date: May 29, 2018

Formerly Used Defense Sites: FUDS

Formerly Used Defense Sites (FUDS) are properties that were formerly owned by, leased to, or otherwise possessed by and under the jurisdiction of the Secretary of Defense prior to October 1986, where the Department of Defense (DoD) is responsible for an environmental restoration. This list is published by the U.S. Army Corps of Engineers.

Government Publication Date: Oct 23, 2018

Material Licensing Tracking System (MLTS): MLTS

A list of sites that store radioactive material subject to the Nuclear Regulatory Commission (NRC) licensing requirements. This list is maintained by the NRC. As of September 2016, the NRC no longer releases location information for sites. Site locations were last received in July 2016.

Government Publication Date: Nov 1, 2018

Historic Material Licensing Tracking System (MLTS) sites: HIST MLTS

A historic list of sites that have inactive licenses and/or removed from the Material Licensing Tracking System (MLTS). In some cases, a site is removed from the MLTS when the state becomes an "Agreement State". An Agreement State is a State that has signed an agreement with the Nuclear Regulatory Commission (NRC) authorizing the State to regulate certain uses of radioactive materials within the State.

Government Publication Date: Jan 31, 2010

Mines Master Index File: MINES

The Master Index File (MIF) contains mine identification numbers issued by the Department of Labor Mine Safety and Health Administration (MSHA) for mines active or opened since 1971. Note that addresses may or may not correspond with the physical location of the mine itself.

Government Publication Date: Jan 30, 2018

Alternative Fueling Stations: ALT FUELS

List of alternative fueling stations made available by the US Department of Energy's Office of Energy Efficiency & Renewable Energy. Includes Biodiesel stations, Ethanol (E85) stations, Liquefied Petroleum Gas (Propane) stations, Ethanol (E85) stations, Natural Gas stations, Hydrogen stations, and Electric Vehicle Supply Equipment (EVSE). The National Renewable Energy Laboratory (NREL) obtains information about new stations from trade media, Clean Cities coordinators, a Submit New Station form on the Station Locator website, and through collaborating with infrastructure equipment and fuel providers, original equipment manufacturers (OEMs), and industry groups.

Government Publication Date: Jan 15, 2019

Registered Pesticide Establishments: SSTS

List of active EPA-registered foreign and domestic pesticide-producing and device-producing establishments based on data from the Section Seven Tracking System (SSTS). The Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Section 7 requires that facilities producing pesticides, active ingredients, or devices be registered. The list of establishments is made available by the EPA.

Government Publication Date: Mar 1, 2018

Polychlorinated Biphenyl (PCB) Notifiers: PCB

Facilities included in the national list of facilities that have notified the United States Environmental Protection Agency (EPA) of Polychlorinated Biphenyl (PCB) activities. Any company or person storing, transporting or disposing of PCBs or conducting PCB research and development must notify the EPA and receive an identification number.

Government Publication Date: Sep 14, 2018

State

Dry Cleaning Facilities: DRYCLEANERS

A list of drycleaner related facilities that have EPA ID numbers. These are facilities with certain SIC codes: power laundries, family and commercial, linen supply, commercial laundry, dry cleaning and pressing machines - Coin Operated Laundry and Dry Cleaning. This is provided by the Department of Toxic Substance Control.

Government Publication Date: Jan 18, 2019

Delisted Drycleaners: DELISTED DRYCLEANERS

Sites removed from the list of drycleaner related facilities that have EPA ID numbers, made available by the California Department of Toxic Substance Control.

Government Publication Date: Jan 18, 2019

Non-Toxic Dry Cleaning Incentive Program: DRYC GRANT

A list of grant recipients of the Non-Toxic Dry Cleaning Incentive Program made available by the California Air Resources Board (CARB). The program provides grants to eligible dry cleaning businesses to assist them in transitioning away from PERC machines to alternative non-toxic and non-smog forming technologies.

Government Publication Date: Feb 28, 2018

Hazardous Waste and Substances Site List - Site Cleanup: HWSS CLEANUP

The Hazardous Waste and Substances Sites (Cortese) List is a planning document used by the State, local agencies and developers to comply with the California Environmental Quality Act requirements in providing information about the location of hazardous materials release sites. This list is published by California Department of Toxic Substance Control.

Government Publication Date: Dec 4, 2018

List of Hazardous Waste Facilities Subject to Corrective Action: DTSC HWF

This is a list of hazardous waste facilities identified in Health and Safety Code (HSC) § 25187.5. These facilities are those where Department of Toxic Substances Control (DTSC) has taken or contracted for corrective action because a facility owner/operator has failed to comply with a date for taking corrective action in an order issued under HSC § 25187, or because DTSC determined that immediate corrective action was necessary to abate an imminent or substantial endangerment.

Government Publication Date: Jul 18, 2016

EnviroStor Inspection, Compliance, and Enforcement: INSP COMP ENF

A list of permitted facilities with inspections and enforcements tracked in the Department of Toxic Substance Control (DTSC) EnviroStor.

Government Publication Date: Oct 2, 2018

School Property Evaluation Program Sites: SCH

A list of sites registered with The Department of Toxic Substances Control (DTSC) School Property Evaluation and Cleanup (SPEC) Division. SPEC is responsible for assessing, investigating and cleaning up proposed school sites. The Division ensures that selected properties are free of contamination or, if the properties were previously contaminated, that they have been cleaned up to a level that protects the students and staff who will occupy the new school.

Government Publication Date: Dec 20, 2018

California Hazardous Material Incident Report System (CHMIRS): CHMIRS

A list of reported hazardous material incidents, spills, and releases from the California Hazardous Material Incident Report System (CHMIRS). This list has been made available by the California Office of Emergency Services (OES).

Government Publication Date: Jun 19, 2018

Hazardous Waste Manifest Data: HAZNET

A list of hazardous waste manifests received each year by Department of Toxic Substances Control (DTSC). The volume of manifests is typically 900,000 - 1,000,000 annually, representing approximately 450,000 - 500,000 shipments.

Government Publication Date: Oct 24, 2016

Historical California Hazardous Material Incident Report System (CHMIRS): HIST CHMIRS

A list of reported hazardous material incidents, spills, and releases from the California Hazardous Material Incident Report System (CHMIRS) prior to 1993. This list has been made available by the California Office of Emergency Services (OES).

Government Publication Date: Jan 1, 1993

Historical Hazardous Waste Manifest Data: HIST MANIFEST

A list of historic hazardous waste manifests received by the Department of Toxic Substances Control (DTSC) from year the 1980 to 1992. The volume of manifests is typically 900,000 - 1,000,000 annually, representing approximately 450,000 - 500,000 shipments.

Government Publication Date: Dec 31, 1992

Historical Cortese List: HIST CORTESE

List of sites which were once included on the Cortese list. The Hazardous Waste and Substances Sites (Cortese) List is a planning document used by the State, local agencies and developers to comply with the California Environmental Quality Act requirements for providing information about the location of hazardous sites.

Government Publication Date: Nov 13, 2008

Cease and Desist Orders and Cleanup and Abatement Orders: CDO/CAO

The California Environment Protection Agency "Cortese List" of active Cease and Desist Orders (CDO) and Cleanup and Abatement Orders (CAO). This list contains many CDOs and CAOs that do NOT concern the discharge of wastes that are hazardous materials. Many of the listed orders concern, as examples, discharges of domestic sewage, food processing wastes, or sediment that do not contain hazardous materials, but the Water Boards' database does not distinguish between these types of orders.

Government Publication Date: Feb 16, 2012

California Environmental Reporting System (CERS) Hazardous Waste Sites: CERS HAZ

List of sites in the California Environmental Protection Agency (CalEPA) Regulated Site Portal which fall under the following regulatory programs: Hazardous Chemical Management, Hazardous Waste Onsite Treatment, Household Hazardous Waste Collection, Hazardous Waste Generator, RCRA LQ HW Generator. The CalEPA oversees the statewide implementation of the Unified Program which applies regulatory standards to protect Californians from hazardous waste and materials.

Government Publication Date: Nov 29, 2018

Delisted Environmental Reporting System (CERS) Hazardous Waste Sites: DELISTED HAZ

This database contains a list of sites that were removed from the California Environmental Protection Agency (CalEPA) in the following regulatory programs: Hazardous Chemical Management, Hazardous Waste Onsite Treatment, Household Hazardous Waste Collection, Hazardous Waste Generator, RCRA LQ HW Generator.

Government Publication Date: Nov 29, 2018

Waste Discharge Requirements: WASTE DISCHG

List of sites in California State Water Resources Control Board (SWRCB) Waste Discharge Requirements (WDRs) Program in California, made available by the SWRCB via GeoTracker. The WDR program regulates point discharges that are exempt pursuant to Subsection 20090 of Title 27 and not subject to the Federal Water Pollution Control Act. The scope of the WDRs Program also includes the discharge of wastes classified as inert, pursuant to section 20230 of Title 27.

Government Publication Date: Nov 30, 2018

Toxic Pollutant Emissions Facilities: EMISSIONS

A list of criteria and toxic pollutant emissions data for facilities in California made available by the California Environmental Protection Agency - Air Resources Board (ARB). Risk data may be based on previous inventory submittals. The toxics data are submitted to the ARB by the local air districts as requirement of the Air Toxics "Hot Spots" Program. This program requires emission inventory updates every four years.

Government Publication Date: Dec 31, 2016

Clandestine Drug Lab Sites: CDL

The Department of Toxic Substances Control (DTSC) maintains a listing of drug lab sites. DTSC is responsible for removal and disposal of hazardous substances discovered by law enforcement officials while investigating illegal/clandestine drug laboratories.

Government Publication Date: Dec 31, 2017

Tribal

No Tribal additional environmental record sources available for this State.

County

No County additional environmental databases were selected to be included in the search.

Definitions

Database Descriptions: This section provides a detailed explanation for each database including: source, information available, time coverage, and acronyms used. They are listed in alphabetic order.

Detail Report: This is the section of the report which provides the most detail for each individual record. Records are summarized by location, starting with the project property followed by records in closest proximity.

Distance: The distance value is the distance between plotted points, not necessarily the distance between the sites' boundaries. All values are an approximation.

Direction: The direction value is the compass direction of the site in respect to the project property and/or center point of the report.

Elevation: The elevation value is taken from the location at which the records for the site address have been plotted. All values are an approximation. Source: Google Elevation API.

Executive Summary: This portion of the report is divided into 3 sections:

'Report Summary'- Displays a chart indicating how many records fall on the project property and, within the report search radii.

'Site Report Summary'-Project Property'- This section lists all the records which fall on the project property. For more details, see the 'Detail Report' section.

'Site Report Summary-Surrounding Properties'- This section summarizes all records on adjacent properties, listing them in order of proximity from the project property. For more details, see the 'Detail Report' section.

Map Key: The map key number is assigned according to closest proximity from the project property. Map Key numbers always start at #1. The project property will always have a map key of '1' if records are available. If there is a number in brackets beside the main number, this will indicate the number of records on that specific property. If there is no number in brackets, there is only one record for that property.

The symbol and colour used indicates 'elevation': the red inverted triangle will dictate 'ERIS Sites with Lower Elevation', the yellow triangle will dictate 'ERIS Sites with Higher Elevation' and the orange square will dictate 'ERIS Sites with Same Elevation.'

Unplottables: These are records that could not be mapped due to various reasons, including limited geographic information. These records may or may not be in your study area, and are included as reference.

PSR
PHYSICAL SETTING REPORT

Property Information

Order Number:	20190211126p
Date Completed:	February 11, 2019
Project Number:	12282.002
Project Property:	Stratham Homes - NW Corner of S. Highland & Hemlock Avenues NW Corner of Hemlock and Highland Aves. Fontana CA 92336
Coordinates:	
Latitude:	34.134992
Longitude:	-117.477241
UTM Northing:	3777226.61844 Meters
UTM Easting:	455997.462646 Meters
UTM Zone:	UTM Zone 11S
Elevation:	1,437.37 ft
Slope Direction:	SSW

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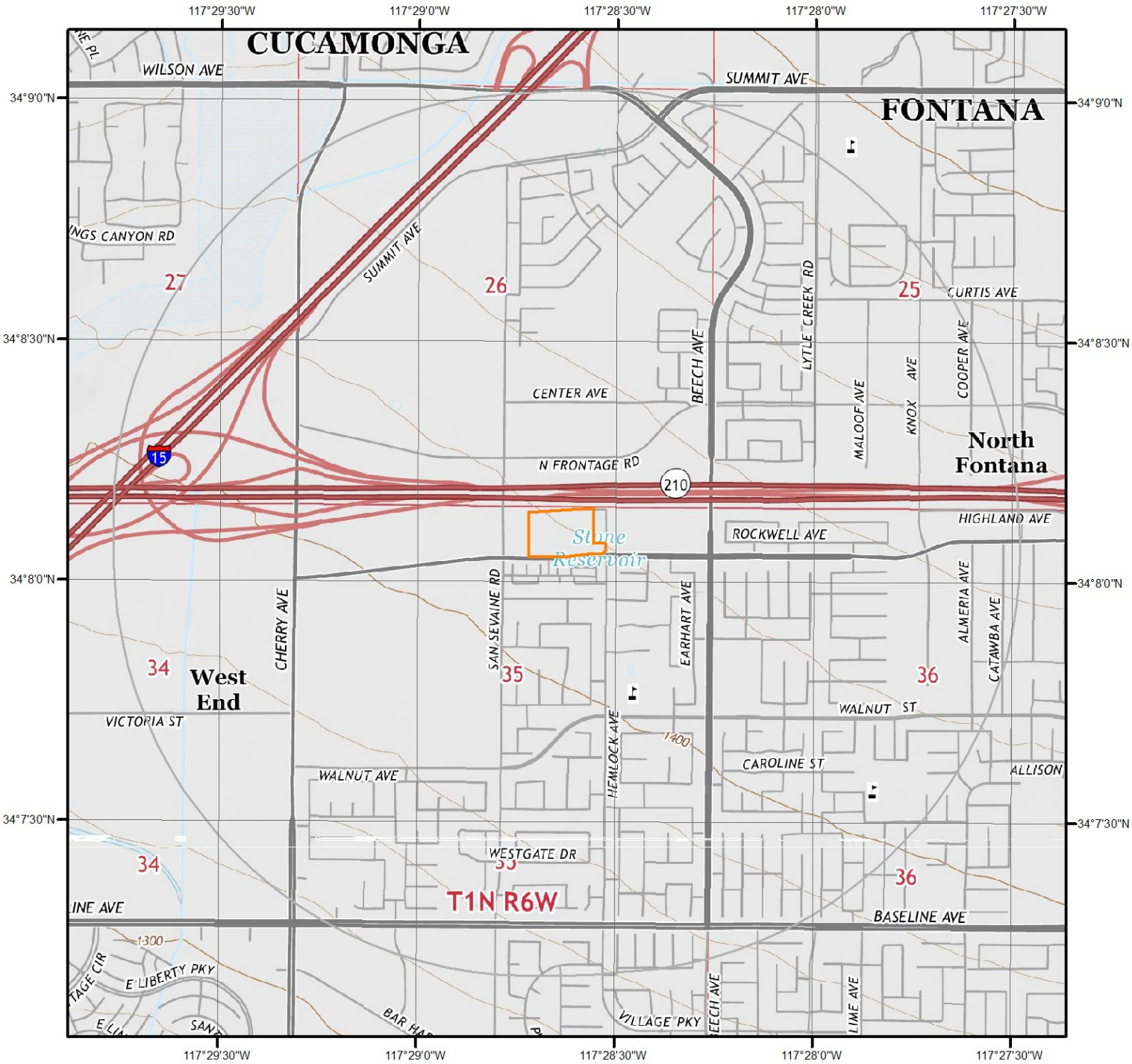
The ERIS ***Physical Setting Report - PSR*** provides comprehensive information about the physical setting around a site and includes a complete overview of topography and surface topology, in addition to hydrologic, geologic and soil characteristics. The location and detailed attributes of oil and gas wells, water wells, public water systems and radon are also included for review.

The compilation of both physical characteristics of a site and additional attribute data is useful in assessing the impact of migration of contaminants and subsequent impact on soils and groundwater.

Disclaimer

This Report does not provide a full environmental evaluation for the site or adjacent properties. Please see the terms and disclaimer at the end of the Report for greater detail.

Topographic Information



Current USGS Topo

0 0.2 0.4 0.8 Miles

N

Quadrangle(s): Devore,CA; Fontana,CA

Source: USGS 7.5 Minute Topographic Map

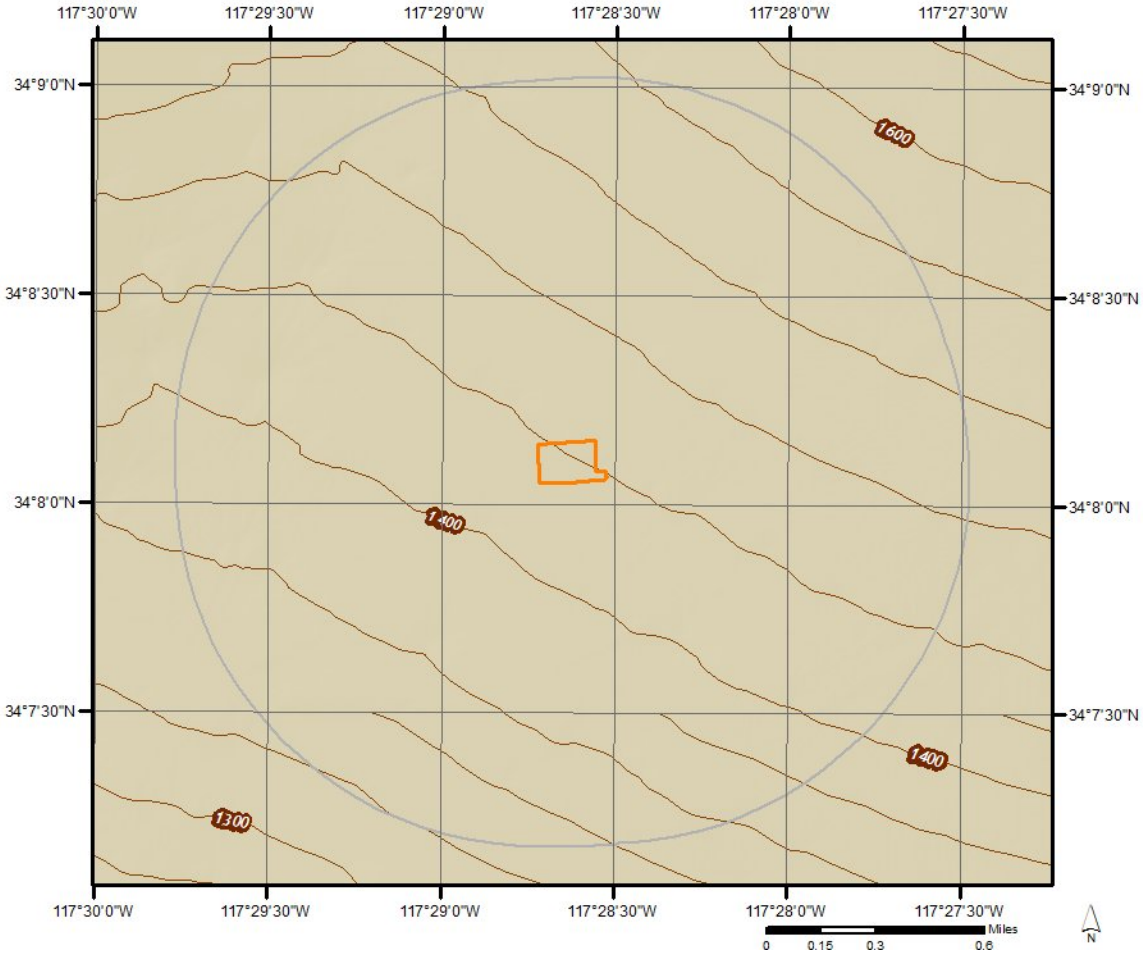
ERIS
ENVIRONMENTAL RISK INFORMATION SERVICES

Topographic Information

The previous topographic map(s) are created by seamlessly merging and cutting current USGS topographic data. Below are shaded relief map(s), derived from USGS elevation data to show surrounding topography in further detail.

Topographic information at project property:

Elevation:	1,437.37 ft
Slope Direction:	SSW



Hydrologic Information

Wetland

Miles
0 0.075 0.15 0.3

N

This map shows wetland existence using data from US Fish & Wildlife.
Data coverage is shown to the right. Gray indicates no data available in the area.

- Estuarine and Marine Deepwater
- Estuarine and Marine Wetland
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Lake
- Other
- Riverine

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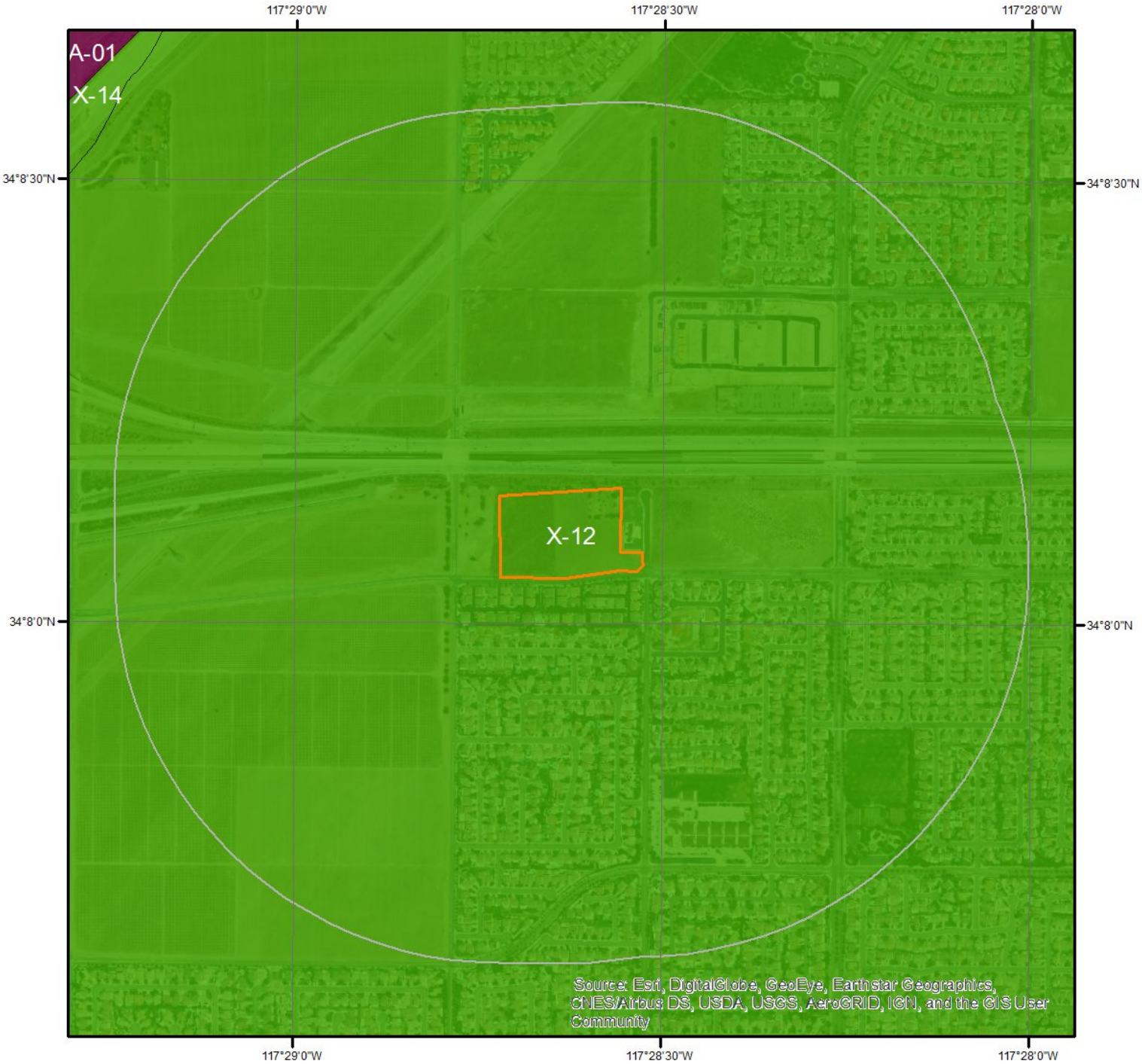
ENVIRONMENTAL RISK INFORMATION SERVICES

Hydrologic Information



Flood Hazard Zones

Miles
0 0.125 0.25

This map shows FEMA flood hazard zones. FIRM panels are shown to the right, and blank indicates no data is available.

A	AH	VE	OPEN WATER
A99	AO	D	NOT POPULATED
AE	V	X	AREA NOT INCLUDED

N

06071C7915H

ERIS
ENVIRONMENTAL RISK INFORMATION SERVICES

Hydrologic Information

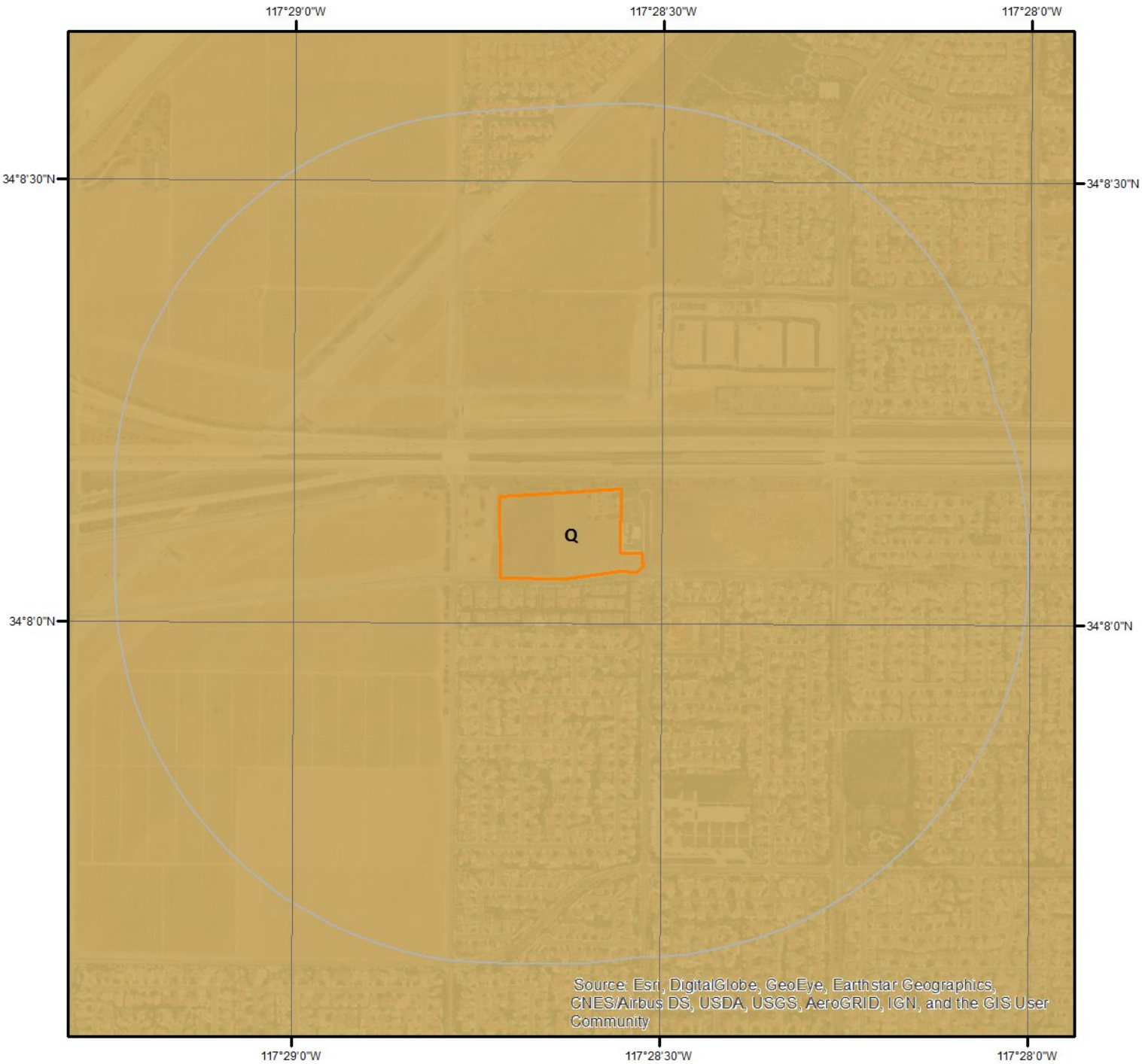
The Wetland Type map shows wetland existence overlaid on an aerial imagery. The Flood Hazard Zones map shows FEMA flood hazard zones overlaid on an aerial imagery. Relevant FIRM panels and detailed zone information is provided below.

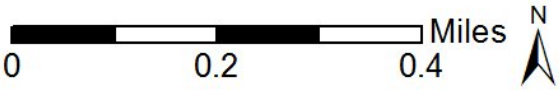
Available FIRM Panels in area:	06071C7915H(effective:2008-08-28)

Flood Zone X-12

Zone:	X
Zone subtype:	AREA OF MINIMAL FLOOD HAZARD

Geologic Information





Geologic Units

This maps shows geologic units in the area. Please refer to the report for detailed descriptions.

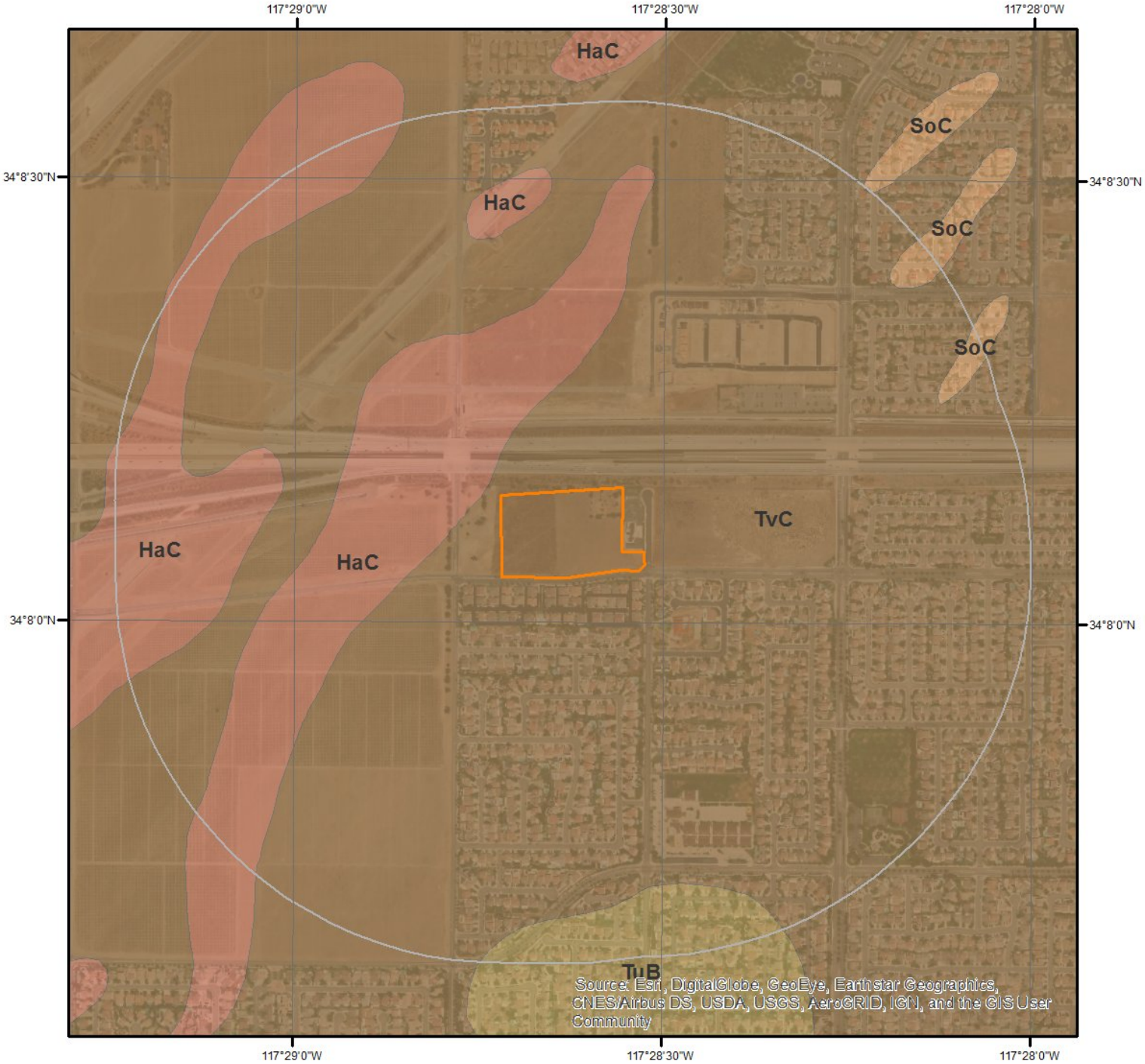
Geologic Information

The previous page shows USGS geology information. Detailed information about each unit is provided below.

Geologic Unit Q

Unit Name:	Quaternary alluvium and marine deposits
Unit Age:	Pliocene to Holocene
Primary Rock Type:	alluvium
Secondary Rock Type:	terrace
Unit Description:	Alluvium, lake, playa, and terrace deposits; unconsolidated and semi-consolidated. Mostly nonmarine, but includes marine deposits near the coast.

Soil Information



SSURGO Soils

0 0.2 0.4 Miles

N

This maps shows SSURGO soil units around the target property. Please refer to the report for detailed soil descriptions.

ERIS
ENVIRONMENTAL RISK INFORMATION SERVICES

Soil Information

The previous page shows a soil map using SSURGO data from USDA Natural Resources Conservation Service. Detailed information about each unit is provided below.

Map Unit HaC

Map Unit Name:	Hanford coarse sandy loam, 2 to 9 percent slopes
Bedrock Depth - Min:	null
Watertable Depth - Annual Min:	null
Drainage Class - Dominant:	Well drained
Hydrologic Group - Dominant:	A - Soils in this group have low runoff potential when thoroughly wet. Water is transmitted freely through the soil.
Major components are printed below	
Hanford(85%)	
horizon H1(0cm to 30cm)	Sandy loam
horizon H2(30cm to 152cm)	Coarse sandy loam
horizon H2(30cm to 152cm)	Fine sandy loam
horizon H2(30cm to 152cm)	Sandy loam

Map Unit SoC

Map Unit Name:	Soboba gravelly loamy sand, 0 to 9 percent slopes
Bedrock Depth - Min:	null
Watertable Depth - Annual Min:	null
Drainage Class - Dominant:	Excessively drained
Hydrologic Group - Dominant:	A - Soils in this group have low runoff potential when thoroughly wet. Water is transmitted freely through the soil.
Major components are printed below	
Soboba(85%)	
horizon H1(0cm to 30cm)	Gravelly loamy sand
horizon H2(30cm to 91cm)	Very gravelly loamy sand
horizon H3(91cm to 152cm)	Very stony sand

Map Unit TuB

Map Unit Name:	Tujunga loamy sand, 0 to 5 percent slopes
Bedrock Depth - Min:	null
Watertable Depth - Annual Min:	null
Drainage Class - Dominant:	Somewhat excessively drained
Hydrologic Group - Dominant:	A - Soils in this group have low runoff potential when thoroughly wet. Water is transmitted freely through the soil.
Major components are printed below	
Tujunga(85%)	
horizon A(0cm to 15cm)	Loamy sand
horizon C1(15cm to 46cm)	Loamy sand
horizon C2(46cm to 152cm)	Loamy sand

Soil Information

Map Unit TvC

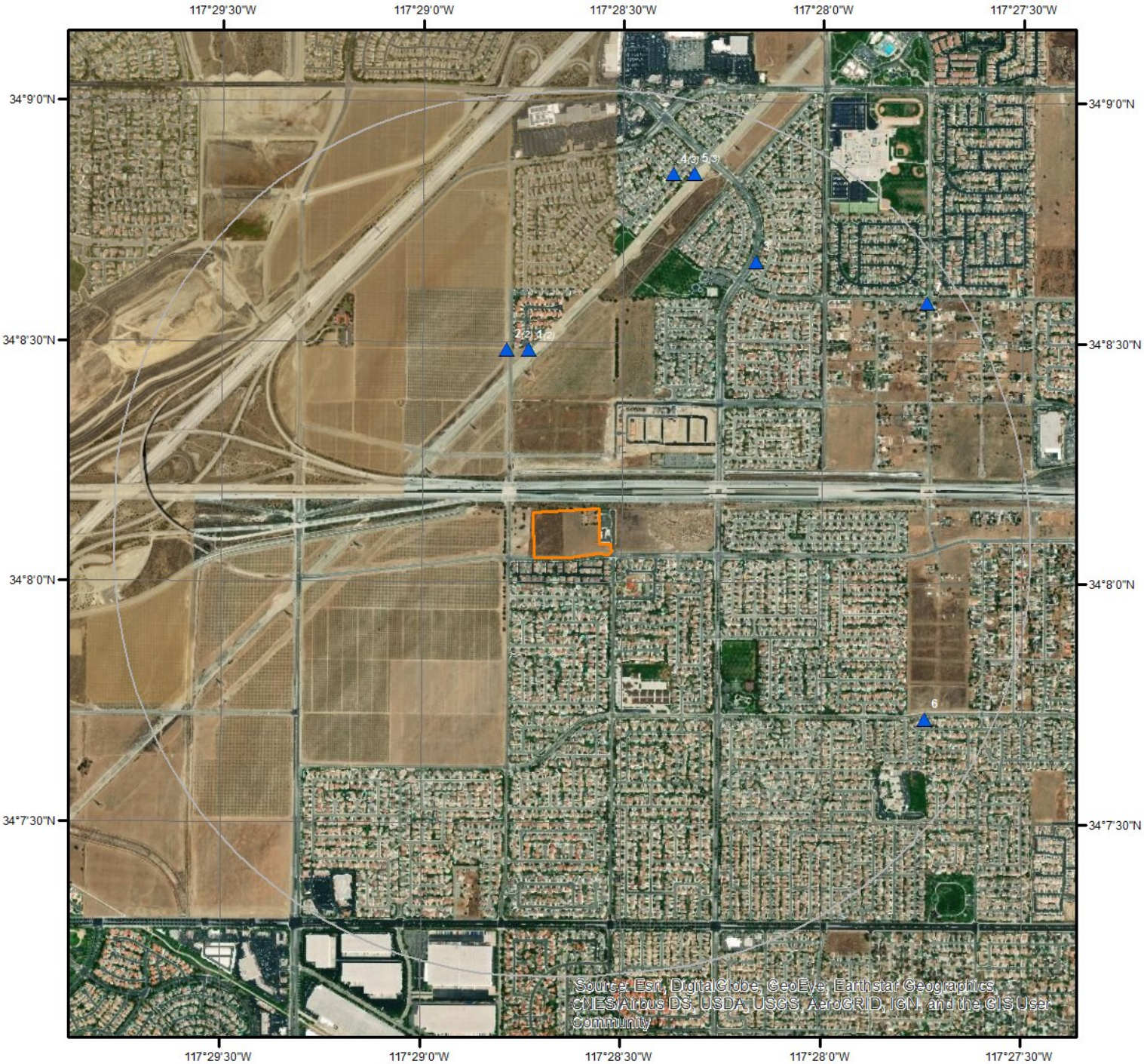
Map Unit Name:	Tujunga gravelly loamy sand, 0 to 9 percent slopes
Bedrock Depth - Min:	null
Watertable Depth - Annual Min:	null
Drainage Class - Dominant:	Somewhat excessively drained
Hydrologic Group - Dominant:	A - Soils in this group have low runoff potential when thoroughly wet. Water is transmitted freely through the soil.

Major components are printed below

Tujunga(85%)

horizon H1(0cm to 91cm)	Gravelly loamy sand
horizon H2(91cm to 152cm)	Gravelly loamy sand
horizon H2(91cm to 152cm)	Gravelly sand

Wells and Additional Sources



Wells & Additional Sources

- ▲ Sites with Higher Elevation
- ■ Sites with Same Elevation
- ▼ Sites with Lower Elevation
- ○ Sites with Unknown Elevation

N

0 0.15 0.3 0.6 Miles

ERIS
ENVIRONMENTAL RISK INFORMATION SERVICES

Wells and Additional Sources Summary

Federal Sources

Public Water Systems Violations and Enforcement Data

Map Key	ID	Distance (ft)	Direction
	No records found		

Safe Drinking Water Information System (SDWIS)

Map Key	ID	Distance (ft)	Direction
	No records found		

USGS National Water Information System

Map Key	Monitoring Loc Identifier	Distance (ft)	Direction
1	USGS-340829117284301	2,058.32	NNW
1	USGS-340829117284302	2,058.32	NNW
5	USGS-340851117281903	4,392.45	NNE
5	USGS-340851117281901	4,392.45	NNE
5	USGS-340851117281902	4,392.45	NNE

State Sources

Oil and Gas Wells

Map Key	All Well Key	Distance (ft)	Direction
3		3,688.03	NE

Public Water Supply Wells

Map Key	WCR No	Distance (ft)	Direction
6	WCR1987-013404	4,477.44	ESE
7	WCR2000-009891	4,882.81	ENE

Water Wells

Map Key	Site Code	Distance (ft)	Direction
2	341414N1174798W002	2,090.35	NNW
2	341414N1174798W001	2,090.35	NNW
4	341475N1174729W002	4,324.32	NNE
4	341475N1174729W001	4,324.32	NNE
4	341475N1174729W003	4,324.32	NNE

Well Investigation Program Case List

Map Key	ID	Distance (ft)	Direction
	No records found		

USGS National Water Information System

Map Key	Direction	Distance (mi)	Distance (ft)	Elevation (ft)	DB
1	NNW	0.39	2,058.32	1,476.86	FED USGS

Organiz Identifier:	USGS-CA	Formation Type:	
Organiz Name:	USGS California Water Science Center	Aquifer Name:	California Coastal Basin aquifers
Well Depth:	700	Aquifer Type:	
Well Depth Unit:	ft	Country Code:	US
Well Hole Depth:	718	Provider Name:	NWIS
W Hole Depth Unit:	ft	County:	SAN BERNARDINO
Construction Date:	20010728	Latitude:	34.1413889
Source Map Scale:	24000	Longitude:	-117.4788778
Monitoring Loc Name:	001N006W26K002S		
Monitoring Loc Identifier:	USGS-340829117284301		
Monitoring Loc Type:	Well		
Monitoring Loc Desc:			
HUC Eight Digit Code:	18070203		
Drainage Area:			
Drainage Area Unit:			
Contrib Drainage Area:			
Contrib Drainage Area Unit:			
Horizontal Accuracy:	.5		
Horizontal Accuracy Unit:	seconds		
Horizontal Collection Mthd:	Differentially corrected Global Positioning System.		
Horiz Coord Refer System:	NAD83		
Vertical Measure:	1470		
Vertical Measure Unit:	feet		
Vertical Accuracy:	20		
Vertical Accuracy Unit:	feet		
Vertical Collection Mthd:	Interpolated from topographic map.		
Vert Coord Refer System:	NGVD29		

Map Key	Direction	Distance (mi)	Distance (ft)	Elevation (ft)	DB
1	NNW	0.39	2,058.32	1,476.86	FED USGS

Organiz Identifier:	USGS-CA	Formation Type:	
Organiz Name:	USGS California Water Science Center	Aquifer Name:	California Coastal Basin aquifers
Well Depth:	450	Aquifer Type:	
Well Depth Unit:	ft	Country Code:	US
Well Hole Depth:	718	Provider Name:	NWIS
W Hole Depth Unit:	ft	County:	SAN BERNARDINO

Construction Date:	20010728	Latitude:	34.1413889
Source Map Scale:	24000	Longitude:	-117.4788778
Monitoring Loc Name:	001N006W26K003S		
Monitoring Loc Identifier:	USGS-340829117284302		
Monitoring Loc Type:	Well		
Monitoring Loc Desc:			
HUC Eight Digit Code:	18070203		
Drainage Area:			
Drainage Area Unit:			
Contrib Drainage Area:			
Contrib Drainage Area Unit:			
Horizontal Accuracy:	.5		
Horizontal Accuracy Unit:	seconds		
Horizontal Collection Mthd:	Differentially corrected Global Positioning System.		
Horiz Coord Refer System:	NAD83		
Vertical Measure:	1470		
Vertical Measure Unit:	feet		
Vertical Accuracy:	20		
Vertical Accuracy Unit:	feet		
Vertical Collection Mthd:	Interpolated from topographic map.		
Vert Coord Refer System:	NGVD29		

Map Key	Direction	Distance (mi)	Distance (ft)	Elevation (ft)	DB
5	NNE	0.83	4,392.45	1,549.14	FED USGS

Organiz Identifier:	USGS-CA	Formation Type:	
Organiz Name:	USGS California Water Science Center	Aquifer Name:	California Coastal Basin aquifers
Well Depth:	550	Aquifer Type:	
Well Depth Unit:	ft	Country Code:	US
Well Hole Depth:	889	Provider Name:	NWIS
W Hole Depth Unit:	ft	County:	SAN BERNARDINO
Construction Date:	20010810	Latitude:	34.1475111
Source Map Scale:	24000	Longitude:	-117.4720194
Monitoring Loc Name:	001N006W26A003S		
Monitoring Loc Identifier:	USGS-340851117281903		
Monitoring Loc Type:	Well		
Monitoring Loc Desc:			
HUC Eight Digit Code:	18070203		
Drainage Area:			
Drainage Area Unit:			
Contrib Drainage Area:			
Contrib Drainage Area Unit:			
Horizontal Accuracy:	.5		
Horizontal Accuracy Unit:	seconds		

Horizontal Collection Mthd:	Differentially corrected Global Positioning System.
Horiz Coord Refer System:	NAD83
Vertical Measure:	1540
Vertical Measure Unit:	feet
Vertical Accuracy:	20
Vertical Accuracy Unit:	feet
Vertical Collection Mthd:	Interpolated from topographic map.
Vert Coord Refer System:	NGVD29

Map Key	Direction	Distance (mi)	Distance (ft)	Elevation (ft)	DB
5	NNE	0.83	4,392.45	1,549.14	FED USGS

Organiz Identifier:	USGS-CA	Formation Type:	
Organiz Name:	USGS California Water Science Center	Aquifer Name:	California Coastal Basin aquifers
Well Depth:	870	Aquifer Type:	
Well Depth Unit:	ft	Country Code:	US
Well Hole Depth:	889	Provider Name:	NWIS
W Hole Depth Unit:	ft	County:	SAN BERNARDINO
Construction Date:	20010810	Latitude:	34.1475111
Source Map Scale:	24000	Longitude:	-117.4720194
Monitoring Loc Name:	001N006W26A001S		
Monitoring Loc Identifier:	USGS-340851117281901		
Monitoring Loc Type:	Well		
Monitoring Loc Desc:			
HUC Eight Digit Code:	18070203		
Drainage Area:			
Drainage Area Unit:			
Contrib Drainage Area:			
Contrib Drainage Area Unit:			
Horizontal Accuracy:	.5		
Horizontal Accuracy Unit:	seconds		
Horizontal Collection Mthd:	Differentially corrected Global Positioning System.		
Horiz Coord Refer System:	NAD83		
Vertical Measure:	1540		
Vertical Measure Unit:	feet		
Vertical Accuracy:	20		
Vertical Accuracy Unit:	feet		
Vertical Collection Mthd:	Interpolated from topographic map.		
Vert Coord Refer System:	NGVD29		

Map Key	Direction	Distance (mi)	Distance (ft)	Elevation (ft)	DB
5	NNE	0.83	4,392.45	1,549.14	FED USGS

Organiz Identifier:	USGS-CA	Formation Type:	
Organiz Name:	USGS California Water Science Center	Aquifer Name:	California Coastal Basin aquifers
Well Depth:	660	Aquifer Type:	
Well Depth Unit:	ft	Country Code:	US
Well Hole Depth:	889	Provider Name:	NWIS
W Hole Depth Unit:	ft	County:	SAN BERNARDINO
Construction Date:	20010810	Latitude:	34.1475111
Source Map Scale:	24000	Longitude:	-117.4720194
Monitoring Loc Name:	001N006W26A002S		
Monitoring Loc Identifier:	USGS-340851117281902		
Monitoring Loc Type:	Well		
Monitoring Loc Desc:			
HUC Eight Digit Code:	18070203		
Drainage Area:			
Drainage Area Unit:			
Contrib Drainage Area:			
Contrib Drainage Area Unit:			
Horizontal Accuracy:	.5		
Horizontal Accuracy Unit:	seconds		
Horizontal Collection Mthd:	Differentially corrected Global Positioning System.		
Horiz Coord Refer System:	NAD83		
Vertical Measure:	1540		
Vertical Measure Unit:	feet		
Vertical Accuracy:	20		
Vertical Accuracy Unit:	feet		
Vertical Collection Mthd:	Interpolated from topographic map.		
Vert Coord Refer System:	NGVD29		

Oil and Gas Wells

Map Key	Direction	Distance (mi)	Distance (ft)	Elevation (ft)	DB
3	NE	0.70	3,688.03	1,537.78	OGW

API No:	0407100025	Directional:	
All Well Key:		BLM Well:	
OP Well ID:		EPA Well:	
OID:		Operator Code:	02401
Well No:	1	Operator Name:	E. H. Brawner
Well Status:	Plugged	Operator St:	
Well Stat Desc:	Plugged	County APIC:	
Well Type:	DH	District:	Southern
Well Type Desc:	Dry Hole	Geo District:	
Well Symbol:	PluggedDH	Field Code:	
Well Sym Desc:		Field Name:	Any Field
Release Date:		Area Code:	
Completion Date:		Area Name:	Any Area

Abandoned Date:		Section:	25
Elevation:		Township:	01N
Total Depth:		Range:	06W
Redrilled Depth:		Lat27:	
Redrill Cancel Flag:		Long27:	
Dryhole:		Lat83:	34.1444664
Confidential:		Long83:	-117.46944427
Confidential Well:	No	Base Meridian:	SB
Directional Drilled:	No	GIS Source Code:	hud
Hydr Fractured:			
Location:			
Source83 Desc:	Heads Up Digitized - Coordinates generated from scanned, geo-referenced, static scale, Mylar maps		
URL:			

Public Water Supply Wells

Map Key	Direction	Distance (mi)	Distance (ft)	Elevation (ft)	DB
6	ESE	0.85	4,477.44	1,437.64	PWSW

WCR No:	WCR1987-013404	Decimal Latitude:	34.12863
Legacy Log No:	152882	Decimal Longitude:	-117.46236
Permit Date:	None	Meth of Determ LL:	Derived from TRS
Permit No:	None	LL Accuracy:	Centroid of Section
Own Assign Well No:	36	Horizontal Datum:	None
Name of Well Owner:		Ground Surf Elev:	None
Planned Former Use:	Water Supply Public	Elevation Accuracy:	None
APN:	None	Elev Determine Meth:	None
Date Work Ended:	1987-07-09 00:00:00.000000000	Vertical Datum:	None
Received Date:		Township:	01N
Well Location:	WALNUT, CITRUS	Range:	06W
City:	Fontana	Section:	36
County Name:	San Bernardino	Baseline Meridian:	San Bernardino
Total Drill Depth:	None	Township Internal:	
Total Complete Dep:	648.0	Range Internal:	
Top Perforated Int:	None	Section Internal:	
Bottom Perf Intvl:	None	Tract Internal:	
Casing Diameter:	None	Sequence Internal:	
Drilling Method:	Direct Rotary	Baseline Merid Int:	
Fluid:	Not Available at Conversion	Decimal Lat Int:	
Static Water Level:	None	Decimal Long Int:	
Total Draw Down:	None	Meth of Det LL Int:	
Test Type:	None	LL Accuracy Intern:	
Pump Test Length:	None	Horiz Datum Int:	
Well Yield:	None	Grnd Surf Elev Int:	
Well Yield Unit:	None	Ele Accuracy Int:	
GW Basin:		Elev Det Meth Int:	
Mat Type Summary:		Vertical Datum Int:	

Attachment Info:	
Region Office:	DWR Southern Region Office
Local Permit Agency:	San Bernardino County DPH - Environmental Health Services Safe Drinking Water Permit Section
Record Type:	WellCompletion/New/Production or Monitoring/NA
Workflow Status:	None
Other Observations:	None

Map Key	Direction	Distance (mi)	Distance (ft)	Elevation (ft)	DB
7	ENE	0.92	4,882.81	1,553.41	PWSW

WCR No:	WCR2000-009891	Decimal Latitude:	34.14307
Legacy Log No:	518604	Decimal Longitude:	-117.4623
Permit Date:	None	Meth of Determ LL:	Derived from TRS
Permit No:	None	LL Accuracy:	Centroid of Section
Own Assign Well No:	None	Horizontal Datum:	None
Name of Well Owner:		Ground Surf Elev:	None
Planned Former Use:	Water Supply Public	Elevation Accuracy:	None
APN:	0226-192-150000	Elev Determine Meth:	None
Date Work Ended:	2000-06-07	Vertical Datum:	None
Received Date:		Township:	01N
Well Location:	CITRUS AVENUE	Range:	06W
City:	Fontana	Section:	25
County Name:	San Bernardino	Baseline Meridian:	San Bernardino
Total Drill Depth:	None	Township Internal:	
Total Complete Dep:	240.0	Range Internal:	
Top Perforated Int:	None	Section Internal:	
Bottom Perf Intvl:	None	Tract Internal:	
Casing Diameter:	30	Sequence Internal:	
Drilling Method:	Reverse Circulation	Baseline Merid Int:	
Fluid:	Not Available at Conversion	Decimal Lat Int:	
Static Water Level:	None	Decimal Long Int:	
Total Draw Down:	None	Meth of Det LL Int:	
Test Type:	None	LL Accuracy Intern:	
Pump Test Length:	None	Horiz Datum Int:	
Well Yield:	1500	Grnd Surf Elev Int:	
Well Yield Unit:	GPM	Ele Accuracy Int:	
GW Basin:		Elev Det Meth Int:	
Mat Type Summary:		Vertical Datum Int:	
Attachment Info:			
Region Office:	DWR Southern Region Office		
Local Permit Agency:	San Bernardino County DPH - Environmental Health Services Safe Drinking Water Permit Section		
Record Type:	WellCompletion/New/Production or Monitoring/NA		
Workflow Status:	None		
Other Observations:	None		

Water Wells

Map Key	Direction	Distance (mi)	Distance (ft)	Elevation (ft)	DB

2	NNW	0.40	2,090.35	1,473.37	WATER WELLS

Site Code:	341414N1174798W002	County Name:	San Bernardino
State Well No:	01N06W26K003S	Latitude:	34.1414
CASGEM Station ID:	25118	Longitude:	-117.4798
Station Use Desc:	Unknown	Basin ID:	199
Loc Well Designate:		Basin CD:	8-002.01
Total Depth (ft):		Basin Desc:	Chino
Is Voluntary Rprt:	Yes	Basin Region Code:	8
Completion Rpt No:		Basin Region Desc:	North Lahontan
Loc Method:	Unknown	Basin Region Actv:	Y
Loc Accuracy:	Unknown	Basin Region Order:	8

--Details--

Meas Date:	11/6/2006 0:00:00	Elevation ID:	1602487
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1472.58	Org Name:	Department of Water Resources
RP Elevation:	1472.58	Coop Agcy Org ID:	5167
RP Reading:	384.55	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	12/6/2006 0:00:00	Elevation ID:	1602483
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1472.58	Org Name:	Department of Water Resources
RP Elevation:	1472.58	Coop Agcy Org ID:	5167
RP Reading:	382.63	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	1/10/2008 0:00:00	Elevation ID:	1602500
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown

Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1472.58	Org Name:	Department of Water Resources
RP Elevation:	1472.58	Coop Agcy Org ID:	5167
RP Reading:	373	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	2/7/2008 0:00:00	Elevation ID:	1602501
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1472.58	Org Name:	Department of Water Resources
RP Elevation:	1472.58	Coop Agcy Org ID:	5167
RP Reading:	373.42	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	3/6/2008 0:00:00	Elevation ID:	1602502
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1472.58	Org Name:	Department of Water Resources
RP Elevation:	1472.58	Coop Agcy Org ID:	5167
RP Reading:	373.9	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	11/7/2008 0:00:00	Elevation ID:	1602516
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7

Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1472.58	Org Name:	Department of Water Resources
RP Elevation:	1472.58	Coop Agcy Org ID:	5167
RP Reading:	378.39	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	3/4/2009 0:00:00	Elevation ID:	1602520
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1472.58	Org Name:	Department of Water Resources
RP Elevation:	1472.58	Coop Agcy Org ID:	5167
RP Reading:	380.84	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	4/14/2008 0:00:00	Elevation ID:	1602503
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1472.58	Org Name:	Department of Water Resources
RP Elevation:	1472.58	Coop Agcy Org ID:	5167
RP Reading:	374.3	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	8/12/2009 0:00:00	Elevation ID:	1602524
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown

Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1472.58	Org Name:	Department of Water Resources
RP Elevation:	1472.58	Coop Agcy Org ID:	5167
RP Reading:	384.36	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	3/30/2010 0:00:00	Elevation ID:	1602531
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1472.58	Org Name:	Department of Water Resources
RP Elevation:	1472.58	Coop Agcy Org ID:	5167
RP Reading:	389.27	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	3/12/2007 0:00:00	Elevation ID:	1602490
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1472.58	Org Name:	Department of Water Resources
RP Elevation:	1472.58	Coop Agcy Org ID:	5167
RP Reading:	376.53	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	1/9/2009 0:00:00	Elevation ID:	1602518
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown

Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1472.58	Org Name:	Department of Water Resources
RP Elevation:	1472.58	Coop Agcy Org ID:	5167
RP Reading:	379.79	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	8/25/2009 0:00:00	Elevation ID:	1602525
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1472.58	Org Name:	Department of Water Resources
RP Elevation:	1472.58	Coop Agcy Org ID:	5167
RP Reading:	384.7	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	5/28/2010 0:00:00	Elevation ID:	1602533
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1472.58	Org Name:	Department of Water Resources
RP Elevation:	1472.58	Coop Agcy Org ID:	5167
RP Reading:	390.4	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	2/13/2007 0:00:00	Elevation ID:	1602489
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1472.58	Org Name:	Department of Water Resources

RP Elevation:	1472.58	Coop Agcy Org ID:	5167
RP Reading:	378.1	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	10/9/2007 0:00:00	Elevation ID:	1602497
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1472.58	Org Name:	Department of Water Resources
RP Elevation:	1472.58	Coop Agcy Org ID:	5167
RP Reading:	372.27	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	4/9/2009 0:00:00	Elevation ID:	1602521
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1472.58	Org Name:	Department of Water Resources
RP Elevation:	1472.58	Coop Agcy Org ID:	5167
RP Reading:	381.5	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	1/16/2007 0:00:00	Elevation ID:	1602488
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1472.58	Org Name:	Department of Water Resources
RP Elevation:	1472.58	Coop Agcy Org ID:	5167
RP Reading:	379.9	Coop Org Name:	United States Geological Survey

Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	4/4/2007 0:00:00	Elevation ID:	1602491
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1472.58	Org Name:	Department of Water Resources
RP Elevation:	1472.58	Coop Agcy Org ID:	5167
RP Reading:	375.35	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	9/30/2008 0:00:00	Elevation ID:	1602515
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1472.58	Org Name:	Department of Water Resources
RP Elevation:	1472.58	Coop Agcy Org ID:	5167
RP Reading:	377.59	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	5/14/2009 0:00:00	Elevation ID:	1602522
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1472.58	Org Name:	Department of Water Resources
RP Elevation:	1472.58	Coop Agcy Org ID:	5167
RP Reading:	382.23	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	10/14/2009 0:00:00	Elevation ID:	1602527
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1472.58	Org Name:	Department of Water Resources
RP Elevation:	1472.58	Coop Agcy Org ID:	5167
RP Reading:	385.47	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	9/30/2010 0:00:00	Elevation ID:	1602535
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1472.58	Org Name:	Department of Water Resources
RP Elevation:	1472.58	Coop Agcy Org ID:	5167
RP Reading:	392.46	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	11/30/2010 0:00:00	Elevation ID:	1602537
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1472.58	Org Name:	Department of Water Resources
RP Elevation:	1472.58	Coop Agcy Org ID:	5167
RP Reading:	393.78	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	9/14/2009 0:00:00	Elevation ID:	1602526

Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1472.58	Org Name:	Department of Water Resources
RP Elevation:	1472.58	Coop Agcy Org ID:	5167
RP Reading:	385.08	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	3/8/2006 0:00:00	Elevation ID:	1602510
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1472.58	Org Name:	Department of Water Resources
RP Elevation:	1472.58	Coop Agcy Org ID:	5167
RP Reading:	400.64	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	12/10/2007 0:00:00	Elevation ID:	1602499
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1472.58	Org Name:	Department of Water Resources
RP Elevation:	1472.58	Coop Agcy Org ID:	5167
RP Reading:	372.5	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	12/12/2005 0:00:00	Elevation ID:	1602513
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y

Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1472.58	Org Name:	Department of Water Resources
RP Elevation:	1472.58	Coop Agcy Org ID:	5167
RP Reading:	405.68	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	8/2/2006 0:00:00	Elevation ID:	1602485
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1472.58	Org Name:	Department of Water Resources
RP Elevation:	1472.58	Coop Agcy Org ID:	5167
RP Reading:	390.5	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	5/10/2007 0:00:00	Elevation ID:	1602492
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1472.58	Org Name:	Department of Water Resources
RP Elevation:	1472.58	Coop Agcy Org ID:	5167
RP Reading:	374.12	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	6/23/2008 0:00:00	Elevation ID:	1602496
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK

Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1472.58	Org Name:	Department of Water Resources
RP Elevation:	1472.58	Coop Agcy Org ID:	5167
RP Reading:	374.84	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	2/11/2009 0:00:00	Elevation ID:	1602519
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1472.58	Org Name:	Department of Water Resources
RP Elevation:	1472.58	Coop Agcy Org ID:	5167
RP Reading:	380.44	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	7/15/2010 0:00:00	Elevation ID:	1602534
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1472.58	Org Name:	Department of Water Resources
RP Elevation:	1472.58	Coop Agcy Org ID:	5167
RP Reading:	391.02	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	11/3/2009 0:00:00	Elevation ID:	1602528
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y

Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1472.58	Org Name:	Department of Water Resources
RP Elevation:	1472.58	Coop Agcy Org ID:	5167
RP Reading:	386.15	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	10/4/2006 0:00:00	Elevation ID:	1602506
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1472.58	Org Name:	Department of Water Resources
RP Elevation:	1472.58	Coop Agcy Org ID:	5167
RP Reading:	386.7	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	5/8/2008 0:00:00	Elevation ID:	1602504
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1472.58	Org Name:	Department of Water Resources
RP Elevation:	1472.58	Coop Agcy Org ID:	5167
RP Reading:	374.75	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	7/7/2009 0:00:00	Elevation ID:	1602523
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1

GS Elevation:	1472.58	Org Name:	Department of Water Resources
RP Elevation:	1472.58	Coop Agcy Org ID:	5167
RP Reading:	383.61	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	4/24/2006 0:00:00	Elevation ID:	1602509
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1472.58	Org Name:	Department of Water Resources
RP Elevation:	1472.58	Coop Agcy Org ID:	5167
RP Reading:	397.25	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	8/15/2007 0:00:00	Elevation ID:	1602495
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1472.58	Org Name:	Department of Water Resources
RP Elevation:	1472.58	Coop Agcy Org ID:	5167
RP Reading:	372.33	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	4/23/2010 0:00:00	Elevation ID:	1602532
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1472.58	Org Name:	Department of Water Resources
RP Elevation:	1472.58	Coop Agcy Org ID:	5167

RP Reading:	389.78	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	10/20/2010 0:00:00	Elevation ID:	1602536
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1472.58	Org Name:	Department of Water Resources
RP Elevation:	1472.58	Coop Agcy Org ID:	5167
RP Reading:	392.9	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	9/7/2006 0:00:00	Elevation ID:	1602486
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1472.58	Org Name:	Department of Water Resources
RP Elevation:	1472.58	Coop Agcy Org ID:	5167
RP Reading:	388.2	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	9/14/2007 0:00:00	Elevation ID:	1602484
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1472.58	Org Name:	Department of Water Resources
RP Elevation:	1472.58	Coop Agcy Org ID:	5167
RP Reading:	372.35	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	

WS Reading:	0		

Meas Date:	11/29/2007 0:00:00	Elevation ID:	1602498
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1472.58	Org Name:	Department of Water Resources
RP Elevation:	1472.58	Coop Agcy Org ID:	5167
RP Reading:	372.65	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	2/8/2006 0:00:00	Elevation ID:	1602511
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1472.58	Org Name:	Department of Water Resources
RP Elevation:	1472.58	Coop Agcy Org ID:	5167
RP Reading:	402.25	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	6/12/2006 0:00:00	Elevation ID:	1602514
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1472.58	Org Name:	Department of Water Resources
RP Elevation:	1472.58	Coop Agcy Org ID:	5167
RP Reading:	393.9	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	8/5/2008 0:00:00	Elevation ID:	1602505
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1472.58	Org Name:	Department of Water Resources
RP Elevation:	1472.58	Coop Agcy Org ID:	5167
RP Reading:	376.46	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	12/2/2008 0:00:00	Elevation ID:	1602517
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1472.58	Org Name:	Department of Water Resources
RP Elevation:	1472.58	Coop Agcy Org ID:	5167
RP Reading:	378.97	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	5/26/2006 0:00:00	Elevation ID:	1602508
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1472.58	Org Name:	Department of Water Resources
RP Elevation:	1472.58	Coop Agcy Org ID:	5167
RP Reading:	394.93	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	7/12/2006 0:00:00	Elevation ID:	1602494
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown

Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1472.58	Org Name:	Department of Water Resources
RP Elevation:	1472.58	Coop Agcy Org ID:	5167
RP Reading:	391.83	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	7/13/2007 0:00:00	Elevation ID:	1602507
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1472.58	Org Name:	Department of Water Resources
RP Elevation:	1472.58	Coop Agcy Org ID:	5167
RP Reading:	372.83	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	2/22/2010 0:00:00	Elevation ID:	1602530
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1472.58	Org Name:	Department of Water Resources
RP Elevation:	1472.58	Coop Agcy Org ID:	5167
RP Reading:	388.66	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	1/19/2006 0:00:00	Elevation ID:	1602512
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7

Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1472.58	Org Name:	Department of Water Resources
RP Elevation:	1472.58	Coop Agcy Org ID:	5167
RP Reading:	403.56	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	6/8/2007 0:00:00	Elevation ID:	1602493
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1472.58	Org Name:	Department of Water Resources
RP Elevation:	1472.58	Coop Agcy Org ID:	5167
RP Reading:	373.3	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	12/11/2009 0:00:00	Elevation ID:	1602529
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1472.58	Org Name:	Department of Water Resources
RP Elevation:	1472.58	Coop Agcy Org ID:	5167
RP Reading:	387.13	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Map Key	Direction	Distance (mi)	Distance (ft)	Elevation (ft)	DB
2	NNW	0.40	2,090.35	1,473.37	WATER WELLS

Site Code:	341414N1174798W001	County Name:	San Bernardino
State Well No:	01N06W26K002S	Latitude:	34.1414

CASGEM Station ID:	25117	Longitude:	-117.4798
Station Use Desc:	Unknown	Basin ID:	199
Loc Well Designate:		Basin CD:	8-002.01
Total Depth (ft):		Basin Desc:	Chino
Is Voluntary Rprt:	Yes	Basin Region Code:	8
Completion Rpt No:		Basin Region Desc:	North Lahontan
Loc Method:	Unknown	Basin Region Actv:	Y
Loc Accuracy:	Unknown	Basin Region Order:	8

--Details--

Meas Date:	7/12/2006 0:00:00	Elevation ID:	1602450
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1472.58	Org Name:	Department of Water Resources
RP Elevation:	1472.58	Coop Agcy Org ID:	5167
RP Reading:	573.55	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	11/7/2008 0:00:00	Elevation ID:	1602460
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1472.58	Org Name:	Department of Water Resources
RP Elevation:	1472.58	Coop Agcy Org ID:	5167
RP Reading:	552.31	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	4/9/2009 0:00:00	Elevation ID:	1602464
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y

Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1472.58	Org Name:	Department of Water Resources
RP Elevation:	1472.58	Coop Agcy Org ID:	5167
RP Reading:	580.72	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	6/12/2006 0:00:00	Elevation ID:	1602458
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1472.58	Org Name:	Department of Water Resources
RP Elevation:	1472.58	Coop Agcy Org ID:	5167
RP Reading:	570.48	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	12/12/2005 0:00:00	Elevation ID:	1602451
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1472.58	Org Name:	Department of Water Resources
RP Elevation:	1472.58	Coop Agcy Org ID:	5167
RP Reading:	551.04	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	4/24/2006 0:00:00	Elevation ID:	1602447
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1

GS Elevation:	1472.58	Org Name:	Department of Water Resources
RP Elevation:	1472.58	Coop Agcy Org ID:	5167
RP Reading:	565.43	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	4/4/2007 0:00:00	Elevation ID:	1602442
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1472.58	Org Name:	Department of Water Resources
RP Elevation:	1472.58	Coop Agcy Org ID:	5167
RP Reading:	591.68	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	5/8/2008 0:00:00	Elevation ID:	1602431
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1472.58	Org Name:	Department of Water Resources
RP Elevation:	1472.58	Coop Agcy Org ID:	5167
RP Reading:	510.81	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	8/5/2008 0:00:00	Elevation ID:	1602429
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1472.58	Org Name:	Department of Water Resources
RP Elevation:	1472.58	Coop Agcy Org ID:	5167

RP Reading:	519.32	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	8/25/2009 0:00:00	Elevation ID:	1602468
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1472.58	Org Name:	Department of Water Resources
RP Elevation:	1472.58	Coop Agcy Org ID:	5167
RP Reading:	562.78	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	4/23/2010 0:00:00	Elevation ID:	1602476
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1472.58	Org Name:	Department of Water Resources
RP Elevation:	1472.58	Coop Agcy Org ID:	5167
RP Reading:	572.76	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	7/15/2010 0:00:00	Elevation ID:	1602478
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1472.58	Org Name:	Department of Water Resources
RP Elevation:	1472.58	Coop Agcy Org ID:	5167
RP Reading:	583.07	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	

WS Reading:	0		

Meas Date:	8/2/2006 0:00:00	Elevation ID:	1602443
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1472.58	Org Name:	Department of Water Resources
RP Elevation:	1472.58	Coop Agcy Org ID:	5167
RP Reading:	575.4	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	10/4/2006 0:00:00	Elevation ID:	1602453
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1472.58	Org Name:	Department of Water Resources
RP Elevation:	1472.58	Coop Agcy Org ID:	5167
RP Reading:	580.34	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	7/7/2009 0:00:00	Elevation ID:	1602466
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1472.58	Org Name:	Department of Water Resources
RP Elevation:	1472.58	Coop Agcy Org ID:	5167
RP Reading:	556.1	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	11/3/2009 0:00:00	Elevation ID:	1602471
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1472.58	Org Name:	Department of Water Resources
RP Elevation:	1472.58	Coop Agcy Org ID:	5167
RP Reading:	587.43	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	1/28/2010 0:00:00	Elevation ID:	1602473
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1472.58	Org Name:	Department of Water Resources
RP Elevation:	1472.58	Coop Agcy Org ID:	5167
RP Reading:	577.64	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	8/15/2007 0:00:00	Elevation ID:	1602441
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1472.58	Org Name:	Department of Water Resources
RP Elevation:	1472.58	Coop Agcy Org ID:	5167
RP Reading:	594.8	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	4/14/2008 0:00:00	Elevation ID:	1602432
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown

Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1472.58	Org Name:	Department of Water Resources
RP Elevation:	1472.58	Coop Agcy Org ID:	5167
RP Reading:	512.3	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	9/14/2009 0:00:00	Elevation ID:	1602469
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1472.58	Org Name:	Department of Water Resources
RP Elevation:	1472.58	Coop Agcy Org ID:	5167
RP Reading:	566.43	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	3/12/2007 0:00:00	Elevation ID:	1602428
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1472.58	Org Name:	Department of Water Resources
RP Elevation:	1472.58	Coop Agcy Org ID:	5167
RP Reading:	589.4	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	11/6/2006 0:00:00	Elevation ID:	1602454
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7

Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1472.58	Org Name:	Department of Water Resources
RP Elevation:	1472.58	Coop Agcy Org ID:	5167
RP Reading:	581.65	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	6/8/2007 0:00:00	Elevation ID:	1602440
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1472.58	Org Name:	Department of Water Resources
RP Elevation:	1472.58	Coop Agcy Org ID:	5167
RP Reading:	593	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	6/23/2008 0:00:00	Elevation ID:	1602430
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1472.58	Org Name:	Department of Water Resources
RP Elevation:	1472.58	Coop Agcy Org ID:	5167
RP Reading:	511.35	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	9/30/2008 0:00:00	Elevation ID:	1602459
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown

Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1472.58	Org Name:	Department of Water Resources
RP Elevation:	1472.58	Coop Agcy Org ID:	5167
RP Reading:	544.37	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	1/10/2008 0:00:00	Elevation ID:	1602435
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1472.58	Org Name:	Department of Water Resources
RP Elevation:	1472.58	Coop Agcy Org ID:	5167
RP Reading:	536.9	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	3/6/2008 0:00:00	Elevation ID:	1602433
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1472.58	Org Name:	Department of Water Resources
RP Elevation:	1472.58	Coop Agcy Org ID:	5167
RP Reading:	529.08	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	1/9/2009 0:00:00	Elevation ID:	1602462
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown

Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1472.58	Org Name:	Department of Water Resources
RP Elevation:	1472.58	Coop Agcy Org ID:	5167
RP Reading:	567.59	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	5/14/2009 0:00:00	Elevation ID:	1602465
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1472.58	Org Name:	Department of Water Resources
RP Elevation:	1472.58	Coop Agcy Org ID:	5167
RP Reading:	556.72	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	2/22/2010 0:00:00	Elevation ID:	1602474
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1472.58	Org Name:	Department of Water Resources
RP Elevation:	1472.58	Coop Agcy Org ID:	5167
RP Reading:	563.25	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	11/30/2010 0:00:00	Elevation ID:	1602482
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1472.58	Org Name:	Department of Water Resources

RP Elevation:	1472.58	Coop Agcy Org ID:	5167
RP Reading:	591.71	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	7/13/2007 0:00:00	Elevation ID:	1602439
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1472.58	Org Name:	Department of Water Resources
RP Elevation:	1472.58	Coop Agcy Org ID:	5167
RP Reading:	588.4	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	2/7/2008 0:00:00	Elevation ID:	1602434
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1472.58	Org Name:	Department of Water Resources
RP Elevation:	1472.58	Coop Agcy Org ID:	5167
RP Reading:	535.02	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	10/14/2009 0:00:00	Elevation ID:	1602470
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1472.58	Org Name:	Department of Water Resources
RP Elevation:	1472.58	Coop Agcy Org ID:	5167
RP Reading:	570.12	Coop Org Name:	United States Geological Survey

Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	8/12/2010 0:00:00	Elevation ID:	1602479
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1472.58	Org Name:	Department of Water Resources
RP Elevation:	1472.58	Coop Agcy Org ID:	5167
RP Reading:	584.89	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	5/26/2006 0:00:00	Elevation ID:	1602448
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1472.58	Org Name:	Department of Water Resources
RP Elevation:	1472.58	Coop Agcy Org ID:	5167
RP Reading:	568.32	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	3/30/2010 0:00:00	Elevation ID:	1602475
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1472.58	Org Name:	Department of Water Resources
RP Elevation:	1472.58	Coop Agcy Org ID:	5167
RP Reading:	569.75	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	9/14/2007 0:00:00	Elevation ID:	1602438
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1472.58	Org Name:	Department of Water Resources
RP Elevation:	1472.58	Coop Agcy Org ID:	5167
RP Reading:	598.9	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	1/19/2006 0:00:00	Elevation ID:	1602444
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1472.58	Org Name:	Department of Water Resources
RP Elevation:	1472.58	Coop Agcy Org ID:	5167
RP Reading:	557.15	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	2/8/2006 0:00:00	Elevation ID:	1602445
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1472.58	Org Name:	Department of Water Resources
RP Elevation:	1472.58	Coop Agcy Org ID:	5167
RP Reading:	558.8	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	11/29/2007 0:00:00	Elevation ID:	1602437

Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1472.58	Org Name:	Department of Water Resources
RP Elevation:	1472.58	Coop Agcy Org ID:	5167
RP Reading:	590.76	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	2/11/2009 0:00:00	Elevation ID:	1602463
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1472.58	Org Name:	Department of Water Resources
RP Elevation:	1472.58	Coop Agcy Org ID:	5167
RP Reading:	573.16	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	9/30/2010 0:00:00	Elevation ID:	1602480
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1472.58	Org Name:	Department of Water Resources
RP Elevation:	1472.58	Coop Agcy Org ID:	5167
RP Reading:	587.95	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	12/6/2006 0:00:00	Elevation ID:	1602455
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y

Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1472.58	Org Name:	Department of Water Resources
RP Elevation:	1472.58	Coop Agcy Org ID:	5167
RP Reading:	585.5	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	5/10/2007 0:00:00	Elevation ID:	1602449
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1472.58	Org Name:	Department of Water Resources
RP Elevation:	1472.58	Coop Agcy Org ID:	5167
RP Reading:	593.86	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	12/10/2007 0:00:00	Elevation ID:	1602436
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1472.58	Org Name:	Department of Water Resources
RP Elevation:	1472.58	Coop Agcy Org ID:	5167
RP Reading:	591.7	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	8/12/2009 0:00:00	Elevation ID:	1602467
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK

Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1472.58	Org Name:	Department of Water Resources
RP Elevation:	1472.58	Coop Agcy Org ID:	5167
RP Reading:	560.08	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	3/8/2006 0:00:00	Elevation ID:	1602446
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1472.58	Org Name:	Department of Water Resources
RP Elevation:	1472.58	Coop Agcy Org ID:	5167
RP Reading:	561.07	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	9/7/2006 0:00:00	Elevation ID:	1602452
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1472.58	Org Name:	Department of Water Resources
RP Elevation:	1472.58	Coop Agcy Org ID:	5167
RP Reading:	578.05	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	2/13/2007 0:00:00	Elevation ID:	1602457
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y

Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1472.58	Org Name:	Department of Water Resources
RP Elevation:	1472.58	Coop Agcy Org ID:	5167
RP Reading:	589.5	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	12/11/2009 0:00:00	Elevation ID:	1602472
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1472.58	Org Name:	Department of Water Resources
RP Elevation:	1472.58	Coop Agcy Org ID:	5167
RP Reading:	591.6	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	5/28/2010 0:00:00	Elevation ID:	1602477
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1472.58	Org Name:	Department of Water Resources
RP Elevation:	1472.58	Coop Agcy Org ID:	5167
RP Reading:	577.94	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	10/20/2010 0:00:00	Elevation ID:	1602481
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1

GS Elevation:	1472.58	Org Name:	Department of Water Resources
RP Elevation:	1472.58	Coop Agcy Org ID:	5167
RP Reading:	589.68	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	12/2/2008 0:00:00	Elevation ID:	1602461
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1472.58	Org Name:	Department of Water Resources
RP Elevation:	1472.58	Coop Agcy Org ID:	5167
RP Reading:	557.35	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	1/16/2007 0:00:00	Elevation ID:	1602456
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1472.58	Org Name:	Department of Water Resources
RP Elevation:	1472.58	Coop Agcy Org ID:	5167
RP Reading:	587.18	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	10/9/2007 0:00:00	Elevation ID:	1602427
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1472.58	Org Name:	Department of Water Resources
RP Elevation:	1472.58	Coop Agcy Org ID:	5167

RP Reading:	599.48	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Map Key	Direction	Distance (mi)	Distance (ft)	Elevation (ft)	DB
4	NNE	0.82	4,324.32	1,544.81	WATER WELLS

Site Code:	341475N1174729W002	County Name:	San Bernardino
State Well No:	01N06W26A002S	Latitude:	34.1475
CASGEM Station ID:	25115	Longitude:	-117.4729
Station Use Desc:	Unknown	Basin ID:	199
Loc Well Designate:		Basin CD:	8-002.01
Total Depth (ft):		Basin Desc:	Chino
Is Voluntary Rprt:	Yes	Basin Region Code:	8
Completion Rpt No:		Basin Region Desc:	North Lahontan
Loc Method:	Unknown	Basin Region Actv:	Y
Loc Accuracy:	Unknown	Basin Region Order:	8

--Details--

Meas Date:	8/5/2008 0:00:00	Elevation ID:	1602326
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1542.58	Org Name:	Department of Water Resources
RP Elevation:	1542.58	Coop Agcy Org ID:	5167
RP Reading:	459.27	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	4/15/2009 0:00:00	Elevation ID:	1602347
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1542.58	Org Name:	Department of Water Resources
RP Elevation:	1542.58	Coop Agcy Org ID:	5167
RP Reading:	463.73	Coop Org Name:	United States Geological Survey

Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	11/3/2009 0:00:00	Elevation ID:	1602353
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1542.58	Org Name:	Department of Water Resources
RP Elevation:	1542.58	Coop Agcy Org ID:	5167
RP Reading:	467.16	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	2/22/2010 0:00:00	Elevation ID:	1602356
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1542.58	Org Name:	Department of Water Resources
RP Elevation:	1542.58	Coop Agcy Org ID:	5167
RP Reading:	469.39	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	5/28/2010 0:00:00	Elevation ID:	1602359
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1542.58	Org Name:	Department of Water Resources
RP Elevation:	1542.58	Coop Agcy Org ID:	5167
RP Reading:	471.07	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	8/12/2010 0:00:00	Elevation ID:	1602361
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1542.58	Org Name:	Department of Water Resources
RP Elevation:	1542.58	Coop Agcy Org ID:	5167
RP Reading:	472.25	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	5/10/2007 0:00:00	Elevation ID:	1602320
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1542.58	Org Name:	Department of Water Resources
RP Elevation:	1542.58	Coop Agcy Org ID:	5167
RP Reading:	462.77	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	8/15/2007 0:00:00	Elevation ID:	1602334
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1542.58	Org Name:	Department of Water Resources
RP Elevation:	1542.58	Coop Agcy Org ID:	5167
RP Reading:	459.25	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	9/14/2007 0:00:00	Elevation ID:	1602333

Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1542.58	Org Name:	Department of Water Resources
RP Elevation:	1542.58	Coop Agcy Org ID:	5167
RP Reading:	458.96	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	3/8/2006 0:00:00	Elevation ID:	1602305
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1542.58	Org Name:	Department of Water Resources
RP Elevation:	1542.58	Coop Agcy Org ID:	5167
RP Reading:	485.89	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	1/10/2008 0:00:00	Elevation ID:	1602336
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1542.58	Org Name:	Department of Water Resources
RP Elevation:	1542.58	Coop Agcy Org ID:	5167
RP Reading:	457.77	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	9/30/2008 0:00:00	Elevation ID:	1602340
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y

Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1542.58	Org Name:	Department of Water Resources
RP Elevation:	1542.58	Coop Agcy Org ID:	5167
RP Reading:	460.09	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	1/9/2009 0:00:00	Elevation ID:	1602343
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1542.58	Org Name:	Department of Water Resources
RP Elevation:	1542.58	Coop Agcy Org ID:	5167
RP Reading:	461.79	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	4/9/2009 0:00:00	Elevation ID:	1602346
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1542.58	Org Name:	Department of Water Resources
RP Elevation:	1542.58	Coop Agcy Org ID:	5167
RP Reading:	463.08	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	3/30/2010 0:00:00	Elevation ID:	1602357
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK

Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1542.58	Org Name:	Department of Water Resources
RP Elevation:	1542.58	Coop Agcy Org ID:	5167
RP Reading:	469.97	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	5/26/2006 0:00:00	Elevation ID:	1602311
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1542.58	Org Name:	Department of Water Resources
RP Elevation:	1542.58	Coop Agcy Org ID:	5167
RP Reading:	481.94	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	12/11/2009 0:00:00	Elevation ID:	1602354
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1542.58	Org Name:	Department of Water Resources
RP Elevation:	1542.58	Coop Agcy Org ID:	5167
RP Reading:	468.05	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	12/5/2005 0:00:00	Elevation ID:	1602308
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y

Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1542.58	Org Name:	Department of Water Resources
RP Elevation:	1542.58	Coop Agcy Org ID:	5167
RP Reading:	489.32	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	10/9/2007 0:00:00	Elevation ID:	1602325
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1542.58	Org Name:	Department of Water Resources
RP Elevation:	1542.58	Coop Agcy Org ID:	5167
RP Reading:	458.32	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	5/8/2008 0:00:00	Elevation ID:	1602328
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1542.58	Org Name:	Department of Water Resources
RP Elevation:	1542.58	Coop Agcy Org ID:	5167
RP Reading:	458.2	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	7/15/2010 0:00:00	Elevation ID:	1602360
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1

GS Elevation:	1542.58	Org Name:	Department of Water Resources
RP Elevation:	1542.58	Coop Agcy Org ID:	5167
RP Reading:	471.77	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	3/29/2005 0:00:00	Elevation ID:	1602324
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1542.58	Org Name:	Department of Water Resources
RP Elevation:	1542.58	Coop Agcy Org ID:	5167
RP Reading:	491.15	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	6/23/2005 0:00:00	Elevation ID:	1602337
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1542.58	Org Name:	Department of Water Resources
RP Elevation:	1542.58	Coop Agcy Org ID:	5167
RP Reading:	491.34	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	10/12/2005 0:00:00	Elevation ID:	1602327
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1542.58	Org Name:	Department of Water Resources
RP Elevation:	1542.58	Coop Agcy Org ID:	5167

RP Reading:	490.3	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	3/6/2008 0:00:00	Elevation ID:	1602329
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1542.58	Org Name:	Department of Water Resources
RP Elevation:	1542.58	Coop Agcy Org ID:	5167
RP Reading:	457.95	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	6/12/2006 0:00:00	Elevation ID:	1602310
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1542.58	Org Name:	Department of Water Resources
RP Elevation:	1542.58	Coop Agcy Org ID:	5167
RP Reading:	481.15	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	11/6/2006 0:00:00	Elevation ID:	1602314
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1542.58	Org Name:	Department of Water Resources
RP Elevation:	1542.58	Coop Agcy Org ID:	5167
RP Reading:	473.23	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	

WS Reading:	0		

Meas Date:	3/12/2007 0:00:00	Elevation ID:	1602318
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1542.58	Org Name:	Department of Water Resources
RP Elevation:	1542.58	Coop Agcy Org ID:	5167
RP Reading:	465.8	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	7/7/2009 0:00:00	Elevation ID:	1602348
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1542.58	Org Name:	Department of Water Resources
RP Elevation:	1542.58	Coop Agcy Org ID:	5167
RP Reading:	464.94	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	1/28/2010 0:00:00	Elevation ID:	1602355
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1542.58	Org Name:	Department of Water Resources
RP Elevation:	1542.58	Coop Agcy Org ID:	5167
RP Reading:	468.83	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	10/20/2010 0:00:00	Elevation ID:	1602363
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1542.58	Org Name:	Department of Water Resources
RP Elevation:	1542.58	Coop Agcy Org ID:	5167
RP Reading:	473.49	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	8/25/2009 0:00:00	Elevation ID:	1602350
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1542.58	Org Name:	Department of Water Resources
RP Elevation:	1542.58	Coop Agcy Org ID:	5167
RP Reading:	465.95	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	12/2/2008 0:00:00	Elevation ID:	1602342
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1542.58	Org Name:	Department of Water Resources
RP Elevation:	1542.58	Coop Agcy Org ID:	5167
RP Reading:	461.16	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	3/4/2009 0:00:00	Elevation ID:	1602345
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown

Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1542.58	Org Name:	Department of Water Resources
RP Elevation:	1542.58	Coop Agcy Org ID:	5167
RP Reading:	462.64	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	2/13/2007 0:00:00	Elevation ID:	1602317
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1542.58	Org Name:	Department of Water Resources
RP Elevation:	1542.58	Coop Agcy Org ID:	5167
RP Reading:	467.35	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	2/7/2008 0:00:00	Elevation ID:	1602330
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1542.58	Org Name:	Department of Water Resources
RP Elevation:	1542.58	Coop Agcy Org ID:	5167
RP Reading:	457.79	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	9/14/2009 0:00:00	Elevation ID:	1602351
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7

Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1542.58	Org Name:	Department of Water Resources
RP Elevation:	1542.58	Coop Agcy Org ID:	5167
RP Reading:	466.23	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	10/14/2009 0:00:00	Elevation ID:	1602352
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1542.58	Org Name:	Department of Water Resources
RP Elevation:	1542.58	Coop Agcy Org ID:	5167
RP Reading:	466.63	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	9/30/2010 0:00:00	Elevation ID:	1602362
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1542.58	Org Name:	Department of Water Resources
RP Elevation:	1542.58	Coop Agcy Org ID:	5167
RP Reading:	473.05	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	6/23/2008 0:00:00	Elevation ID:	1602338
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown

Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1542.58	Org Name:	Department of Water Resources
RP Elevation:	1542.58	Coop Agcy Org ID:	5167
RP Reading:	458.35	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	11/30/2010 0:00:00	Elevation ID:	1602364
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1542.58	Org Name:	Department of Water Resources
RP Elevation:	1542.58	Coop Agcy Org ID:	5167
RP Reading:	474.37	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	8/2/2006 0:00:00	Elevation ID:	1602306
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1542.58	Org Name:	Department of Water Resources
RP Elevation:	1542.58	Coop Agcy Org ID:	5167
RP Reading:	478.48	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	1/19/2006 0:00:00	Elevation ID:	1602304
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown

Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1542.58	Org Name:	Department of Water Resources
RP Elevation:	1542.58	Coop Agcy Org ID:	5167
RP Reading:	487.75	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	9/7/2006 0:00:00	Elevation ID:	1602312
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1542.58	Org Name:	Department of Water Resources
RP Elevation:	1542.58	Coop Agcy Org ID:	5167
RP Reading:	476.38	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	4/4/2007 0:00:00	Elevation ID:	1602319
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1542.58	Org Name:	Department of Water Resources
RP Elevation:	1542.58	Coop Agcy Org ID:	5167
RP Reading:	464.45	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	11/7/2008 0:00:00	Elevation ID:	1602341
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1542.58	Org Name:	Department of Water Resources

RP Elevation:	1542.58	Coop Agcy Org ID:	5167
RP Reading:	460.72	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	8/31/2005 0:00:00	Elevation ID:	1602323
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1542.58	Org Name:	Department of Water Resources
RP Elevation:	1542.58	Coop Agcy Org ID:	5167
RP Reading:	491	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	7/12/2006 0:00:00	Elevation ID:	1602321
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1542.58	Org Name:	Department of Water Resources
RP Elevation:	1542.58	Coop Agcy Org ID:	5167
RP Reading:	479.56	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	6/8/2007 0:00:00	Elevation ID:	1602339
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1542.58	Org Name:	Department of Water Resources
RP Elevation:	1542.58	Coop Agcy Org ID:	5167
RP Reading:	461.43	Coop Org Name:	United States Geological Survey

Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	12/10/2007 0:00:00	Elevation ID:	1602307
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1542.58	Org Name:	Department of Water Resources
RP Elevation:	1542.58	Coop Agcy Org ID:	5167
RP Reading:	457.6	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	8/12/2009 0:00:00	Elevation ID:	1602349
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1542.58	Org Name:	Department of Water Resources
RP Elevation:	1542.58	Coop Agcy Org ID:	5167
RP Reading:	465.72	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	2/8/2006 0:00:00	Elevation ID:	1602303
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1542.58	Org Name:	Department of Water Resources
RP Elevation:	1542.58	Coop Agcy Org ID:	5167
RP Reading:	486.9	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	12/6/2006 0:00:00	Elevation ID:	1602315
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1542.58	Org Name:	Department of Water Resources
RP Elevation:	1542.58	Coop Agcy Org ID:	5167
RP Reading:	471.65	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	7/13/2007 0:00:00	Elevation ID:	1602335
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1542.58	Org Name:	Department of Water Resources
RP Elevation:	1542.58	Coop Agcy Org ID:	5167
RP Reading:	460.36	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	4/14/2008 0:00:00	Elevation ID:	1602322
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1542.58	Org Name:	Department of Water Resources
RP Elevation:	1542.58	Coop Agcy Org ID:	5167
RP Reading:	457.92	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	2/11/2009 0:00:00	Elevation ID:	1602344

Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1542.58	Org Name:	Department of Water Resources
RP Elevation:	1542.58	Coop Agcy Org ID:	5167
RP Reading:	462.36	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	4/24/2006 0:00:00	Elevation ID:	1602309
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1542.58	Org Name:	Department of Water Resources
RP Elevation:	1542.58	Coop Agcy Org ID:	5167
RP Reading:	483.67	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	10/4/2006 0:00:00	Elevation ID:	1602313
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1542.58	Org Name:	Department of Water Resources
RP Elevation:	1542.58	Coop Agcy Org ID:	5167
RP Reading:	475.07	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	1/16/2007 0:00:00	Elevation ID:	1602316
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y

Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1542.58	Org Name:	Department of Water Resources
RP Elevation:	1542.58	Coop Agcy Org ID:	5167
RP Reading:	469.1	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	11/29/2007 0:00:00	Elevation ID:	1602332
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1542.58	Org Name:	Department of Water Resources
RP Elevation:	1542.58	Coop Agcy Org ID:	5167
RP Reading:	457.9	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	4/23/2010 0:00:00	Elevation ID:	1602358
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1542.58	Org Name:	Department of Water Resources
RP Elevation:	1542.58	Coop Agcy Org ID:	5167
RP Reading:	470.43	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	5/27/2005 0:00:00	Elevation ID:	1602331
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK

Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1542.58	Org Name:	Department of Water Resources
RP Elevation:	1542.58	Coop Agcy Org ID:	5167
RP Reading:	490.66	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Map Key	Direction	Distance (mi)	Distance (ft)	Elevation (ft)	DB
4	NNE	0.82	4,324.32	1,544.81	WATER WELLS

Site Code:	341475N1174729W001	County Name:	San Bernardino
State Well No:	01N06W26A001S	Latitude:	34.1475
CASGEM Station ID:	25114	Longitude:	-117.4729
Station Use Desc:	Unknown	Basin ID:	199
Loc Well Designate:		Basin CD:	8-002.01
Total Depth (ft):		Basin Desc:	Chino
Is Voluntary Rprt:	Yes	Basin Region Code:	8
Completion Rpt No:		Basin Region Desc:	North Lahontan
Loc Method:	Unknown	Basin Region Actv:	Y
Loc Accuracy:	Unknown	Basin Region Order:	8

--Details--

Meas Date:	5/27/2005 0:00:00	Elevation ID:	1602271
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1542.58	Org Name:	Department of Water Resources
RP Elevation:	1542.58	Coop Agcy Org ID:	5167
RP Reading:	718.15	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	3/30/2010 0:00:00	Elevation ID:	1602295
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown

Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1542.58	Org Name:	Department of Water Resources
RP Elevation:	1542.58	Coop Agcy Org ID:	5167
RP Reading:	725.4	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	4/24/2006 0:00:00	Elevation ID:	1602266
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1542.58	Org Name:	Department of Water Resources
RP Elevation:	1542.58	Coop Agcy Org ID:	5167
RP Reading:	722.5	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	7/7/2009 0:00:00	Elevation ID:	1602286
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1542.58	Org Name:	Department of Water Resources
RP Elevation:	1542.58	Coop Agcy Org ID:	5167
RP Reading:	719.76	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	3/29/2005 0:00:00	Elevation ID:	1602272
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown

Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1542.58	Org Name:	Department of Water Resources
RP Elevation:	1542.58	Coop Agcy Org ID:	5167
RP Reading:	705.1	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	5/8/2008 0:00:00	Elevation ID:	1602260
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1542.58	Org Name:	Department of Water Resources
RP Elevation:	1542.58	Coop Agcy Org ID:	5167
RP Reading:	723.35	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	4/9/2009 0:00:00	Elevation ID:	1602284
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1542.58	Org Name:	Department of Water Resources
RP Elevation:	1542.58	Coop Agcy Org ID:	5167
RP Reading:	721.84	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	5/14/2009 0:00:00	Elevation ID:	1602285
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1542.58	Org Name:	Department of Water Resources

RP Elevation:	1542.58	Coop Agcy Org ID:	5167
RP Reading:	721.83	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	6/23/2005 0:00:00	Elevation ID:	1602270
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1542.58	Org Name:	Department of Water Resources
RP Elevation:	1542.58	Coop Agcy Org ID:	5167
RP Reading:	709.6	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	8/2/2006 0:00:00	Elevation ID:	1602264
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1542.58	Org Name:	Department of Water Resources
RP Elevation:	1542.58	Coop Agcy Org ID:	5167
RP Reading:	725.7	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	11/6/2006 0:00:00	Elevation ID:	1602253
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1542.58	Org Name:	Department of Water Resources
RP Elevation:	1542.58	Coop Agcy Org ID:	5167
RP Reading:	728.4	Coop Org Name:	United States Geological Survey

Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	5/10/2007 0:00:00	Elevation ID:	1602248
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1542.58	Org Name:	Department of Water Resources
RP Elevation:	1542.58	Coop Agcy Org ID:	5167
RP Reading:	723.8	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	4/14/2008 0:00:00	Elevation ID:	1602261
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1542.58	Org Name:	Department of Water Resources
RP Elevation:	1542.58	Coop Agcy Org ID:	5167
RP Reading:	722.81	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	9/30/2008 0:00:00	Elevation ID:	1602278
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1542.58	Org Name:	Department of Water Resources
RP Elevation:	1542.58	Coop Agcy Org ID:	5167
RP Reading:	719.17	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	11/7/2008 0:00:00	Elevation ID:	1602279
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1542.58	Org Name:	Department of Water Resources
RP Elevation:	1542.58	Coop Agcy Org ID:	5167
RP Reading:	719.27	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	3/4/2009 0:00:00	Elevation ID:	1602283
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1542.58	Org Name:	Department of Water Resources
RP Elevation:	1542.58	Coop Agcy Org ID:	5167
RP Reading:	720.16	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	12/11/2009 0:00:00	Elevation ID:	1602292
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1542.58	Org Name:	Department of Water Resources
RP Elevation:	1542.58	Coop Agcy Org ID:	5167
RP Reading:	721.46	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	2/22/2010 0:00:00	Elevation ID:	1602294

Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1542.58	Org Name:	Department of Water Resources
RP Elevation:	1542.58	Coop Agcy Org ID:	5167
RP Reading:	724.2	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	4/23/2010 0:00:00	Elevation ID:	1602296
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1542.58	Org Name:	Department of Water Resources
RP Elevation:	1542.58	Coop Agcy Org ID:	5167
RP Reading:	726.18	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	8/5/2008 0:00:00	Elevation ID:	1602258
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1542.58	Org Name:	Department of Water Resources
RP Elevation:	1542.58	Coop Agcy Org ID:	5167
RP Reading:	716.86	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	9/7/2006 0:00:00	Elevation ID:	1602255
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y

Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1542.58	Org Name:	Department of Water Resources
RP Elevation:	1542.58	Coop Agcy Org ID:	5167
RP Reading:	726.72	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	2/11/2009 0:00:00	Elevation ID:	1602282
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1542.58	Org Name:	Department of Water Resources
RP Elevation:	1542.58	Coop Agcy Org ID:	5167
RP Reading:	719.62	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	9/14/2009 0:00:00	Elevation ID:	1602289
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1542.58	Org Name:	Department of Water Resources
RP Elevation:	1542.58	Coop Agcy Org ID:	5167
RP Reading:	722.01	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	10/14/2009 0:00:00	Elevation ID:	1602290
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK

Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1542.58	Org Name:	Department of Water Resources
RP Elevation:	1542.58	Coop Agcy Org ID:	5167
RP Reading:	722.42	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	8/12/2010 0:00:00	Elevation ID:	1602299
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1542.58	Org Name:	Department of Water Resources
RP Elevation:	1542.58	Coop Agcy Org ID:	5167
RP Reading:	729.11	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	5/26/2006 0:00:00	Elevation ID:	1602275
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1542.58	Org Name:	Department of Water Resources
RP Elevation:	1542.58	Coop Agcy Org ID:	5167
RP Reading:	723.58	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	12/6/2006 0:00:00	Elevation ID:	1602243
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y

Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1542.58	Org Name:	Department of Water Resources
RP Elevation:	1542.58	Coop Agcy Org ID:	5167
RP Reading:	729.4	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	4/4/2007 0:00:00	Elevation ID:	1602246
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1542.58	Org Name:	Department of Water Resources
RP Elevation:	1542.58	Coop Agcy Org ID:	5167
RP Reading:	726.76	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	10/9/2007 0:00:00	Elevation ID:	1602241
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1542.58	Org Name:	Department of Water Resources
RP Elevation:	1542.58	Coop Agcy Org ID:	5167
RP Reading:	720.28	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	11/29/2007 0:00:00	Elevation ID:	1602254
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1

GS Elevation:	1542.58	Org Name:	Department of Water Resources
RP Elevation:	1542.58	Coop Agcy Org ID:	5167
RP Reading:	720.38	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	8/25/2009 0:00:00	Elevation ID:	1602288
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1542.58	Org Name:	Department of Water Resources
RP Elevation:	1542.58	Coop Agcy Org ID:	5167
RP Reading:	721.53	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	9/30/2010 0:00:00	Elevation ID:	1602300
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1542.58	Org Name:	Department of Water Resources
RP Elevation:	1542.58	Coop Agcy Org ID:	5167
RP Reading:	730.23	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	10/12/2005 0:00:00	Elevation ID:	1602273
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1542.58	Org Name:	Department of Water Resources
RP Elevation:	1542.58	Coop Agcy Org ID:	5167

RP Reading:	714.83	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	2/13/2007 0:00:00	Elevation ID:	1602244
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1542.58	Org Name:	Department of Water Resources
RP Elevation:	1542.58	Coop Agcy Org ID:	5167
RP Reading:	728.55	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	1/28/2010 0:00:00	Elevation ID:	1602293
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1542.58	Org Name:	Department of Water Resources
RP Elevation:	1542.58	Coop Agcy Org ID:	5167
RP Reading:	723.28	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	1/19/2006 0:00:00	Elevation ID:	1602267
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1542.58	Org Name:	Department of Water Resources
RP Elevation:	1542.58	Coop Agcy Org ID:	5167
RP Reading:	719.01	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	

WS Reading:	0		

Meas Date:	3/12/2007 0:00:00	Elevation ID:	1602245
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1542.58	Org Name:	Department of Water Resources
RP Elevation:	1542.58	Coop Agcy Org ID:	5167
RP Reading:	726.8	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	1/10/2008 0:00:00	Elevation ID:	1602277
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1542.58	Org Name:	Department of Water Resources
RP Elevation:	1542.58	Coop Agcy Org ID:	5167
RP Reading:	720.8	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	2/7/2008 0:00:00	Elevation ID:	1602263
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1542.58	Org Name:	Department of Water Resources
RP Elevation:	1542.58	Coop Agcy Org ID:	5167
RP Reading:	721.32	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	3/6/2008 0:00:00	Elevation ID:	1602262
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1542.58	Org Name:	Department of Water Resources
RP Elevation:	1542.58	Coop Agcy Org ID:	5167
RP Reading:	722.05	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	11/30/2010 0:00:00	Elevation ID:	1602302
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1542.58	Org Name:	Department of Water Resources
RP Elevation:	1542.58	Coop Agcy Org ID:	5167
RP Reading:	731.53	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	6/23/2008 0:00:00	Elevation ID:	1602259
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1542.58	Org Name:	Department of Water Resources
RP Elevation:	1542.58	Coop Agcy Org ID:	5167
RP Reading:	724.2	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	1/9/2009 0:00:00	Elevation ID:	1602281
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown

Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1542.58	Org Name:	Department of Water Resources
RP Elevation:	1542.58	Coop Agcy Org ID:	5167
RP Reading:	718.66	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	5/28/2010 0:00:00	Elevation ID:	1602297
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1542.58	Org Name:	Department of Water Resources
RP Elevation:	1542.58	Coop Agcy Org ID:	5167
RP Reading:	727.17	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	10/20/2010 0:00:00	Elevation ID:	1602301
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1542.58	Org Name:	Department of Water Resources
RP Elevation:	1542.58	Coop Agcy Org ID:	5167
RP Reading:	730.69	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	7/12/2006 0:00:00	Elevation ID:	1602257
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7

Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1542.58	Org Name:	Department of Water Resources
RP Elevation:	1542.58	Coop Agcy Org ID:	5167
RP Reading:	725.05	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	6/8/2007 0:00:00	Elevation ID:	1602249
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1542.58	Org Name:	Department of Water Resources
RP Elevation:	1542.58	Coop Agcy Org ID:	5167
RP Reading:	723.28	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	9/14/2007 0:00:00	Elevation ID:	1602252
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1542.58	Org Name:	Department of Water Resources
RP Elevation:	1542.58	Coop Agcy Org ID:	5167
RP Reading:	720.57	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	7/13/2007 0:00:00	Elevation ID:	1602250
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown

Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1542.58	Org Name:	Department of Water Resources
RP Elevation:	1542.58	Coop Agcy Org ID:	5167
RP Reading:	722.9	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	8/31/2005 0:00:00	Elevation ID:	1602269
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1542.58	Org Name:	Department of Water Resources
RP Elevation:	1542.58	Coop Agcy Org ID:	5167
RP Reading:	712.9	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	6/12/2006 0:00:00	Elevation ID:	1602247
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1542.58	Org Name:	Department of Water Resources
RP Elevation:	1542.58	Coop Agcy Org ID:	5167
RP Reading:	724.1	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	3/8/2006 0:00:00	Elevation ID:	1602276
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown

Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1542.58	Org Name:	Department of Water Resources
RP Elevation:	1542.58	Coop Agcy Org ID:	5167
RP Reading:	720.86	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	10/4/2006 0:00:00	Elevation ID:	1602251
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1542.58	Org Name:	Department of Water Resources
RP Elevation:	1542.58	Coop Agcy Org ID:	5167
RP Reading:	727.5	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	8/12/2009 0:00:00	Elevation ID:	1602287
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1542.58	Org Name:	Department of Water Resources
RP Elevation:	1542.58	Coop Agcy Org ID:	5167
RP Reading:	721.02	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	11/3/2009 0:00:00	Elevation ID:	1602291
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1542.58	Org Name:	Department of Water Resources

RP Elevation:	1542.58	Coop Agcy Org ID:	5167
RP Reading:	720.14	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	12/5/2005 0:00:00	Elevation ID:	1602268
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1542.58	Org Name:	Department of Water Resources
RP Elevation:	1542.58	Coop Agcy Org ID:	5167
RP Reading:	717.21	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	2/8/2006 0:00:00	Elevation ID:	1602242
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1542.58	Org Name:	Department of Water Resources
RP Elevation:	1542.58	Coop Agcy Org ID:	5167
RP Reading:	719.76	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	1/16/2007 0:00:00	Elevation ID:	1602274
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1542.58	Org Name:	Department of Water Resources
RP Elevation:	1542.58	Coop Agcy Org ID:	5167
RP Reading:	730.32	Coop Org Name:	United States Geological Survey

Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	8/15/2007 0:00:00	Elevation ID:	1602265
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1542.58	Org Name:	Department of Water Resources
RP Elevation:	1542.58	Coop Agcy Org ID:	5167
RP Reading:	722.27	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	12/10/2007 0:00:00	Elevation ID:	1602256
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1542.58	Org Name:	Department of Water Resources
RP Elevation:	1542.58	Coop Agcy Org ID:	5167
RP Reading:	720.71	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	12/2/2008 0:00:00	Elevation ID:	1602280
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1542.58	Org Name:	Department of Water Resources
RP Elevation:	1542.58	Coop Agcy Org ID:	5167
RP Reading:	719.04	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	7/15/2010 0:00:00	Elevation ID:	1602298
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1542.58	Org Name:	Department of Water Resources
RP Elevation:	1542.58	Coop Agcy Org ID:	5167
RP Reading:	728.29	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Map Key	Direction	Distance (mi)	Distance (ft)	Elevation (ft)	DB
4	NNE	0.82	4,324.32	1,544.81	WATER WELLS

Site Code:	341475N1174729W003	County Name:	San Bernardino
State Well No:	01N06W26A003S	Latitude:	34.1475
CASGEM Station ID:	25116	Longitude:	-117.4729
Station Use Desc:	Unknown	Basin ID:	199
Loc Well Designate:		Basin CD:	8-002.01
Total Depth (ft):		Basin Desc:	Chino
Is Voluntary Rprt:	Yes	Basin Region Code:	8
Completion Rpt No:		Basin Region Desc:	North Lahontan
Loc Method:	Unknown	Basin Region Actv:	Y
Loc Accuracy:	Unknown	Basin Region Order:	8

--Details--

Meas Date:	8/31/2005 0:00:00	Elevation ID:	1602387
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1542.58	Org Name:	Department of Water Resources
RP Elevation:	1542.58	Coop Agcy Org ID:	5167
RP Reading:	490.2	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	4/4/2007 0:00:00	Elevation ID:	1602371
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1542.58	Org Name:	Department of Water Resources
RP Elevation:	1542.58	Coop Agcy Org ID:	5167
RP Reading:	463.52	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	11/30/2010 0:00:00	Elevation ID:	1602426
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1542.58	Org Name:	Department of Water Resources
RP Elevation:	1542.58	Coop Agcy Org ID:	5167
RP Reading:	473.48	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	2/13/2007 0:00:00	Elevation ID:	1602392
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1542.58	Org Name:	Department of Water Resources
RP Elevation:	1542.58	Coop Agcy Org ID:	5167
RP Reading:	466.42	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	11/7/2008 0:00:00	Elevation ID:	1602403
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown

Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1542.58	Org Name:	Department of Water Resources
RP Elevation:	1542.58	Coop Agcy Org ID:	5167
RP Reading:	459.68	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	8/25/2009 0:00:00	Elevation ID:	1602412
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1542.58	Org Name:	Department of Water Resources
RP Elevation:	1542.58	Coop Agcy Org ID:	5167
RP Reading:	464.92	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	7/15/2010 0:00:00	Elevation ID:	1602422
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1542.58	Org Name:	Department of Water Resources
RP Elevation:	1542.58	Coop Agcy Org ID:	5167
RP Reading:	470.86	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	3/4/2009 0:00:00	Elevation ID:	1602407
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7

Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1542.58	Org Name:	Department of Water Resources
RP Elevation:	1542.58	Coop Agcy Org ID:	5167
RP Reading:	461.62	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	8/12/2010 0:00:00	Elevation ID:	1602423
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1542.58	Org Name:	Department of Water Resources
RP Elevation:	1542.58	Coop Agcy Org ID:	5167
RP Reading:	471.32	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	9/30/2010 0:00:00	Elevation ID:	1602424
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1542.58	Org Name:	Department of Water Resources
RP Elevation:	1542.58	Coop Agcy Org ID:	5167
RP Reading:	472.15	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	5/27/2005 0:00:00	Elevation ID:	1602385
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown

Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1542.58	Org Name:	Department of Water Resources
RP Elevation:	1542.58	Coop Agcy Org ID:	5167
RP Reading:	490.86	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	10/12/2005 0:00:00	Elevation ID:	1602388
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1542.58	Org Name:	Department of Water Resources
RP Elevation:	1542.58	Coop Agcy Org ID:	5167
RP Reading:	490.45	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	12/5/2005 0:00:00	Elevation ID:	1602389
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1542.58	Org Name:	Department of Water Resources
RP Elevation:	1542.58	Coop Agcy Org ID:	5167
RP Reading:	488.55	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	1/19/2006 0:00:00	Elevation ID:	1602401
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown

Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1542.58	Org Name:	Department of Water Resources
RP Elevation:	1542.58	Coop Agcy Org ID:	5167
RP Reading:	486.97	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	9/7/2006 0:00:00	Elevation ID:	1602396
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1542.58	Org Name:	Department of Water Resources
RP Elevation:	1542.58	Coop Agcy Org ID:	5167
RP Reading:	475.55	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	6/8/2007 0:00:00	Elevation ID:	1602369
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1542.58	Org Name:	Department of Water Resources
RP Elevation:	1542.58	Coop Agcy Org ID:	5167
RP Reading:	460.5	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	12/2/2008 0:00:00	Elevation ID:	1602404
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1542.58	Org Name:	Department of Water Resources

RP Elevation:	1542.58	Coop Agcy Org ID:	5167
RP Reading:	460.12	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	1/9/2009 0:00:00	Elevation ID:	1602405
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1542.58	Org Name:	Department of Water Resources
RP Elevation:	1542.58	Coop Agcy Org ID:	5167
RP Reading:	460.78	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	6/23/2005 0:00:00	Elevation ID:	1602386
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1542.58	Org Name:	Department of Water Resources
RP Elevation:	1542.58	Coop Agcy Org ID:	5167
RP Reading:	490.58	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	4/24/2006 0:00:00	Elevation ID:	1602393
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1542.58	Org Name:	Department of Water Resources
RP Elevation:	1542.58	Coop Agcy Org ID:	5167
RP Reading:	482.9	Coop Org Name:	United States Geological Survey

Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	10/14/2009 0:00:00	Elevation ID:	1602414
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1542.58	Org Name:	Department of Water Resources
RP Elevation:	1542.58	Coop Agcy Org ID:	5167
RP Reading:	465.57	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	3/29/2005 0:00:00	Elevation ID:	1602384
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1542.58	Org Name:	Department of Water Resources
RP Elevation:	1542.58	Coop Agcy Org ID:	5167
RP Reading:	490.4	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	10/4/2006 0:00:00	Elevation ID:	1602397
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1542.58	Org Name:	Department of Water Resources
RP Elevation:	1542.58	Coop Agcy Org ID:	5167
RP Reading:	474.22	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	10/9/2007 0:00:00	Elevation ID:	1602366
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1542.58	Org Name:	Department of Water Resources
RP Elevation:	1542.58	Coop Agcy Org ID:	5167
RP Reading:	457.32	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	11/3/2009 0:00:00	Elevation ID:	1602415
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1542.58	Org Name:	Department of Water Resources
RP Elevation:	1542.58	Coop Agcy Org ID:	5167
RP Reading:	466.22	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	7/13/2007 0:00:00	Elevation ID:	1602372
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1542.58	Org Name:	Department of Water Resources
RP Elevation:	1542.58	Coop Agcy Org ID:	5167
RP Reading:	459.4	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	7/7/2009 0:00:00	Elevation ID:	1602410

Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1542.58	Org Name:	Department of Water Resources
RP Elevation:	1542.58	Coop Agcy Org ID:	5167
RP Reading:	463.94	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	12/11/2009 0:00:00	Elevation ID:	1602416
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1542.58	Org Name:	Department of Water Resources
RP Elevation:	1542.58	Coop Agcy Org ID:	5167
RP Reading:	467.1	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	2/22/2010 0:00:00	Elevation ID:	1602418
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1542.58	Org Name:	Department of Water Resources
RP Elevation:	1542.58	Coop Agcy Org ID:	5167
RP Reading:	468.46	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	4/23/2010 0:00:00	Elevation ID:	1602420
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y

Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1542.58	Org Name:	Department of Water Resources
RP Elevation:	1542.58	Coop Agcy Org ID:	5167
RP Reading:	469.5	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	10/20/2010 0:00:00	Elevation ID:	1602425
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1542.58	Org Name:	Department of Water Resources
RP Elevation:	1542.58	Coop Agcy Org ID:	5167
RP Reading:	472.6	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	2/8/2006 0:00:00	Elevation ID:	1602391
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1542.58	Org Name:	Department of Water Resources
RP Elevation:	1542.58	Coop Agcy Org ID:	5167
RP Reading:	486.11	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	6/12/2006 0:00:00	Elevation ID:	1602379
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK

Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1542.58	Org Name:	Department of Water Resources
RP Elevation:	1542.58	Coop Agcy Org ID:	5167
RP Reading:	480.33	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	1/16/2007 0:00:00	Elevation ID:	1602400
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1542.58	Org Name:	Department of Water Resources
RP Elevation:	1542.58	Coop Agcy Org ID:	5167
RP Reading:	468.2	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	3/8/2006 0:00:00	Elevation ID:	1602383
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1542.58	Org Name:	Department of Water Resources
RP Elevation:	1542.58	Coop Agcy Org ID:	5167
RP Reading:	485.1	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	5/26/2006 0:00:00	Elevation ID:	1602394
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y

Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1542.58	Org Name:	Department of Water Resources
RP Elevation:	1542.58	Coop Agcy Org ID:	5167
RP Reading:	481.1	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	9/14/2007 0:00:00	Elevation ID:	1602367
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1542.58	Org Name:	Department of Water Resources
RP Elevation:	1542.58	Coop Agcy Org ID:	5167
RP Reading:	457.78	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	9/14/2009 0:00:00	Elevation ID:	1602413
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1542.58	Org Name:	Department of Water Resources
RP Elevation:	1542.58	Coop Agcy Org ID:	5167
RP Reading:	465.26	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	1/28/2010 0:00:00	Elevation ID:	1602417
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1

GS Elevation:	1542.58	Org Name:	Department of Water Resources
RP Elevation:	1542.58	Coop Agcy Org ID:	5167
RP Reading:	467.89	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	3/30/2010 0:00:00	Elevation ID:	1602419
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1542.58	Org Name:	Department of Water Resources
RP Elevation:	1542.58	Coop Agcy Org ID:	5167
RP Reading:	469.01	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	8/2/2006 0:00:00	Elevation ID:	1602390
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1542.58	Org Name:	Department of Water Resources
RP Elevation:	1542.58	Coop Agcy Org ID:	5167
RP Reading:	477.62	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	3/12/2007 0:00:00	Elevation ID:	1602377
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1542.58	Org Name:	Department of Water Resources
RP Elevation:	1542.58	Coop Agcy Org ID:	5167

RP Reading:	464.77	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	3/6/2008 0:00:00	Elevation ID:	1602382
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1542.58	Org Name:	Department of Water Resources
RP Elevation:	1542.58	Coop Agcy Org ID:	5167
RP Reading:	456.9	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	6/23/2008 0:00:00	Elevation ID:	1602374
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1542.58	Org Name:	Department of Water Resources
RP Elevation:	1542.58	Coop Agcy Org ID:	5167
RP Reading:	457.62	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	8/12/2009 0:00:00	Elevation ID:	1602411
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1542.58	Org Name:	Department of Water Resources
RP Elevation:	1542.58	Coop Agcy Org ID:	5167
RP Reading:	464.65	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	

WS Reading:	0		

Meas Date:	5/28/2010 0:00:00	Elevation ID:	1602421
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1542.58	Org Name:	Department of Water Resources
RP Elevation:	1542.58	Coop Agcy Org ID:	5167
RP Reading:	470.15	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	11/6/2006 0:00:00	Elevation ID:	1602398
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1542.58	Org Name:	Department of Water Resources
RP Elevation:	1542.58	Coop Agcy Org ID:	5167
RP Reading:	472.4	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	5/10/2007 0:00:00	Elevation ID:	1602365
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1542.58	Org Name:	Department of Water Resources
RP Elevation:	1542.58	Coop Agcy Org ID:	5167
RP Reading:	461.82	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	2/7/2008 0:00:00	Elevation ID:	1602378
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1542.58	Org Name:	Department of Water Resources
RP Elevation:	1542.58	Coop Agcy Org ID:	5167
RP Reading:	456.73	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	5/14/2009 0:00:00	Elevation ID:	1602409
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1542.58	Org Name:	Department of Water Resources
RP Elevation:	1542.58	Coop Agcy Org ID:	5167
RP Reading:	462.75	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	8/5/2008 0:00:00	Elevation ID:	1602373
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1542.58	Org Name:	Department of Water Resources
RP Elevation:	1542.58	Coop Agcy Org ID:	5167
RP Reading:	458.25	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	11/29/2007 0:00:00	Elevation ID:	1602381
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown

Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1542.58	Org Name:	Department of Water Resources
RP Elevation:	1542.58	Coop Agcy Org ID:	5167
RP Reading:	456.9	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	12/10/2007 0:00:00	Elevation ID:	1602380
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1542.58	Org Name:	Department of Water Resources
RP Elevation:	1542.58	Coop Agcy Org ID:	5167
RP Reading:	456.6	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	2/11/2009 0:00:00	Elevation ID:	1602406
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1542.58	Org Name:	Department of Water Resources
RP Elevation:	1542.58	Coop Agcy Org ID:	5167
RP Reading:	461.33	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	7/12/2006 0:00:00	Elevation ID:	1602395
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7

Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1542.58	Org Name:	Department of Water Resources
RP Elevation:	1542.58	Coop Agcy Org ID:	5167
RP Reading:	478.74	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	12/6/2006 0:00:00	Elevation ID:	1602399
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1542.58	Org Name:	Department of Water Resources
RP Elevation:	1542.58	Coop Agcy Org ID:	5167
RP Reading:	470.8	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	8/15/2007 0:00:00	Elevation ID:	1602368
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1542.58	Org Name:	Department of Water Resources
RP Elevation:	1542.58	Coop Agcy Org ID:	5167
RP Reading:	458.3	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	1/10/2008 0:00:00	Elevation ID:	1602370
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown

Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1542.58	Org Name:	Department of Water Resources
RP Elevation:	1542.58	Coop Agcy Org ID:	5167
RP Reading:	456.68	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	4/14/2008 0:00:00	Elevation ID:	1602376
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1542.58	Org Name:	Department of Water Resources
RP Elevation:	1542.58	Coop Agcy Org ID:	5167
RP Reading:	456.88	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	5/8/2008 0:00:00	Elevation ID:	1602375
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1542.58	Org Name:	Department of Water Resources
RP Elevation:	1542.58	Coop Agcy Org ID:	5167
RP Reading:	457.15	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	9/30/2008 0:00:00	Elevation ID:	1602402
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown

Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1542.58	Org Name:	Department of Water Resources
RP Elevation:	1542.58	Coop Agcy Org ID:	5167
RP Reading:	459.08	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Meas Date:	4/9/2009 0:00:00	Elevation ID:	1602408
Meas Method ID:	7	Elev Meas Mtd Desc:	Unknown
Meas Accuracy ID:	5	Elev Meas Mtd Actv:	Y
Meas Issue ID:		Elev Meas Mtd Order:	7
Meas Issue Code:		Elev Meas Mtd Cd:	UNK
Meas Issue Desc:		Elev Accuracy Desc:	Water level accuracy is unknown
Meas Issue Actv:		Elev Accuracy Actv:	Y
Meas Issue Class:		Elev Accuracy Cd:	Unknown
Meas Issue Tp Ord:		Org ID:	1
GS Elevation:	1542.58	Org Name:	Department of Water Resources
RP Elevation:	1542.58	Coop Agcy Org ID:	5167
RP Reading:	462.1	Coop Org Name:	United States Geological Survey
Casgem Reading:	N	Comments:	
WS Reading:	0		

Radon Information

This section lists any relevant radon information found for the target property.

Federal EPA Radon Zone for *SAN BERNARDINO* County: **2**

Zone 1: Counties with predicted average indoor radon screening levels greater than 4 pCi/L
Zone 2: Counties with predicted average indoor radon screening levels from 2 to 4 pCi/L
Zone 3: Counties with predicted average indoor radon screening levels less than 2 pCi/L

Federal Area Radon Information for *SAN BERNARDINO* County

No Measures/Homes:	17
Geometric Mean:	0.5
Arithmetic Mean:	0.7
Median:	0.7
Standard Deviation:	1
Maximum:	2.9
% >4 pCi/L:	0
% >20 pCi/L:	0
Notes on Data Table:	TABLE 1. Screening indoor radon data from the EPA/State Residential Radon Survey of California conducted during 1989-90. Data represent 2-7 day charcoal canister measurements from the lowest level of each home tested.

Federal Sources

FEMA National Flood Hazard Layer — **FEMA FLOOD**

The National Flood Hazard Layer (NFHL) data incorporates Flood Insurance Rate Map (FIRM) databases published by the Federal Emergency Management Agency (FEMA), and any Letters Of Map Revision (LOMRs) that have been issued against those databases since their publication date. The FIRM Database is the digital, geospatial version of the flood hazard information shown on the published paper FIRMs. The FIRM Database depicts flood risk information and supporting data used to develop the risk data. The FIRM Database is derived from Flood Insurance Studies (FISs), previously published FIRMs, flood hazard analyses performed in support of the FISs and FIRMs, and new mapping data, where available.

Indoor Radon Data — **INDOOR RADON**

Indoor radon measurements tracked by the Environmental Protection Agency(EPA) and the State Residential Radon Survey.

Public Water Systems Violations and Enforcement Data — **PWSV**

List of drinking water violations and enforcement actions from the Safe Drinking Water Information System (SDWIS) made available by the Drinking Water Protection Division of the US EPA's Office of Groundwater and Drinking Water. Enforcement sensitive actions are not included in the data released by the EPA. Address information provided in SWDIS may correspond either with the physical location of the water system, or with a contact address.

Radon Zone Level — **RADON ZONE**

Areas showing the level of Radon Zones (level 1, 2 or 3) by county. This data is maintained by the Environmental Protection Agency (EPA).

Safe Drinking Water Information System (SDWIS) — **SDWIS**

The Safe Drinking Water Information System (SDWIS) contains information about public water systems as reported to US Environmental Protection Agency (EPA) by the states. Addresses may correspond with the location of the water system, or with a contact address.

Soil Survey Geographic database — **SSURGO**

The Soil Survey Geographic database (SSURGO) contains information about soil as collected by the National Cooperative Soil Survey at the Natural Resources Conservation Service (NRCS). Soil maps outline areas called map units. The map units are linked to soil properties in a database. Each map unit may contain one to three major components and some minor components.

U.S. Fish & Wildlife Service Wetland Data — **US WETLAND**

The U.S. Fish & Wildlife Service Wetland layer represents the approximate location and type of wetlands and deepwater habitats in the United States.

USGS Current Topo — **US TOPO**

US Topo topographic maps are produced by the National Geospatial Program of the U.S. Geological Survey (USGS). The project was launched in late 2009, and the term "US Topo" refers specifically to quadrangle topographic maps published in 2009 and later.

USGS Geology — **US GEOLOGY**

Seamless maps depicting geological information provided by the United States Geological Survey (USGS).

USGS National Water Information System — **FED USGS**

The U.S. Geological Survey (USGS)'s National Water Information System (NWIS) is the nation's principal repository of water resources data. This database includes comprehensive information of well-construction details, time-series data for gage height, streamflow, groundwater level, and precipitation and water use data.

State Sources

Oil and Gas Wells — **OGW**

A list of Oil and Gas well locations. This is provided by California's Department of Conservation Division of

Oil, Gas and Geothermal Resources.

Public Water Supply Wells **PWSW**

List of community water supply wells in California. This data was made available by California Department of Water Resources, Division of Statewide Integrated Water Management, who indicates that the management of the data in an ongoing project, and some county data is not represented. Location information is provided using the Public Land Survey System (PLSS) and is subject to the accuracy limitations inherent to the PLSS system.

Water Wells **WATER WELLS**

A list of water wells maintained by the Department of Water Resources (DWR) Water Data Library.

Well Investigation Program Case List **WIP**

The Well Investigation Program (WIP) was developed by the State Water Resources Control Board (SWRCB) to locate, assess and remediate sources of solvent contamination impacting drinking water wells. This list contains WIP cases (active and historical) for the San Gabriel and San Fernando Valley area and was provided by the Los Angeles Regional Water Quality Control Board.

Liability Notice

Reliance on information in Report: The Physical Setting Report (PSR) DOES NOT replace a full Phase I Environmental Site Assessment but is solely intended to be used as a review of environmental databases and physical characteristics for the site or adjacent properties.

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Appendix F - Regulatory Records

Robert Hansen

From: Robert Hansen
Sent: Monday, February 11, 2019 3:51 PM
To: 'Jone.Barrio@dtsc.ca.gov'
Subject: Records REquest - Fontana, CA

Can you please complete a search for records for San Bernardino County APNs 0228-021-08 and 0228-021-09 in Fontana, CA. Thank you.

Rob Hansen
ofc main – (909) 484-2205
cell – (909) 202-1662
10532 Acacia Street, Suite B-6
Rancho Cucamonga, CA 91730
Leighton
Solutions You Can Build On
Geotechnical – Environmental- Materials Testing & Construction Inspection

Jared Blumenfeld
Secretary for
Environmental Protection

Department of Toxic Substances Control

Meredith Williams, Acting Director
5796 Corporate Avenue
Cypress, California 90630

Gavin Newsom
Governor

February 12, 2019

Mr. Rob Hansen
Leighton
Rancho Cucamonga
rhansen@leightongroup.com

Site: 0228-021-08 &
0228-021-09, Fontana
PR4-021219-04

Dear: Mr. Hansen:

We have received your Public Records Act Request for records from Department of Toxic Substances Control.

After a thorough review of our files we have found that, no such records exist at this office pertaining to the site/facility referenced above.

We would like to inform you about Envirostor, a database that provides information and documents on over 5,000 DTSC cleanup sites. Envirostor can be accessed at: http://www.envirostor.dtsc.ca.gov/public.

If you have any questions, would like further information regarding your request, please contact our Regional Records Coordinator at (714) 484-5336 | future request please: fax: 714.484.5318 or email both: Jone.Barrio@dtsc.ca.gov & Julie.Johnson@dtsc.ca.gov

Sincerely,

Jone Barrio

Jone Barrio
Regional Records Coordinator
DTSC-Cypress Administrative Services

Printed on Recycled Paper

Robert Hansen

From: Robert Hansen
Sent: Monday, February 11, 2019 3:53 PM
To: 'Glenn.castillo@dtsc.ca.gov'
Subject: Records Request - Fontana, CA

Can you please complete a search for records for San Bernardino County APNs 0228-021-08 and 0228-021-09 in Fontana, CA. Thank you.

Rob Hansen
ofc main – (909) 484-2205
cell – (909) 202-1662
10532 Acacia Street, Suite B-6
Rancho Cucamonga, CA 91730
Leighton
Solutions You Can Build On
Geotechnical – Environmental- Materials Testing & Construction Inspection

Department of Toxic Substances Control

Jared Blumenfeld
Secretary for
Environmental Protection

Meredith Williams, Ph.D.
Acting Director
9211 Oakdale Avenue
Chatsworth, California 91311

Gavin Newsom
Governor

February 12, 2019

Mr. Rob Hansen
Leighton
10532 Acacia Street, Suite B-6
Rancho Cucamonga, CA 91786

APNs: 0228-021-08 and 0228-021-09, Fontana, CA
PR3-021119-04

Dear Mr. Hansen:

We have received your Public Records Act Request for records from the Department of Toxic Substances Control.

After a thorough review of our files we have found that no such records exist at this office pertaining to the sites/facilities referenced above.

We would also like to inform you about Envirostor, a database that provides information and documents on over 5,000 DTSC cleanup sites. Envirostor can be accessed at: http://www.envirostor.dtsc.ca.gov/public. Also, a computer is available in the Central Files of each DTSC Regional Office for use by community members to view Envirostor.

If you have any questions or would like further information regarding your request, please contact me at (818) 717-6522.

Sincerely,

Glenn Castillo /JVT
Regional Records Coordinator

Printed on Recycled Paper

Robert Hansen

From: WB-RB8-FileReview8 <FileReview8@waterboards.ca.gov>
Sent: Wednesday, February 13, 2019 8:40 AM
To: Robert Hansen
Subject: RE: Records Review Request

Good morning,

Unfortunately, we do not use APN numbers or cross streets to maintain our files. We only use facility names and/or physical address numbers to locate files. If you can provide a numerical address or facility name, we can carry out your request.

If we can be of further assistance, please do not hesitate to contact us again.

Thank you,
File Review Desk
3737 Main St. Suite 500
Riverside, CA 92501

From: Robert Hansen <rhansen@leightongroup.com>
Sent: Monday, February 11, 2019 3:47 PM
To: WB-RB8-FileReview8 <FileReview8@waterboards.ca.gov>
Subject: Records Review Request

Can you please complete a search for records for San Bernardino County APNs 0228-021-08 and 0228-021-09 in Fontana, CA. Thank you.

Rob Hansen
ofc main – (909) 484-2205
cell – (909) 202-1662
10532 Acacia Street, Suite B-6
Rancho Cucamonga, CA 91730
Leighton
Solutions You Can Build On
Geotechnical – Environmental- Materials Testing & Construction Inspection

SAN BERNARDINO COUNTY FIRE PROTECTION DISTRICT

620 South "E" Street • San Bernardino, CA 92415-0153 • (909) 386-8401 • Fax (909) 386-8460

Office of the Fire Marshal
Hazardous Materials Division
sbcfire.org

Mark A. Hartwig
Fire Chief/Fire Warden

Michael A. Horton
Fire Marshal

February 21, 2019

19020805 Fontana Nrl Leighton

LEIGHTON & ASSOCIATES, INC.
10532 ACACIA ST., SUITE B-6
RANCHO CUCAMONGA, CA 91730

ATTENTION: **ROBERT HANSEN**

SUBJECT: **CERTIFIED RECORD SEARCH FINDINGS**
APN#S: 0228-021-08-0000, 0228-021-09-0000
(14973 AND 15035 HIGHLAND AVENUE), FONTANA, CALIFORNIA

This is to confirm that the OFM Hazardous Materials Division (HMD) has searched its records for any file(s) pertaining to the subject property, as described in your request, and finds that no records exist for the above site description(s).

Records maintained by OFM-HMD date back to mid-1980's. Records searched include:

- facilities with hazardous waste generator permits, hazardous materials handler permits, underground storage tank permits, universal waste permits, tiered permits, EPCRA facilities, RMP facilities, Cal ARP facilities, and/or waste recycling generators, including inactive and/or out of business records, as well as non-permitted facility actions;
- logs of permits issued for the removal, installation, and/or modification of underground storage tanks;
- records and databases pertaining to illicit dumping, spill reports and release notifications, and complaints;
- incidents responded to by the hazardous materials emergency response team;
- and sites undergoing remediation for contaminated soil and/or groundwater.

Donna Juday

DONNA JUDAY
Office Specialist
Office of the Fire Marshal
Hazardous Materials Division

BOARD OF DIRECTORS

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Appendix G - Historical Use Documentation

ENVIRONMENTAL RISK INFORMATION SERVICES

HISTORICAL AERIALS

Project Property:	*Stratham Homes - NW Corner of S. Highland & Hemlock Avenues* *NW Corner of Hemlock and Highland Aves.* *Fontana, CA 92336*
Project No:	*12282.002*
Requested By:	*Leighton and Associates, Inc.*
Order No:	*20190211126*
Date Completed:	*February 12, 2019*

Environmental Risk Information Services
A division of Glacier Media Inc.
1.866.517.5204 | info@erisinfo.com | erisinfo.com

Search Results Summary

Year	Source	Scale	Comment
2016	**NAIP** - National Agriculture Information Program	1"=500'	
2012	**NAIP** - National Agriculture Information Program	1"=500'	
2010	**NAIP** - National Agriculture Information Program	1"=500'	
2005	**NAIP** - National Agriculture Information Program	1"=500'	
2002	**USGS** - US Geological Survey	1"=500'	
1994	**USGS** - US Geological Survey	1"=500'	
1985	**NHAP** - National High Altitude Photography	1"=500'	
1980	**USGS** - US Geological Survey	1"=500'	
1975	**USGS** - US Geological Survey	1"=500'	
1966	**USGS** - US Geological Survey	1"=500'	
1959	**ASCS** - Agriculture and Soil Conservation Service	1"=500'	
1954	**AMS** - Army Mapping Service	1"=500'	
1948	**USAF** - United States Air Force	1"=500'	
1938	**ASCS** - Agriculture and Soil Conservation Service	1"=500'	

Order No: 20190211126

Year: **2016**
Source: **NAIP**
Scale: **1" to 500'**
Comments:

Site Address: NW Corner of Hemlock and Highland Aves. Fontana CA
Approx Center: 34.13499 / -117.477

N

ERIS
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www.erisinfo.com | 1.866.517.5204

Order No: 20190211126

Year: **2012**
Source: **NAIP**
Scale: **1" to 500'**
Comments:

Site Address: NW Corner of Hemlock and Highland Aves. Fontana CA
Approx Center: 34.13499 / -117.477

N

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ENVIRONMENTAL RISK INFORMATION SERVICES

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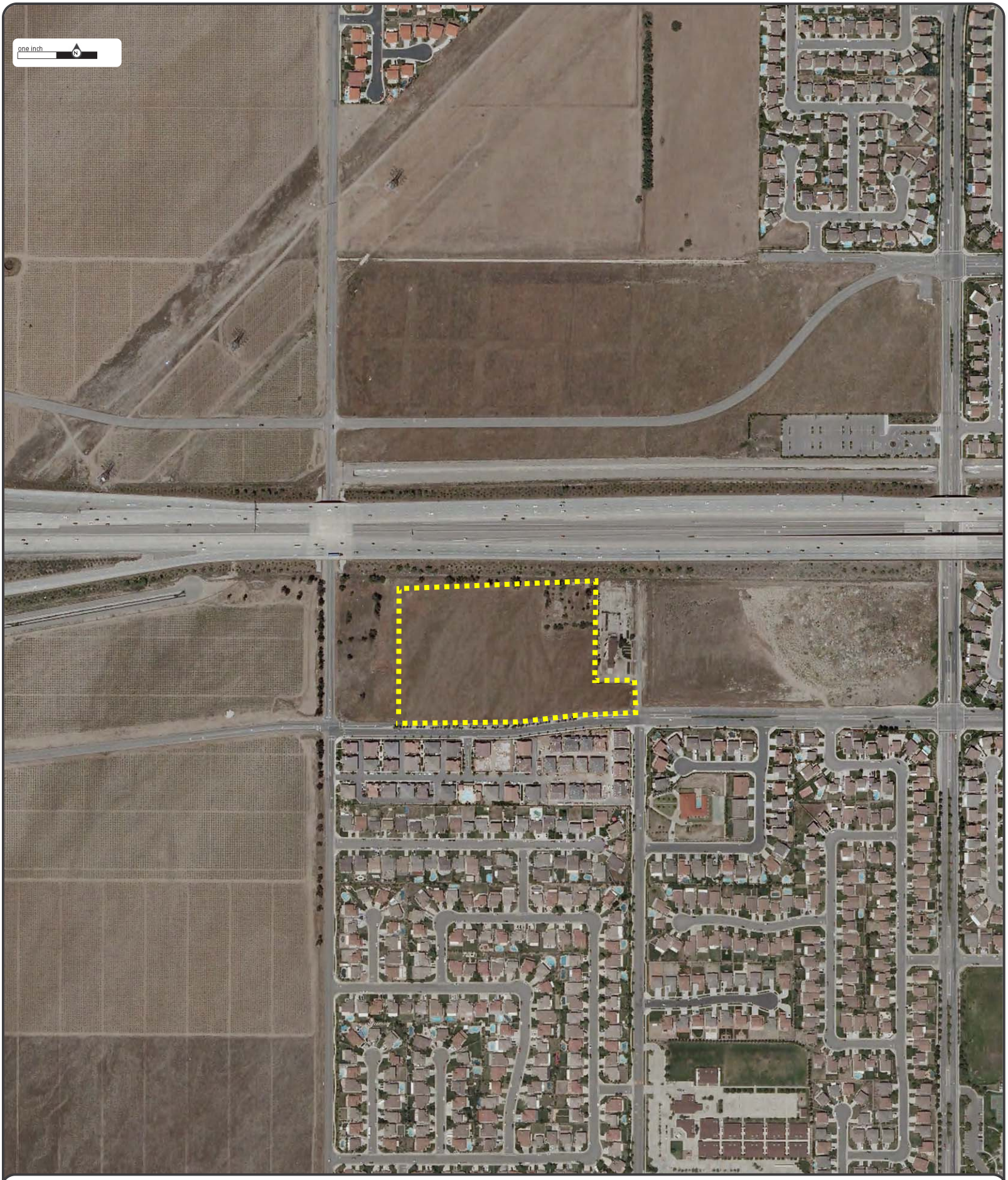

Order No: 20190211126

Year: **2010**
Source: **NAIP**
Scale: **1" to 500'**
Comments:

Site Address: NW Corner of Hemlock and Highland Aves. Fontana CA
Approx Center: 34.13499 / -117.477

N

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Order No: 20190211126

Year: **2005**
Source: **NAIP**
Scale: **1" to 500'**
Comments:

Site Address: NW Corner of Hemlock and Highland Aves. Fontana CA
Approx Center: 34.13499 / -117.477

N

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Order No: 20190211126

Year: **2002**
Source: **USGS**
Scale: **1" to 500'**
Comments:

Site Address: NW Corner of Hemlock and Highland Aves. Fontana CA
Approx Center: 34.13499 / -117.477

N

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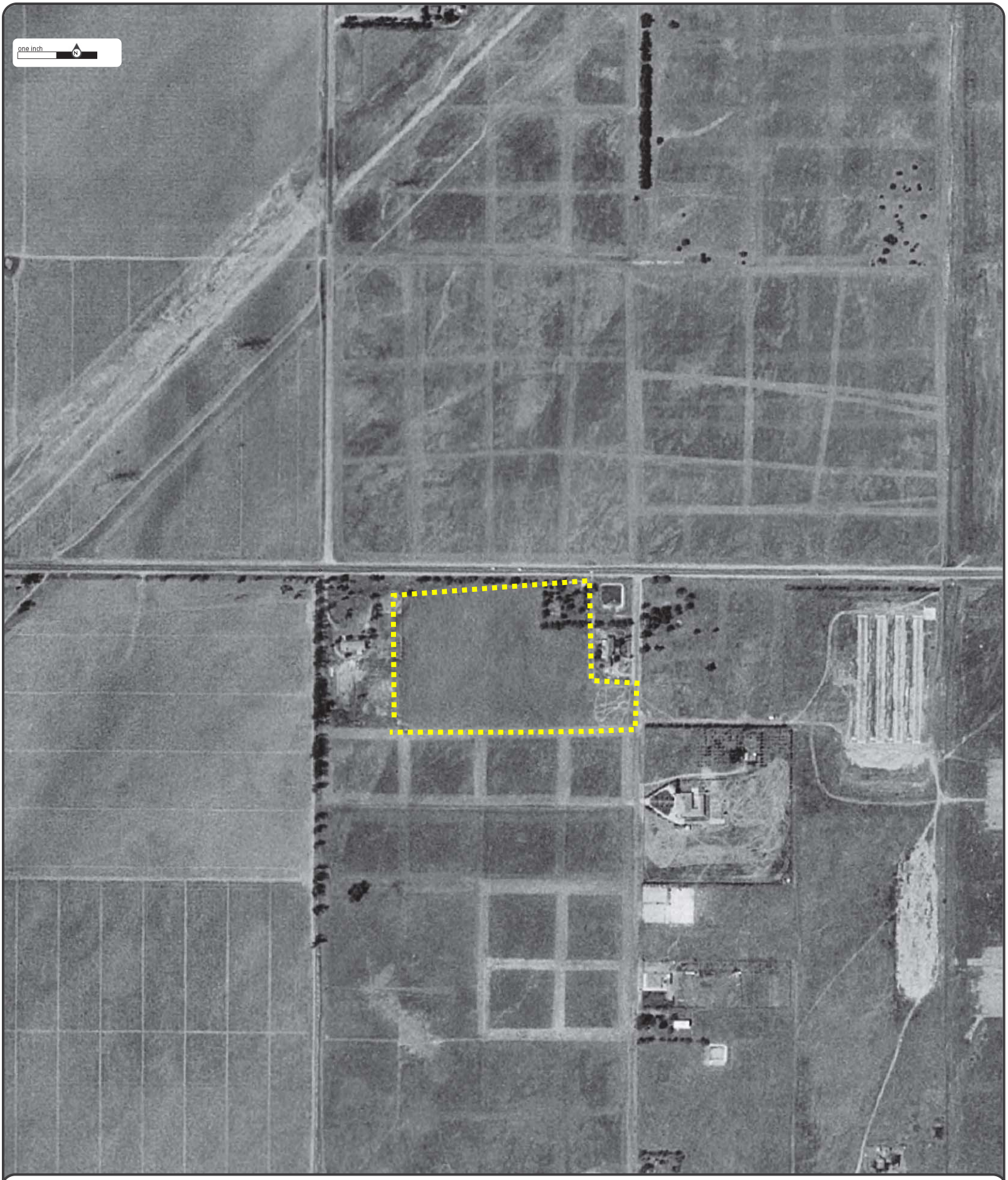

Order No: 20190211126

Year: **1994**
Source: **USGS**
Scale: **1" to 500'**
Comments:

Site Address: NW Corner of Hemlock and Highland Aves. Fontana CA
Approx Center: 34.13499 / -117.477

N

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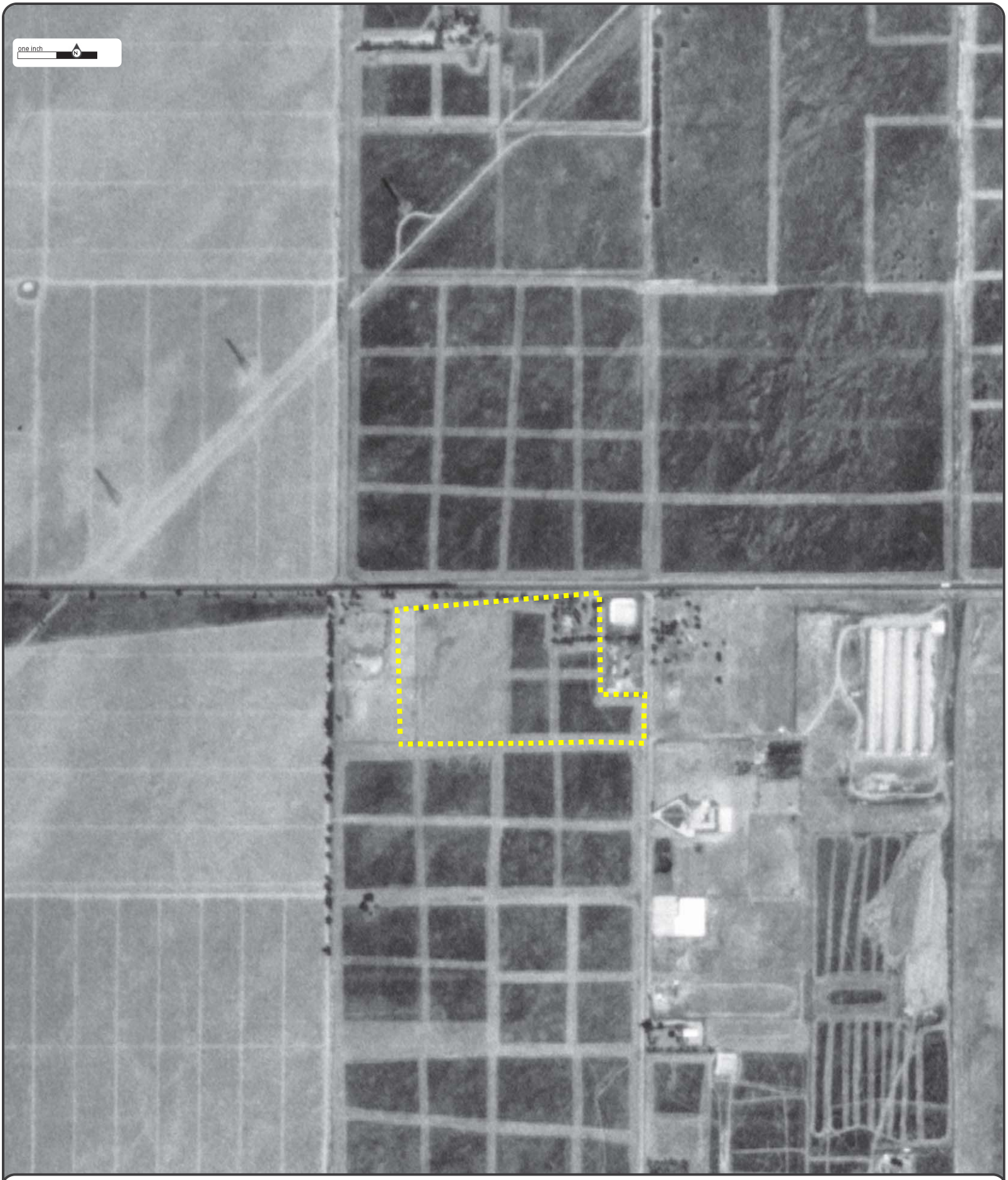

Order No: 20190211126

Year: **1985**
Source: **NHAP**
Scale: **1" to 500'**
Comments:

Site Address: NW Corner of Hemlock and Highland Aves. Fontana CA
Approx Center: 34.13499 / -117.477

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Order No: 20190211126

Year: **1980**
Source: **USGS**
Scale: **1" to 500'**
Comments:

Site Address: NW Corner of Hemlock and Highland Aves. Fontana CA
Approx Center: 34.13499 / -117.477

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Order No: 20190211126

Year: **1975**
Source: **USGS**
Scale: **1" to 500'**
Comments:

Site Address: NW Corner of Hemlock and Highland Aves. Fontana CA
Approx Center: 34.13499 / -117.477

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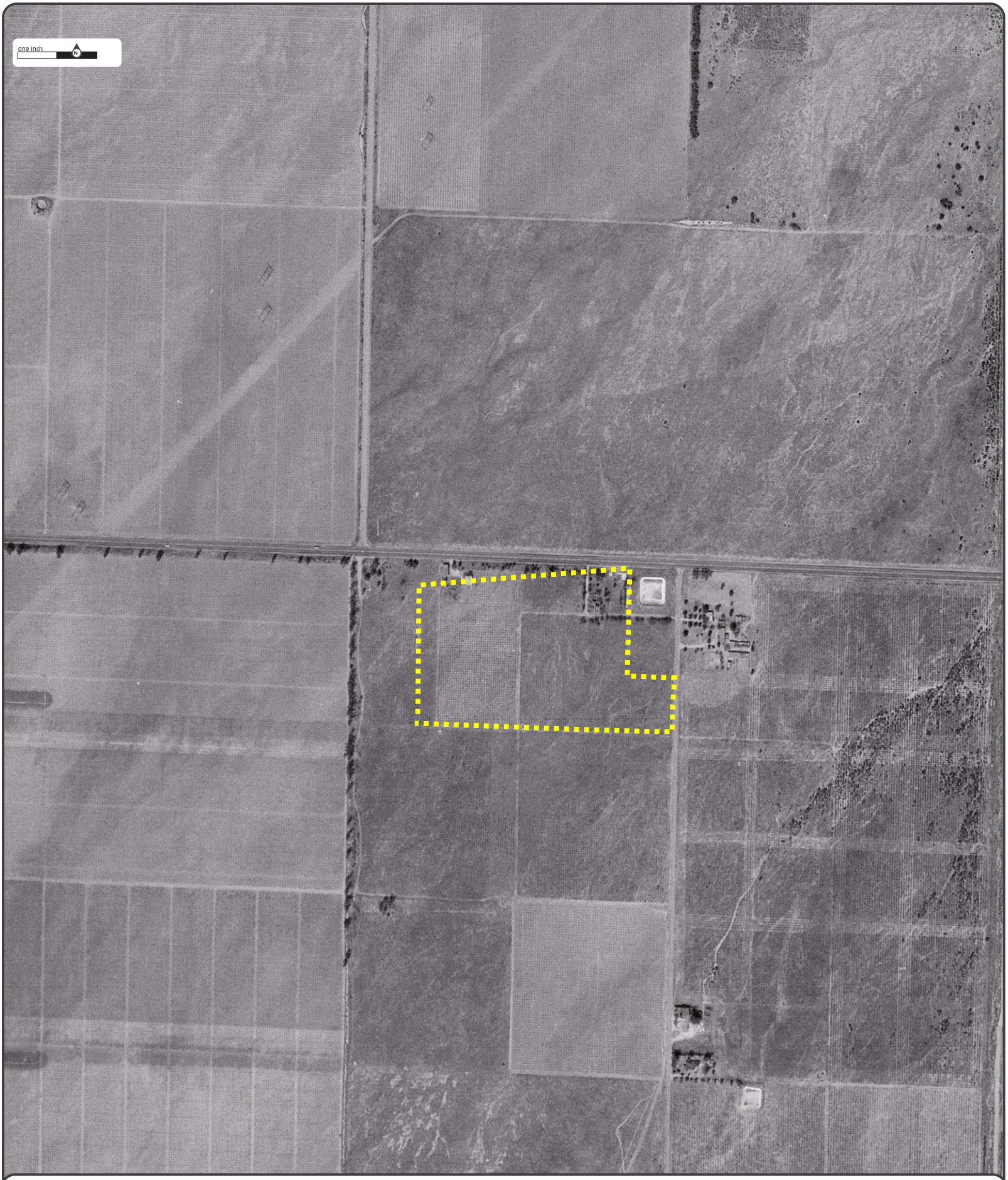

Order No: 20190211126

Year: **1966**
Source: **USGS**
Scale: **1" to 500'**
Comments:

Site Address: NW Corner of Hemlock and Highland Aves. Fontana CA
Approx Center: 34.13499 / -117.477

N

ERIS
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Order No: 20190211126

Year: **1959**
Source: **ASCS**
Scale: **1" to 500'**
Comments:

Site Address: NW Corner of Hemlock and Highland Aves. Fontana CA
Approx Center: 34.13499 / -117.477

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ERIS
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Order No: 20190211126

Year: **1954**
Source: **AMS**
Scale: **1" to 500'**
Comments:

Site Address: NW Corner of Hemlock and Highland Aves. Fontana CA
Approx Center: 34.13499 / -117.477

N

ERIS
ENVIRONMENTAL RISK INFORMATION SERVICES

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Order No: 20190211126

Year: **1948**
Source: **USAF**
Scale: **1" to 500'**
Comments:

Site Address: NW Corner of Hemlock and Highland Aves. Fontana CA
Approx Center: 34.13499 / -117.477

N

ERIS
ENVIRONMENTAL RISK INFORMATION SERVICES

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Order No: 20190211126

Year: **1938**
Source: **ASCS**
Scale: **1" to 500'**
Comments:

Site Address: NW Corner of Hemlock and Highland Aves. Fontana CA
Approx Center: 34.13499 / -117.477

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ENVIRONMENTAL RISK INFORMATION SERVICES

TOPOGRAPHIC MAPS

Project Property:	*Stratham Homes - NW Corner of S. Highland Hemlock Avenues* *NW Corner of Hemlock and Highland Aves.* *Fontana CA 92336*
Project No:	*12282.002*
Requested By:	*Leighton and Associates, Inc.*
Order No:	*20190211126*
Date Completed:	*February 12, 2019*

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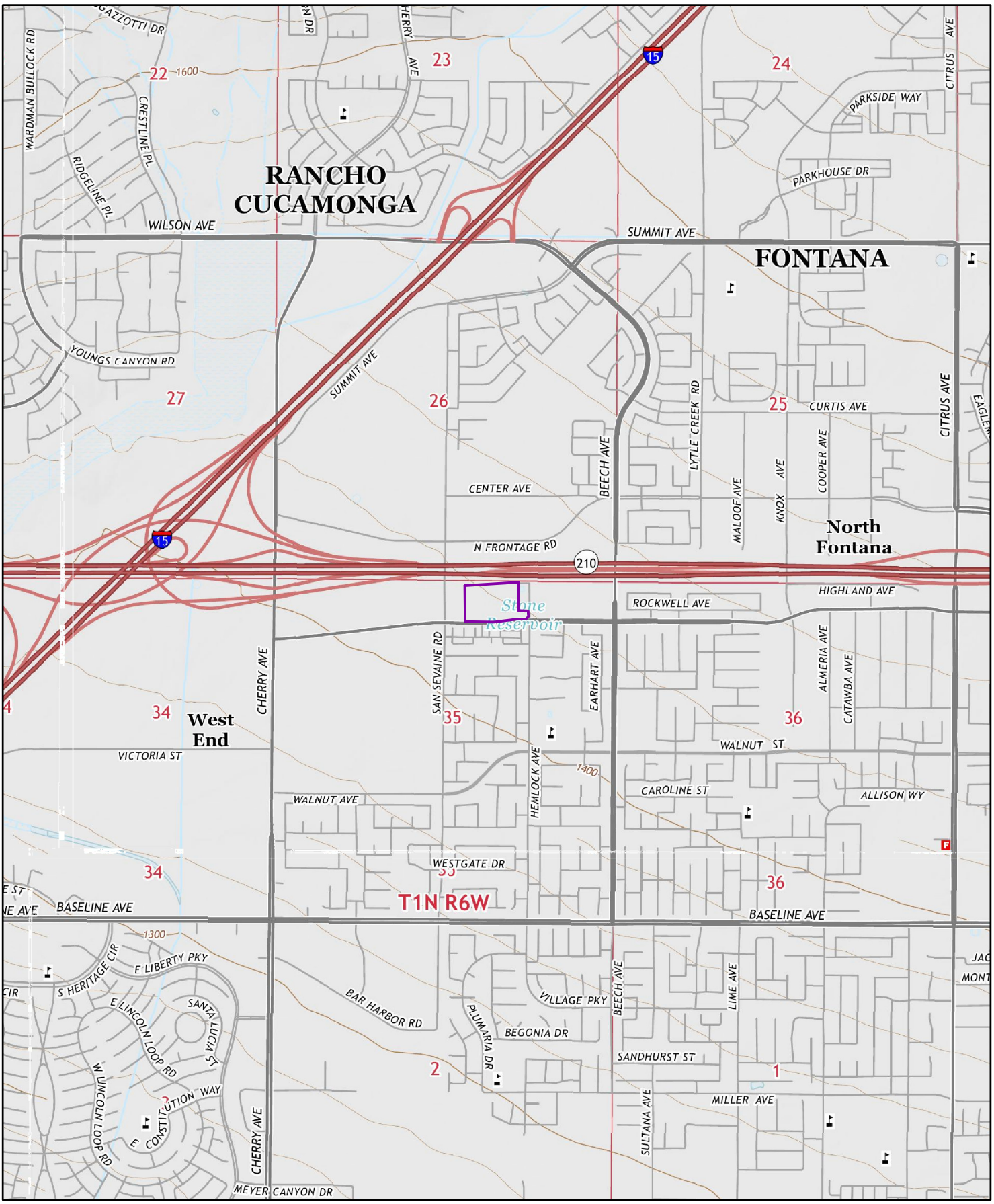
We have searched USGS collections of current topographic maps and historical topographic maps for the project property. Below is a list of maps found for the project property and adjacent area. Maps are from 7.5 and 15 minute topographic map series, if available.

Year	Map Series
2015	7.5
1996	7.5
1988	7.5
1980	7.5
1966	7.5
1954	7.5
1941	7.5
1936	7.5
1954	15
1901	15
1898	15
1896	15

Topographic Maps included in this report are produced by the USGS and are to be used for research purposes including a phase I report. Maps are not to be resold as commercial property.

No warranty of Accuracy or Liability for ERIS: *The information contained in this report has been produced by ERIS Information Inc. (in the US) and ERIS Information Limited Partnership (in Canada), both doing business as 'ERIS', using Topographic Maps produced by the USGS. This maps contained herein does not purport to be and does not constitute a guarantee of the accuracy of the information contained herein. Although ERIS has endeavored to present you with information that is accurate, ERIS disclaims, any and all liability for any errors, omissions, or inaccuracies in such information and data, whether attributable to inadvertence, negligence or otherwise, and for any consequences arising therefrom. Liability on the part of ERIS is limited to the monetary value paid for this report.*



2015

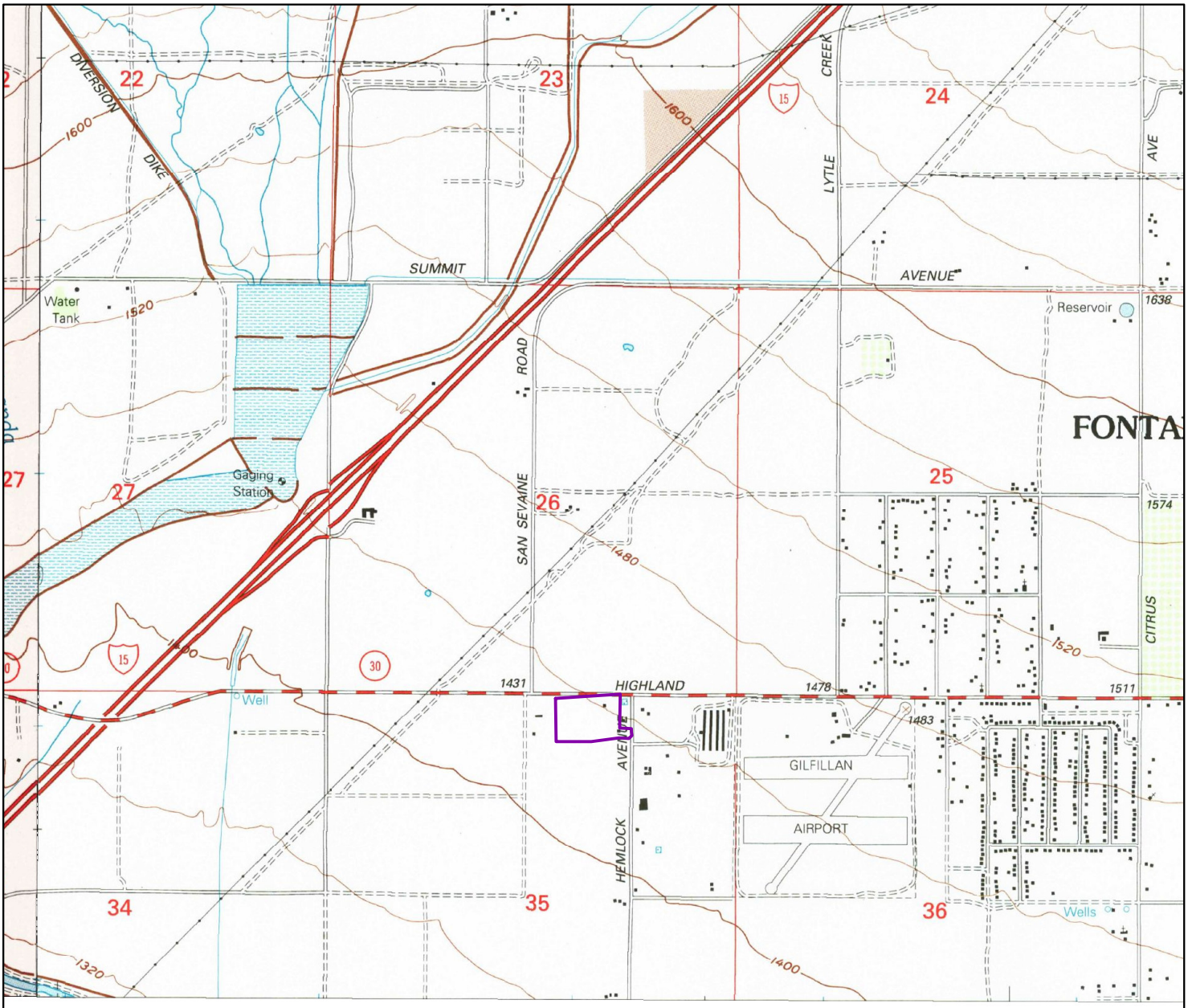
0 0.2 0.4 0.8 Miles

Order No. 20190211126

Quadrangle(s): Devore,CA

Source: USGS 7.5 Minute Topographic Map

ERIS
ENVIRONMENTAL RISK INFORMATION SERVICES



1996

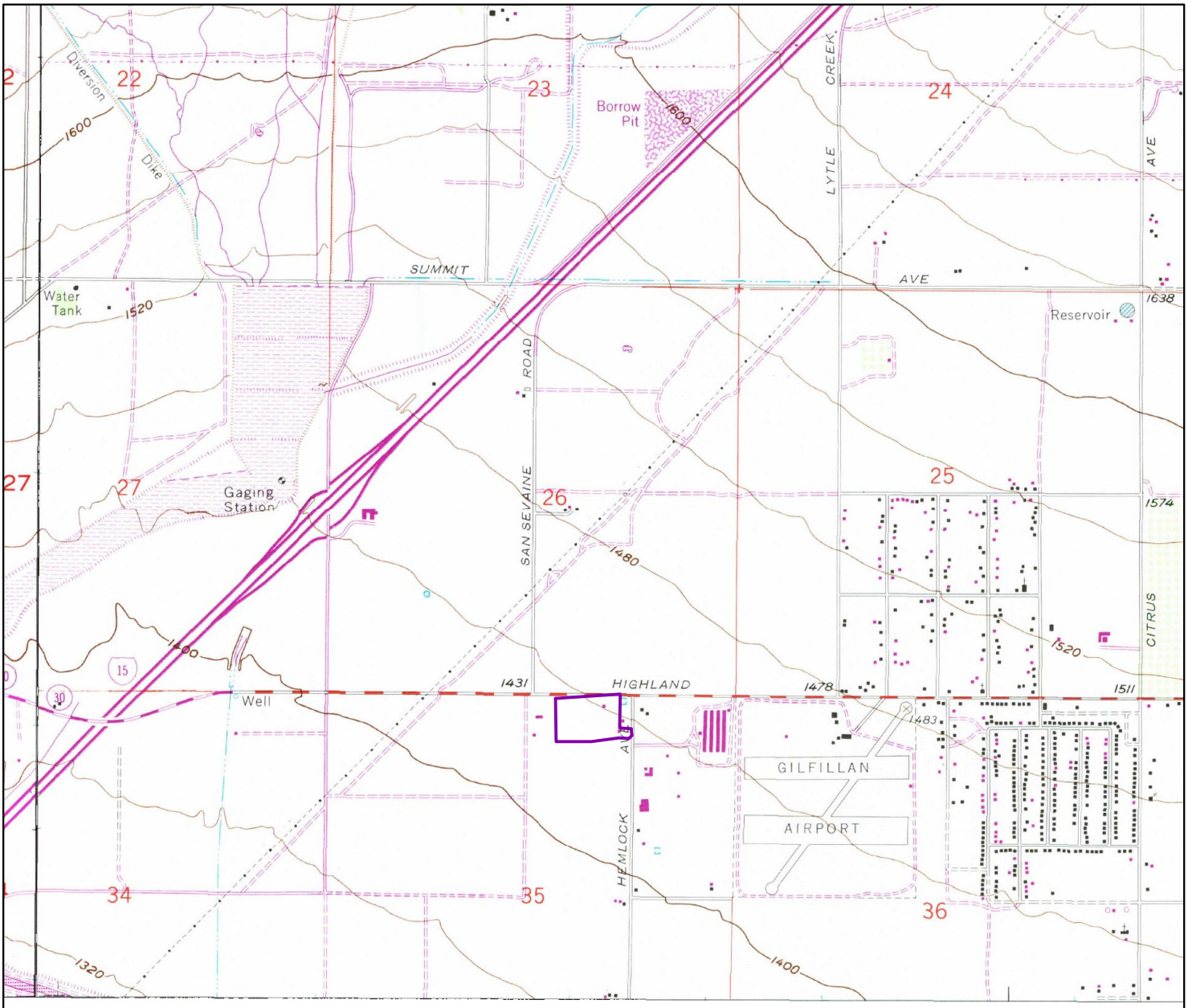
0 0.2 0.4 0.8 Miles

Order No. 20190211126

Quadrangle(s): Devore,CA

Source: USGS 7.5 Minute Topographic Map

ERIS
ENVIRONMENTAL RISK INFORMATION SERVICES



1988

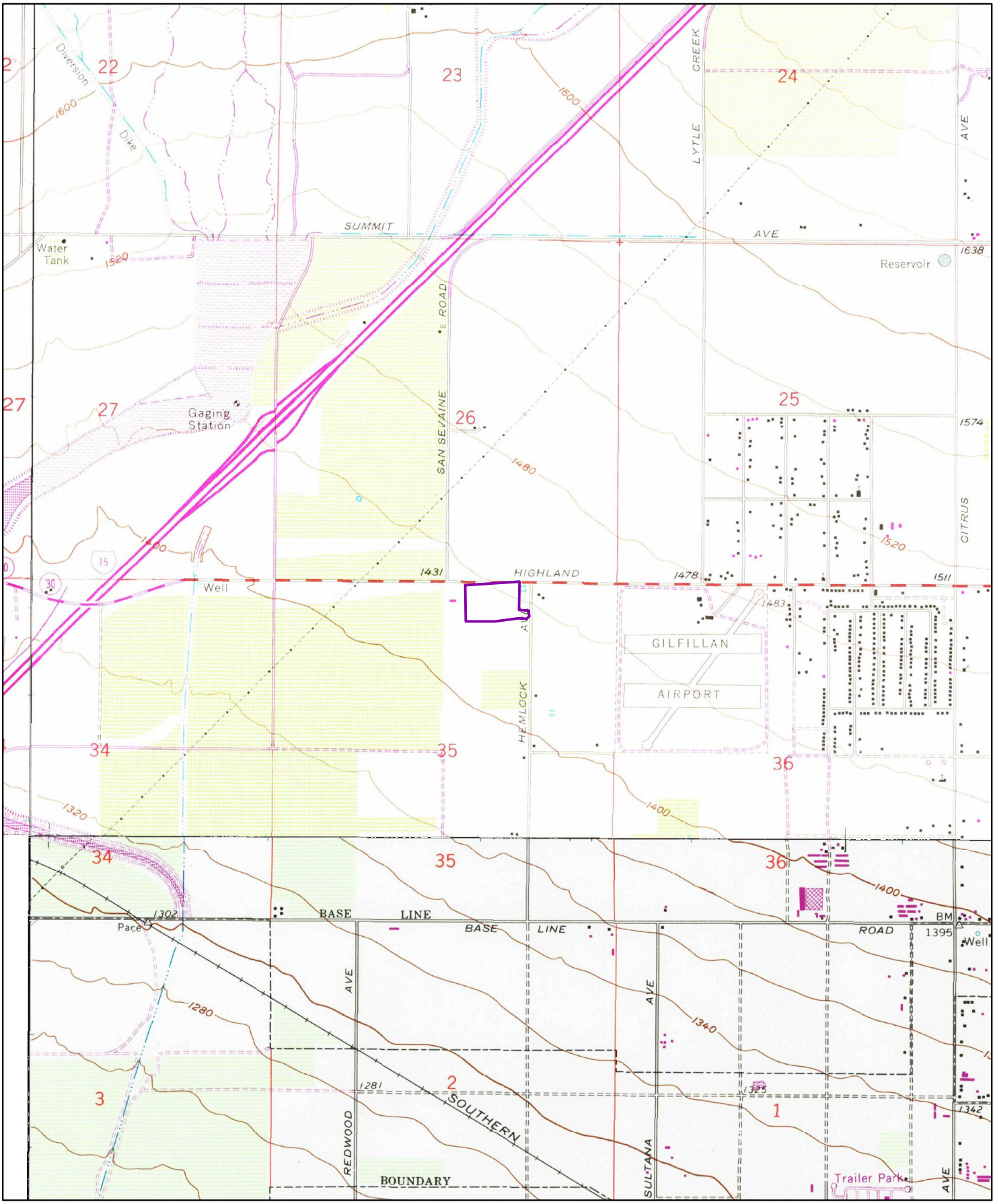
0 0.2 0.4 0.8 Miles

Order No. 20190211126

Quadrangle(s): Devore,CA

Source: USGS 7.5 Minute Topographic Map

ERIS
ENVIRONMENTAL RISK INFORMATION SERVICES



1980

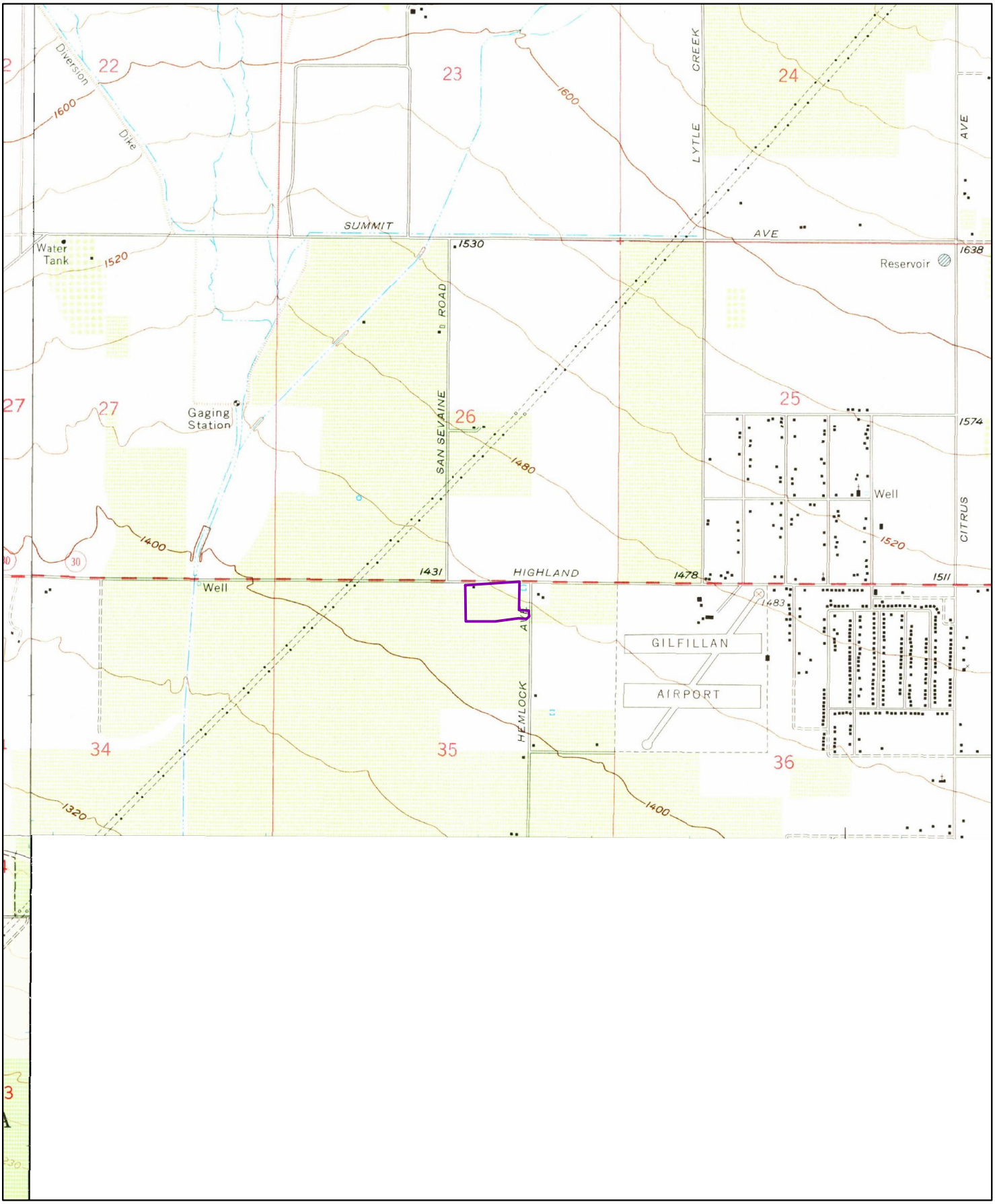
0 0.2 0.4 0.8 Miles

Order No. 20190211126

Quadrangle(s): Devore,CA

Source: USGS 7.5 Minute Topographic Map

ERIS
ENVIRONMENTAL RISK INFORMATION SERVICES



1966

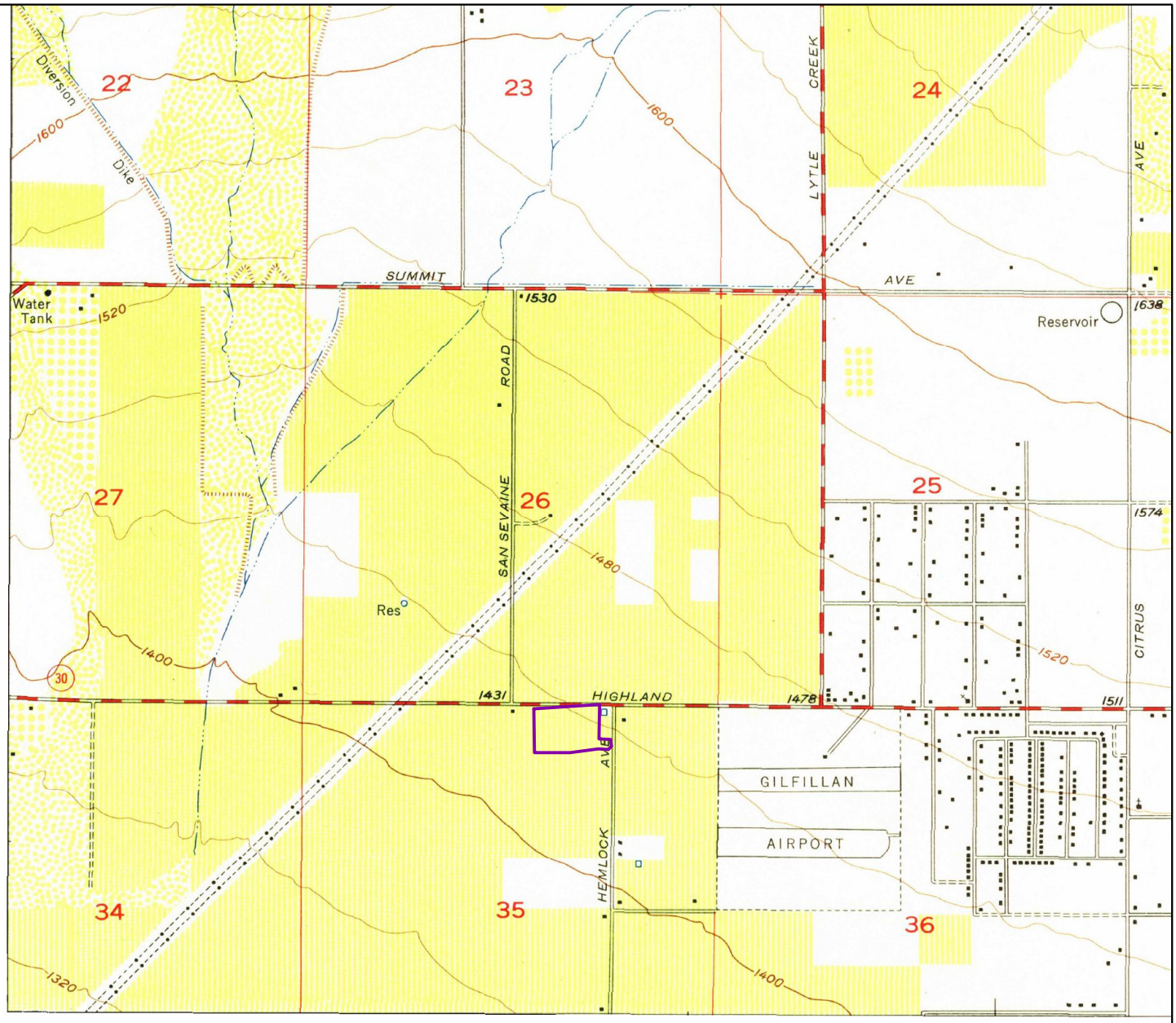
0 0.2 0.4 0.8 Miles

Order No. 20190211126

Quadrangle(s): Devore,CA

Source: USGS 7.5 Minute Topographic Map

ERIS
ENVIRONMENTAL RISK INFORMATION SERVICES



1954

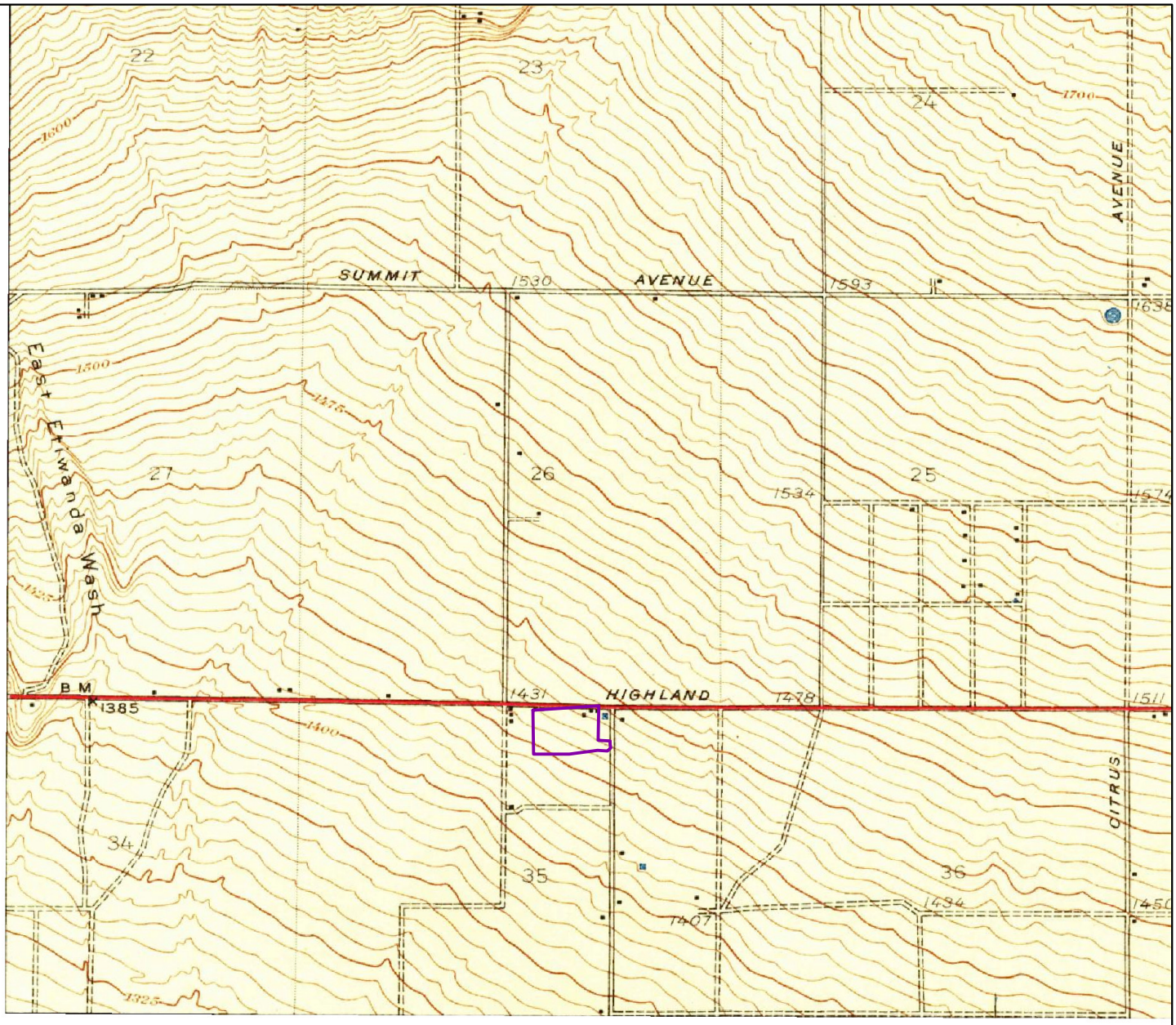
0 0.2 0.4 0.8 Miles

Order No. 20190211126

Quadrangle(s): Devore,CA

Source: USGS 7.5 Minute Topographic Map

ERIS
ENVIRONMENTAL RISK INFORMATION SERVICES



1941

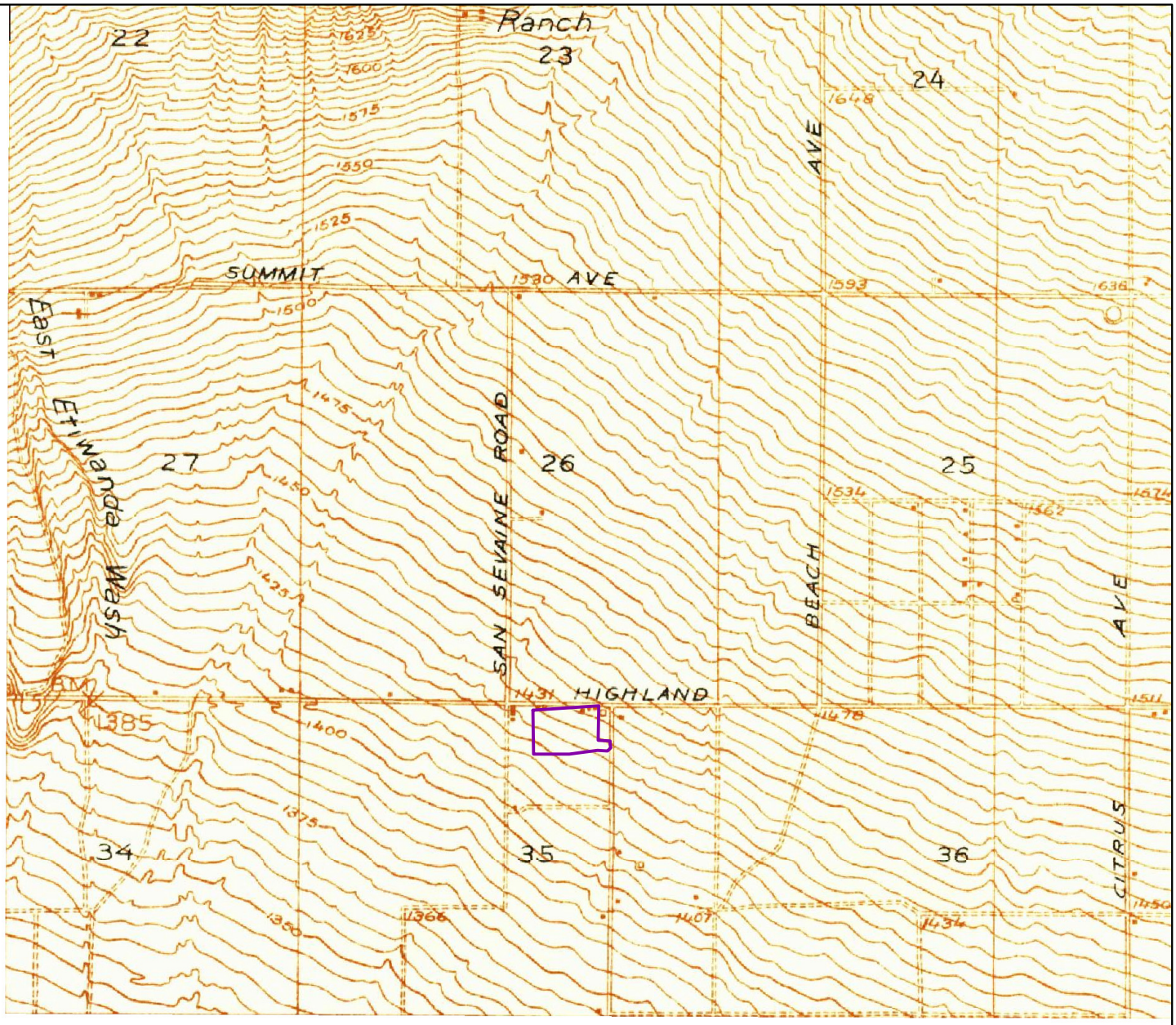
0 0.2 0.4 0.8 Miles

Order No. 20190211126

Quadrangle(s): Devore,CA

Source: USGS 7.5 Minute Topographic Map

ERIS
ENVIRONMENTAL RISK INFORMATION SERVICES



1936

0 0.2 0.4 0.8 Miles

Order No. 20190211126

Quadrangle(s): Devore,CA

Source: USGS 7.5 Minute Topographic Map

ERIS
ENVIRONMENTAL RISK INFORMATION SERVICES

1954

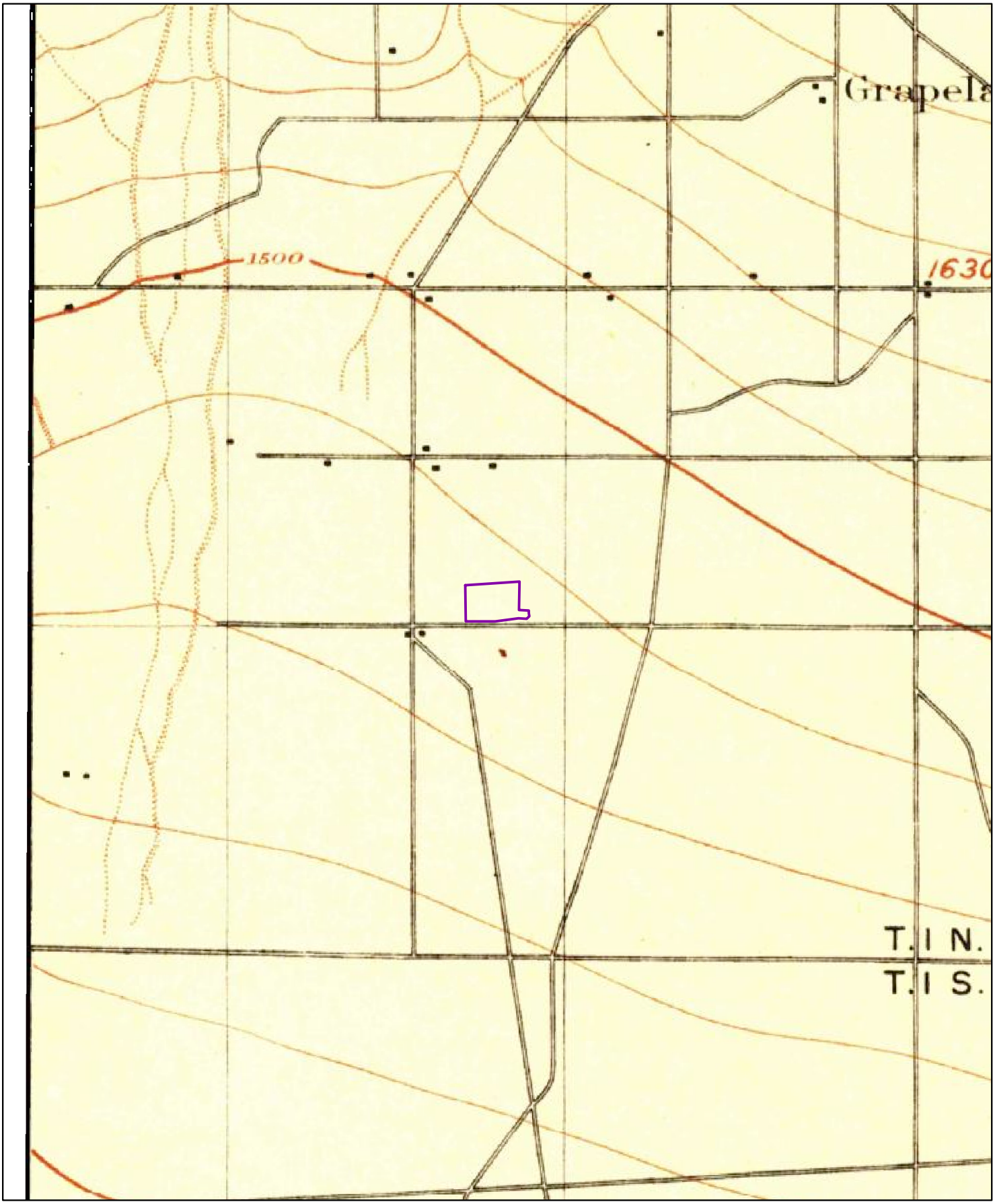
Miles
0 0.2 0.4 0.8

Order No. 20190211126

Quadrangle(s): San Bernardino,CA

Source: USGS 15 Minute Topographic Map

ERIS
ENVIRONMENTAL RISK INFORMATION SERVICES



1901

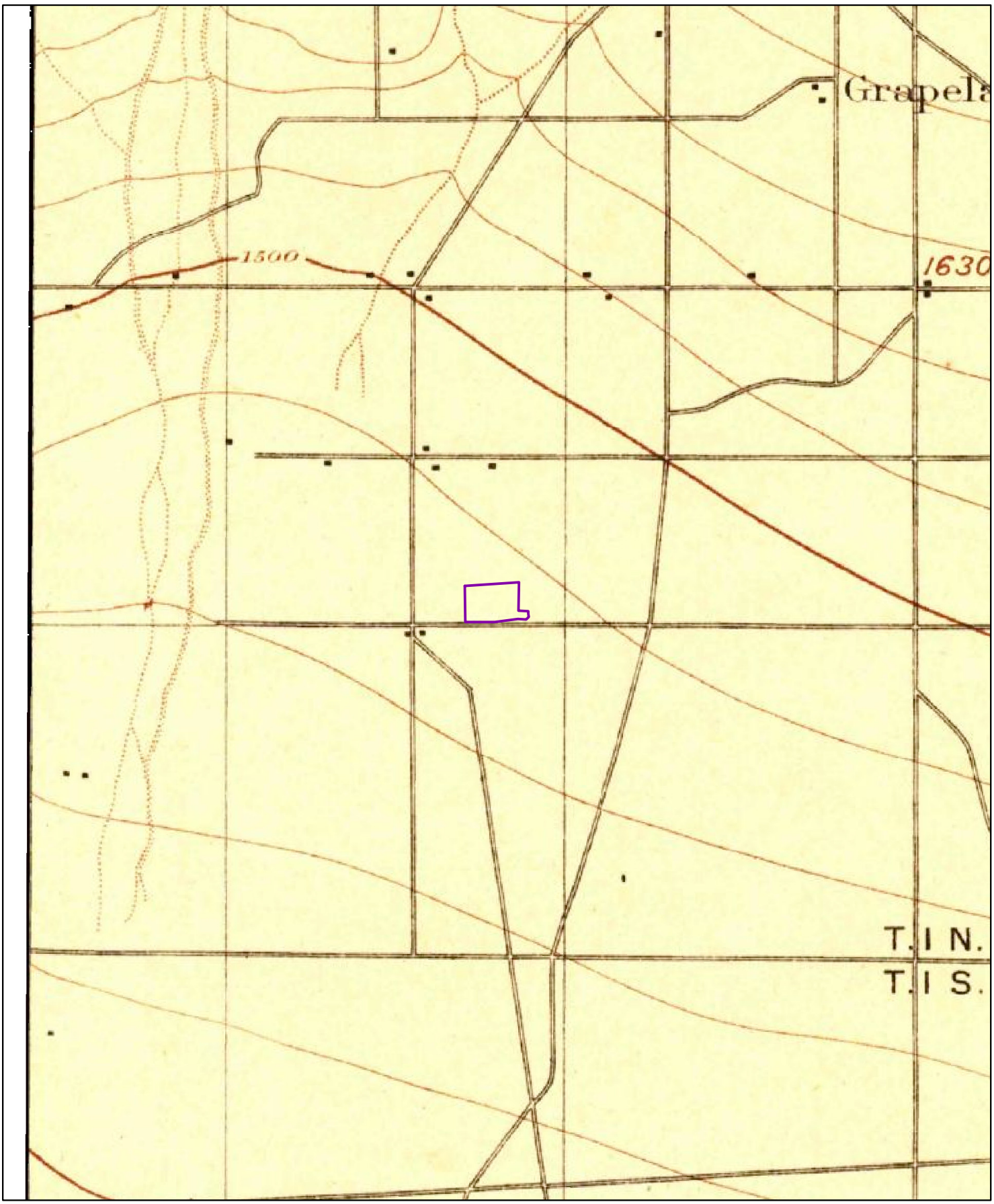
0 0.2 0.4 0.8 Miles

Order No. 20190211126

Quadrangle(s): San Bernardino,CA

Source: USGS 15 Minute Topographic Map

ERIS
ENVIRONMENTAL RISK INFORMATION SERVICES



1898

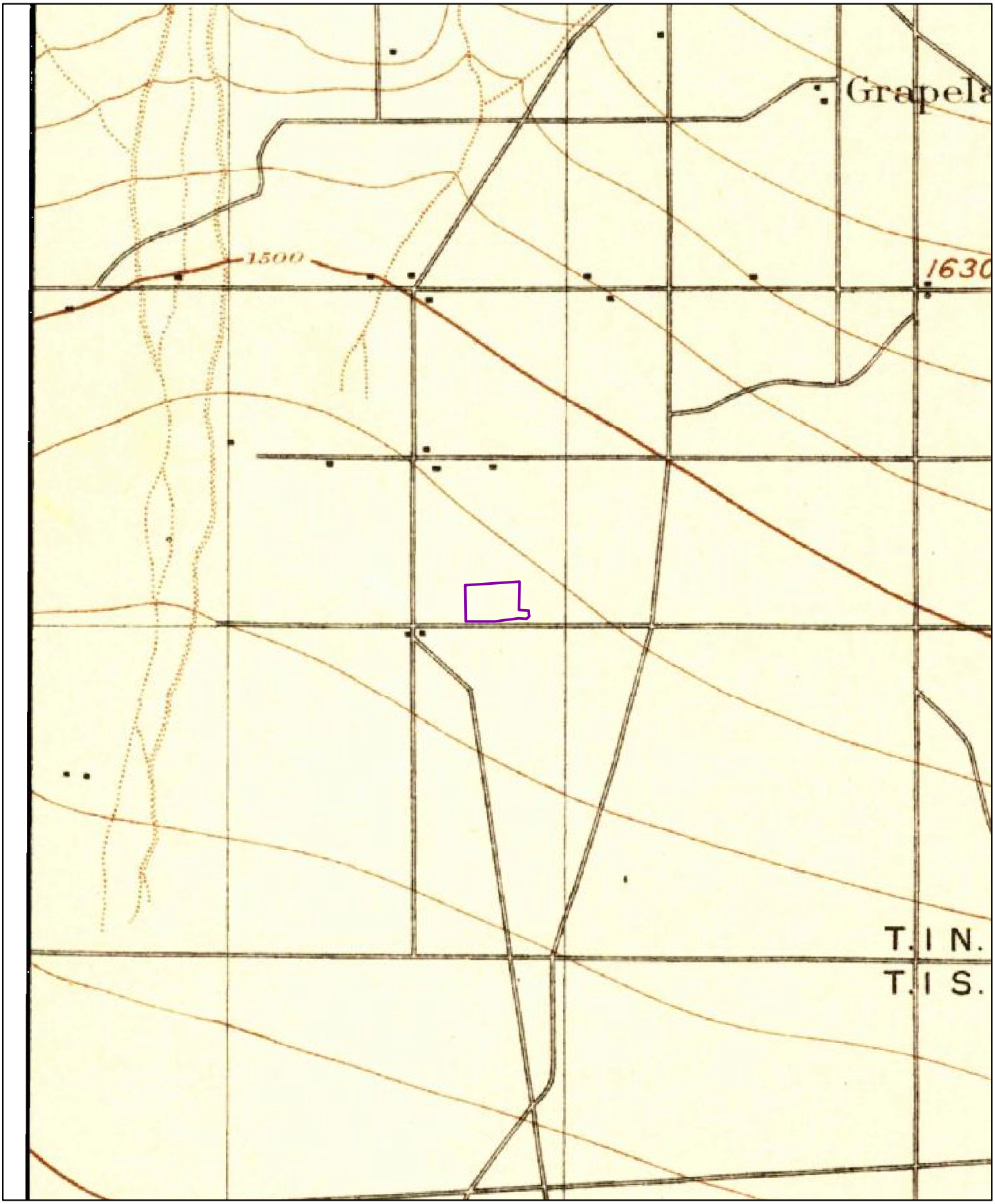
0 0.2 0.4 0.8 Miles

Order No. 20190211126

Quadrangle(s): San Bernardino,CA

Source: USGS 15 Minute Topographic Map

ERIS
ENVIRONMENTAL RISK INFORMATION SERVICES



1896

0 0.2 0.4 0.8 Miles

Order No. 20190211126

Quadrangle(s): San Bernardino,CA

Source: USGS 15 Minute Topographic Map

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FIRE INSURANCE MAPS

Project Property:	*Stratham Homes - NW Corner of S. Highland Hemlock Avenues* *NW Corner of Hemlock and Highland Aves.* *Fontana CA 92336*
Project No:	*12282.002*
Requested By:	*Leighton and Associates, Inc.*
Order No:	*20190211126*
Date Completed:	*February 12, 2019*

Please note that no information was found for your site or adjacent properties.

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ENVIRONMENTAL RISK INFORMATION SERVICES

CITY DIRECTORY

Project Property:	*Stratham Homes - NW Corner of S. Highland & Hemlock Avenues* *NW Corner of Hemlock and Highland Aves.* *Fontana, CA 92336*
Project No:	*12282.002*
Requested By:	*Leighton and Associates, Inc.*
Order No:	*20190211126*
Date Completed:	*February 13, 2019*

Environmental Risk Information Services
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February 13, 2019
RE: CITY DIRECTORY RESEARCH
Stratham Homes - NW Corner of S. Highland & Hemlock Avenues
NW Corner of Hemlock and Highland Aves. Fontana, CA

Thank you for contacting ERIS for an City Directory Search for the site described above. Our staff has conducted a reverse listing City Directory search to determine prior occupants of the subject site and adjacent properties. We have provided the nearest addresses(s) when adjacent addresses are not listed. If we have searched a range of addresses, all addresses in that range found in the Directory are included.

Note: Reverse Listing Directories generally are focused on more highly developed areas. Newly developed areas may be covered in the more recent years, but the older directories will tend to cover only the "central" parts of the city. To complete the search, we have either utilized the ACPL, Library of Congress, State Archives, and/or a regional library or history center as well as multiple digitized directories. These do not claim to be a complete collection of all reverse listing city directories produced.

ERIS has made every effort to provide accurate and complete information but shall not be held liable for missing, incomplete or inaccurate information. To complete this search we used the general range(s) below to search for relevant findings. If you believe there are additional addresses or streets that require searching please contact us at 866-517-5204.

Search Criteria:
14800-15200 of S. Highland Avenue
6400-6700 of Hemlock Avenue

Search Results Summary

Date	Source	Comment
2018	DIGITAL BUSINESS DIRECTORY	
2014	DIGITAL BUSINESS DIRECTORY	
2010	DIGITAL BUSINESS DIRECTORY	
2005	HAINES	
2005	HAINES	
2000	HAINES	
2000	HAINES	
1995	HAINES	
1995	HAINES	
1990	HAINES	
1990	HAINES	
1985	HAINES	
1980	HAINES	
1975	HAINES	
1971	HAINES	

2018 HEMLOCK AVENUE

SOURCE: DIGITAL BUSINESS DIRECTORY

NO LISTING FOUND FOR THIS YEAR...

2018 S. HIGHLAND AVENUE

SOURCE: DIGITAL BUSINESS DIRECTORY

NO LISTING FOUND FOR THIS YEAR...

2014 HEMLOCK AVENUE
SOURCE: DIGITAL BUSINESS DIRECTORY

6556 **INLAND VALLEY ISLAMIC SOCIETY**...*Church*
6556 **INLAND VALLEY ISLAMIC SOCIETY**...*Civil*

2014 S. HIGHLAND AVENUE
SOURCE: DIGITAL BUSINESS DIRECTORY

NO LISTING FOUND FOR THIS YEAR...

2010 HEMLOCK AVENUE

SOURCE: DIGITAL BUSINESS DIRECTORY

NO LISTING FOUND FOR THIS YEAR...

2010 S. HIGHLAND AVENUE

SOURCE: DIGITAL BUSINESS DIRECTORY

NO LISTING FOUND FOR THIS YEAR...

2005 S. HIGHLAND AVENUE

SOURCE: HAINES

NO LISTINGS IN RANGE

2005 HEMLOCK AVENUE

SOURCE: HAINES

NO LISTINGS IN RANGE

2000 S. HIGHLAND AVENUE

SOURCE: HAINES

NO LISTINGS IN RANGE

2000 HEMLOCK AVENUE

SOURCE: HAINES

NO LISTINGS IN RANGE

1995 S. HIGHLAND AVENUE

SOURCE: HAINES

NO LISTINGS IN RANGE

1995 HEMLOCK AVENUE

SOURCE: HAINES

STREET NOT LISTED

1990 S. HIGHLAND AVENUE

SOURCE: HAINES

NO LISTINGS IN RANGE

1990 HEMLOCK AVENUE

SOURCE: HAINES

STREET NOT LISTED

1985 HEMLOCK AVENUE
SOURCE: HAINES

STREET NOT LISTED

1985 S. HIGHLAND AVENUE
SOURCE: HAINES

NO LISTINGS IN RANGE

1980 HEMLOCK AVENUE
SOURCE: HAINES

STREET NOT LISTED

1980 S. HIGHLAND AVENUE
SOURCE: HAINES

NO LISTINGS IN RANGE

1975 HEMLOCK AVENUE
SOURCE: HAINES

STREET NOT LISTED

1975 S. HIGHLAND AVENUE
SOURCE: HAINES

NO LISTINGS IN RANGE

1971 HEMLOCK AVENUE
SOURCE: HAINES

STREET NOT LISTED

1971 S. HIGHLAND AVENUE
SOURCE: HAINES

NO LISTINGS IN RANGE

--- END REPORT ---

Appendix H - Geoenvironmental Reports

Leighton

Important Information about This

Geoenvironmental Report

Geoenvironmental studies are commissioned to gain information about environmental conditions on and beneath the surface of a site. The more comprehensive the study, the more reliable the assessment is likely to be. But remember: Any such assessment is to a greater or lesser extent based on professional opinions about conditions that cannot be seen or tested. Accordingly, no matter how many data are developed, risks created by unanticipated conditions will always remain. *Have realistic expectations.* Work with your geoenvironmental consultant to manage known and unknown risks. Part of that process should already have been accomplished, through the risk allocation provisions you and your geoenvironmental professional discussed and included in your contract's general terms and conditions. This document is intended to explain some of the concepts that may be included in your agreement, and to pass along information and suggestions to help you manage your risk.

Beware of Change; Keep Your Geoenvironmental Professional Advised

The design of a geoenvironmental study considers a variety of factors that are subject to change. Changes can undermine the applicability of a report's findings, conclusions, and recommendations. *Advise your geoenvironmental professional about any changes you become aware of.* Geoenvironmental professionals cannot accept responsibility or liability for problems that occur because a report fails to consider conditions that did not exist when the study was designed. Ask your geoenvironmental professional about the types of changes you should be particularly alert to. Some of the most common include:

- modification of the proposed development or ownership group,
- sale or other property transfer,
- replacement of or additions to the financing entity,
- amendment of existing regulations or introduction of new ones, or
- changes in the use or condition of adjacent property.

Should you become aware of any change, *do not rely on a geoenvironmental report.* Advise your geoenvironmental professional immediately; follow the professional's advice.

Recognize the Impact of Time

A geoenvironmental professional's findings, recommendations, and conclusions cannot remain valid indefinitely. The more time that passes, the more likely it is that important latent changes will occur. *Do not rely on a geoenvironmental report if too much time has elapsed since it was completed.* Ask your environmental professional to define "too much time." In the case of Phase I Environmental Site Assessments (ESAs), for example, more than 180 days after submission is generally considered "too much."

Prepare To Deal with Unanticipated Conditions

The findings, recommendations, and conclusions of a Phase I ESA report typically are based on a review of historical information, interviews, a site "walkover," and other forms of noninvasive research. When site subsurface conditions are not sampled in any way, the risk of unanticipated conditions is higher than it would otherwise be.

While borings, installation of monitoring wells, and similar invasive test methods can help reduce the risk of unanticipated conditions, *do not overvalue the effectiveness of testing.* Testing provides information about actual conditions only at the precise locations where samples are taken, and only when they are taken. Your geoenvironmental

professional has applied that specific information to develop a general opinion about environmental conditions. *Actual conditions in areas not sampled may differ (sometimes sharply) from those predicted in a report.* For example, a site may contain an unregistered underground storage tank that shows no surface trace of its existence. *Even conditions in areas that were tested can change*, sometimes suddenly, due to any number of events, not the least of which include occurrences at adjacent sites. Recognize, too, that *even some conditions in tested areas may go undiscovered,* because the tests or analytical methods used were designed to detect only those conditions assumed to exist.

Manage your risks by retaining your geoenvironmental professional to work with you as the project proceeds. Establish a contingency fund or other means to enable your geoenvironmental professional to respond rapidly, in order to limit the impact of unforeseen conditions. And to help prevent any misunderstanding, identify those empowered to authorize changes and the administrative procedures that should be followed.

Do Not Permit Any Other Party To Rely on the Report

Geoenvironmental professionals design their studies and prepare their reports to meet the specific needs of the clients who retain them, in light of the risk management methods that the client and geoenvironmental professional agree to, and the statutory, regulatory, or other requirements that apply. The study designed for a developer may differ sharply from one designed for a lender, insurer, public agency...or even another developer. *Unless the report specifically states otherwise, it was developed for you and only you.* Do not unilaterally permit any other party to rely on it. The report and the study underlying it may not be adequate for another party's needs, and you could be held liable for shortcomings your geoenvironmental professional was powerless to prevent or anticipate. Inform your geoenvironmental professional when you know or expect that someone else—a third-party—will want to use or rely on the report. *Do not permit third-party use or reliance until you first confer with the geoenvironmental professional who prepared the report.* Additional testing, analysis, or study may be required and, in any event, appropriate terms and conditions should be agreed to so both you and your geoenvironmental professional are protected from third-party risks. *Any party who relies on a geoenvironmental report without the express written permission of the professional who prepared it and the client for whom it was prepared may be solely liable for any problems that arise.*

Avoid Misinterpretation of the Report

Design professionals and other parties may want to rely on the report in developing plans and specifications. They need to be advised, in writing, that their needs may not have been considered when the study's scope was developed, and, even if their needs were considered, they might misinterpret geoenvironmental findings, conclusions, and recommendations. *Commission your geoenvironmental professional to explain pertinent elements of the report to others who are permitted to rely on it, and to review any plans, specifications or other instruments of professional service that incorporate any of the report's findings, conclusions, or recommendations.* Your geoenvironmental professional has the best understanding of the issues involved, including the fundamental assumptions that underpinned the study's scope.

Give Contractors Access to the Report

Reduce the risk of delays, claims, and disputes by giving contractors access to the full report, *providing that it is accompanied by a letter of transmittal that can protect you* by making it unquestionably clear that: 1) the study was not conducted and the report was not prepared for purposes of bid development, and 2) the findings, conclusions, and recommendations included in the report are based on a variety of opinions, inferences, and assumptions and are subject to interpretation. Use the letter to also advise contractors to consult with your geoenvironmental professional to obtain clarifications, interpretations, and guidance (a fee may be required for this service), and that—in any event—they should conduct additional studies to obtain the specific type and extent of information each prefers for preparing a bid or cost estimate. Providing access to the full report, with the appropriate caveats, helps prevent formation of adversarial attitudes and claims of concealed or differing conditions. If a contractor elects to ignore the warnings and advice in the letter of transmittal, it would do so at its own risk. Your geoenvironmental professional should be able to help you prepare an effective letter.

Do Not Separate Documentation from the Report

Geoenvironmental reports often include supplemental documentation, such as maps and copies of regulatory files, permits, registrations, citations, and correspondence with regulatory agencies. If subsurface explorations were performed, the report may contain final boring logs and copies of laboratory data. If remediation activities occurred on site, the report may include: copies of daily field reports; waste manifests; and information about the disturbance of subsurface materials, the type and thickness of any fill placed on site, and fill placement practices, among other types of documentation. *Do not separate supplemental documentation from the report. Do not, and do not permit any other party to redraw or modify any of the supplemental documentation for incorporation into other professionals' instruments of service.*

Understand the Role of Standards

Unless they are incorporated into statutes or regulations, standard practices and standard guides developed by the American Society for Testing and Materials (ASTM) and other recognized standards-developing organizations (SDOs) are little more than aspirational methods agreed to by a consensus of a committee. The committees that develop standards may not comprise those best-qualified to establish methods and, no matter what, no standard method can possibly consider the infinite client- and project-specific variables that fly in the face of the theoretical "standard conditions" to which standard practices and standard guides apply. In fact, these variables can be so pronounced that geoenvironmental professionals who comply with every directive of an ASTM or other standard procedure could run afoul of local custom and practice, thus violating the standard of care. Accordingly, when geoenvironmental professionals indicate in their reports that they have performed a service "in general compliance" with one standard or another, it means they have applied professional judgement in creating and implementing a scope of service designed for the specific client and project involved, and which follows some of the general precepts laid out in the referenced standard. To the extent that a report indicates "general compliance" with a standard, you may wish to speak with your geoenvironmental professional to learn more about what was and was not done. *Do not assume a given standard was followed to the letter.* Research indicates that that seldom is the case.

Realize That Recommendations May Not Be Final

The technical recommendations included in a geoenvironmental report are based on assumptions about actual conditions, and so are preliminary or tentative. Final recommendations can be prepared only by observing actual conditions as they are exposed. For that reason, you should retain the geoenvironmental professional of record to observe construction and/or remediation activities on site, to permit rapid response to unanticipated conditions. *The geoenvironmental professional who prepared the report cannot assume responsibility or liability for the report's recommendations if that professional is not retained to observe relevant site operations.*

Understand That Geotechnical Issues Have Not Been Addressed

Unless geotechnical engineering was specifically included in the scope of professional service, a report is not likely to relate any findings, conclusions, or recommendations about the suitability of subsurface materials for construction purposes, especially when site remediation has been accomplished through the removal, replacement, encapsulation, or chemical treatment of on-site soils. The equipment, techniques, and testing used by geotechnical engineers differ markedly from those used by geoenvironmental professionals; their education, training, and experience are also significantly different. If you plan to build on the subject site, but have not yet had a geotechnical engineering study conducted, your geoenvironmental professional should be able to provide guidance about the next steps you should take. The same firm may provide the services you need.

Read Responsibility Provisions Closely

Geoenvironmental studies cannot be exact; they are based on professional judgement and opinion. Nonetheless, some clients, contractors, and others assume geoenvironmental reports are or certainly should be unerringly precise. Such assumptions have created unrealistic expectations that have led to wholly unwarranted claims and disputes. To help prevent such problems, geoenvironmental professionals have developed a number of report provisions and contract terms that explain who is responsible for what, and how risks are to be allocated. Some people mistake these for "exculpatory clauses," that is, provisions whose purpose is to transfer one party's rightful responsibilities and liabilities to someone else. Read the responsibility provisions included in a report and in the contract you and your geoenvironmental professional agreed to. *Responsibility provisions are not "boilerplate."* They are important.

Rely on Your Geoenvironmental Professional for Additional Assistance

Membership in the Geoprofessional Business Association exposes geoenvironmental professionals to a wide array of risk management techniques that can be of genuine benefit for everyone involved with a geoenvironmental project. Confer with your GBA-member geoenvironmental professional for more information.

GEOPROFESSIONAL BUSINESS ASSOCIATION

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Appendix J
Phase II Environmental Site Assessment

HIGHLAND RESIDENTIAL PROJECT
INITIAL STUDY

PHASE II ENVIRONMENTAL SITE ASSESSMENT
PROPOSED RESIDENTIAL DEVELOPMENT,
NORTHWEST CORNER OF SOUTH HIGHLAND AVENUE
AND HEMLOCK AVENUE,
FONTANA, CALIFORNIA

Prepared for

STRATHAM HOMES

2201 Dupont Drive, Suite 300
Irvine, California 92612

Project No. 12282.003

March 12, 2019

Leighton and Associates, Inc.

A LEIGHTON GROUP COMPANY

Leighton and Associates, Inc.
A LEIGHTON GROUP COMPANY

March 12, 2019

Project No. 12282.003

Stratham Homes
2201 Dupont Drive, Suite 300
Irvine, California 92612

Attention: Mr. Patrick E. Potts

Subject: Phase II Environmental Site Assessment
Proposed Residential Development
Northwest Corner of South Highland Avenue and Hemlock Avenue
City of Fontana, California

INTRODUCTION

Leighton and Associates, Inc. (Leighton) is pleased to present this report summarizing a Phase II Environmental Site Assessment (ESA) of the property located at the northwest corner of South Highland Avenue and Hemlock Avenue, in the city of Fontana, San Bernardino County, California (Site – **Figure 1**).

The purpose of this investigation was to assess the potential shallow soil impacts that may be attributed to historical rural/agricultural use of the Site as identified in Leighton's Phase I ESA of the Site, dated February 25, 2019. References are included in **Appendix A**.

SCOPE OF WORK

This Phase II ESA was conducted based on the findings and conclusions of our Phase I ESA (Leighton, 2019) and in accordance with our proposal dated February 21, 2019. The scope of work included the following:

- Excavation of 11 sampling points, and collection of soil samples at approximately 0.5 and 2.5 feet below the ground surface (bgs).

10532 Acacia Street, Suite B-6 ▪ Rancho Cucamonga, CA 91730-5455
909.484.2205 ▪ 909.484.2170 Fax

- Preparation of this report summarizing our findings and conclusions, including tables, illustrations, and appendices.

PRE-FIELD ACTIVITIES

Utility Clearance

Underground Service Alert (USA) was contacted at least 48 hours prior to the commencement of fieldwork to mark underground utility locations. Each proposed sampling location or excavation area was clearly marked in white paint prior to contacting USA.

FIELD ACTIVITIES

On March 1, 2019, Leighton personnel directed the excavation of 11 sampling locations to a depth of 2.5 feet below the ground surface (bgs), SS1 through SS11, throughout the Site. The locations of the excavations are shown on **Figure 2**. A backhoe was used to excavate the sample locations due to the presence of gravel and cobble sized materials in the shallow soil of the Site. Soil samples were collected at depths of 0.5 feet, and 2.5 feet from each sample location. Focused sampling was completed in both the northwest and northeast corners of the site due to possible historical farm related structures/operations identified in these areas during completion of the Phase I report.

Soil samples were retained in 4-ounce laboratory-supplied glass jars and placed in an ice-cooled chest for storage and delivery to Enviro-Chem, Inc. Laboratories (Enviro-Chem) in Pomona, California for chemical analysis. Enviro-Chem has ELAP certification for the analysis requested.

Upon completion of sampling, all sampling locations were backfilled with soil cuttings and the surface was returned to its original finish.

LABORATORY ANALYSIS AND RESULTS

All soil samples collected at 0.5 feet bgs were analyzed for organochlorine pesticides (OCPs) by EPA Method 8081A, as well as arsenic and copper by EPA Method 6010B. The soil samples collected at 2.5 feet bgs were composited by the lab into four composite groups and also analyzed for OCPs by EPA Method 8081A, arsenic and copper by EPA Method 6010B.

The soil analytical results were compared to the November 2018 EPA Region 9 Regional Screening Levels (RSLs) for residential land use, and the DTSC Southern California Background concentration of 12 milligrams per kilograms (mg/kg) for arsenic only.

The complete laboratory report and COC form are included in **Appendix B**. A summary of laboratory results is presented in **Table 1**, and discussed below.

The reported concentrations of copper ranged from 3.16 mg/kg to 19.8 mg/kg. These concentrations were below the residential RSL of 3,100 mg/kg. The reported concentrations of arsenic ranged from 2.14 mg/kg to 5.47 mg/kg. The reported concentrations of arsenic are above the US EPA RSLs for residential soil however, these concentrations were below DTSC recognized background arsenic concentration of 12 mg/kg for southern California soils (DTSC, 2008) (US EPA, 2018)

These detected concentrations of arsenic are below the DTSC Southern California Background concentration of 12 mg/kg (DTSC, 2008).

The only OCPs, detected were 4,4-DDE and 4,4-DDT. These compounds were detected at maximum concentrations of 0.012 mg/kg for both 4,4-DDE and 4,4-DDT. All of these reported OCP concentrations are below the adjusted RSLs for residential use.

CONCLUSIONS

Shallow soil samples were collected over the Site from depths of 0.5 and 2.5 feet bgs, and analyzed for OCPs, arsenic and copper. All results were reported to be below the US EPA Regional Screening goals for residential property usage, or in the case of arsenic, which is below the DTSC regional background levels.

In general, observations should be made during future Site redevelopment for areas of possible contamination such as, but not limited to, the presence of underground utilities, buried debris, waste drums, tanks, and stained soil or odorous soils. Should such materials be encountered, further investigation and analysis may be necessary at that time.

CLOSING

We appreciate the opportunity to work with you on this project. If you have any questions regarding this report, please call us at your convenience.

Respectfully submitted,

LEIGHTON AND ASSOCIATES, INC.

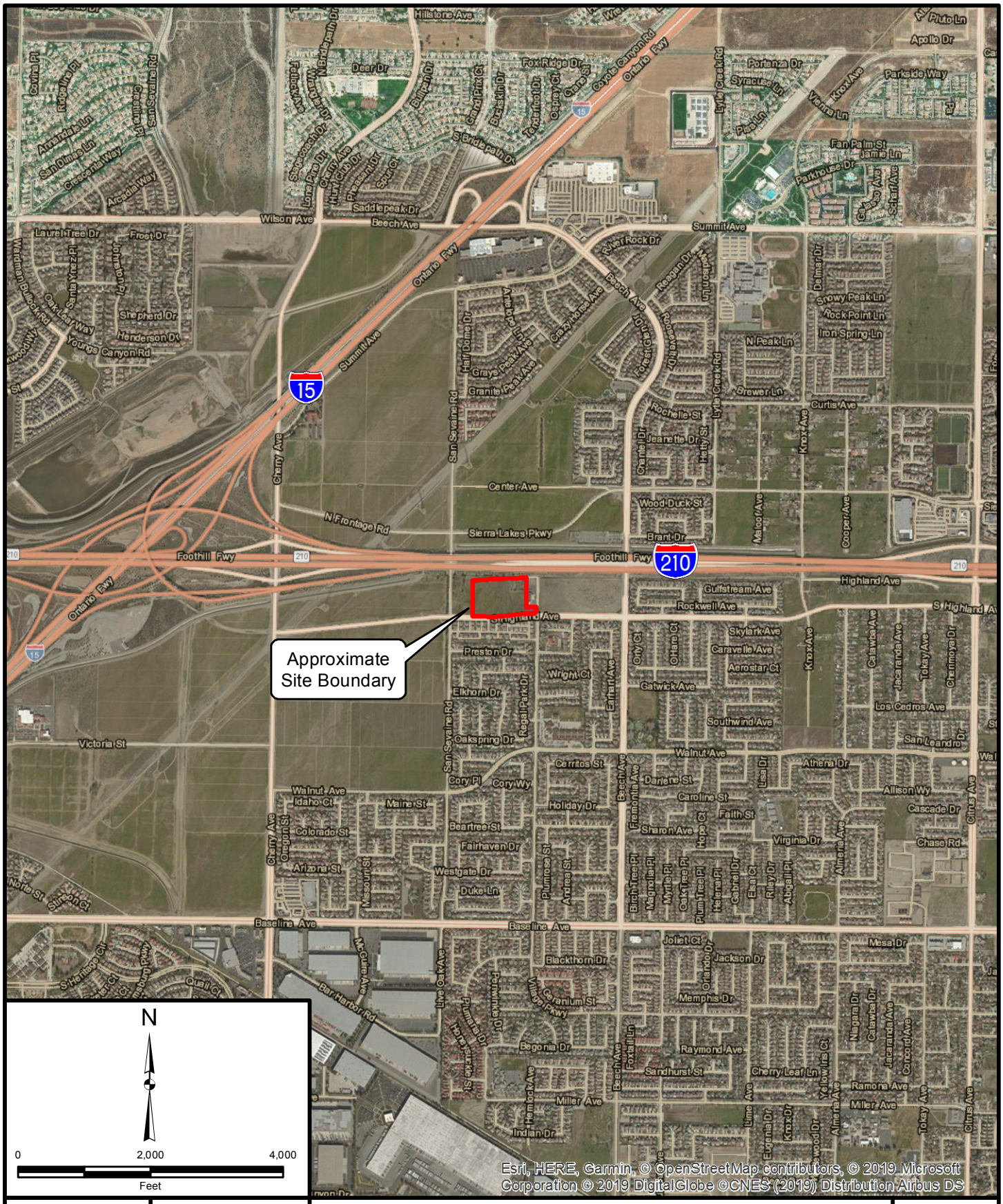
Robert Hansen, PG
Associate Geologist

Breeanna Copeland, GIT
Senior Staff Geologist

RBH/BPC/rsm

Attachments: Figure 1 – Site Location Map
Figure 2 – Sample Location Map
Table 1 – Summary of Soil Analyses
Appendix A – References
Appendix B – Laboratory Reports and Chain-of-Custody Records

Distribution: (1) Addressee



Project: 12282.003	Eng/Geol: RBH
Scale: 1 " = 2,000 '	Date: March 2019

Base Map: ESRI ArcGIS Online 2019
Thematic Information: Leighton
Author: Leighton Geomatics (mmurphy)

SITE LOCATION MAP

Stratham Homes
Near NW Corner of S. Highland and Hemlock Avenue
Fontana, California

Figure 1

Leighton

Map Saved as P:\Drafting\11282\003\Maps\11282-003_F01_SLM_2019-03-11.mxd on 3/11/2019 10:31:35 AM

Project: 12282.003	Eng/Geol: RBH
Scale: 1 " = 100 '	Date: March 2019

Base Map: Bing Maps, 2016 2019
Thematic Information: Leighton
Author: Leighton Geomatics (mmurphy)

SAMPLE LOCATION MAP

Stratham Homes
Near NW Corner of S. Highland and Hemlock Avenue
Fontana, California

Figure 2

Leighton

Map Saved as P:\Drafting\12282\003\Maps\11282-003_F02_SLM_2019-03-11.mxd on 3/11/2019 2:29:24 PM

Table 1
Summary of Soil Analyses
Stratham Homes Residential Development
Northwest of S. Highland Avenue and Hemlock Avenue
City of Fontana, San Bernardino County, California

Sample ID	***Depth (feet bgs)***	***Sample Date***	***Matrix***	***Detected OCPs (mg/kg)***		***Arsenic (mg/kg)***	***Copper (mg/kg)***
				4,4'-DDE	***4,4'-DDT***		
SS1-0.5	0.5	3/1/2019	soil	<0.001	<0.001	***4.25***	***9.87***
SS2-0.5	0.5	3/1/2019	soil	<0.001	<0.001	***3.77***	***19.8***
SS3-0.5	0.5	3/1/2019	soil	<0.001	***0.012***	***2.33***	***17.4***
SS4-0.5	0.5	3/1/2019	soil	***0.003***	***0.002***	***2.17***	***13.3***
SS5-0.5	0.5	3/1/2019	soil	***0.012***	***0.004***	***2.48***	***16.5***
SS6-0.5	0.5	3/1/2019	soil	***0.0007J***	<0.001	***2.40***	***9.61***
SS7-0.5	0.5	3/1/2019	soil	***0.0008J***	<0.001	***2.70***	***10.4***
SS8-0.5	0.5	3/1/2019	soil	***0.0008J***	<0.001	***2.31***	***12.4***
SS9-0.5	0.5	3/1/2019	soil	<0.001	<0.001	***2.14***	***8.90***
SS10-0.5	0.5	3/1/2019	soil	<0.001	<0.001	***5.47***	***11.4***
SS11-0.5	0.5	3/1/2019	soil	<0.001	<0.001	***2.40***	***9.49***
SS1-2.5	2.5	3/1/2019	soil	--	--	--	--
SS2-2.5	2.5	3/1/2019	soil	--	--	--	--
SS3-2.5	2.5	3/1/2019	soil	--	--	--	--
CS1-2.5 (composite)		3/1/2019	soil	***0.0007J***	***0.004***	***2.88***	***11.0***
SS6-2.5	2.5	3/1/2019	soil	--	--	--	--
SS7-2.5	2.5	3/1/2019	soil	--	--	--	--
SS8-2.5	2.5	3/1/2019	soil	--	--	--	--
CS2-2.5 (composite)		3/1/2019	soil	<0.001	<0.001	***4.23***	***8.49***
SS9-2.5	2.5	3/1/2019	soil	--	--	--	--
SS10-2.5	2.5	3/1/2019	soil	--	--	--	--
SS11-2.5	2.5	3/1/2019	soil	--	--	--	--
CS3-2.5 (composite)		3/1/2019	soil	***0.004***	***0.0007J***	***3.61***	***3.16***
SS4-2.5	2.5	3/1/2019	soil	--	--	--	--
SS5-2.5	2.5	3/1/2019	soil	--	--	--	--
CS4-2.5 (composite)		3/1/2019	soil	***0.011***	***0.007***	***2.23***	***9.66***
Screening Criteria							
			US EPA-RSL (Residential)	***2.0***	***1.9***	***0.68***	***3,100***
			DTSC Background	--	--	***12***	--

Notes:

OCPs Organochlorine Pesticides by EPA Method 8081A
mg/kg = milligrams per kilogram
EPA RSL= United States Environmental Protection Agency Regional Screening Criteria (November, 2018)
DTSC Background = DTSC Determination of a Southern California Regional Background Arsenic Concentration in Soil (DTSC, 2008)
-- = Not analyzed or not applicable
Bold concentrations were detected above laboratory reporting limit
Red concentrations exceed one or more screening criteria
J = Trace Concentration between the method detection limit and the practical quantitation limit

Leighton

APPENDIX A

REFERENCES

Leighton

APPENDIX A

References

Department of Toxic Substances Control (DTSC), 2008, Determination of a Southern California Regional Background Arsenic Concentration in Soil, 2008

Leighton and Associates, Inc., 2019, Phase I Environmental Site Assessment, NW Corner of Hemlock and Highland Avenues, Fontana, California, dated February 25, 2019.

United States Environmental Protection Agency, 2018, Regional Screening Levels (RSLs), https://www.epa.gov/risk/regional-screening-levels-rsls-generic-tables, Table updated in November, 2018.

APPENDIX B

LABORATORY REPORTS AND CHAIN-OF-CUSTODY RECORDS

Leighton

Enviro – Chem, Inc.
1214 E. Lexington Avenue, Pomona, CA 91766 Tel (909) 590-5905 Fax (909) 590-5907

Date: March 8, 2019

Mr. Robert Hansen
Leighton & Associates
10532 Acacia, Suite B-6
Rancho Cucamonga, CA 91730
Tel(909)484-2205 E-Mail: RHansen@leightongroup.com

Project: **Stratham Homes Fontana**
Project No.: **12282.003**
Lab I.D.: **190301-28 through -49**

Dear Mr. Hansen:

The **analytical results** for the soil samples, received by our lab on March 1, 2019, are attached. The samples were received chilled, intact and with chain of custody record.

Trace concentrations between the MDL and the PQL have been reported with a "J" flag indicator.

Enviro-Chem appreciates the opportunity to provide you and your company this and other services. Please do not hesitate to call us if you have any questions.

Sincerely,

Curtis Desilets
Vice President/Program Manger

Andy Wang
Laboratory Manager

Enviro – Chem, Inc.
1214 E. Lexington Avenue, Pomona, CA 91766 Tel (909) 590-5905 Fax (909) 590-5907

LABORATORY REPORT

CUSTOMER: Leighton & Associates
10532 Acacia, Suite B-6, Rancho Cucamonga, CA 91730
Tel(909)484-2205 E-Mail: RHansen@leightongroup.com

PROJECT: Stratham Homes Fontana — PROJECT No.: 12282.003
MATRIX: SOIL — DATE RECEIVED: 03/01/19
SAMPLING DATE: 03/01/19 — DATE ANALYZED: 03/05/19
REPORT TO: Mr. ROBERT HANSEN — DATE REPORTED: 03/08/19

EPA 6010B FOR TTLC-ARSENIC/COPPER
UNITS: mg/Kg = MILLIGRAM PER KILOGRAM = PPM

SAMPLE I.D.	LAB I.D.	ARSENIC RESULT	DF	COPPER RESULT	DF
SS1-0.5	190301-28	4.25	1	9.87	1
SS2-0.5	190301-30	3.77	1	19.8	1
SS3-0.5	190301-32	2.33	1	17.4	1
SS4-0.5	190301-34	2.17	1	13.3	1
SS5-0.5	190301-36	2.48	1	16.5	1
SS6-0.5	190301-38	2.40	1	9.61	1
SS7-0.5	190301-40	2.70	1	10.4	1
SS8-0.5	190301-42	2.31	1	12.4	1
SS9-0.5	190301-44	2.14	1	8.90	1
SS10-0.5	190301-46	5.47	1	11.4	1
SS10-0.5	190301-48	2.40	1	9.49	1
CS1-2.5	190301-29/-31/-33 (Composite)	2.88	1	11.0	1
CS4-2.5	190301-35/-37 (Composite)	2.23	1	9.66	1
CS2-2.5	190301-39/-41/-43 (Composite)	4.23	1	8.49	1
CS3-2.5	190301-45/-47/-49 (Composite)	3.61	1	3.16	1
Method Blank	---	ND	1	ND	1
	MDL	0.248		0.203	
	PQL	0.30		1.00	

COMMENTS:
DF = Dilution Factor
MDL = Method Detection Limit
PQL = Practical Quantitation Limit
J = Trace Concentration between MDL and PQL
Actual Detection Limit = PQL X DF
ND = Below the Actual Detection Limit or non-detected
TTLC = Total Threshold Limit Concentration
STLC = Soluble Threshold Limit Concentration
TTLC Limit for Arsenic = 500 PPM / TTLC Limit for Copper = 2500 PPM
STLC Limit for Arsenic = 5 PPM / STLC Limit for lead = 25 PPM
* = STLC analysis is recommended (if marked)
*** = The concentration exceeds the TTLC Limit, therefore the sample is defined as hazardous waste as per CCR-TITLE 22 (if marked)

Data Reviewed and Approved by: _____
CAL-DHS ELAP CERTIFICATE No.: 1555

QA/QC for Metals Analysis --TTLC--SOLID/SOIL MATRIX

Matrix Spike/ Matrix Spike Duplicate/ LCS :

ANALYSIS DATE: 3/5/2019

Unit : mg/Kg(ppm)

Analysis	Spk.Sample ID	CONC.	LCS %Rec.	LCS STATUS	Sample Result	Spike Conc.	MS	% Rec MS	MSD	% Rec MSD	% RPD
Arsenic(As)	190301-28	50.0	103	PASS	4.25	50.0	56.2	104%	58.9	109%	5%
Copper(Cu)	190301-28	50.0	98	PASS	9.87	50.0	66.2	113%	68.0	116%	3%
Nickel(Ni)	190301-28	50.0	105	PASS	6.57	50.0	59.4	106%	63.9	115%	8%

ANALYSIS DATE. : 3/4/2019

Analysis	Spk.Sample ID	LCS CONC.	LCS %Rec.	LCS STATUS	Sample Result	Spike Conc.	MS	% Rec MS	MSD	% Rec MSD	% RPD
Mercury (Hg)	190301-26	0.125	97	PASS	0	0.125	0.106	84%	0.112	89%	6%

MS/MSD Status:

Analysis	%MS	%MSD	%LCS	%RPD
Arsenic(As)	PASS	PASS	PASS	PASS
Copper(Cu)	PASS	PASS	PASS	PASS
Nickel(Ni)	PASS	PASS	PASS	PASS
Mercury (Hg)	PASS	PASS	PASS	PASS
Accepted Range	**75 ~ 125**	**75 ~ 125**	**85 ~ 115**	**0 ~ 20**

ANALYST: _____

FINAL REVIEWER: _____

*=Fail due to matrix interference

Note:LCS is in control therefore results are in control

Enviro – Chem, Inc.
1214 E. Lexington Avenue, Pomona, CA 91766 Tel (909) 590-5905 Fax (909) 590-5907

LABORATORY REPORT

CUSTOMER: **Leighton & Associates**
10532 Acacia, Suite B-6, Rancho Cucamonga, CA 91730
Tel(909)484-2205 E-Mail: RHansen@leightongroup.com

PROJECT: **Stratham Homes Fontana**
PROJECT No.: **12282.003**
DATE RECEIVED: 03/01/19
MATRIX: SOIL
DATE EXTRACTED: 03/04/19
SAMPLING DATE: 03/01/19
DATE ANALYZED: 03/04/19
REPORT TO: Mr. ROBERT HANSEN
DATE REPORTED: 03/08/19

SAMPLE I.D.: **SS1-0.5**
LAB I.D.: 190301-28

Organochlorine Pesticides Analysis
method: EPA 8081A
Unit: mg/Kg = Milligram Per Kilogram = PPM

PARAMETER	SAMPLE RESULT	PQL	MDL	DF
Aldrin	ND	0.001	0.0001	1
alpha-BHC	ND	0.001	0.0002	1
beta-BHC	ND	0.001	0.0001	1
gamma-BHC (Lindane)	ND	0.001	0.0001	1
delta-BHC	ND	0.001	0.0002	1
alpha-Chlordane	ND	0.001	0.0002	1
gamma-Chlordane	ND	0.001	0.0001	1
Technical Chlordane	ND	0.005	0.0005	1
4,4'-DDD	ND	0.001	0.0003	1
4,4'-DDE	ND	0.001	0.0003	1
4,4'-DDT	ND	0.001	0.0001	1
Dieldrin	ND	0.001	0.0003	1
Endosulfan I	ND	0.001	0.0002	1
Endosulfan II	ND	0.001	0.0001	1
Endosulfan Sulfate	ND	0.001	0.0001	1
Endrin	ND	0.001	0.0004	1
Endrin Aldehyde	ND	0.001	0.0001	1
Endrin Ketone	ND	0.001	0.0001	1
Heptachlor Epoxide	ND	0.001	0.0003	1
Heptachlor	ND	0.001	0.0001	1
Methoxyclor	ND	0.001	0.0001	1
Toxaphene	ND	0.020	0.0100	1

COMMENTS:
DF = Dilution Factor
MDL = Method Detection Limit
PQL = Practical Quantitation Limit
Actual Detection Limit = PQL X DF
J = Trace Concentration between MDL and PQL
ND = Below the Actual Detection Limit or non-detected

Data Reviewed and Approved by:
CAL-DHS CERTIFICATE # 1555

Enviro – Chem, Inc.
1214 E. Lexington Avenue, Pomona, CA 91766 Tel (909) 590-5905 Fax (909) 590-5907

LABORATORY REPORT

CUSTOMER: **Leighton & Associates**
10532 Acacia, Suite B-6, Rancho Cucamonga, CA 91730
Tel(909)484-2205 E-Mail: RHansen@leightongroup.com

PROJECT: **Stratham Homes Fontana**
PROJECT No.: **12282.003**
DATE RECEIVED: 03/01/19
MATRIX: SOIL
DATE EXTRACTED: 03/04/19
SAMPLING DATE: 03/01/19
DATE ANALYZED: 03/05/19
REPORT TO: Mr. ROBERT HANSEN
DATE REPORTED: 03/08/19

SAMPLE I.D.: **SS2-0.5**
LAB I.D.: 190301-30

Organochlorine Pesticides Analysis
method: EPA 8081A
Unit: mg/Kg = Milligram Per Kilogram = PPM

PARAMETER	SAMPLE RESULT	PQL	MDL	DF
Aldrin	ND	0.001	0.0001	10*
alpha-BHC	ND	0.001	0.0002	10*
beta-BHC	ND	0.001	0.0001	10*
gamma-BHC (Lindane)	ND	0.001	0.0001	10*
delta-BHC	ND	0.001	0.0002	10*
alpha-Chlordane	ND	0.001	0.0002	10*
gamma-Chlordane	ND	0.001	0.0001	10*
Technical Chlordane	ND	0.005	0.0005	10*
4,4'-DDD	ND	0.001	0.0003	10*
4,4'-DDE	ND	0.001	0.0003	10*
4,4'-DDT	ND	0.001	0.0001	10*
Dieldrin	ND	0.001	0.0003	10*
Endosulfan I	ND	0.001	0.0002	10*
Endosulfan II	ND	0.001	0.0001	10*
Endosulfan Sulfate	ND	0.001	0.0001	10*
Endrin	ND	0.001	0.0004	10*
Endrin Aldehyde	ND	0.001	0.0001	10*
Endrin Ketone	ND	0.001	0.0001	10*
Heptachlor Epoxide	ND	0.001	0.0003	10*
Heptachlor	ND	0.001	0.0001	10*
Methoxyclor	ND	0.001	0.0001	10*
Toxaphene	ND	0.020	0.0100	10*

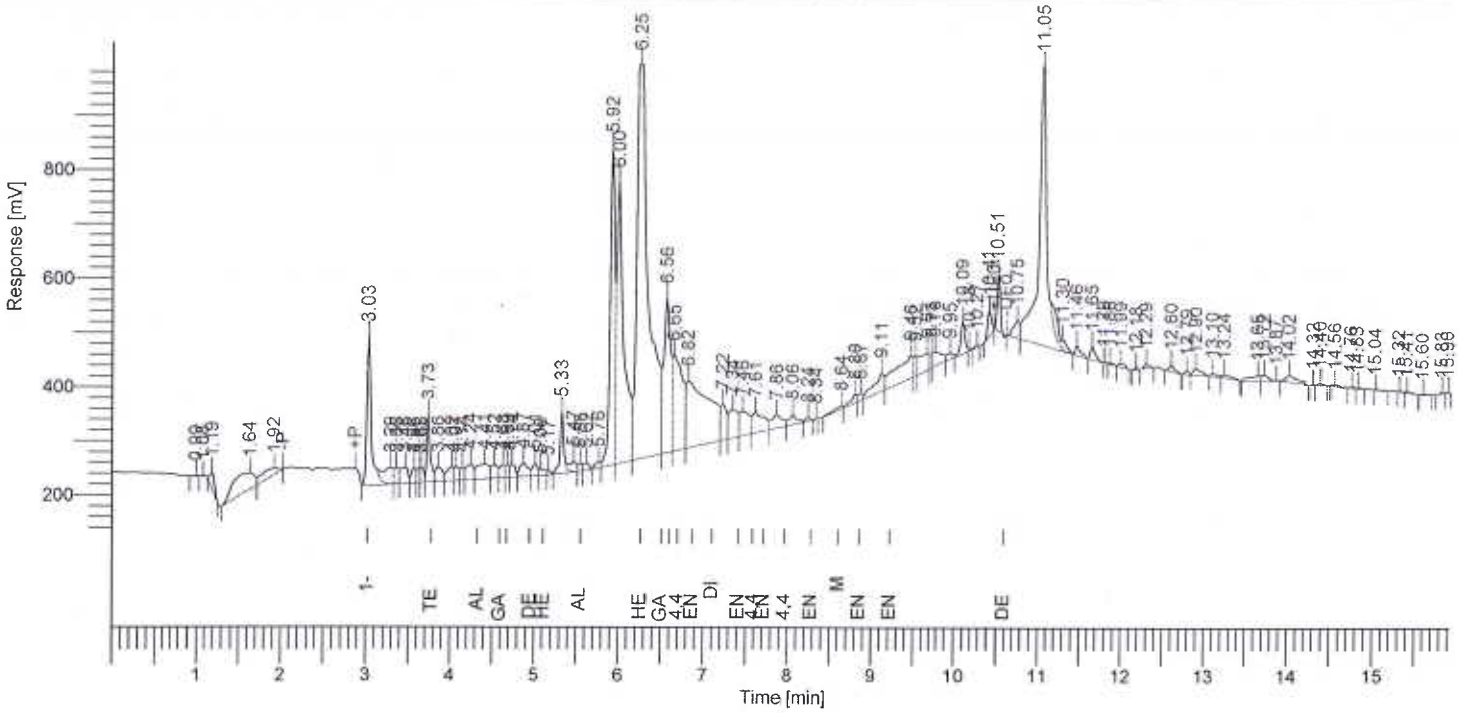
COMMENTS:
DF = Dilution Factor
MDL = Method Detection Limit
PQL = Practical Quantitation Limit
Actual Detection Limit = PQL X DF
J = Trace Concentration between MDL and PQL
ND = Below the Actual Detection Limit or non-detected
* = Actual Detection Limit raised due to matrix interference

Data Reviewed and Approved by:
CAL-DHS CERTIFICATE # 1555

Software Version : 6.3.2.0646
Sample Name : 190301-30 20/20 RE
Instrument Name : GC-J
Rack/Vial : 0/42
Sample Amount : 1.000000
Cycle : 11

Date : 3/5/2019 2:28:29 PM
Data Acquisition Time : 3/5/2019 2:04:58 PM
Channel : A
Operator : tcprocess
Dilution Factor : 1.000000

Result File : E:\GC DATA\GC-J\J02019\J1903\J190304\A067.rst
Sequence File : E:\GC DATA\GC-J\J02019\J1903\J190304\J190304.seq



Results

Component Name	Time [min]	Area [uV*sec]	Height [uV]	Adjusted Amount
1-Bromo-2-Nitrobenze	3.03	993195	269563	
Tetra chloro-meta-xy	3.73	366032	119280	82.0955
Alpha-BHC	4.24	177099	28118	0.0113
Gamma-BHC	4.63	99993	22786	0.0070
Beta-BHC	4.69	76982	23246	0.0113
Delta-BHC	5.01	97531	21775	0.0053
Heptachlor	5.08	57281	12608	0.0056
Aldrin	5.55	46031	13628	0.0035
Heptachlor Epoxide	6.25	7223163	726225	
Alpha Chlordane	6.56	1681925	283917	0.1514
4,4' DDE	6.65	1365900	176066	0.1390
Endosulfan I	6.82	2279085	123257	0.1994
Endrin	7.46	353694	45163	0.0572
4,4' DDD	7.61	360721	37748	0.0569
4,4' DDT	7.86	219398	24676	0.0431
Endrin Aldhyde	8.24	26192	6268	0.0049
Methoxychlor	8.64	54155	6039	0.0224
Endosulfan Sulfate	8.87	52772	12238	0.0085
Endrin Ketone	9.11	293519	33820	0.0387
Decachlorobiphenyl	10.51	270412	104855	83.7596
		16095079	2091278	166.6206

Warning – Signal level out-of-range in peak

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1214 E. Lexington Avenue, Pomona, CA 91766 Tel (909) 590-5905 Fax (909) 590-5907

LABORATORY REPORT

CUSTOMER: **Leighton & Associates**
10532 Acacia, Suite B-6, Rancho Cucamonga, CA 91730
Tel(909)484-2205 E-Mail: RHansen@leightongroup.com

PROJECT: **Stratham Homes Fontana**
PROJECT No.: **12282.003**
DATE RECEIVED: 03/01/19
MATRIX: SOIL
DATE EXTRACTED: 03/04/19
SAMPLING DATE: 03/01/19
DATE ANALYZED: 03/05/19
REPORT TO: Mr. ROBERT HANSEN
DATE REPORTED: 03/08/19

SAMPLE I.D.: **SS3-0.5**
LAB I.D.: 190301-32

Organochlorine Pesticides Analysis
method: EPA 8081A
Unit: mg/Kg = Milligram Per Kilogram = PPM

PARAMETER	SAMPLE RESULT	PQL	MDL	DF
Aldrin	ND	0.001	0.0001	4
alpha-BHC	ND	0.001	0.0002	4
beta-BHC	ND	0.001	0.0001	4
gamma-BHC (Lindane)	ND	0.001	0.0001	4
delta-BHC	ND	0.001	0.0002	4
alpha-Chlordane	ND	0.001	0.0002	4
gamma-Chlordane	ND	0.001	0.0001	4
Technical Chlordane	ND	0.005	0.0005	4
4,4'-DDD	ND	0.001	0.0003	4
4,4'-DDE	ND	0.001	0.0003	4
4,4'-DDT	0.012	0.001	0.0001	4
Dieldrin	ND	0.001	0.0003	4
Endosulfan I	ND	0.001	0.0002	4
Endosulfan II	ND	0.001	0.0001	4
Endosulfan Sulfate	ND	0.001	0.0001	4
Endrin	ND	0.001	0.0004	4
Endrin Aldehyde	ND	0.001	0.0001	4
Endrin Ketone	ND	0.001	0.0001	4
Heptachlor Epoxide	ND	0.001	0.0003	4
Heptachlor	ND	0.001	0.0001	4
Methoxyclor	ND	0.001	0.0001	4
Toxaphene	ND	0.020	0.0100	4

COMMENTS:
DF = Dilution Factor
MDL = Method Detection Limit
PQL = Practical Quantitation Limit
Actual Detection Limit = PQL X DF
J = Trace Concentration between MDL and PQL
ND = Below the Actual Detection Limit or non-detected

Data Reviewed and Approved by:
CAL-DHS CERTIFICATE # 1555

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PROJECT: **Stratham Homes Fontana**
PROJECT No.: **12282.003**
DATE RECEIVED: 03/01/19
MATRIX: SOIL
DATE EXTRACTED: 03/04/19
SAMPLING DATE: 03/01/19
DATE ANALYZED: 03/05/19
REPORT TO: Mr. ROBERT HANSEN
DATE REPORTED: 03/08/19

SAMPLE I.D.: **SS4-0.5**
LAB I.D.: 190301-34

Organochlorine Pesticides Analysis
method: EPA 8081A
Unit: mg/Kg = Milligram Per Kilogram = PPM

PARAMETER	SAMPLE RESULT	PQL	MDL	DF
Aldrin	ND	0.001	0.0001	1
alpha-BHC	ND	0.001	0.0002	1
beta-BHC	ND	0.001	0.0001	1
gamma-BHC (Lindane)	ND	0.001	0.0001	1
delta-BHC	ND	0.001	0.0002	1
alpha-Chlordane	ND	0.001	0.0002	1
gamma-Chlordane	ND	0.001	0.0001	1
Technical Chlordane	ND	0.005	0.0005	1
4,4'-DDD	ND	0.001	0.0003	1
4,4'-DDE	0.003	0.001	0.0003	1
4,4'-DDT	0.002	0.001	0.0001	1
Dieldrin	ND	0.001	0.0003	1
Endosulfan I	ND	0.001	0.0002	1
Endosulfan II	ND	0.001	0.0001	1
Endosulfan Sulfate	ND	0.001	0.0001	1
Endrin	ND	0.001	0.0004	1
Endrin Aldehyde	ND	0.001	0.0001	1
Endrin Ketone	ND	0.001	0.0001	1
Heptachlor Epoxide	ND	0.001	0.0003	1
Heptachlor	ND	0.001	0.0001	1
Methoxyclor	ND	0.001	0.0001	1
Toxaphene	ND	0.020	0.0100	1

COMMENTS:
DF = Dilution Factor
MDL = Method Detection Limit
PQL = Practical Quantitation Limit
Actual Detection Limit = PQL X DF
J = Trace Concentration between MDL and PQL
ND = Below the Actual Detection Limit or non-detected

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PROJECT: **Stratham Homes Fontana**
PROJECT No.: **12282.003**
DATE RECEIVED: 03/01/19
MATRIX: SOIL
DATE EXTRACTED: 03/04/19
SAMPLING DATE: 03/01/19
DATE ANALYZED: 03/05/19
REPORT TO: Mr. ROBERT HANSEN
DATE REPORTED: 03/08/19

SAMPLE I.D.: **SS5-0.5**
LAB I.D.: 190301-36

Organochlorine Pesticides Analysis
method: EPA 8081A
Unit: mg/Kg = Milligram Per Kilogram = PPM

PARAMETER	SAMPLE RESULT	PQL	MDL	DF
Aldrin	ND	0.001	0.0001	2
alpha-BHC	ND	0.001	0.0002	2
beta-BHC	ND	0.001	0.0001	2
gamma-BHC (Lindane)	ND	0.001	0.0001	2
delta-BHC	ND	0.001	0.0002	2
alpha-Chlordane	ND	0.001	0.0002	2
gamma-Chlordane	ND	0.001	0.0001	2
Technical Chlordane	ND	0.005	0.0005	2
4,4'-DDD	ND	0.001	0.0003	2
4,4'-DDE	0.012	0.001	0.0003	2
4,4'-DDT	0.004	0.001	0.0001	2
Dieldrin	ND	0.001	0.0003	2
Endosulfan I	ND	0.001	0.0002	2
Endosulfan II	ND	0.001	0.0001	2
Endosulfan Sulfate	ND	0.001	0.0001	2
Endrin	ND	0.001	0.0004	2
Endrin Aldehyde	ND	0.001	0.0001	2
Endrin Ketone	ND	0.001	0.0001	2
Heptachlor Epoxide	ND	0.001	0.0003	2
Heptachlor	ND	0.001	0.0001	2
Methoxyclor	ND	0.001	0.0001	2
Toxaphene	ND	0.020	0.0100	2

COMMENTS:
DF = Dilution Factor
MDL = Method Detection Limit
PQL = Practical Quantitation Limit
Actual Detection Limit = PQL X DF
J = Trace Concentration between MDL and PQL
ND = Below the Actual Detection Limit or non-detected

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PROJECT: **Stratham Homes Fontana**

PROJECT No.: **12282.003**
DATE RECEIVED: 03/01/19
DATE EXTRACTED: 03/04/19
DATE ANALYZED: 03/05/19
DATE REPORTED: 03/08/19

MATRIX: SOIL
SAMPLING DATE: 03/01/19
REPORT TO: Mr. ROBERT HANSEN

SAMPLE I.D.: **SS6-0.5**
LAB I.D.: 190301-38

Organochlorine Pesticides Analysis
method: EPA 8081A
Unit: mg/Kg = Milligram Per Kilogram = PPM

PARAMETER	SAMPLE RESULT	PQL	MDL	DF
Aldrin	ND	0.001	0.0001	1
alpha-BHC	ND	0.001	0.0002	1
beta-BHC	ND	0.001	0.0001	1
gamma-BHC (Lindane)	ND	0.001	0.0001	1
delta-BHC	ND	0.001	0.0002	1
alpha-Chlordane	ND	0.001	0.0002	1
gamma-Chlordane	ND	0.001	0.0001	1
Technical Chlordane	ND	0.005	0.0005	1
4,4'-DDD	ND	0.001	0.0003	1
4,4'-DDE	0.0007J	0.001	0.0003	1
4,4'-DDT	ND	0.001	0.0001	1
Dieldrin	ND	0.001	0.0003	1
Endosulfan I	ND	0.001	0.0002	1
Endosulfan II	ND	0.001	0.0001	1
Endosulfan Sulfate	ND	0.001	0.0001	1
Endrin	ND	0.001	0.0004	1
Endrin Aldehyde	ND	0.001	0.0001	1
Endrin Ketone	ND	0.001	0.0001	1
Heptachlor Epoxide	ND	0.001	0.0003	1
Heptachlor	ND	0.001	0.0001	1
Methoxyclor	ND	0.001	0.0001	1
Toxaphene	ND	0.020	0.0100	1

COMMENTS:
DF = Dilution Factor
MDL = Method Detection Limit
PQL = Practical Quantitation Limit
Actual Detection Limit = PQL X DF
J = Trace Concentration between MDL and PQL
ND = Below the Actual Detection Limit or non-detected

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PROJECT: **Stratham Homes Fontana**
PROJECT No.: **12282.003**
DATE RECEIVED: 03/01/19
MATRIX: SOIL
DATE EXTRACTED: 03/04/19
SAMPLING DATE: 03/01/19
DATE ANALYZED: 03/05/19
REPORT TO: Mr. ROBERT HANSEN
DATE REPORTED: 03/08/19

SAMPLE I.D.: **SS7-0.5**
LAB I.D.: 190301-40

Organochlorine Pesticides Analysis
method: EPA 8081A
Unit: mg/Kg = Milligram Per Kilogram = PPM

PARAMETER	SAMPLE RESULT	PQL	MDL	DF
Aldrin	ND	0.001	0.0001	1
alpha-BHC	ND	0.001	0.0002	1
beta-BHC	ND	0.001	0.0001	1
gamma-BHC (Lindane)	ND	0.001	0.0001	1
delta-BHC	ND	0.001	0.0002	1
alpha-Chlordane	ND	0.001	0.0002	1
gamma-Chlordane	ND	0.001	0.0001	1
Technical Chlordane	ND	0.005	0.0005	1
4,4'-DDD	ND	0.001	0.0003	1
4,4'-DDE	0.0008J	0.001	0.0003	1
4,4'-DDT	ND	0.001	0.0001	1
Dieldrin	ND	0.001	0.0003	1
Endosulfan I	ND	0.001	0.0002	1
Endosulfan II	ND	0.001	0.0001	1
Endosulfan Sulfate	ND	0.001	0.0001	1
Endrin	ND	0.001	0.0004	1
Endrin Aldehyde	ND	0.001	0.0001	1
Endrin Ketone	ND	0.001	0.0001	1
Heptachlor Epoxide	ND	0.001	0.0003	1
Heptachlor	ND	0.001	0.0001	1
Methoxyclor	ND	0.001	0.0001	1
Toxaphene	ND	0.020	0.0100	1

COMMENTS:
DF = Dilution Factor
MDL = Method Detection Limit
PQL = Practical Quantitation Limit
Actual Detection Limit = PQL X DF
J = Trace Concentration between MDL and PQL
ND = Below the Actual Detection Limit or non-detected

Data Reviewed and Approved by:
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PROJECT: **Stratham Homes Fontana**
PROJECT No.: **12282.003**
DATE RECEIVED: 03/01/19
MATRIX: SOIL
DATE EXTRACTED: 03/04/19
SAMPLING DATE: 03/01/19
DATE ANALYZED: 03/05/19
REPORT TO: Mr. ROBERT HANSEN
DATE REPORTED: 03/08/19

SAMPLE I.D.: **SS8-0.5**
LAB I.D.: 190301-42

Organochlorine Pesticides Analysis
method: EPA 8081A
Unit: mg/Kg = Milligram Per Kilogram = PPM

PARAMETER	SAMPLE RESULT	PQL	MDL	DF
Aldrin	ND	0.001	0.0001	1
alpha-BHC	ND	0.001	0.0002	1
beta-BHC	ND	0.001	0.0001	1
gamma-BHC (Lindane)	ND	0.001	0.0001	1
delta-BHC	ND	0.001	0.0002	1
alpha-Chlordane	ND	0.001	0.0002	1
gamma-Chlordane	ND	0.001	0.0001	1
Technical Chlordane	ND	0.005	0.0005	1
4,4'-DDD	ND	0.001	0.0003	1
4,4'-DDE	0.0008J	0.001	0.0003	1
4,4'-DDT	ND	0.001	0.0001	1
Dieldrin	ND	0.001	0.0003	1
Endosulfan I	ND	0.001	0.0002	1
Endosulfan II	ND	0.001	0.0001	1
Endosulfan Sulfate	ND	0.001	0.0001	1
Endrin	ND	0.001	0.0004	1
Endrin Aldehyde	ND	0.001	0.0001	1
Endrin Ketone	ND	0.001	0.0001	1
Heptachlor Epoxide	ND	0.001	0.0003	1
Heptachlor	ND	0.001	0.0001	1
Methoxyclor	ND	0.001	0.0001	1
Toxaphene	ND	0.020	0.0100	1

COMMENTS:
DF = Dilution Factor
MDL = Method Detection Limit
PQL = Practical Quantitation Limit
Actual Detection Limit = PQL X DF
J = Trace Concentration between MDL and PQL
ND = Below the Actual Detection Limit or non-detected

Data Reviewed and Approved by:
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PROJECT: **Stratham Homes Fontana**
PROJECT No.: **12282.003**
DATE RECEIVED: 03/01/19
MATRIX: SOIL
DATE EXTRACTED: 03/04/19
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DATE ANALYZED: 03/04/19
REPORT TO: Mr. ROBERT HANSEN
DATE REPORTED: 03/08/19

SAMPLE I.D.: **SS9-0.5**
LAB I.D.: 190301-44

Organochlorine Pesticides Analysis
method: EPA 8081A
Unit: mg/Kg = Milligram Per Kilogram = PPM

PARAMETER	SAMPLE RESULT	PQL	MDL	DF
Aldrin	ND	0.001	0.0001	1
alpha-BHC	ND	0.001	0.0002	1
beta-BHC	ND	0.001	0.0001	1
gamma-BHC (Lindane)	ND	0.001	0.0001	1
delta-BHC	ND	0.001	0.0002	1
alpha-Chlordane	ND	0.001	0.0002	1
gamma-Chlordane	ND	0.001	0.0001	1
Technical Chlordane	ND	0.005	0.0005	1
4,4'-DDD	ND	0.001	0.0003	1
4,4'-DDE	ND	0.001	0.0003	1
4,4'-DDT	ND	0.001	0.0001	1
Dieldrin	ND	0.001	0.0003	1
Endosulfan I	ND	0.001	0.0002	1
Endosulfan II	ND	0.001	0.0001	1
Endosulfan Sulfate	ND	0.001	0.0001	1
Endrin	ND	0.001	0.0004	1
Endrin Aldehyde	ND	0.001	0.0001	1
Endrin Ketone	ND	0.001	0.0001	1
Heptachlor Epoxide	ND	0.001	0.0003	1
Heptachlor	ND	0.001	0.0001	1
Methoxyclor	ND	0.001	0.0001	1
Toxaphene	ND	0.020	0.0100	1

COMMENTS:
DF = Dilution Factor
MDL = Method Detection Limit
PQL = Practical Quantitation Limit
Actual Detection Limit = PQL X DF
J = Trace Concentration between MDL and PQL
ND = Below the Actual Detection Limit or non-detected

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PROJECT: **Stratham Homes Fontana**
PROJECT No.: **12282.003**
DATE RECEIVED: 03/01/19
MATRIX: SOIL
DATE EXTRACTED: 03/04/19
SAMPLING DATE: 03/01/19
DATE ANALYZED: 03/04/19
REPORT TO: Mr. ROBERT HANSEN
DATE REPORTED: 03/08/19

SAMPLE I.D.: **SS10-0.5**
LAB I.D.: 190301-46

Organochlorine Pesticides Analysis
method: EPA 8081A
Unit: mg/Kg = Milligram Per Kilogram = PPM

PARAMETER	SAMPLE RESULT	PQL	MDL	DF
Aldrin	ND	0.001	0.0001	1
alpha-BHC	ND	0.001	0.0002	1
beta-BHC	ND	0.001	0.0001	1
gamma-BHC (Lindane)	ND	0.001	0.0001	1
delta-BHC	ND	0.001	0.0002	1
alpha-Chlordane	ND	0.001	0.0002	1
gamma-Chlordane	ND	0.001	0.0001	1
Technical Chlordane	ND	0.005	0.0005	1
4,4'-DDD	ND	0.001	0.0003	1
4,4'-DDE	ND	0.001	0.0003	1
4,4'-DDT	ND	0.001	0.0001	1
Dieldrin	ND	0.001	0.0003	1
Endosulfan I	ND	0.001	0.0002	1
Endosulfan II	ND	0.001	0.0001	1
Endosulfan Sulfate	ND	0.001	0.0001	1
Endrin	ND	0.001	0.0004	1
Endrin Aldehyde	ND	0.001	0.0001	1
Endrin Ketone	ND	0.001	0.0001	1
Heptachlor Epoxide	ND	0.001	0.0003	1
Heptachlor	ND	0.001	0.0001	1
Methoxyclor	ND	0.001	0.0001	1
Toxaphene	ND	0.020	0.0100	1

COMMENTS:
DF = Dilution Factor
MDL = Method Detection Limit
PQL = Practical Quantitation Limit
Actual Detection Limit = PQL X DF
J = Trace Concentration between MDL and PQL
ND = Below the Actual Detection Limit or non-detected

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PROJECT: **Stratham Homes Fontana**
PROJECT No.: **12282.003**
DATE RECEIVED: 03/01/19
MATRIX: SOIL
DATE EXTRACTED: 03/04/19
SAMPLING DATE: 03/01/19
DATE ANALYZED: 03/04/19
REPORT TO: Mr. ROBERT HANSEN
DATE REPORTED: 03/08/19

SAMPLE I.D.: **SS11-0.5**
LAB I.D.: 190301-48

Organochlorine Pesticides Analysis
method: EPA 8081A
Unit: mg/Kg = Milligram Per Kilogram = PPM

PARAMETER	SAMPLE RESULT	PQL	MDL	DF
Aldrin	ND	0.001	0.0001	1
alpha-BHC	ND	0.001	0.0002	1
beta-BHC	ND	0.001	0.0001	1
gamma-BHC (Lindane)	ND	0.001	0.0001	1
delta-BHC	ND	0.001	0.0002	1
alpha-Chlordane	ND	0.001	0.0002	1
gamma-Chlordane	ND	0.001	0.0001	1
Technical Chlordane	ND	0.005	0.0005	1
4,4'-DDD	ND	0.001	0.0003	1
4,4'-DDE	ND	0.001	0.0003	1
4,4'-DDT	ND	0.001	0.0001	1
Dieldrin	ND	0.001	0.0003	1
Endosulfan I	ND	0.001	0.0002	1
Endosulfan II	ND	0.001	0.0001	1
Endosulfan Sulfate	ND	0.001	0.0001	1
Endrin	ND	0.001	0.0004	1
Endrin Aldehyde	ND	0.001	0.0001	1
Endrin Ketone	ND	0.001	0.0001	1
Heptachlor Epoxide	ND	0.001	0.0003	1
Heptachlor	ND	0.001	0.0001	1
Methoxyclor	ND	0.001	0.0001	1
Toxaphene	ND	0.020	0.0100	1

COMMENTS:
DF = Dilution Factor
MDL = Method Detection Limit
PQL = Practical Quantitation Limit
Actual Detection Limit = PQL X DF
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PROJECT: **Stratham Homes Fontana**
PROJECT No.: **12282.003**
DATE RECEIVED: 03/01/19
DATE EXTRACTED: 03/04/19
DATE ANALYZED: 03/05/19
DATE REPORTED: 03/08/19

MATRIX: SOIL
SAMPLING DATE: 03/01/19
REPORT TO: Mr. ROBERT HANSEN

SAMPLE I.D.: **CS1-2.5**
LAB I.D.: 190301-29/-31/-33 (Composite)

Organochlorine Pesticides Analysis
method: EPA 8081A
Unit: mg/Kg = Milligram Per Kilogram = PPM

PARAMETER	SAMPLE RESULT	PQL	MDL	DF
Aldrin	ND	0.001	0.0001	1
alpha-BHC	ND	0.001	0.0002	1
beta-BHC	ND	0.001	0.0001	1
gamma-BHC (Lindane)	ND	0.001	0.0001	1
delta-BHC	ND	0.001	0.0002	1
alpha-Chlordane	ND	0.001	0.0002	1
gamma-Chlordane	ND	0.001	0.0001	1
Technical Chlordane	ND	0.005	0.0005	1
4,4'-DDD	ND	0.001	0.0003	1
4,4'-DDE	0.0007J	0.001	0.0003	1
4,4'-DDT	0.004	0.001	0.0001	1
Dieldrin	ND	0.001	0.0003	1
Endosulfan I	ND	0.001	0.0002	1
Endosulfan II	ND	0.001	0.0001	1
Endosulfan Sulfate	ND	0.001	0.0001	1
Endrin	ND	0.001	0.0004	1
Endrin Aldehyde	ND	0.001	0.0001	1
Endrin Ketone	ND	0.001	0.0001	1
Heptachlor Epoxide	ND	0.001	0.0003	1
Heptachlor	ND	0.001	0.0001	1
Methoxyclor	ND	0.001	0.0001	1
Toxaphene	ND	0.020	0.0100	1

COMMENTS:
DF = Dilution Factor
MDL = Method Detection Limit
PQL = Practical Quantitation Limit
Actual Detection Limit = PQL X DF
J = Trace Concentration between MDL and PQL
ND = Below the Actual Detection Limit or non-detected

Data Reviewed and Approved by:
CAL-DHS CERTIFICATE # 1555

Enviro – Chem, Inc.
1214 E. Lexington Avenue, Pomona, CA 91766 Tel (909) 590-5905 Fax (909) 590-5907

LABORATORY REPORT

CUSTOMER: **Leighton & Associates**
10532 Acacia, Suite B-6, Rancho Cucamonga, CA 91730
Tel(909)484-2205 E-Mail: RHansen@leightongroup.com

PROJECT: **Stratham Homes Fontana**
PROJECT No.: **12282.003**
DATE RECEIVED: 03/01/19
DATE EXTRACTED: 03/04/19
DATE ANALYZED: 03/05/19
DATE REPORTED: 03/08/19

MATRIX: SOIL
SAMPLING DATE: 03/01/19
REPORT TO: Mr. ROBERT HANSEN

SAMPLE I.D.: **CS4-2.5**
LAB I.D.: 190301-35/-37 (Composite)

Organochlorine Pesticides Analysis
method: EPA 8081A
Unit: mg/Kg = Milligram Per Kilogram = PPM

PARAMETER	SAMPLE RESULT	PQL	MDL	DF
Aldrin	ND	0.001	0.0001	2
alpha-BHC	ND	0.001	0.0002	2
beta-BHC	ND	0.001	0.0001	2
gamma-BHC (Lindane)	ND	0.001	0.0001	2
delta-BHC	ND	0.001	0.0002	2
alpha-Chlordane	ND	0.001	0.0002	2
gamma-Chlordane	ND	0.001	0.0001	2
Technical Chlordane	ND	0.005	0.0005	2
4,4'-DDD	ND	0.001	0.0003	2
4,4'-DDE	0.011	0.001	0.0003	2
4,4'-DDT	0.007	0.001	0.0001	2
Dieldrin	ND	0.001	0.0003	2
Endosulfan I	ND	0.001	0.0002	2
Endosulfan II	ND	0.001	0.0001	2
Endosulfan Sulfate	ND	0.001	0.0001	2
Endrin	ND	0.001	0.0004	2
Endrin Aldehyde	ND	0.001	0.0001	2
Endrin Ketone	ND	0.001	0.0001	2
Heptachlor Epoxide	ND	0.001	0.0003	2
Heptachlor	ND	0.001	0.0001	2
Methoxyclor	ND	0.001	0.0001	2
Toxaphene	ND	0.020	0.0100	2

COMMENTS:
DF = Dilution Factor
MDL = Method Detection Limit
PQL = Practical Quantitation Limit
Actual Detection Limit = PQL X DF
J = Trace Concentration between MDL and PQL
ND = Below the Actual Detection Limit or non-detected

Data Reviewed and Approved by:
CAL-DHS CERTIFICATE # 1555

Enviro – Chem, Inc.
1214 E. Lexington Avenue, Pomona, CA 91766 Tel (909) 590-5905 Fax (909) 590-5907

LABORATORY REPORT

CUSTOMER: **Leighton & Associates**
10532 Acacia, Suite B-6, Rancho Cucamonga, CA 91730
Tel(909)484-2205 E-Mail: RHansen@leightongroup.com

PROJECT: **Stratham Homes Fontana**

PROJECT No.: **12282.003**
DATE RECEIVED: 03/01/19
DATE EXTRACTED: 03/04/19
DATE ANALYZED: 03/04/19
DATE REPORTED: 03/08/19

MATRIX: SOIL
SAMPLING DATE: 03/01/19
REPORT TO: Mr. ROBERT HANSEN

SAMPLE I.D.: **CS2-2.5**
LAB I.D.: 190301-39/-41/-43 (Composite)

Organochlorine Pesticides Analysis
method: EPA 8081A
Unit: mg/Kg = Milligram Per Kilogram = PPM

PARAMETER	SAMPLE RESULT	PQL	MDL	DF
Aldrin	ND	0.001	0.0001	1
alpha-BHC	ND	0.001	0.0002	1
beta-BHC	ND	0.001	0.0001	1
gamma-BHC (Lindane)	ND	0.001	0.0001	1
delta-BHC	ND	0.001	0.0002	1
alpha-Chlordane	ND	0.001	0.0002	1
gamma-Chlordane	ND	0.001	0.0001	1
Technical Chlordane	ND	0.005	0.0005	1
4,4'-DDD	ND	0.001	0.0003	1
4,4'-DDE	ND	0.001	0.0003	1
4,4'-DDT	ND	0.001	0.0001	1
Dieldrin	ND	0.001	0.0003	1
Endosulfan I	ND	0.001	0.0002	1
Endosulfan II	ND	0.001	0.0001	1
Endosulfan Sulfate	ND	0.001	0.0001	1
Endrin	ND	0.001	0.0004	1
Endrin Aldehyde	ND	0.001	0.0001	1
Endrin Ketone	ND	0.001	0.0001	1
Heptachlor Epoxide	ND	0.001	0.0003	1
Heptachlor	ND	0.001	0.0001	1
Methoxyclor	ND	0.001	0.0001	1
Toxaphene	ND	0.020	0.0100	1

COMMENTS:
DF = Dilution Factor
MDL = Method Detection Limit
PQL = Practical Quantitation Limit
Actual Detection Limit = PQL X DF
J = Trace Concentration between MDL and PQL
ND = Below the Actual Detection Limit or non-detected

Data Reviewed and Approved by:
CAL-DHS CERTIFICATE # 1555

Enviro – Chem, Inc.
1214 E. Lexington Avenue, Pomona, CA 91766 Tel (909) 590-5905 Fax (909) 590-5907

LABORATORY REPORT

CUSTOMER: **Leighton & Associates**
10532 Acacia, Suite B-6, Rancho Cucamonga, CA 91730
Tel(909)484-2205 E-Mail: RHansen@leightongroup.com

PROJECT: **Stratham Homes Fontana**
PROJECT No.: **12282.003**
DATE RECEIVED: 03/01/19
DATE EXTRACTED: 03/04/19
DATE ANALYZED: 03/04/19
DATE REPORTED: 03/08/19

MATRIX: SOIL
SAMPLING DATE: 03/01/19
REPORT TO: Mr. ROBERT HANSEN

SAMPLE I.D.: **CS3-2.5**
LAB I.D.: 190301-45/-47/-49 (Composite)

Organochlorine Pesticides Analysis
method: EPA 8081A
Unit: mg/Kg = Milligram Per Kilogram = PPM

PARAMETER	SAMPLE RESULT	PQL	MDL	DF
Aldrin	ND	0.001	0.0001	1
alpha-BHC	ND	0.001	0.0002	1
beta-BHC	ND	0.001	0.0001	1
gamma-BHC (Lindane)	ND	0.001	0.0001	1
delta-BHC	ND	0.001	0.0002	1
alpha-Chlordane	ND	0.001	0.0002	1
gamma-Chlordane	ND	0.001	0.0001	1
Technical Chlordane	ND	0.005	0.0005	1
4,4'-DDD	ND	0.001	0.0003	1
4,4'-DDE	0.004	0.001	0.0003	1
4,4'-DDT	0.0007J	0.001	0.0001	1
Dieldrin	ND	0.001	0.0003	1
Endosulfan I	ND	0.001	0.0002	1
Endosulfan II	ND	0.001	0.0001	1
Endosulfan Sulfate	ND	0.001	0.0001	1
Endrin	ND	0.001	0.0004	1
Endrin Aldehyde	ND	0.001	0.0001	1
Endrin Ketone	ND	0.001	0.0001	1
Heptachlor Epoxide	ND	0.001	0.0003	1
Heptachlor	ND	0.001	0.0001	1
Methoxyclor	ND	0.001	0.0001	1
Toxaphene	ND	0.020	0.0100	1

COMMENTS:
DF = Dilution Factor
MDL = Method Detection Limit
PQL = Practical Quantitation Limit
Actual Detection Limit = PQL X DF
J = Trace Concentration between MDL and PQL
ND = Below the Actual Detection Limit or non-detected

Data Reviewed and Approved by:
CAL-DHS CERTIFICATE # 1555

Enviro – Chem, Inc.
1214 E. Lexington Avenue, Pomona, CA 91766 Tel (909) 590-5905 Fax (909) 590-5907

METHOD BLANK REPORT

CUSTOMER: **Leighton & Associates**
10532 Acacia, Suite B-6
Rancho Cucamonga, CA 91730
Tel(909)484-2205 E-Mail: RHansen@leightongroup.com

PROJECT: **Stratham Homes Fontana**

PROJECT No.: **12282.003**
DATE RECEIVED: 03/01/19
DATE EXTRACTED: 02/19/19
DATE ANALYZED: 02/19/19
DATE REPORTED: 03/08/19

MATRIX: SOIL
SAMPLING DATE: 03/01/19
REPORT TO: Mr. ROBERT HANSEN

METHOD BLANK FOR LAB I.D.:
190301-28, -30, -32, -34, -36, -38, -40, -42, -44, -46, -48 &
190301-29/-31/-33 (COMPOSITE), 190301-35/-37 (COMPOSITE),
190301-39/-41/-43 (COMPOSITE), 190301-45/-47/-49 (COMPOSITE)

Organochlorine Pesticides Analysis
method: EPA 8081A
Unit: mg/Kg = Milligram Per Kilogram = PPM

PARAMETER	SAMPLE RESULT	PQL	MDL	DF
Aldrin	ND	0.001	0.0001	1
alpha-BHC	ND	0.001	0.0001	1
beta-BHC	ND	0.001	0.0001	1
gamma-BHC (Lindane)	ND	0.001	0.0001	1
delta-BHC	ND	0.001	0.0001	1
alpha-Chlordane	ND	0.001	0.0001	1
gamma-Chlordane	ND	0.001	0.0001	1
Technical Chlordane	ND	0.005	0.0005	1
4,4'-DDD	ND	0.001	0.0001	1
4,4'-DDE	ND	0.001	0.0001	1
4,4'-DDT	ND	0.001	0.0001	1
Dieldrin	ND	0.001	0.0001	1
Endosulfan I	ND	0.001	0.0001	1
Endosulfan II	ND	0.001	0.0001	1
Endosulfan Sulfate	ND	0.001	0.0001	1
Endrin	ND	0.001	0.0001	1
Endrin Aldehyde	ND	0.001	0.0001	1
Endrin Ketone	ND	0.001	0.0001	1
Heptachlor Epoxide	ND	0.001	0.0001	1
Heptachlor	ND	0.001	0.0001	1
Methoxyclor	ND	0.001	0.0001	1
Toxaphene	ND	0.020	0.0100	1

COMMENTS:
DF = Dilution Factor
MDL = Method Detection Limit
PQL = Practical Quantitation Limit
Actual Detection Limit = PQL X DF
J = Trace Concentration between MDL and PQL
ND = Below the Actual Detection Limit or non-detected

Data Reviewed and Approved by:
CAL-DHS CERTIFICATE # 1555

Enviro-Chem, Inc.

1214 E. Lexington Avenue, Pomona, CA 91766 Tel (909)590-5905 Fax (909)590-5907

EPA 8081 QA/QC Report

Matrix: **Soil/Solid/Liquid(Oil)** Date Analyzed: 3/4-5/2019

Unit: **mg/Kg (ppm)**

Matrix Spike (MS)/Matrix Spike Duplicate (MSD)

Spiked Sample Lab I.D.: **190304-LCS1/2**

Analyte	S.R.	spk conc	MS	%REC	MSD	%REC	%RPD	ACP %RPD	ACP %REC
Gamma-BHC	0.000	0.00500	0.00565	**113%**	0.00621	**124%**	**9%**	**0-20%**	**70-130**
Aldrin	0.000	0.00500	0.00504	**101%**	0.00514	**103%**	**2%**	**0-20%**	**70-130**
4,4-DDE	0.000	0.00500	0.00529	**106%**	0.00536	**107%**	**1%**	**0-20%**	**70-130**

Lab Control Spike (LCS) Recovery:

Analyte	spk conc	LCS	% REC	ACP %REC
Gamma-BHC	0.00500	0.00456	**91%**	**75-125**
Aldrin	0.00500	0.00570	**114%**	**75-125**
4,4-DDE	0.00500	0.00427	**85%**	**75-125**
Dieldrin	0.00500	0.00462	**92%**	**75-125**

Surrogate Recovery	ACP%	%REC	%REC	%REC	%REC	%REC	%REC	%REC
Sample I.D.		MB	190301-28	190301-29,31,33	190301-30	190301-32	190301-34	190301-35,37
Tetra-chloro-meta-xylene	50-150	99%	117%	110%	82%	53%	61%	97%
Decachlorobiphenyl	50-150	116%	106%	112%	84%	81%	119%	138%

Surrogate Recovery	ACP%	%REC	%REC	%REC	%REC	%REC	%REC	%REC
Sample I.D.		190301-36	190301-38	190301-39,41,43	190301-40	190301-42	190301-44	190301-45,47,49
Tetra-chloro-meta-xylene	50-150	105%	98%	118%	79%	103%	129%	109%
Decachlorobiphenyl	50-150	141%	140%	97%	127%	142%	124%	137%

Surrogate Recovery	ACP%	%REC	%REC	%REC	%REC	%REC	%REC	%REC
Sample I.D.		190301-46	190301-48					
Tetra-chloro-meta-xylene	50-150	121%	110%					
Decachlorobiphenyl	50-150	104%	98%					

S.R. = Sample Result

spk conc = Spike Concentration

%REC = Percent Recovery

ACP %RPD = Acceptable Percent RPD Range

ACP %REC = Acceptable Percent Recovery Range

** = Surrogate fail due to matrix interference (If Marked)*

Note: ***LCS, MS, MSD are in control therefore results are in control.***

Analyzed and Reviewed By: _____

Final Reviewer: _____

Enviro-Chem, Inc. Laboratories
1214 E. Lexington Avenue,
Pomona, CA 91766
Tel: (909) 590-5905 Fax: (909) 590-5907
CA-DHS ELAP CERTIFICATE #1555

Turnaround Time
0 Same Day
0 24 Hours
0 48 Hours
0 ~~72 Hours~~
X 1 Week (Standard)
Other:

Misc./PO# composite 2.5 samples shown below

SAMPLE ID	LAB ID	SAMPLING DATE	SAMPLING TIME	MATRIX	No. OF CONTAINERS	TEMPERATURE	PRESERVATION	OCPS 8081A	Arsenic 6010B	Copper 6010B							COMMENTS
SS1-0.5	190301-28	3/1/19	0809	Soil	1		ice	X	X	X							
SS1-2.5	-29		0813					X	X	X							CS1-2.5
SS2-0.5	-30		0817					X	X	X							
SS2-2.5	-31		0819					X	X	X							CS1-2.5
SS3-0.5	-32		0824					X	X	X							
SS3-2.5	-33		0826					X	X	X							CS1-2.5
SS4-0.5	-34		0905					X	X	X							
SS4-2.5	-35		0907					X	X	X							CS4-2.5
SS5-0.5	-36		0859					X	X	X							
SS5-2.5	-37		0902					X	X	X							CS4-2.5
SS6-0.5	-38		0831					X	X	X							
SS6-2.5	-39		0833					X	X	X							CS2-2.5
SS7-0.5	-40		0838					X	X	X							
SS7-2.5	-41		0840					X	X	X							CS2-2.5
SS8-0.5	-42	3/1/19	0843	Soil	1		ice	X	X	X							

Analysis Required

Company Name: Leighton and Associates Inc
Address: 10532 Acacia St Suite B6
City/State/Zip: Rancho Cucamonga CA 91730

Project Contact: Robert Hansen
Tel: 909-527-8782
email Fax: rhansen@leightongroup.com

Sampler's Signature: Breanna Copeland
Project Name/ID: 12282.003 Stratham Homes Fontana

Relinquished by:	Received by:	Date & Time:
Breanna Copeland	[illegible]	03-01-19 1345
[illegible]	[illegible]	03-01-19 1455

Instructions for Sample Storage After Analysis:
O Dispose of O Return to Client O Store (30 Days)
O Other:

CHAIN OF CUSTODY RECORD

Date: 3-1-2019

WHITE WITH SAMPLE • YELLOW TO CLIENT

Enviro-Chem, Inc. Laboratories
1214 E. Lexington Avenue,
Pomona, CA 91766
Tel: (909) 590-5905 Fax: (909) 590-5907
CA-DHS ELAP CERTIFICATE #1555

Turnaround Time
0 Same Day
0 24 Hours
0 48 Hours
0 72 Hours
X 1 Week (Standard)
Other:

Misc./PO#

SAMPLE ID	LAB ID	SAMPLING DATE	SAMPLING TIME	MATRIX	No. OF CONTAINERS	TEMPERATURE	PRESERVATION	OCPs 8081A	Arsenic 6010B	Copper 6010B						COMMENTS
SS8-2.5	190301-43	3/1/19	0845	soil	1		ice	X	X	X						CS2-2.5
SS9-0.5	-44		0899					X	X	X						
SS9-2.5	-45		0856					X	X	X						CS3-2.5
SS10-0.5	-46		0910					X	X	X						
SS10-2.5	-47		0912					X	X	X						CS3-2.5
SS11-0.5	-48		0849					X	X	X						
SS11-2.5	-49	3/1/19	0851	Soil	1		ice	X	X	X						CS3-2.5

Analysis Required

Company Name: Leighton + Associates Inc	Project Contact: Robert Hansen
Address: 10532 Acacia St, Suite B6	Tel: 909-527-8782
City/State/Zip: Rancho Cucamonga CA 91730	email Fax: rhansen@leightongroup.com
Sampler's Signature: Breanna Copeland	Project Name/ID: 17282.003 Stratham Homes Fontana

Relinquished by: Breanna Copeland	Received by: [signature]	Date & Time: 03-01-19 1345	Instructions for Sample Storage After Analysis:
Relinquished by: [signature]	Received by: [signature]	Date & Time: 03-01-19 1435	O Dispose of O Return to Client O Store (30 Days)
Relinquished by:	Received by:	Date & Time:	O Other:

CHAIN OF CUSTODY RECORD

Date: 3-1-2019

WHITE WITH SAMPLE • YELLOW TO CLIENT

Appendix K
Preliminary Drainage Report

HIGHLAND RESIDENTIAL PROJECT
INITIAL STUDY

ALLARD ENGINEERING
civil engineering land surveying land planning

Tentative Tract Map No. 20297
15035 Highland

Preliminary Drainage Report

July 30, 2019

Prepared For:
Stratham Homes
2201 Dupont Drive
Irvine, CA 92612
(949) 833-1554

Prepared By:
Allard Engineering
16866 Seville Avenue
Fontana, CA 92335
(909) 356-1815

Prepared under the supervision of:

_____
Reynold R. Allard, P.E. RCE 79086 Exp. 03-31-20

Table of Contents

Discussion

Reference Material

Hydrology

Onsite Hydrology
- Developed Hydrology Exhibit
- Developed Rational Method (100 Year Storm)

Offsite Hydrology
- Developed Offsite Hydrology Exhibit
- Developed Rational Method (100 Year Storm)

Hydraulic Calculations

- Typical Onsite Drive Isle Street Capacity
- Offsite Water Depth and Catch Basin Capacity for Beech Avenue and South Highland Avenue

Discussion

Discussion

Introduction

Tentative Tract Map No. 20297 is proposing 10.2 acres of detached residential units comprising of a townhome/condo style development. The entire project consists of 110 salable units in a private community gated community. The community will include common open space area such as pool, clubhouse and park play area. The development will have a HOA to maintain the community elements along with the storm drain system and WQMP BMPs for the site. The project will also be proposing street frontage improvement to Hemlock Avenue South Highland Avenue consisting of A.C. pavement, curb and gutter and parkway improvements being approximately 1100-ft.

The project is located in the City of Fontana, bounded by South Highland Avenue to the south, Hemlock Avenue to the East, San Sevaine Avenue to the West and Old Highland Avenue/210 Freeway to the North. The existing site undeveloped land with sparse vegetation and drains southerly to South Highland Avenue.

Purpose

The purpose of this report is to provide preliminary hydrology and to confirm that the master plan storm drain downstream of the project is adequately sized to convey this project, and to demonstrate that this project is in conformance with the master plan of drainage.

Criteria

The San Bernardino County Hydrology Manual criteria and methodology was used to determine the developed runoff. NOAA Atlas 14 maps were used to determine the 100 year storm intensity. Advanced Engineering Software was utilized to perform computations.

Findings

The proposed drainage solution for the project will consists of a series of graded inlets and catch basins that will drain into a storm drain system that joins a proposed 36” RCP storm drain in South Highland Avenue. The proposed 36” RCP tie to an existing 36” RCP storm drain in San Sevaine Avenue to the West and shown on DWG NO. 2939. DWG can be found in the reference material section of this report.

The onsite rational method shows the developed site will generate 34.1cfs of runoff in a 100 year storm event. The existing 36” RCP in San Sevaine Avenue has 50.9cfs shown in the profile with the HGL just above the pipe and well below the street. This line has sufficient capacity for the project’s developed flows. The offsite hydrology found that there is 7.6cfs in South Highland Avenue after Hemlock Avenue. The project will propose a 7’ catch basin in South Highland Avenue just east of the project’s entrance to reduce water in the street an allow plenty of street capacity for remaining project’s frontage.

The proposed drainage also includes underground infiltration/retention chamber systems that will act as the sites primary treatment system for water quality. The storm flows will be conveyed to these systems and then allowed to then continue downstream once the water quality treatment volume has been met. Due to the preliminary nature of this report addition onsite hydraulic capacity will be performed with the final drainage report to size the onsite storm drain system and inlets.

Reference Material

NOAA Atlas 14, Volume 6, Version 2
Location name: Fontana, California, USA*
Latitude: 34.1351°, Longitude: -117.4733°
Elevation: 1451.81 ft**
* source: ESRI Maps
** source: USGS

POINT PRECIPITATION FREQUENCY ESTIMATES

Sanja Perica, Sarah Dietz, Sarah Heim, Lillian Hiner, Kazungu Maitaria, Deborah Martin, Sandra Pavlovic, Ishani Roy, Carl Trypaluk, Dale Unruh, Fenglin Yan, Michael Yekta, Tan Zhao, Geoffrey Bonnin, Daniel Brewer, Li-Chuan Chen, Tye Parzybok, John Yarchoan

NOAA, National Weather Service, Silver Spring, Maryland

PF_tabular | PF_graphical | Maps_&_aerials

PF tabular

PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches)[1]

Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	0.128 (0.107-0.156)	0.170 (0.141-0.207)	0.224 (0.186-0.273)	0.268 (0.221-0.330)	0.328 (0.261-0.417)	0.374 (0.291-0.487)	0.422 (0.320-0.562)	0.471 (0.347-0.646)	0.538 (0.379-0.770)	0.591 (0.402-0.876)
10-min	0.184 (0.153-0.223)	0.244 (0.203-0.296)	0.321 (0.266-0.391)	0.385 (0.316-0.473)	0.470 (0.374-0.598)	0.537 (0.417-0.698)	0.604 (0.458-0.806)	0.675 (0.497-0.925)	0.771 (0.544-1.10)	0.846 (0.576-1.26)
15-min	0.223 (0.185-0.270)	0.295 (0.245-0.358)	0.389 (0.322-0.473)	0.465 (0.382-0.571)	0.569 (0.452-0.724)	0.649 (0.505-0.844)	0.731 (0.554-0.974)	0.816 (0.601-1.12)	0.932 (0.658-1.33)	1.02 (0.697-1.52)
30-min	0.332 (0.276-0.403)	0.439 (0.365-0.534)	0.579 (0.480-0.706)	0.693 (0.570-0.852)	0.848 (0.674-1.08)	0.967 (0.752-1.26)	1.09 (0.826-1.45)	1.22 (0.895-1.67)	1.39 (0.980-1.99)	1.53 (1.04-2.26)
60-min	0.500 (0.416-0.606)	0.661 (0.550-0.804)	0.872 (0.723-1.06)	1.04 (0.858-1.28)	1.28 (1.01-1.62)	1.46 (1.13-1.89)	1.64 (1.24-2.19)	1.83 (1.35-2.51)	2.09 (1.48-3.00)	2.30 (1.57-3.41)
2-hr	0.770 (0.641-0.935)	1.01 (0.840-1.23)	1.32 (1.09-1.61)	1.56 (1.29-1.92)	1.89 (1.50-2.41)	2.14 (1.67-2.79)	2.39 (1.82-3.19)	2.65 (1.95-3.64)	3.00 (2.12-4.29)	3.26 (2.22-4.84)
3-hr	0.994 (0.827-1.21)	1.30 (1.08-1.58)	1.68 (1.40-2.05)	1.99 (1.64-2.45)	2.40 (1.91-3.05)	2.71 (2.10-3.52)	3.01 (2.28-4.01)	3.32 (2.45-4.56)	3.74 (2.64-5.35)	4.06 (2.76-6.02)
6-hr	1.47 (1.23-1.79)	1.92 (1.60-2.33)	2.48 (2.06-3.02)	2.92 (2.40-3.59)	3.50 (2.78-4.45)	3.93 (3.06-5.11)	4.36 (3.30-5.81)	4.79 (3.52-6.56)	5.35 (3.77-7.66)	5.78 (3.93-8.57)
12-hr	2.01 (1.67-2.44)	2.63 (2.18-3.19)	3.40 (2.82-4.14)	4.00 (3.29-4.92)	4.78 (3.80-6.08)	5.36 (4.16-6.96)	5.92 (4.48-7.88)	6.47 (4.77-8.88)	7.20 (5.08-10.3)	7.74 (5.27-11.5)
24-hr	2.73 (2.42-3.15)	3.63 (3.21-4.18)	4.73 (4.17-5.47)	5.59 (4.89-6.52)	6.70 (5.67-8.07)	7.51 (6.23-9.24)	8.30 (6.72-10.5)	9.08 (7.16-11.8)	10.1 (7.64-13.6)	10.8 (7.93-15.1)
2-day	3.34 (2.96-3.85)	4.53 (4.01-5.23)	6.04 (5.32-6.98)	7.23 (6.33-8.44)	8.82 (7.47-10.6)	10.0 (8.30-12.3)	11.2 (9.06-14.1)	12.4 (9.75-16.0)	14.0 (10.6-18.8)	15.2 (11.1-21.1)

3-day	**3.58** (3.17-4.12)	**4.92** (4.35-5.68)	**6.67** (5.88-7.72)	**8.09** (7.08-9.43)	**10.0** (8.48-12.1)	**11.5** (9.53-14.1)	**13.0** (10.5-16.4)	**14.5** (11.4-18.8)	**16.6** (12.6-22.4)	**18.2** (13.3-25.4)
4-day	**3.84** (3.40-4.42)	**5.33** (4.72-6.15)	**7.30** (6.44-8.45)	**8.91** (7.80-10.4)	**11.1** (9.42-13.4)	**12.8** (10.7-15.8)	**14.6** (11.8-18.4)	**16.4** (12.9-21.3)	**18.9** (14.3-25.5)	**20.9** (15.3-29.2)
7-day	**4.39** (3.89-5.06)	**6.17** (5.46-7.12)	**8.53** (7.53-9.87)	**10.5** (9.18-12.2)	**13.2** (11.2-15.9)	**15.3** (12.7-18.8)	**17.5** (14.2-22.0)	**19.8** (15.6-25.6)	**22.9** (17.3-30.9)	**25.4** (18.6-35.5)
10-day	**4.76** (4.21-5.48)	**6.74** (5.96-7.77)	**9.37** (8.27-10.8)	**11.6** (10.1-13.5)	**14.6** (12.4-17.6)	**17.0** (14.1-20.9)	**19.5** (15.8-24.5)	**22.1** (17.4-28.6)	**25.7** (19.4-34.7)	**28.6** (20.9-39.9)
20-day	**5.62** (4.98-6.48)	**8.06** (7.13-9.29)	**11.4** (10.0-13.1)	**14.1** (12.4-16.5)	**18.0** (15.3-21.7)	**21.1** (17.5-26.0)	**24.4** (19.8-30.7)	**27.9** (22.0-36.1)	**32.8** (24.8-44.2)	**36.7** (26.8-51.2)
30-day	**6.58** (5.83-7.59)	**9.45** (8.36-10.9)	**13.4** (11.8-15.5)	**16.7** (14.6-19.5)	**21.4** (18.1-25.8)	**25.2** (20.9-31.0)	**29.2** (23.7-36.8)	**33.6** (26.5-43.5)	**39.7** (30.1-53.6)	**44.7** (32.7-62.4)
45-day	**7.86** (6.96-9.05)	**11.2** (9.89-12.9)	**15.8** (13.9-18.3)	**19.7** (17.3-23.0)	**25.4** (21.5-30.6)	**30.0** (24.9-36.9)	**35.0** (28.3-44.1)	**40.3** (31.8-52.2)	**48.0** (36.3-64.8)	**54.4** (39.7-75.9)
60-day	**9.16** (8.11-10.6)	**12.9** (11.4-14.9)	**18.1** (16.0-20.9)	**22.6** (19.8-26.3)	**29.1** (24.6-35.0)	**34.4** (28.6-42.3)	**40.2** (32.5-50.6)	**46.4** (36.6-60.1)	**55.5** (42.0-74.9)	**63.1** (46.1-88.0)

[1] Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).

Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values.

Please refer to NOAA Atlas 14 document for more information.

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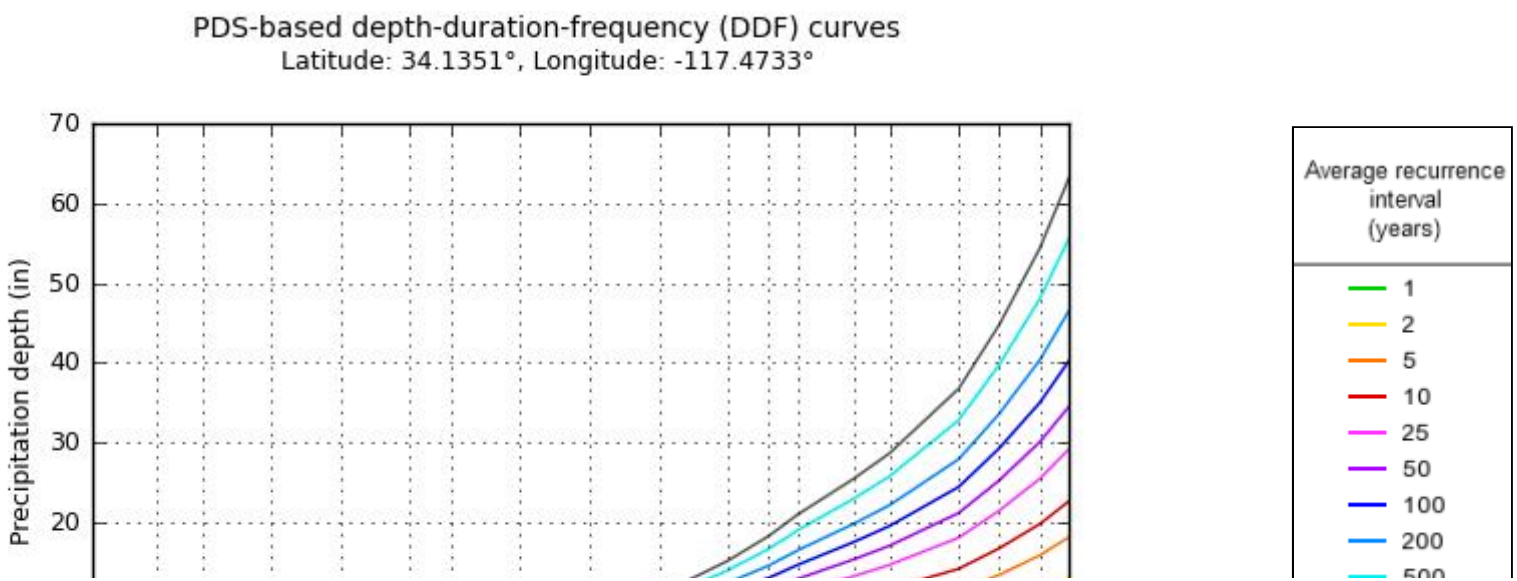
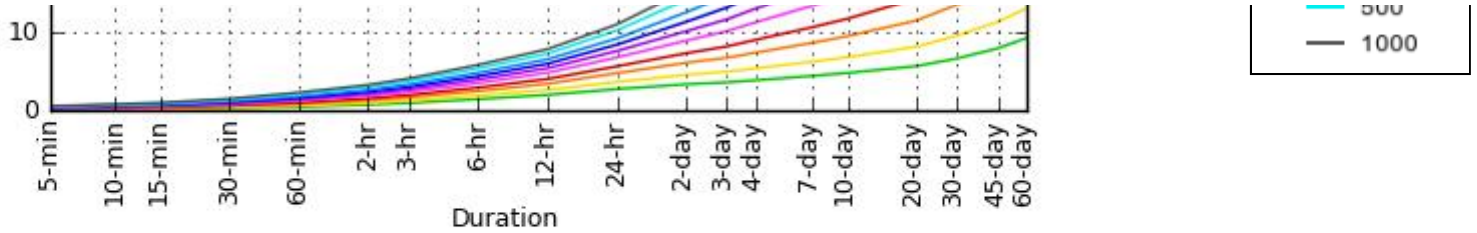
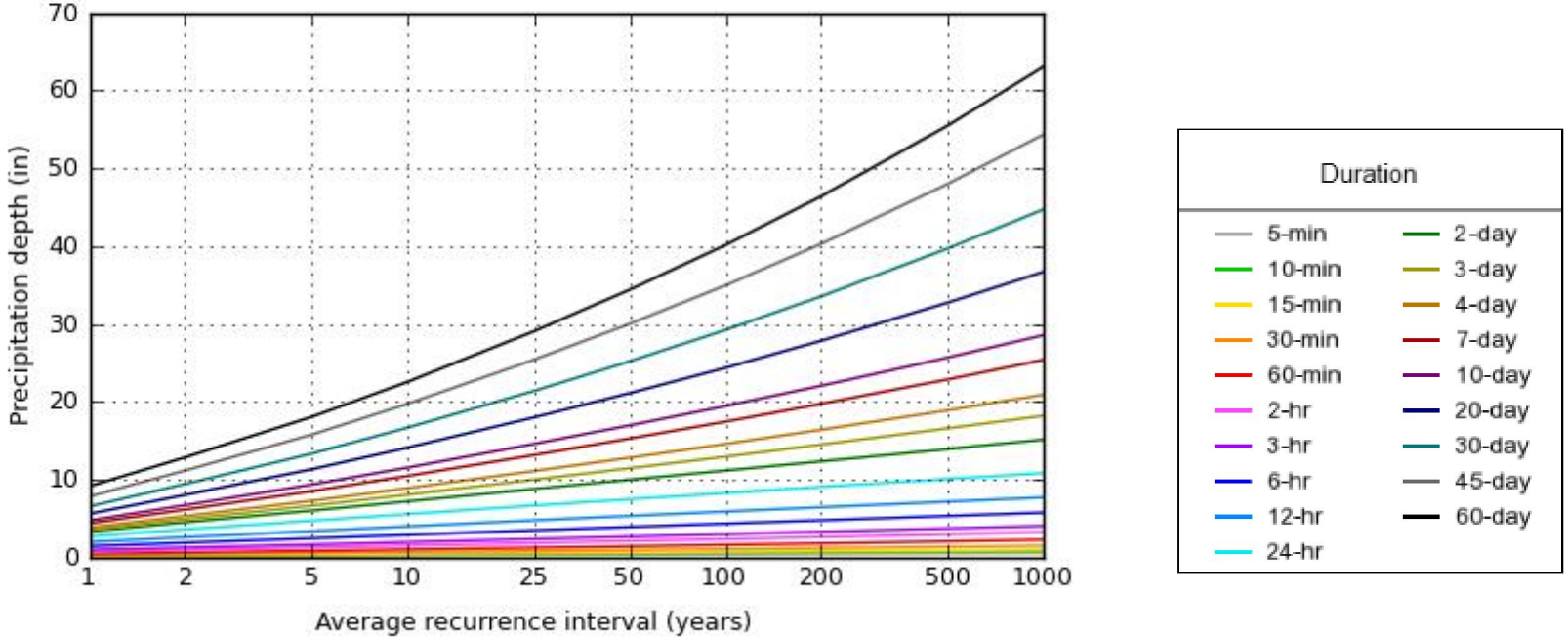
PF graphical







NOAA Atlas 14, Volume 6, Version 2

Created (GMT): Tue May 22 23:11:42 2018

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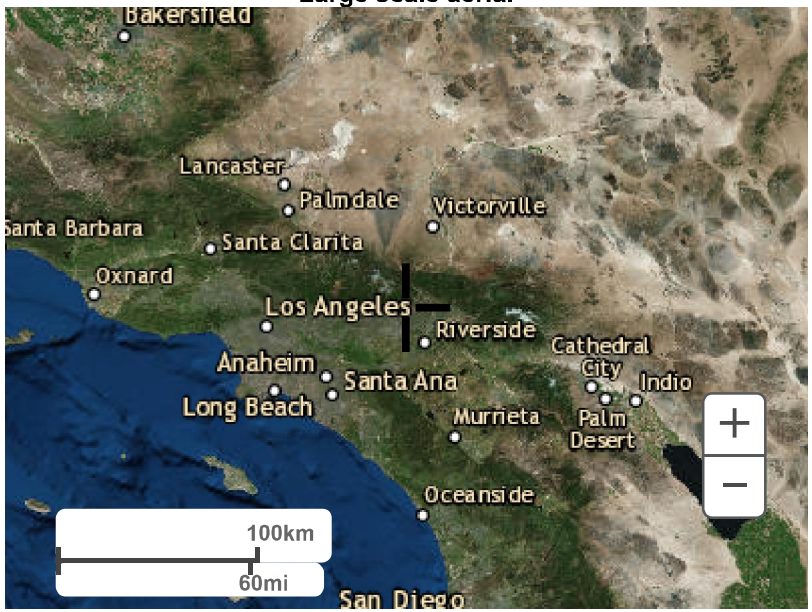
Maps & aerials

Small scale terrain

Large scale terrain

Large scale map

Large scale aerial



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US Department of Commerce
National Oceanic and Atmospheric Administration
National Weather Service
National Water Center
1325 East West Highway
Silver Spring, MD 20910
Questions?: HDSC.Questions@noaa.gov

Disclaimer

Map Scale: 1:1,760 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0 25 50 100 150

Feet: 0 50 100 200 300

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 11N WGS84

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Map Unit Polygons

Soil Map Unit Lines

Soil Map Unit Points

Special Point Features

Blowout

Borrow Pit

Clay Spot

Closed Depression

Gravel Pit

Gravelly Spot

Landfill

Lava Flow

Marsh or swamp

Mine or Quarry

Miscellaneous Water

Perennial Water

Rock Outcrop

Saline Spot

Sandy Spot

Severely Eroded Spot

Sinkhole

Slide or Slip

Sodic Spot

Spoil Area

Stony Spot

Very Stony Spot

Wet Spot

Other

Special Line Features

Water Features

Streams and Canals

Transportation

Rails

Interstate Highways

US Routes

Major Roads

Local Roads

Background

Aerial Photography

MAP INFORMATION

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

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

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

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

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

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

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

Soil Survey Area: San Bernardino County Southwestern Part, California
Survey Area Data: Version 10, Sep 12, 2018

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

Date(s) aerial images were photographed: Apr 1, 2018—Jun 30, 2018

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

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
TvC	Tujunga gravelly loamy sand, 0 to 9 percent slopes	15.2	100.0%
Totals for Area of Interest		**15.2**	**100.0%**

San Bernardino County Southwestern Part, California

TvC—Tujunga gravelly loamy sand, 0 to 9 percent slopes

Map Unit Setting

National map unit symbol: hcl2
Elevation: 10 to 1,500 feet
Mean annual precipitation: 10 to 25 inches
Mean annual air temperature: 59 to 64 degrees F
Frost-free period: 250 to 350 days
Farmland classification: Not prime farmland

Map Unit Composition

Tujunga and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Tujunga

Setting

Landform: Alluvial fans
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from granite

Typical profile

H1 - 0 to 36 inches: gravelly loamy sand
H2 - 36 to 60 inches: gravelly sand

Properties and qualities

Slope: 0 to 9 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Somewhat excessively drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): High to very high (5.95 to 19.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: Rare
Frequency of ponding: None
Available water storage in profile: Low (about 3.8 inches)

Interpretive groups

Land capability classification (irrigated): 4s
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: A
Hydric soil rating: No

Minor Components

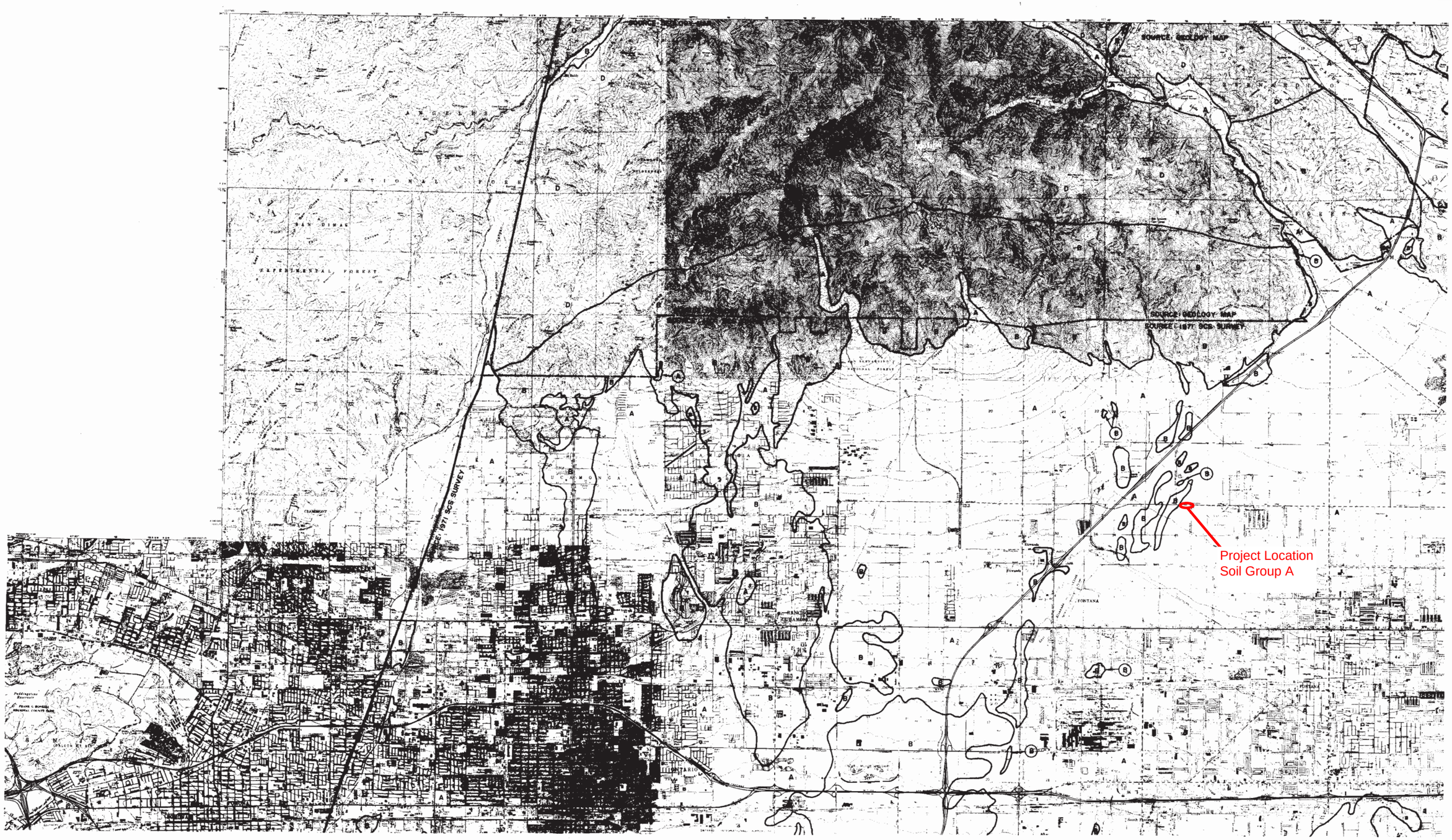
Unnamed
Percent of map unit: 5 percent
Landform: Drainageways
Hydric soil rating: Yes

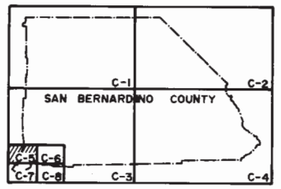
Soboba, gravelly loamy sand
Percent of map unit: 5 percent
Hydric soil rating: No

Delhi, fine sand
Percent of map unit: 5 percent
Hydric soil rating: No

Data Source Information

Soil Survey Area: San Bernardino County Southwestern Part, California
Survey Area Data: Version 10, Sep 12, 2018





INDEX MAP

LEGEND

SOIL GROUP BOUNDARY

A SOIL GROUP DESIGNATION

BOUNDARY OF INDICATED SOURCE

SCALE 1:48,000

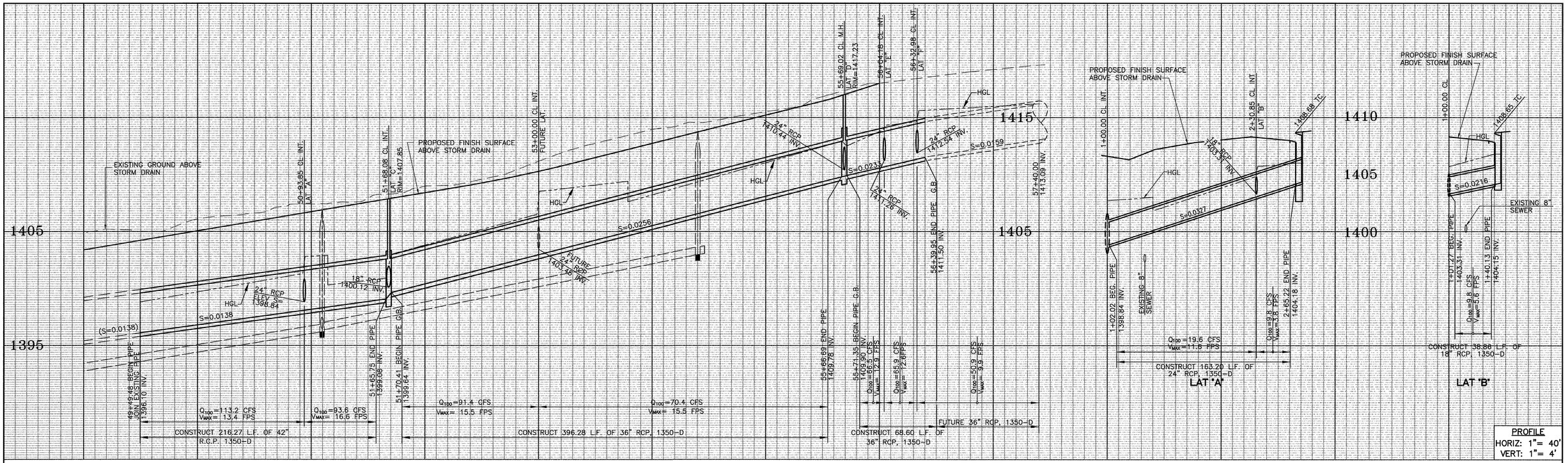
SCALE REDUCED BY 1/2

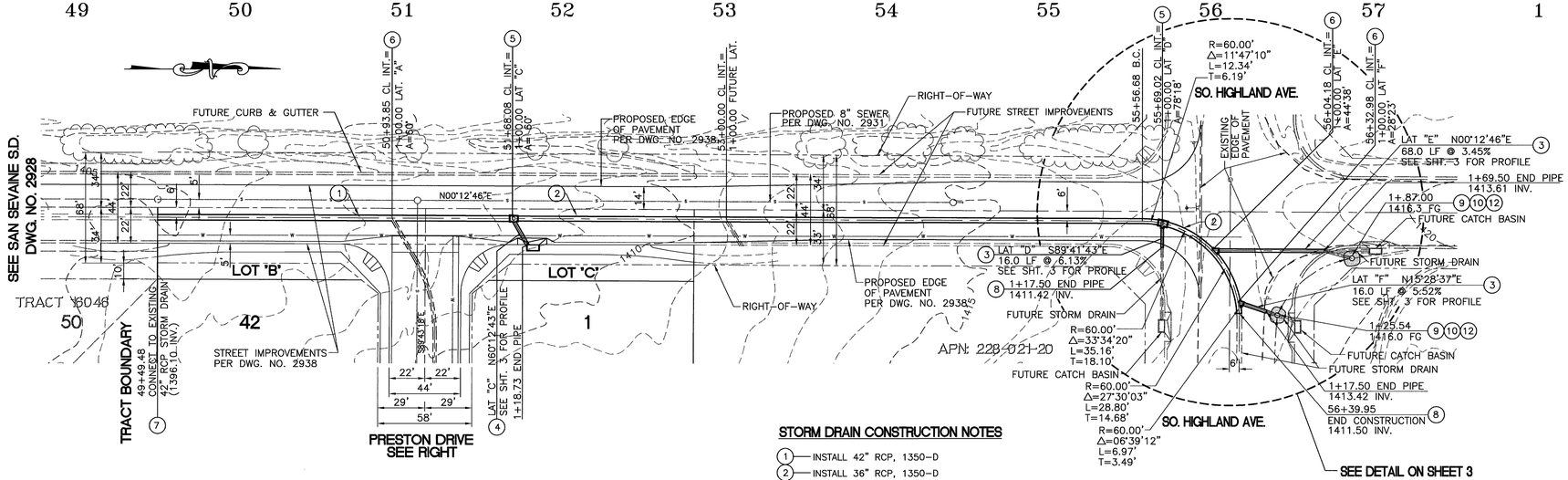
SAN BERNARDINO COUNTY

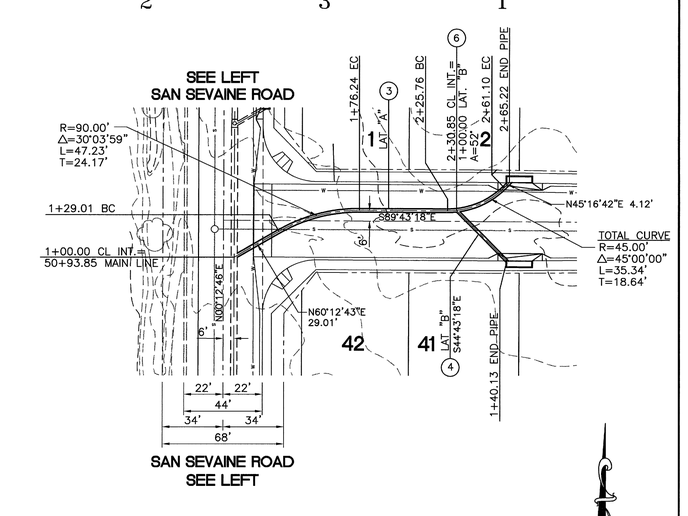
HYDROLOGY MANUAL

HYDROLOGIC SOILS GROUP MAP
FOR
SOUTHWEST-A AREA

FIGURE C-13







STORM DRAIN CONSTRUCTION NOTES

1. INSTALL 42" RCP, 1350-D
2. INSTALL 36" RCP, 1350-D
3. INSTALL 24" RCP, 1350-D
4. INSTALL 18" RCP, 1350-D
5. CONSTRUCT MANHOLE PER APWA STD. DWG. NO. 320-1, AS SHOWN ON SHEET 4
6. CONSTRUCT JUNCTION STRUCTURE PER APWA STD. DWG. NO. 331-2, AS SHOWN ON SHEET 3
7. REMOVE EXISTING TEMPORARY BULKHEAD
8. CONSTRUCT BRICK AND MORTAR BULKHEAD
9. INSTALL 18" CMP
10. CONSTRUCT TEMPORARY CMP RISER PER CALTRANS STD. D93C, TYPE B AS SHOWN ON SHEET 3
12. CONSTRUCT 3" A.C. PAVEMENT

GRAPHIC SCALE

40 0 20 40 80 160

(IN FEET)
1 inch = 40 ft.

Underground Service Alert
Call TOLL FREE 1-800 227-2600
TWO WORKING DAYS BEFORE YOU DIG

SHOULD CONSTRUCTION OF THE REQUIRED IMPROVEMENTS NOT COMMENCE WITHIN TWO YEARS OF THE DATE OF APPROVAL SHOWN HEREON AND CARRIED FORTH IN A DILIGENT MANNER THE CITY ENGINEER MAY REQUIRE REVISIONS TO THE PLANS TO BRING THEM INTO CONFORMANCE WITH CONDITIONS AND STANDARDS IN EFFECT.

PLANS PREPARED FOR
FORECAST HOMES
10670 CIVIC CENTER DRIVE
RANCHO CUCAMONGA, CA 91730
(909) 987-7788
(909) 987-1169

REVISIONS

No.		Engineer Approval	Date:	City Approval	Date:
1	"AS BUILT"	RJA	11/28/01	BS	2-1-02

BENCHMARK
CALTRANS BENCHMARK NO. 8-17
BRASS CAP IN CONCRETE S.C.E. TOWER LEG. 343' N/O HIGHLAND AVE., 0.2 MI. W/O SAN SEVAINE RD., IN SOUTH CONCRETE BASE OF S.C.E. TOWER 19.5; 2.65 MI. W. ALONG HIGHLAND AVE. FROM SIERRA AVE.
ELEVATION: 1428.6090

REGISTERED PROFESSIONAL ENGINEER RAYMOND J. ALLARD No. 36052 Exp. 6/30/2004 CIVIL STATE OF CALIFORNIA

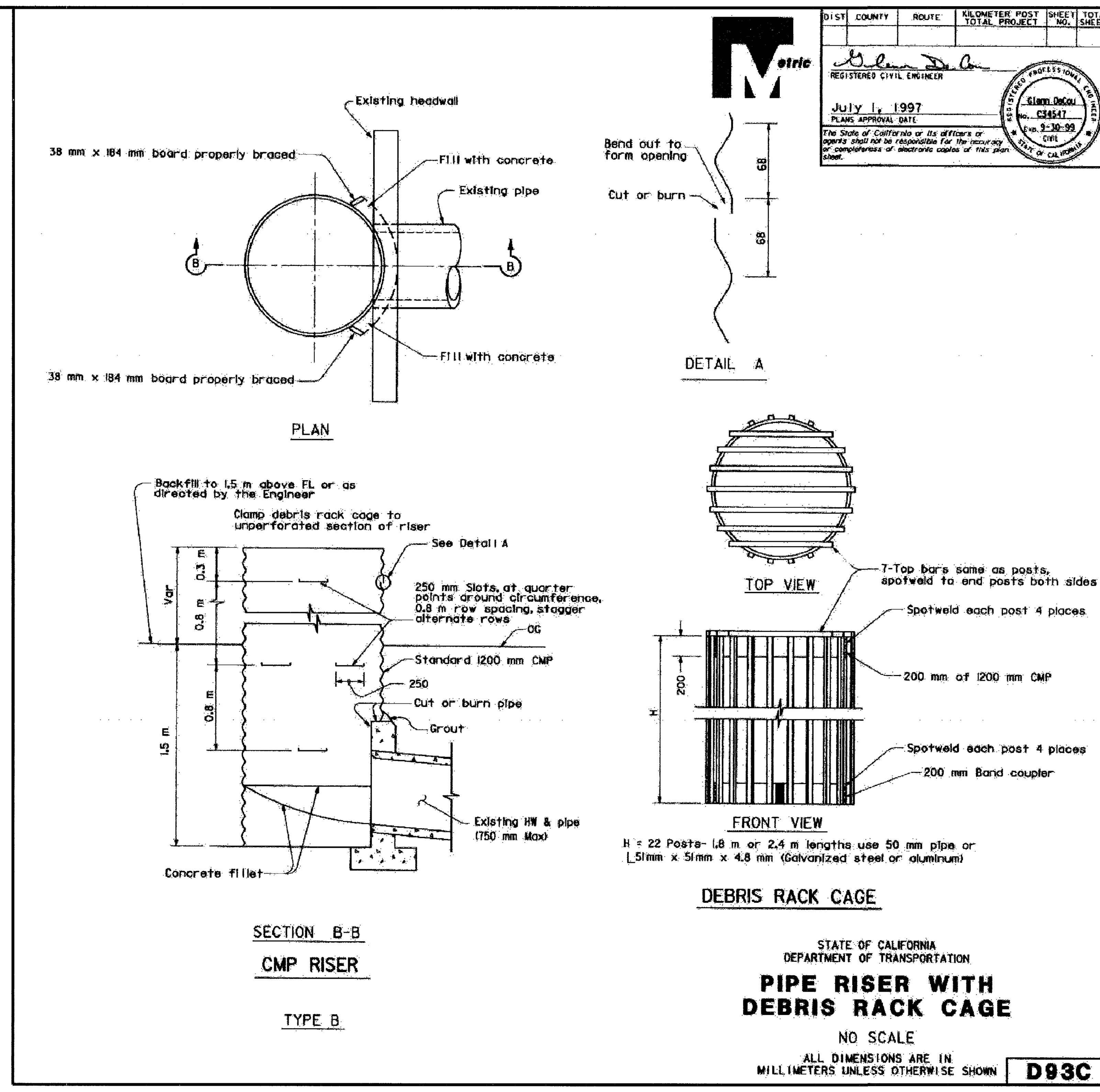
Prepared By:
ALLARD ENGINEERING
Civil Engineering - Land Surveying - Land Planning
8253 Sierra Avenue
Fontana, California 92335
(909) 356-1815 Fax (909) 356-1795
Raymond J. Allard 8.29.01
Raymond J. Allard, R.C.E. 36052 Date
(expires 6/30/2004)

CITY OF FONTANA, CALIFORNIA
STORM DRAIN PLAN
TRACT 16078
SAN SEVAINE ROAD
PRESTON DRIVE

Drawn By: DBW
Designed By: DBW
Checked By: RD
Scale: 1"= 40'
Date: AUGUST, 2001
Approved: For CITY ENGINEER R.C.E. ~~61152~~ 40964
Dwg. No. 2939 2/4

Filename: M:\DWG\16001\STORM DRAIN\SHT2.DWG

Plot Date: August 31, 2001 dbw



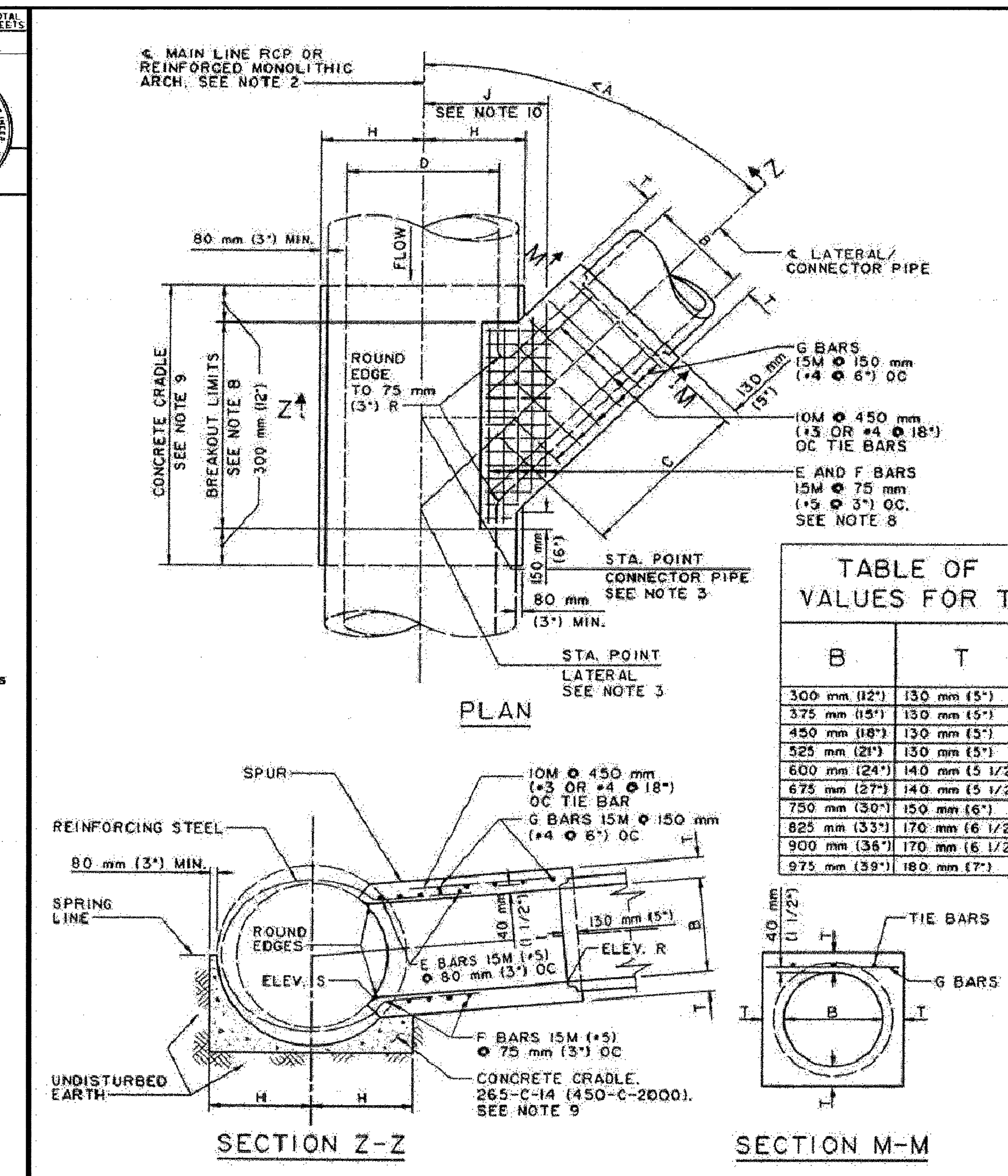


TABLE OF VALUES FOR T

B	T
300 mm (12")	130 mm (5")
375 mm (15")	130 mm (5")
450 mm (18")	130 mm (5")
525 mm (21")	130 mm (5")
600 mm (24")	140 mm (5 1/2")
675 mm (27")	140 mm (5 1/2")
750 mm (30")	150 mm (6")
825 mm (33")	170 mm (6 1/2")
900 mm (36")	170 mm (6 1/2")
975 mm (39")	180 mm (7")

AMERICAN PUBLIC WORKS ASSOCIATION - SOUTHERN CALIFORNIA CHAPTER

PROMULGATED BY THE PUBLIC WORKS STANDARDS INC. GREENBOOK COMMITTEE 1984 REV. 1996

JUNCTION STRUCTURE - PIPE TO PIPE INLET ID ≥ 600 mm (24") OR OD > 1/2 MAIN LINE ID

USE WITH STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION

STANDARD PLAN METRIC 331 - 2 SHEET 1 OF 2

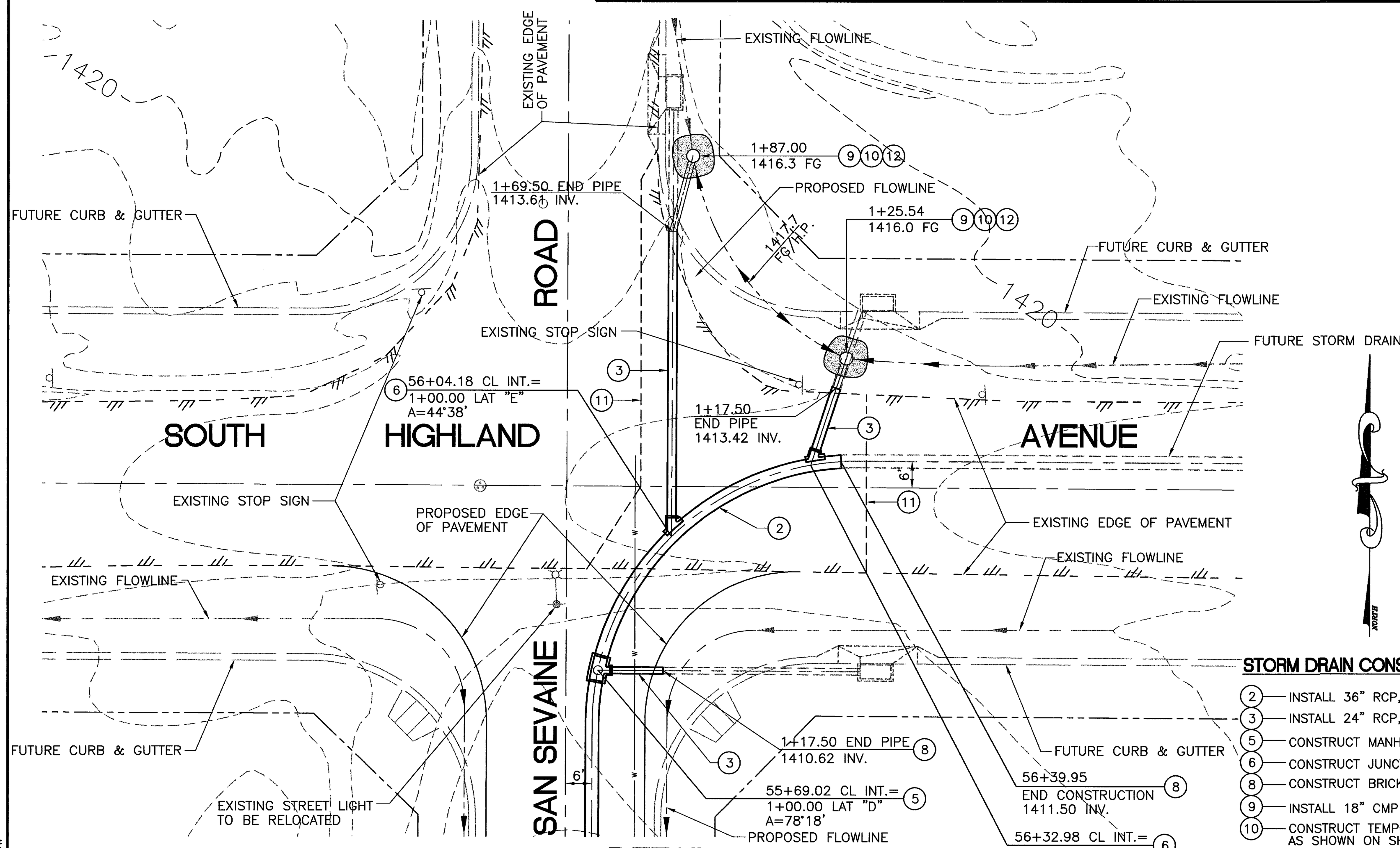
NOTES

1. THIS JUNCTION STRUCTURE SHALL BE USED WHEN THE OUTSIDE DIAMETER OF THE LATERAL IS GREATER THAN 1/2 THE INSIDE DIAMETER D OF THE MAIN LINE; OR WHEN THE INSIDE DIAMETER B OF THE LATERAL IS GREATER THAN 600 mm (24"). B SHALL NOT EXCEED .75 D OR 975 mm (39").
2. IF THE MAIN LINE IS A REINFORCED MONOLITHIC ARCH STORM DRAIN, D SHALL REFER TO THE CLEAR SPAN OF THE ARCH. REINFORCING STEEL SHALL BE CUT AND BENT INTO THE JUNCTION STRUCTURE IN THE SAME MANNER AS FOR A PIPE. A CONCRETE CRADLE IS NOT REQUIRED FOR A REINFORCED MONOLITHIC ARCH.
3. STATIONS SHOWN ON THE PROJECT DRAWINGS FOR LATERALS APPLY AT THE INTERSECTION OF CENTER LINES OF MAIN LINE AND LATERAL. STATIONS SHOWN ON THE PROJECT DRAWINGS FOR CATCH BASIN CONNECTOR PIPES APPLY AT THE INTERSECTION OF THE INSIDE WALL OF THE MAIN LINE WITH THE CONNECTOR PIPE CENTER LINE.
4. VALUES FOR A, B, C AND D SHALL BE SHOWN ON THE PROJECT DRAWINGS. ELEVATION R AND ELEVATION S SHALL BE SHOWN ONLY WHEN REQUIRED PER NOTE 5.
5. a. ELEVATIONS R AND S NEED NOT BE SHOWN ON THE PROJECT DRAWINGS IF THE INLET PIPE IS TO ENTER THE MAIN LINE RADIALLY.
   b. ELEVATION R SHALL BE SHOWN ON THE PROJECT DRAWINGS ONLY IF A STUB IS TO BE PROVIDED IN THE MAIN LINE FOR FUTURE CONNECTION OF AN INLET PIPE.
   c. ELEVATION S SHALL BE SHOWN ON THE PROJECT DRAWINGS IF AN INLET PIPE IS TO ENTER THE MAIN LINE OTHER THAN RADIALLY. INLET PIPE SHALL BE LAID ON A STRAIGHT GRADE FROM ELEVATION S TO THE CATCH BASIN OR GRADE BREAK IN LINE.
6. THE INLET PIPE SHALL ENTER THE MAIN LINE RADIALLY UNLESS OTHERWISE INDICATED. THE INLET PIPE MAY ENTER THE MAIN LINE OTHER THAN RADIALLY IF ANGLE A IS GREATER THAN 45°, B IS LESS THAN OR EQUAL TO 600 mm (24") AND THE OUTSIDE DIAMETER OF THE INLET PIPE IS LESS THAN .5 D; OTHERWISE, STANDARD PLAN 340 SHALL BE USED.
7. NO MORE THAN ONE OPENING SHALL BE MADE IN ANY ONE SECTION OF PIPE.
8. THE OPENING FOR THE BREAKOUT SHALL BE RECTANGULAR AND CUT NORMAL TO THE PIPE SURFACE WITHOUT DAMAGING THE REINFORCING STEEL. THE TRANSVERSE REINFORCEMENT OF THE MAIN LINE SHALL BE CUT AT THE CENTER OF THE OPENING AND BENT INTO THE TOP AND BOTTOM SLABS OF THE SPUR.
9. THE MAIN LINE SHALL BE REINFORCED WITH A CONCRETE CRADLE AND ENCASEMENT (AS APPLICABLE). A CONCRETE ENCASEMENT IS REQUIRED IF A JOINT IN THE MAIN LINE FALLS WITHIN THE LIMITS OF THE CRADLE. THE CONCRETE ENCASEMENT SHALL EXTEND 300 mm (12") ABOVE THE TOP OF THE MAIN LINE AND TO THE LIMITS OF THE CRADLE.
   IF CONNECTING TO AN EXISTING STORM DRAIN, PORTION OF CRADLE OPPOSITE INLET MAY BE OMITTED.
10. REINFORCING STEEL SHALL CONFORM TO ASTM A 615M, GRADE 300, (ASTM A 615, GRADE 40), AND BE PLACED 40 mm (1 1/2") CLEAR FROM CONCRETE SURFACES, UNLESS OTHERWISE SHOWN F BARS SHALL BE CARRIED TO A POINT NOT LESS THAN J DISTANCE FROM CENTER LINE WITH J=7D/12 + 150 mm (6").
11. FLOOR OF THE SPUR SHALL BE STEEL-TROWELED TO THE SPRING LINE OF THE SPUR.
12. DIMENSIONS SHOWN ON THIS PLAN FOR METRIC AND ENGLISH UNITS ARE NOT EXACT EQUAL VALUES. IF METRIC VALUES ARE USED, ALL VALUES USED FOR CONSTRUCTION SHALL BE METRIC VALUES, EXCEPT REINFORCING BARS SIZES IN ENGLISH UNITS MAY BE SUBSTITUTED FOR METRIC BAR SIZES. IF ENGLISH UNITS ARE USED, ALL VALUES USED FOR CONSTRUCTION SHALL BE ENGLISH UNITS.

AMERICAN PUBLIC WORKS ASSOCIATION - SOUTHERN CALIFORNIA CHAPTER

JUNCTION STRUCTURE — PIPE TO PIPE INLET ID ≥ 600 mm (24") OR OD> 1/2 MAIN LINE ID

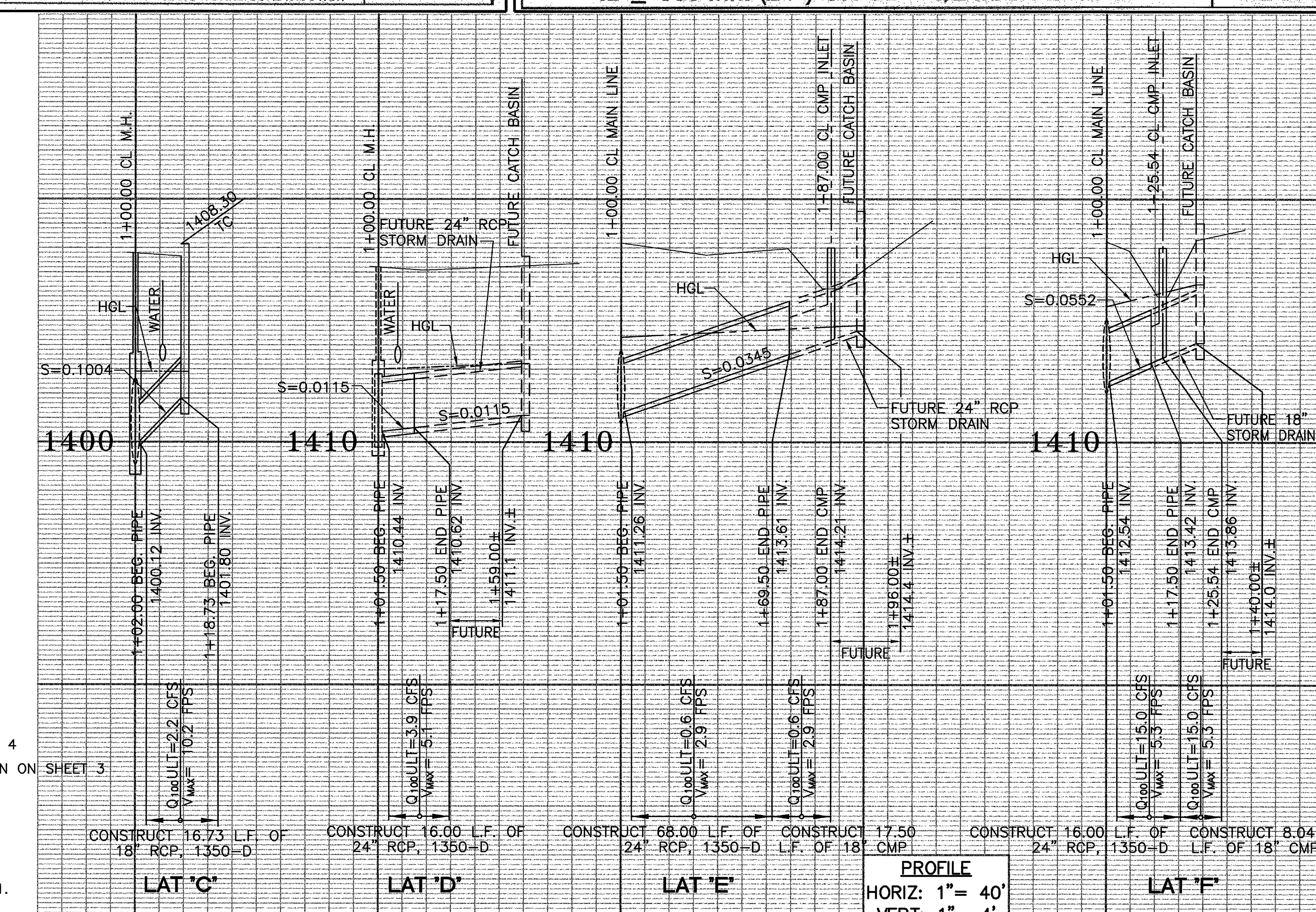
STANDARD PLAN METRIC 331 - 2 SHEET 2 OF 2



DETAIL
SCALE: 1"=20'

STORM DRAIN CONSTRUCTION NOTES

(2) INSTALL 36" RCP, 1350-D
(3) INSTALL 24" RCP, 1350-D
(5) CONSTRUCT MANHOLE PER APWA STD. DWG. NO. 320-1, AS SHOWN ON SHEET 4
(6) CONSTRUCT JUNCTION STRUCTURE PER APWA STD. DWG. NO. 331-2, AS SHOWN ON SHEET 3
(8) CONSTRUCT BRICK AND MORTAR BULKHEAD
(9) INSTALL 18" CMP
(10) CONSTRUCT TEMPORARY CMP RISER PER CALTRANS STD. D93C, TYPE B AS SHOWN ON SHEET 3
(11) REMOVE EXISTING A.C. PAVEMENT AND REPLACE WITH 6.5" A.C. PAVEMENT OVER 12" OF 95% COMPACTED NATIVE PER CITY STD. DWG. NO. 131.
(12) CONSTRUCT 3" A.C. PAVEMENT



PROFILE
HORIZ: 1"= 40'
VERT: 1"= 4'

Plot Date: August 31, 2001 dbw

Underground Service Alert
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227-2600
TWO WORKING DAYS BEFORE YOU DIG

SHOULD CONSTRUCTION OF THE REQUIRED IMPROVEMENTS NOT COMMENCE WITHIN TWO YEARS OF THE DATE OF APPROVAL SHOWN HEREON AND CARRIED FORTH IN A DILIGENT MANNER THE CITY ENGINEER MAY REQUIRE REVISIONS TO THE PLANS TO BRING THEM INTO CONFORMANCE WITH CONDITIONS AND STANDARDS IN EFFECT.

PLANS PREPARED FOR
FORECAST HOMES
10670 CIVIC CENTER DRIVE
RANCHO CUCAMONGA, CA 91730
(909) 987-7788
(909) 987-1169

REVISIONS

No.		Engineer Approval	Date:	City Approval	Date:
1	"AS BUILT"	RJA	1/28/02	RS	7.1.02

BENCHMARK

CALTRANS BENCHMARK NO. 8-17
BRASS CAP IN CONCRETE S.C.E. TOWER LEG. 343' N/O HIGHLAND AVE., 0.2 MI. W/O SAN SEVAINE RD., IN SOUTH CONCRETE BASE OF S.C.E. TOWER 19.5; 2.65 MI. W. ALONG HIGHLAND AVE. FROM SIERRA AVE.

ELEVATION: 1428.6090

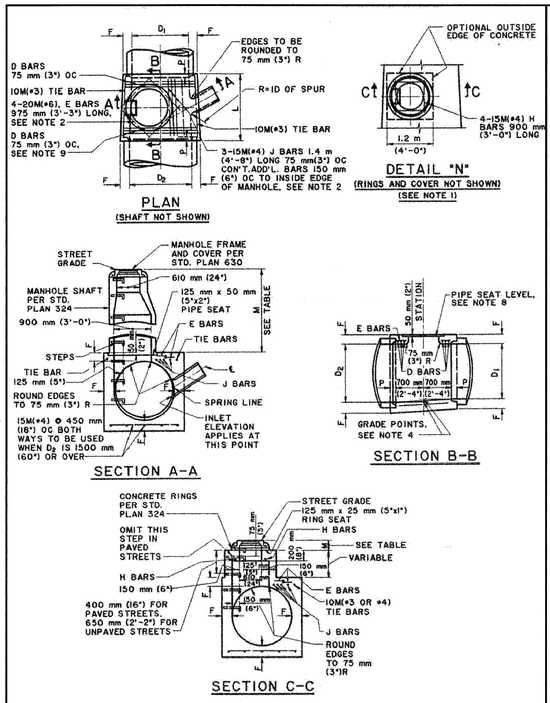
REGISTERED PROFESSIONAL ENGINEER RAYMOND J. ALLARD No. 36052 Exp. 6/30/2004 CIVIL STATE OF CALIFORNIA

Prepared By:
ALLARD ENGINEERING
Civil Engineering - Land Surveying - Land Planning
8253 Sierra Avenue
Fontana, California 92335
(909) 356-1815 Fax (909) 356-1795
Raymond J. Allard 8.29.01
Raymond J. Allard, R.C.E. 36052 Date
(expires 6/30/2004)

CITY OF FONTANA, CALIFORNIA
STORM DRAIN PLANS
TRACT NO. 16078
DETAIL SHEET

Drawn By: DBW
Designed By: DBW
Checked By: RD RG
Approved: Felipe Molina 40964
FOR CITY ENGINEER R.C.E. ~~51152~~
Scale: AS NOTED
Date: AUGUST, 2001
Dwg. No. 2939
3 / 4

Filename: M:\DWG\16001\STORM DRAIN\SHT3.DWG



AMERICAN PUBLIC WORKS ASSOCIATION - SOUTHERN CALIFORNIA CHAPTER

PROMULGATED BY THE PUBLIC WORKS STANDARDS INC., GREENBOOK COMMITTEE 1992 REV. 1996

MANHOLE PIPE TO PIPE MAIN LINE ID=900 mm (36") OR LARGER

USE WITH STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION

STANDARD PLAN METRIC 320 - 1 SHEET 1 OF 4

TABLE OF VALUES FOR F	
D_2	F
900 mm (36")	165 mm (6 1/2")
975 mm (39")	180 mm (7")
1050 mm (42")	190 mm (7 1/2")
1125 mm (45")	195 mm (7 3/4")
1200 mm (48")	205 mm (8")
1275 mm (51")	215 mm (8 1/2")
1350 mm (54")	230 mm (9")
1425 mm (57")	235 mm (9 1/4")
1500 mm (60")	240 mm (9 1/2")
1575 mm (63")	255 mm (10")
1650 mm (66")	260 mm (10 1/4")
1725 mm (69")	275 mm (10 3/4")
1800 mm (72")	280 mm (11")
1950 mm (78")	300 mm (11 3/4")
2100 mm (84")	320 mm (12 1/2")
2250 mm (90")	335 mm (13 1/4")
2400 mm (96")	355 mm (14")
2550 mm (102")	395 mm (15 1/2")
2700 mm (108")	405 mm (16")
2850 mm (114")	420 mm (16 1/2")
3000 mm (120")	430 mm (17")
3150 mm (126")	430 mm (17")
3300 mm (132")	445 mm (17 1/2")
3450 mm (138")	445 mm (17 1/2")
3600 mm (144")	455 mm (18")

TABLE OF VALUES FOR M (SEE NOTE 1)				
SECTION	PAVED STREET		UNPAVED STREET	
	MAX.	MIN.	MAX.	MIN.
A-A		867 mm (2'-10 1/2")		1060 mm (3'-6")
C-C	282 mm (11")	217 mm (8 1/2")	410 mm (16")	380 mm (15")

AMERICAN PUBLIC WORKS ASSOCIATION - SOUTHERN CALIFORNIA CHAPTER

MANHOLE PIPE TO PIPE MAIN LINE ID=900 mm (36") OR LARGER

STANDARD PLAN METRIC 320 - 1 SHEET 2 OF 4

NOTES

1. WHEN DEPTH M FROM STREET GRADE TO THE TOP OF THE BOX IS LESS THAN 867 mm (2'-10 1/2") FOR PAVED STREETS OR 1060 mm (3'-6") FOR UNPAVED STREETS, CONSTRUCT MONOLITHIC SHAFT PER SECTION C-C AND DETAIL "N". SHAFT FOR ANY DEPTH OF MANHOLE MAY BE CONSTRUCTED PER SECTION C-C. WHEN DIAMETER D_1 IS 1200 mm (48") OR LESS, CENTER OF SHAFT MAY BE LOCATED PER NOTE 2.
2. CENTER OF MANHOLE SHAFT SHALL BE LOCATED OVER CENTER LINE OF STORM DRAIN WHEN DIAMETER D_1 IS 1200 mm (48") OR LESS, IN WHICH CASE PLACE E BARS SYMMETRICALLY AROUND SHAFT AT 45° WITH CENTER LINE AND OMIT J BARS.
3. L AND P SHALL HAVE THE FOLLOWING VALUES UNLESS OTHERWISE SHOWN ON THE PROJECT DRAWINGS:
   A. D_2=2400 mm (96") OR LESS, L=1.7 m (5'-6"), P=130 mm (5")
   B. D_2 OVER 2400 mm (96"), L=1.8 m (6'-0"), P=210 mm (8")
   L MAY BE INCREASED OR LOCATION OF MANHOLE SHIFTED TO MEET PIPE ENDS. WHEN L GREATER THAN THAT SHOWN ABOVE IS SPECIFIED, D BARS SHALL BE CONTINUED 150 mm (6") OC.
4. STATIONS OF MANHOLES SHOWN ON PROJECT DRAWINGS APPLY AT CENTER LINE OF SHAFT. ELEVATIONS ARE SHOWN AT CENTER LINE OF SHAFT AND REFER TO THE PROLONGED INVERT GRADE LINES.
5. REINFORCEMENT SHALL CONFORM TO ASTM A 615M, GRADE 300 (ASTM A 615, GRADE 40), AND SHALL TERMINATE 40 mm (1 1/2") CLEAR OF CONCRETE SURFACES UNLESS OTHERWISE SHOWN.
6. FLOOR OF MANHOLE SHALL BE STEEL TROWELED TO SPRING LINE.
7. BODY OF MANHOLE SHALL BE POURED IN ONE CONTINUOUS OPERATION EXCEPT THAT A CONSTRUCTION JOINT WITH A LONGITUDINAL KEYWAY MAY BE PLACED AT SPRING LINE.
8. THICKNESS OF THE DECK SHALL VARY WHEN NECESSARY TO PROVIDE A LEVEL SEAT BUT SHALL NOT BE LESS THAN THE TABULAR VALUES FOR F SHOWN ON TABLE SH. 2.
9. D BARS SHALL BE 15M(#4) FOR D_2=975 mm(39") OR LESS, 15M(#5) FOR D_2 =1050 mm (42") TO 2100 mm (84") INCLUSIVE AND 20M(#6) FOR D_2=2250 mm (90") OR OVER.
10. CENTER LINE OF INLET PIPE SHALL INTERSECT INSIDE FACE OF CONE AT SPRING LINE UNLESS OTHERWISE SHOWN.
11. STEPS SHALL CONFORM TO STANDARD PLAN 635 OR 636 UNLESS OTHERWISE SHOWN. STEPS SHALL BE UNIFORMLY SPACED 350 mm (14") TO 375 mm (15") OC. THE LOWEST STEP SHALL NOT BE MORE THAN 600 mm (24") ABOVE THE INVERT.
12. THE FOLLOWING CRITERIA SHALL BE USED FOR THIS MANHOLE:
   A. MAIN LINE = 900 mm (36") INSIDE DIAMETER OR LARGER. EXCEPT IF THE MAIN LINE RCP DOWNSTREAM OF MANHOLE IS 900 mm (36") TO 1050 mm (42") INSIDE DIAMETER AND THE MAIN LINE RCP UPSTREAM IS 825 mm (33") OR LESS STANDARD PLAN 321 SHALL BE USED.

AMERICAN PUBLIC WORKS ASSOCIATION - SOUTHERN CALIFORNIA CHAPTER

MANHOLE PIPE TO PIPE MAIN LINE ID=900 mm (36") OR LARGER

STANDARD PLAN METRIC 320 - 1 SHEET 3 OF 4

   B. THE OUTSIDE DIAMETER OF THE LATERAL MUST BE LESS THAN OR EQUAL TO 1/2 THE INSIDE DIAMETER OF THE MAIN LINE. IF THE UPSTREAM AND DOWNSTREAM DIAMETERS OF THE MANHOLE ARE NOT THE SAME, THE GOVERNING INSIDE DIAMETER OF THE MAIN LINE SHALL BE CONSIDERED TO BE THAT WHERE THE EXTENDED CENTER LINE OF THE LATERAL ENTERS THE MANHOLE.
   C. IN NO INSTANCE SHALL THE INSIDE DIAMETER OF THE LATERAL TO THE MANHOLE BE GREATER THAN 750 mm (30").
13. MANHOLE FRAME AND COVER SHALL CONFORM TO STANDARD PLAN 630 UNLESS OTHERWISE SHOWN.
14. MANHOLE SHAFT SHALL CONFORM TO STANDARD PLAN 324 UNLESS OTHERWISE SHOWN.
15. WHERE A MANHOLE SHAFT - 900 mm (36") WITHOUT REDUCER IS SPECIFIED REFER TO STANDARD PLAN 326.
16. WHERE A PRESSURE MANHOLE SHAFT - WITH ECCENTRIC REDUCER IS SPECIFIED REFER TO STANDARD PLAN 328.
17. WHERE A PRESSURE MANHOLE SHAFT - 914 mm (36") WITHOUT REDUCER IS SPECIFIED REFER TO STANDARD PLAN 329.
18. DIMENSIONS SHOWN ON THIS PLAN FOR METRIC AND ENGLISH UNITS ARE NOT EXACT EQUAL VALUES. IF METRIC VALUES ARE USED, ALL VALUES USED FOR CONSTRUCTION SHALL BE METRIC VALUES, EXCEPT REINFORCING BAR SIZES IN ENGLISH UNITS MAY BE SUBSTITUTED FOR METRIC BAR SIZES. IF ENGLISH UNITS ARE USED, ALL VALUES USED FOR CONSTRUCTION SHALL BE ENGLISH UNITS.

THE FOLLOWING STANDARD PLANS ARE INCORPORATED HEREIN:

324 MANHOLE SHAFT - WITH ECCENTRIC REDUCER
326 MANHOLE SHAFT - 900 mm (36") WITHOUT REDUCER
328 PRESSURE MANHOLE SHAFT - WITH ECCENTRIC
329 PRESSURE MANHOLE SHAFT 914 mm (36") WITHOUT REDUCER
630 610 mm (24") MANHOLE FRAME AND COVER
633 914 mm (36") MANHOLE FRAME AND COVER
635 STEEL STEP
636 POLYPROPYLENE PLASTIC STEP

AMERICAN PUBLIC WORKS ASSOCIATION - SOUTHERN CALIFORNIA CHAPTER

MANHOLE PIPE TO PIPE MAIN LINE ID=900 mm (36") OR LARGER

STANDARD PLAN METRIC 320 - 1 SHEET 4 OF 4

Plot Date: AUGUST 29, 2001 dbw

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SHOULD CONSTRUCTION OF THE REQUIRED IMPROVEMENTS NOT COMMENCE WITHIN TWO YEARS OF THE DATE OF APPROVAL SHOWN HEREON AND CARRIED FORTH IN A DILIGENT MANNER THE CITY ENGINEER MAY REQUIRE REVISIONS TO THE PLANS TO BRING THEM INTO CONFORMANCE WITH CONDITIONS AND STANDARDS IN EFFECT.

PLANS PREPARED FOR
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(909) 987-7788
(909) 987-1169

REVISIONS

No.		Engineer Approval	Date:	City Approval	Date:
1	"AS BUILT"	RJA	1/28/02	RG	2-1-02

BENCHMARK

CALTRANS BENCHMARK NO. 8-17

BRASS CAP IN CONCRETE S.C.E. TOWER LEG. 343' N/O HIGHLAND AVE., 0.2 MI. W/O SAN SEVAINE RD., IN SOUTH CONCRETE BASE OF S.C.E. TOWER 19.5; 2.65 MI. W. ALONG HIGHLAND AVE. FROM SIERRA AVE.

ELEVATION: 1428.6090

REGISTERED PROFESSIONAL ENGINEER RAYMOND J. ALLARD No. 36052 Exp. 6/30/2004 CIVIL STATE OF CALIFORNIA

Prepared By:
ALLARD ENGINEERING
Civil Engineering - Land Surveying - Land Planning
8253 Sierra Avenue
Fontana, California 92335
(909) 356-1815 Fax (909) 356-1795
Raymond J. Allard, R.C.E. 36052 Date
(expires 6/30/2004)

CITY OF FONTANA, CALIFORNIA
STORM DRAIN PLANS

TRACT NO. 16078
DETAIL SHEET

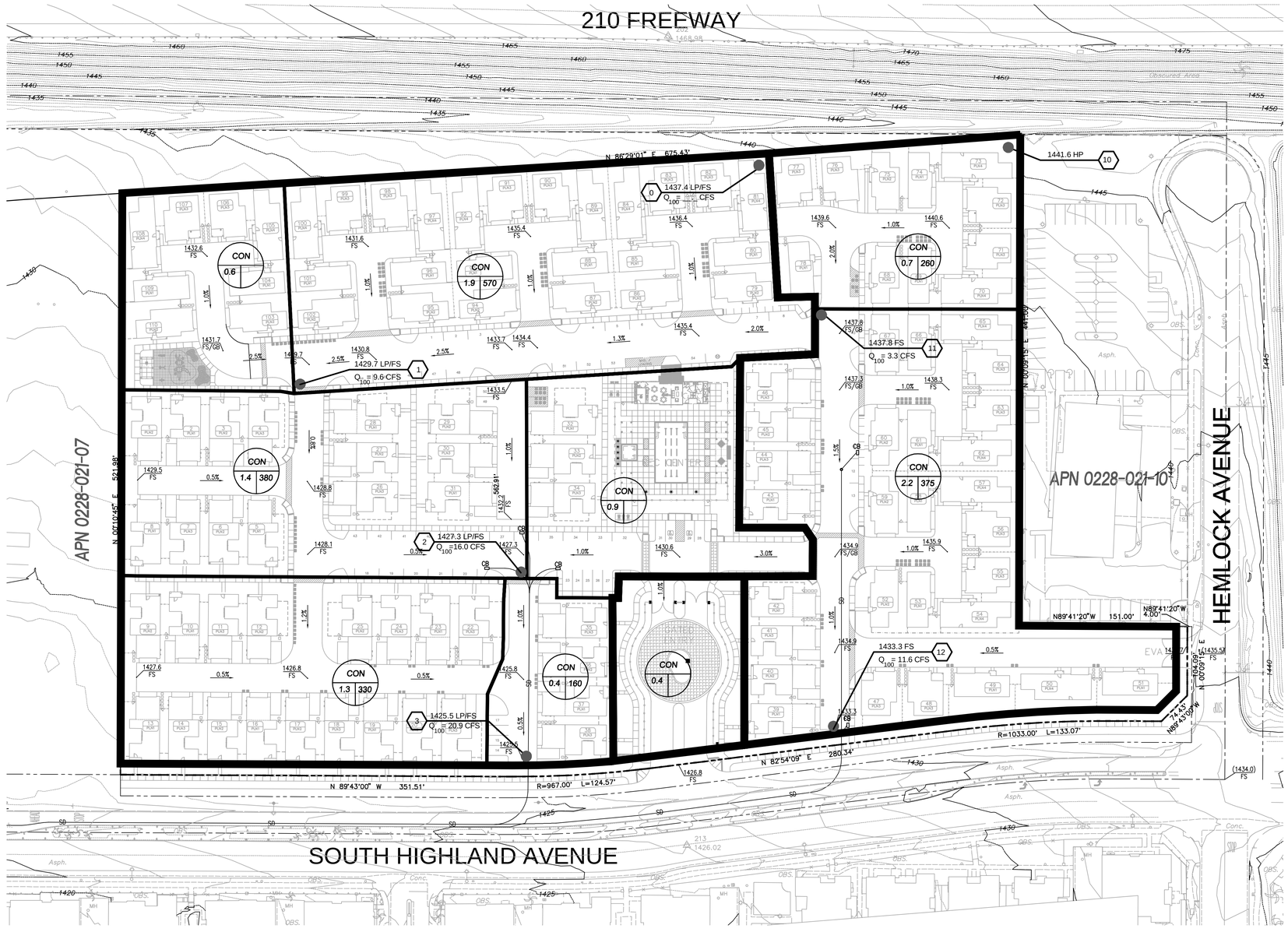
Drawn By: DBW
Designed By: DBW
Checked By: RD RG
Approved: Rod Foster 8-29-01 40964 CITY ENGINEER R.C.E. ~~51152~~
Scale: NO SCALE
Date: AUGUST, 2001
Dwg. No. 2939
4/4

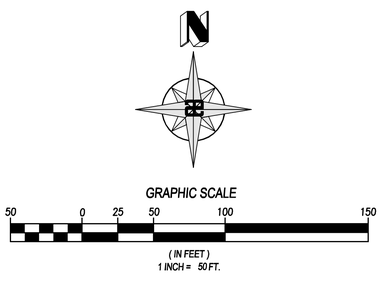
Filename: M:\DWG\16001\STORM DRAIN\SHT4.DWG

Hydrology

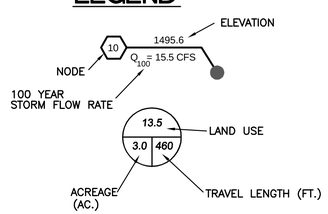
Onsite Hydrology
Developed Hydrology Exhibit
Developed Rational Method (100 Year Storm)

Offsite Hydrology
Developed Offsite Hydrology Exhibit
Developed Rational Method (100 Year Storm)





LEGEND:



INDICATES WATERSHED BOUNDARY

INDICATES SUBAREA BOUNDARY

INDICATES FLOW DIRECTION

—(1495)— EXISITING CONTOUR LINE

CON – CONDOMINIUMS LAND USE (10.8 DU/AC)

HP – HIGH POINT

LP – LOW POINT

CFS – CUBIC FEET PER SECOND

Prepared By:

ALLARD ENGINEERING

Civil Engineering - Land Surveying - Land Planning

16866 Seville Avenue

Fontana, California 92335

(909) 356-1815 Fax (909) 356-1795

Prepared For:

STRATHAM HOMES, INC.

2201 DUPONT DRIVE, SUITE 300

IRVINE, CA 92612

(949) 833-1554

CITY OF FONTANA

DEVELOPED HYDROLOGY MAP

TENTATIVE TRACT MAP NO. 20297

15035 HIGHLAND

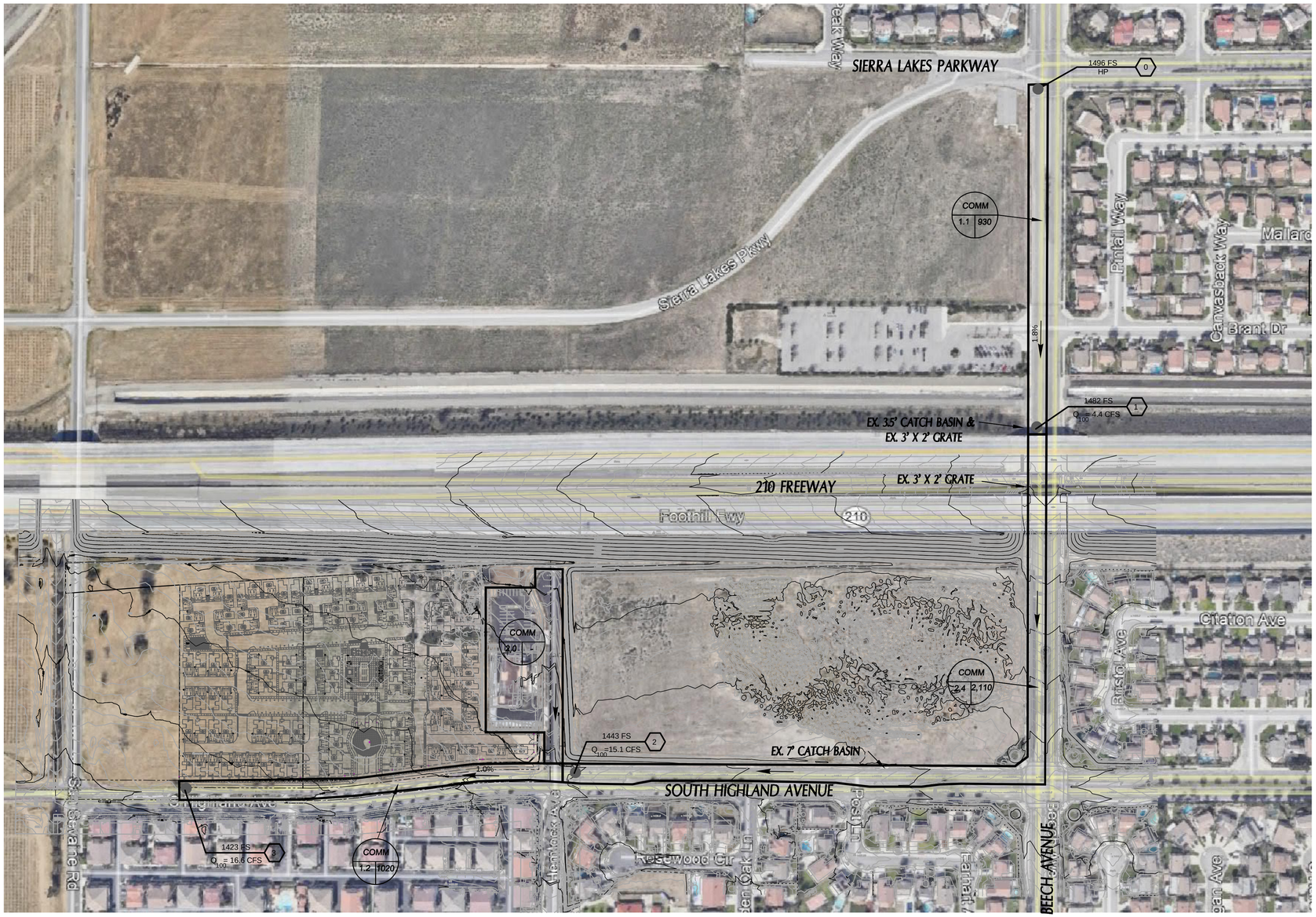
```
****************************************************************************
             RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
          (Reference: 1986 SAN BERNARDINO CO. HYDROLOGY CRITERION)
         (c) Copyright 1983-2006 Advanced Engineering Software (aes)
             Ver. 13.0  Release Date: 06/01/2006  License ID 1400

                           Analysis prepared by:

                             Allard Engineering
                             8253 Sierra Avenue
                             Fontana Ca. 92335
                               (909) 356-1815

 ************************** DESCRIPTION OF STUDY **************************
* Tentative Tract Map 20297                                                *
* Developed Onsite Rational Method                                         *
* 100 Year Storm                                                           *
 ****************************************************************************

  FILE NAME: ONSITE.DAT
  TIME/DATE OF STUDY: 08:00 08/02/2019
============================================================================
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
============================================================================
                    --*TIME-OF-CONCENTRATION MODEL*--

  USER SPECIFIED STORM EVENT(YEAR) =  100.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  18.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90
  *USER-DEFINED LOGARITHMIC INTERPOLATION USED FOR RAINFALL*

  SLOPE OF INTENSITY DURATION CURVE(LOG(I;IN/HR) vs. LOG(Tc;MIN)) = 0.6000
  USER SPECIFIED 1-HOUR INTENSITY(INCH/HOUR) = 1.6400

  *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD*

  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  =========  =================  ======  ===== ====== ===== =======
  1   30.0     20.0    0.018/0.018/0.020   0.67    2.00 0.0313 0.167 0.0150

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth =  0.00 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*
  *USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

****************************************************************************
  FLOW PROCESS FROM NODE      0.00 TO NODE      1.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   570.00
  ELEVATION DATA: UPSTREAM(FEET) =   1437.40  DOWNSTREAM(FEET) =   1429.70

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   10.778
```

```
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.594
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  CONDOMINIUMS               A        1.90      0.98     0.350    32   10.78
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.98
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.350
  SUBAREA RUNOFF(CFS) =      7.27
  TOTAL AREA(ACRES) =      1.90   PEAK FLOW RATE(CFS) =      7.27

****************************************************************************
  FLOW PROCESS FROM NODE      1.00 TO NODE      1.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  10.78
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.594
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  CONDOMINIUMS               A        0.60      0.98     0.350    32
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.98
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.350
  SUBAREA AREA(ACRES) =    0.60      SUBAREA RUNOFF(CFS) =    2.30
  EFFECTIVE AREA(ACRES) =      2.50   AREA-AVERAGED Fm(INCH/HR) =  0.34
  AREA-AVERAGED Fp(INCH/HR) =  0.98  AREA-AVERAGED Ap =  0.35
  TOTAL AREA(ACRES) =      2.50       PEAK FLOW RATE(CFS) =       9.57

****************************************************************************
  FLOW PROCESS FROM NODE      1.00 TO NODE      2.00 IS CODE =  61
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STANDARD CURB SECTION USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1429.70  DOWNSTREAM ELEVATION(FEET) = 1427.30
  STREET LENGTH(FEET) =   380.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 13.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =   5.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      11.91
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.43
    HALFSTREET FLOOD WIDTH(FEET) =   13.00
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.49
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.07
  STREET FLOW TRAVEL TIME(MIN.) =   2.54   Tc(MIN.) =  13.32
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.046
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  CONDOMINIUMS               A        1.40      0.98     0.350    32
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.98
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.350
  SUBAREA AREA(ACRES) =    1.40      SUBAREA RUNOFF(CFS) =    4.67
```

```
  EFFECTIVE AREA(ACRES) =      3.90    AREA-AVERAGED Fm(INCH/HR) =  0.34
  AREA-AVERAGED Fp(INCH/HR) =  0.98  AREA-AVERAGED Ap =  0.35
  TOTAL AREA(ACRES) =      3.90        PEAK FLOW RATE(CFS) =      13.01

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.44   HALFSTREET FLOOD WIDTH(FEET) =  13.00
  FLOW VELOCITY(FEET/SEC.) =  2.57   DEPTH*VELOCITY(FT*FT/SEC.) =   1.14
  LONGEST FLOWPATH FROM NODE      0.00 TO NODE      2.00 =   950.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE      2.00 TO NODE      2.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  13.32
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.046
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  CONDOMINIUMS               A        0.90      0.98     0.350    32
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.98
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.350
  SUBAREA AREA(ACRES) =    0.90      SUBAREA RUNOFF(CFS) =    3.00
  EFFECTIVE AREA(ACRES) =      4.80   AREA-AVERAGED Fm(INCH/HR) =  0.34
  AREA-AVERAGED Fp(INCH/HR) =  0.98  AREA-AVERAGED Ap =  0.35
  TOTAL AREA(ACRES) =      4.80       PEAK FLOW RATE(CFS) =      16.01

****************************************************************************
  FLOW PROCESS FROM NODE      2.00 TO NODE      3.00 IS CODE =  61
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STANDARD CURB SECTION USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1427.30  DOWNSTREAM ELEVATION(FEET) = 1425.50
  STREET LENGTH(FEET) =   160.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 13.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =   5.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      16.65
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.44
    HALFSTREET FLOOD WIDTH(FEET) =   13.00
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.37
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.47
  STREET FLOW TRAVEL TIME(MIN.) =   0.79   Tc(MIN.) =  14.11
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.909
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  CONDOMINIUMS               A        0.40      0.98     0.350    32
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.98
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.350
  SUBAREA AREA(ACRES) =    0.40      SUBAREA RUNOFF(CFS) =    1.28
  EFFECTIVE AREA(ACRES) =      5.20    AREA-AVERAGED Fm(INCH/HR) =  0.34
```

```
  AREA-AVERAGED Fp(INCH/HR) =  0.98  AREA-AVERAGED Ap =  0.35
  TOTAL AREA(ACRES) =      5.20        PEAK FLOW RATE(CFS) =      16.70

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.44   HALFSTREET FLOOD WIDTH(FEET) =  13.00
  FLOW VELOCITY(FEET/SEC.) =  3.38   DEPTH*VELOCITY(FT*FT/SEC.) =   1.48
  LONGEST FLOWPATH FROM NODE      0.00 TO NODE      3.00 =  1110.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE      3.00 TO NODE      3.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  14.11
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.909
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  CONDOMINIUMS               A        1.30      0.98     0.350    32
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.97
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.350
  SUBAREA AREA(ACRES) =    1.30      SUBAREA RUNOFF(CFS) =    4.17
  EFFECTIVE AREA(ACRES) =      6.50   AREA-AVERAGED Fm(INCH/HR) =  0.34
  AREA-AVERAGED Fp(INCH/HR) =  0.98  AREA-AVERAGED Ap =  0.35
  TOTAL AREA(ACRES) =      6.50       PEAK FLOW RATE(CFS) =      20.87

****************************************************************************
  FLOW PROCESS FROM NODE     10.00 TO NODE     11.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   260.00
  ELEVATION DATA: UPSTREAM(FEET) =   1441.60  DOWNSTREAM(FEET) =   1437.80

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    7.751
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  5.599
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  CONDOMINIUMS               A        0.70      0.98     0.350    32    7.75
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.98
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.350
  SUBAREA RUNOFF(CFS) =      3.31
  TOTAL AREA(ACRES) =      0.70   PEAK FLOW RATE(CFS) =      3.31

****************************************************************************
  FLOW PROCESS FROM NODE     11.00 TO NODE     12.00 IS CODE =  61
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STANDARD CURB SECTION USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1437.80  DOWNSTREAM ELEVATION(FEET) = 1433.30
  STREET LENGTH(FEET) =   375.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 13.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =   5.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
```

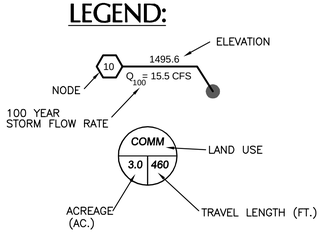
```
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       7.72
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.36
    HALFSTREET FLOOD WIDTH(FEET) =   11.55
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.66
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.95
  STREET FLOW TRAVEL TIME(MIN.) =   2.35   Tc(MIN.) =  10.10
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.776
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  CONDOMINIUMS               A        2.20      0.98     0.350    32
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.98
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.350
  SUBAREA AREA(ACRES) =    2.20      SUBAREA RUNOFF(CFS) =    8.78
  EFFECTIVE AREA(ACRES) =      2.90    AREA-AVERAGED Fm(INCH/HR) =  0.34
  AREA-AVERAGED Fp(INCH/HR) =  0.98  AREA-AVERAGED Ap =  0.35
  TOTAL AREA(ACRES) =      2.90        PEAK FLOW RATE(CFS) =      11.57

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.40   HALFSTREET FLOOD WIDTH(FEET) =  13.00
  FLOW VELOCITY(FEET/SEC.) =  2.98   DEPTH*VELOCITY(FT*FT/SEC.) =   1.18
  LONGEST FLOWPATH FROM NODE     10.00 TO NODE     12.00 =   635.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE     12.00 TO NODE     12.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  10.10
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.776
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  CONDOMINIUMS               A        0.40      0.98     0.350    32
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.98
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.350
  SUBAREA AREA(ACRES) =    0.40      SUBAREA RUNOFF(CFS) =    1.60
  EFFECTIVE AREA(ACRES) =      3.30   AREA-AVERAGED Fm(INCH/HR) =  0.34
  AREA-AVERAGED Fp(INCH/HR) =  0.98  AREA-AVERAGED Ap =  0.35
  TOTAL AREA(ACRES) =      3.30       PEAK FLOW RATE(CFS) =      13.17
============================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)     =      3.30  TC(MIN.) =     10.10
  EFFECTIVE AREA(ACRES) =      3.30  AREA-AVERAGED Fm(INCH/HR)=  0.34
  AREA-AVERAGED Fp(INCH/HR) =  0.98  AREA-AVERAGED Ap = 0.350
  PEAK FLOW RATE(CFS)   =     13.17
============================================================================
============================================================================
  END OF RATIONAL METHOD ANALYSIS
```



EXISTING FLOW AT PROJECT BOUNDARY:

NODE 1	(Q=4.4 CFS)
EX. 3.5' CATCH BASIN & 3'X2' GRATE CAPACITY	−7.4 CFS
EX. 3'X2' GRATE CAPACITY	−6.0 CFS
	0.0 CFS
EX. 7' CATCH BASIN IN S. HIGHLAND	(Q=5.2 CFS)
EX. 7' CATCH BASIN CAPACITY	−3.1 CFS
	2.1 CFS
EX. 7' HEMLOCK AVENUE FLOWS	+5.5 CFS
EXISTING FLOWS IN SOUTH HIGHLAND AT HEMLOCK AND POJECT BOUNDARY	= 7.6 CFS

LEGEND:



INDICATES SUBAREA BOUNDARY

INDICATES FLOW DIRECTION

—(1495)— EXISITING CONTOUR LINE

COMM– 90% IMPERVIOUS LAND COVER

HP – HIGH POINT

CFS – CUBIC FEET PER SECOND

NOTE:

FLOW RATE AT NODE 3 REFLECTS TOTAL FLOW TRIBUTARY TO THAT POINT WITH ACCOUNTING FOR EXISTING STORM DRAIN IN BEECH AVENUE OR SOUTH HIGHLAND AVENUE. SEE SUMMARY OF EXISTING FLOW AT PROJECT BOUNDARY FOR THE ACTUAL FLOW RATE AT PROJECT BOUNDARY.

GRAPHIC SCALE

150 0 75 150 600

(IN FEET)
1 inch = 150 ft.

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CITY OF FONTANA
CALIFORNIA

TENTATIVE TRACT MAP NO. 20297

OFFSITE HYDROLOGY EXHIBIT PLAN

PLOT DATE: August 03, 2019 reynoldallard

Filename: I:\Stratham Homes–129\Chow Property– Fontana\DWG's\ENTITLEMENT\EXHIBITS\Offsite Hydrology Exhibit.dwg

```
****************************************************************************
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                           Analysis prepared by:

                             Allard Engineering
                             8253 Sierra Avenue
                             Fontana Ca. 92335
                               (909) 356-1815

 ************************** DESCRIPTION OF STUDY **************************
* Offsite Developed Rational Method                                        *
* 100 Year Storm                                                           *
*                                                                          *
 ****************************************************************************

  FILE NAME: OFFSITE.DAT
  TIME/DATE OF STUDY: 13:07 08/02/2019
============================================================================
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
============================================================================
                    --*TIME-OF-CONCENTRATION MODEL*--

  USER SPECIFIED STORM EVENT(YEAR) =  100.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  18.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90
  *USER-DEFINED LOGARITHMIC INTERPOLATION USED FOR RAINFALL*

  SLOPE OF INTENSITY DURATION CURVE(LOG(I;IN/HR) vs. LOG(Tc;MIN)) = 0.6000
  USER SPECIFIED 1-HOUR INTENSITY(INCH/HOUR) = 1.6400

  *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD*

  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  =========  =================  ======  ===== ====== ===== =======
  1   33.0     20.0    0.020/0.020/0.020   0.67    1.50 0.0313 0.167 0.0150

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth =  0.24 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*
  *USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

****************************************************************************
  FLOW PROCESS FROM NODE      0.00 TO NODE      1.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   930.00
  ELEVATION DATA: UPSTREAM(FEET) =   1496.00  DOWNSTREAM(FEET) =   1482.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   10.833
```

```
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.580
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  COMMERCIAL                 A        1.10      0.98     0.100    32   10.83
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.97
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.100
  SUBAREA RUNOFF(CFS) =      4.44
  TOTAL AREA(ACRES) =      1.10   PEAK FLOW RATE(CFS) =      4.44

****************************************************************************
  FLOW PROCESS FROM NODE      1.00 TO NODE      2.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  1 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1482.00  DOWNSTREAM ELEVATION(FEET) = 1443.00
  STREET LENGTH(FEET) =  2110.00   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 33.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  20.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       7.77
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.45
    HALFSTREET FLOOD WIDTH(FEET) =   13.90
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.73
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.66
  STREET FLOW TRAVEL TIME(MIN.) =   9.43   Tc(MIN.) =  20.26
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.146
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  COMMERCIAL                 A        2.40      0.98     0.100    32
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.98
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.100
  SUBAREA AREA(ACRES) =    2.40      SUBAREA RUNOFF(CFS) =    6.58
  EFFECTIVE AREA(ACRES) =      3.50    AREA-AVERAGED Fm(INCH/HR) =  0.10
  AREA-AVERAGED Fp(INCH/HR) =  0.97  AREA-AVERAGED Ap =  0.10
  TOTAL AREA(ACRES) =      3.50        PEAK FLOW RATE(CFS) =       9.60

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.47   HALFSTREET FLOOD WIDTH(FEET) =  15.15
  FLOW VELOCITY(FEET/SEC.) =  3.93   DEPTH*VELOCITY(FT*FT/SEC.) =   1.85
  LONGEST FLOWPATH FROM NODE      0.00 TO NODE      2.00 =  3040.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE      2.00 TO NODE      2.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  20.26
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.146
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
```

```
  COMMERCIAL                  A        2.00      0.98     0.100    32
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.98
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.100
  SUBAREA AREA(ACRES) =    2.00      SUBAREA RUNOFF(CFS) =    5.49
  EFFECTIVE AREA(ACRES) =      5.50   AREA-AVERAGED Fm(INCH/HR) =  0.10
  AREA-AVERAGED Fp(INCH/HR) =  0.97  AREA-AVERAGED Ap =  0.10
  TOTAL AREA(ACRES) =      5.50       PEAK FLOW RATE(CFS) =      15.09

****************************************************************************
  FLOW PROCESS FROM NODE      2.00 TO NODE      3.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  1 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1443.00  DOWNSTREAM ELEVATION(FEET) = 1423.00
  STREET LENGTH(FEET) =  1020.00   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 33.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  20.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      16.57
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.54
    HALFSTREET FLOOD WIDTH(FEET) =   18.66
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.56
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.47
  STREET FLOW TRAVEL TIME(MIN.) =   3.73   Tc(MIN.) =  23.99
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.843
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  COMMERCIAL                  A        1.20      0.98     0.100    32
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.98
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.100
  SUBAREA AREA(ACRES) =    1.20      SUBAREA RUNOFF(CFS) =    2.97
  EFFECTIVE AREA(ACRES) =      6.70    AREA-AVERAGED Fm(INCH/HR) =  0.10
  AREA-AVERAGED Fp(INCH/HR) =  0.97  AREA-AVERAGED Ap =  0.10
  TOTAL AREA(ACRES) =      6.70        PEAK FLOW RATE(CFS) =      16.56

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.54   HALFSTREET FLOOD WIDTH(FEET) =  18.66
  FLOW VELOCITY(FEET/SEC.) =  4.56   DEPTH*VELOCITY(FT*FT/SEC.) =   2.47
  LONGEST FLOWPATH FROM NODE      0.00 TO NODE      3.00 =  4060.00 FEET.
============================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)     =      6.70  TC(MIN.) =     23.99
  EFFECTIVE AREA(ACRES) =      6.70  AREA-AVERAGED Fm(INCH/HR)=  0.10
  AREA-AVERAGED Fp(INCH/HR) =  0.97  AREA-AVERAGED Ap = 0.100
  PEAK FLOW RATE(CFS)   =     16.56
============================================================================
============================================================================
  END OF RATIONAL METHOD ANALYSIS
```

Hydraulic Calculations

Typical Onsite Drive Isle Street Capacity

Offsite Water Depth and Catch Basin Capacity for Beech Avenue and South Highland Avenue

```
****************************************************************************
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                           Analysis prepared by:

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                             8253 Sierra Avenue
                             Fontana Ca. 92335
                               (909) 356-1815

----------------------------------------------------------------------------
  TIME/DATE OF STUDY: 08:34 08/03/2019
============================================================================
 Problem Descriptions:
  Typical Onsite Drive Isle Capacity


****************************************************************************
>>>>STREETFLOW MODEL INPUT INFORMATION<<<<
----------------------------------------------------------------------------
    CONSTANT STREET GRADE(FEET/FEET) = 0.010000
    CONSTANT STREET FLOW DEPTH(FEET) =    0.50
    AVERAGE STREETFLOW FRICTION FACTOR(MANNING) = 0.015000
    CONSTANT SYMMETRICAL STREET HALF-WIDTH(FEET) =   13.00
    DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =    5.00
    INTERIOR STREET CROSSFALL(DECIMAL) = 0.020000
    OUTSIDE  STREET CROSSFALL(DECIMAL) = 0.020000
    CONSTANT SYMMETRICAL CURB HEIGHT(FEET) =   0.50
    CONSTANT SYMMETRICAL GUTTER-WIDTH(FEET) =   1.50
    CONSTANT SYMMETRICAL GUTTER-LIP(FEET) =  0.03125
    CONSTANT SYMMETRICAL GUTTER-HIKE(FEET) =  0.12500
    FLOW ASSUMED TO FILL STREET EVENLY ON BOTH SIDES
============================================================================
    STREET FLOW MODEL RESULTS:
----------------------------------------------------------------------------
    STREET FLOW DEPTH(FEET) =  0.50
    HALFSTREET FLOOD WIDTH(FEET) =   13.00
    HALFSTREET FLOW(CFS) =   12.82
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.88
    PRODUCT OF DEPTH&VELOCITY =    1.94
============================================================================
```

```
_____________________________________________________________________________
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                           Analysis prepared by:

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                             8253 Sierra Avenue
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-----------------------------------------------------------------------------
  TIME/DATE OF STUDY: 07:05 08/03/2019
=============================================================================
 Problem Descriptions:
  Water Depth at Node 1


*****************************************************************************
>>>>STREETFLOW MODEL INPUT INFORMATION<<<<
-----------------------------------------------------------------------------
    CONSTANT STREET GRADE(FEET/FEET) = 0.018000
    CONSTANT STREET FLOW(CFS) =    4.40
    AVERAGE STREETFLOW FRICTION FACTOR(MANNING) = 0.015000
    CONSTANT SYMMETRICAL STREET HALF-WIDTH(FEET) =   33.00
    DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =   10.00
    INTERIOR STREET CROSSFALL(DECIMAL) = 0.020000
    OUTSIDE  STREET CROSSFALL(DECIMAL) = 0.020000
    CONSTANT SYMMETRICAL CURB HEIGHT(FEET) =   0.67
    CONSTANT SYMMETRICAL GUTTER-WIDTH(FEET) =   1.50
    CONSTANT SYMMETRICAL GUTTER-LIP(FEET) =  0.03125
    CONSTANT SYMMETRICAL GUTTER-HIKE(FEET) =  0.12500
    FLOW ASSUMED TO FILL STREET ON ONE SIDE, AND THEN SPLITS
=============================================================================
    STREET FLOW MODEL RESULTS:
-----------------------------------------------------------------------------
    STREET FLOW DEPTH(FEET) =  0.34
    HALFSTREET FLOOD WIDTH(FEET) =   10.85
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.40
    PRODUCT OF DEPTH&VELOCITY =    1.17
=============================================================================
```

```
_____________________________________________________________________________
*****************************************************************************
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                           Analysis prepared by:

                             Allard Engineering
                             8253 Sierra Avenue
                             Fontana Ca. 92335
                               (909) 356-1815

-----------------------------------------------------------------------------
  TIME/DATE OF STUDY: 07:10 08/03/2019
=============================================================================
 Problem Descriptions:
  Catch Basin at Node 1 Capacity


*****************************************************************************
>>>>FLOWBY CATCH BASIN INLET CAPACITY INPUT INFORMATION<<<<
-----------------------------------------------------------------------------


    Curb Inlet Capacities are approximated based on the Bureau of
    Public Roads nomograph plots for flowby basins and sump basins.


    STREETFLOW(CFS) =    4.40
    GUTTER FLOWDEPTH(FEET) =  0.34
    BASIN LOCAL DEPRESSION(FEET) =  0.17

-----------------------------------------------------------------------------
         FLOWBY BASIN ANALYSIS RESULTS:

       BASIN WIDTH     FLOW INTERCEPTION
            1.78            0.75
            2.00            0.83
            2.50            1.02
            3.00            1.21
            3.50            1.39
            4.00            1.58
            4.50            1.76
            5.00            1.93
            5.50            2.09
            6.00            2.24
            6.50            2.38
            7.00            2.53
            7.50            2.66
            8.00            2.80
            8.50            2.94
            9.00            3.06
            9.50            3.18
           10.00            3.30
           10.50            3.41
           11.00            3.51
           11.50            3.60
           12.00            3.69
           12.50            3.77
           13.00            3.85
           13.50            3.93
           14.00            3.99
```

14.50	4.06
15.00	4.12
15.50	4.18
16.00	4.23
16.50	4.28
17.00	4.33
17.50	4.37
17.82	4.40

```
****************************************************************************
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                           Analysis prepared by:

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                             Fontana Ca. 92335
                               (909) 356-1815

----------------------------------------------------------------------------
  TIME/DATE OF STUDY: 07:19 08/03/2019
============================================================================
 Problem Descriptions:
  Depth at South Highland Existing Catch Basin


****************************************************************************
>>>>STREETFLOW MODEL INPUT INFORMATION<<<<
----------------------------------------------------------------------------
    CONSTANT STREET GRADE(FEET/FEET) = 0.010000
    CONSTANT STREET FLOW(CFS) =    5.20
    AVERAGE STREETFLOW FRICTION FACTOR(MANNING) = 0.015000
    CONSTANT SYMMETRICAL STREET HALF-WIDTH(FEET) =   33.00
    DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =   10.00
    INTERIOR STREET CROSSFALL(DECIMAL) = 0.020000
    OUTSIDE  STREET CROSSFALL(DECIMAL) = 0.020000
    CONSTANT SYMMETRICAL CURB HEIGHT(FEET) =   0.67
    CONSTANT SYMMETRICAL GUTTER-WIDTH(FEET) =   1.50
    CONSTANT SYMMETRICAL GUTTER-LIP(FEET) =  0.03125
    CONSTANT SYMMETRICAL GUTTER-HIKE(FEET) =  0.12500
    FLOW ASSUMED TO FILL STREET ON ONE SIDE, AND THEN SPLITS
============================================================================
    STREET FLOW MODEL RESULTS:
----------------------------------------------------------------------------
    STREET FLOW DEPTH(FEET) =  0.40
    HALFSTREET FLOOD WIDTH(FEET) =   13.80
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.57
    PRODUCT OF DEPTH&VELOCITY =    1.03
============================================================================
```

```
****************************************************************************
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                           Analysis prepared by:

                             Allard Engineering
                             8253 Sierra Avenue
                             Fontana Ca. 92335
                               (909) 356-1815

----------------------------------------------------------------------------
  TIME/DATE OF STUDY: 07:22 08/03/2019
============================================================================
 Problem Descriptions:
  South Highland Existing Catch Basin Capacity


****************************************************************************
>>>>FLOWBY CATCH BASIN INLET CAPACITY INPUT INFORMATION<<<<
----------------------------------------------------------------------------


    Curb Inlet Capacities are approximated based on the Bureau of
    Public Roads nomograph plots for flowby basins and sump basins.


    STREETFLOW(CFS) =    5.20
    GUTTER FLOWDEPTH(FEET) =  0.40
    BASIN LOCAL DEPRESSION(FEET) =  0.17

----------------------------------------------------------------------------
         FLOWBY BASIN ANALYSIS RESULTS:

       BASIN WIDTH     FLOW INTERCEPTION
            1.75            0.92
            2.00            1.04
            2.50            1.27
            3.00            1.51
            3.50            1.73
            4.00            1.96
            4.50            2.18
            5.00            2.38
            5.50            2.57
            6.00            2.75
            6.50            2.93
            7.00            3.10
            7.50            3.27
            8.00            3.44
            8.50            3.60
            9.00            3.75
            9.50            3.90
           10.00            4.03
           10.50            4.15
           11.00            4.27
           11.50            4.37
           12.00            4.47
           12.50            4.57
           13.00            4.65
           13.50            4.73
           14.00            4.81
```

14.50	4.88
15.00	4.94
15.50	5.00
16.00	5.06
16.50	5.11
17.00	5.16
17.49	5.20

```
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                           Analysis prepared by:

                             Allard Engineering
                             8253 Sierra Avenue
                             Fontana Ca. 92335
                               (909) 356-1815

----------------------------------------------------------------------------
  TIME/DATE OF STUDY: 08:04 08/03/2019
============================================================================
 Problem Descriptions:
  South Highland Project Boundary at Hemlock Avenue Water Depth


****************************************************************************
>>>>STREETFLOW MODEL INPUT INFORMATION<<<<
----------------------------------------------------------------------------
    CONSTANT STREET GRADE(FEET/FEET) = 0.010000
    CONSTANT STREET FLOW(CFS) =    7.20
    AVERAGE STREETFLOW FRICTION FACTOR(MANNING) = 0.015000
    CONSTANT SYMMETRICAL STREET HALF-WIDTH(FEET) =   33.00
    DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =   10.00
    INTERIOR STREET CROSSFALL(DECIMAL) = 0.020000
    OUTSIDE  STREET CROSSFALL(DECIMAL) = 0.020000
    CONSTANT SYMMETRICAL CURB HEIGHT(FEET) =   0.67
    CONSTANT SYMMETRICAL GUTTER-WIDTH(FEET) =   1.50
    CONSTANT SYMMETRICAL GUTTER-LIP(FEET) =  0.03125
    CONSTANT SYMMETRICAL GUTTER-HIKE(FEET) =  0.12500
    FLOW ASSUMED TO FILL STREET ON ONE SIDE, AND THEN SPLITS
============================================================================
    STREET FLOW MODEL RESULTS:
----------------------------------------------------------------------------
    STREET FLOW DEPTH(FEET) =  0.44
    HALFSTREET FLOOD WIDTH(FEET) =   15.77
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.76
    PRODUCT OF DEPTH&VELOCITY =    1.22
============================================================================
```

Appendix L
Preliminary Water Quality Management Plan

HIGHLAND RESIDENTIAL PROJECT
INITIAL STUDY

Preliminary
Water Quality Management Plan

For:

Tentative Tract No. 20297

15035 Highland

APN No. 0228-021-08 & 0228-021-09

WQMP 19-_____

South Highland Avenue & Hemlock Avenue

Prepared for:

Stratham Homes, Inc.

2201 Dupoint Drive, Suite 300

Irvine, CA 92612

Phone: (949) 833-1554

Prepared by:

Allard Engineering

16866 Seville Avenue

Fontana, CA 92335

Phone (909) 356-1815

rallard@allardeng.com

Approval Date: _____

Project Owner's Certification

This Water Quality Management Plan (WQMP) has been prepared for Stratham Homes Inc. by Allard Engineering. The WQMP is intended to comply with the requirements of the City of Fontana and the NPDES Area wide Stormwater Program requiring the preparation of a WQMP. The undersigned, while it owns the subject property, is responsible for the implementation of the provisions of this plan and will ensure that this plan is amended as appropriate to reflect up-to-date conditions on the site consistent with San Bernardino County's Municipal Storm Water Management Program and the intent of the NPDES Permit for San Bernardino County and the incorporated cities of San Bernardino County within the Santa Ana Region. Once the undersigned transfers its interest in the property, its successors in interest and the city/county shall be notified of the transfer. The new owner will be informed of its responsibility under this WQMP. A copy of the approved WQMP shall be available on the subject site in perpetuity.

"I certify under a penalty of law that the provisions (implementation, operation, maintenance, and funding) of the WQMP have been accepted and that the plan will be transferred to future successors."

Project Data			
Permit/Application Number(s):	WQMP-19-_____	Grading Permit Number(s):	
Tract/Parcel Map Number(s):	TTM No. 20297	Building Permit Number(s):	
CUP, SUP, and/or APN (Specify Lot Numbers if Portions of Tract):			APN(s) : 0228-021-08 &- 09

Owner's Signature		
Owner Name:	Keyvan Razi	
Title	President	
Company	Stratham Homes, Inc.	
Address	2201 Dupoint Drive, Suite 300 Irvine, CA 92612	
Email	erazi@strathamhomes.com	
Telephone #	(949) 833-1554	
Signature	Date	

Preparer's Certification

Project Data			
Permit/Application Number(s):	WQMP-19-_____	Grading Permit Number(s):	
Tract/Parcel Map Number(s):	TTM No. 20297	Building Permit Number(s):	
CUP, SUP, and/or APN (Specify Lot Numbers if Portions of Tract):			APN(s) : 0228-021-08 &-09

"The selection, sizing and design of stormwater treatment and other stormwater quality and quantity control measures in this plan were prepared under my oversight and meet the requirements of Regional Water Quality Control Board Order No. R8-2010-0036."

Engineer: RAYMOND ALLARD		PE Stamp Below
Title	PRESIDENT	
Company	Allard Engineering	
Address	16866 Seville Avenue	
Email	rallard@allardeng.com	
Telephone #	(909) 356-1815	
Signature		
Date		

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Section 1 Discretionary Permit(s)

Form 1-1 Project Information					
Project Name	Tentative Tract Map No. 20297				
Project Owner Contact Name:	Keyvan Razi, Stratham Homes, Inc.				
Mailing Address:	2201 Dupoint Drive, Suite 300 Irvine, CA 92612	E-mail Address:	erazi@strathamhomes.com	Telephone:	949-833-1554
Permit/Application Number(s):	WQMP-19-_____		Tract/Parcel Map Number(s): TTM No. 20297	APN# 0228-021-31	
Additional Information/ Comments:	N/A				
Description of Project:	This project is proposing 10 acres of detached residential units comprising of a townhome/condo style development. The entire project consists of 110 salable units in a private community gated community. The community will include common open space area such as pool, clubhouse and park play area. The development will have a HOA to maintain the community elements along with the WQMP BMPs for the site. The project will be proposing Highland Avenue frontage improvements along its southerly frontage. The proposed parkway frontage improvements are approximately 1,100 ft which is less than the minimum required length of ½ mile (2,640-ft) and are exempt from treatment per the San Bernardino County Transportation Project Total Guidance Document (TGD). The project is in the City of Fontana, bounded by South Highland Avenue to the south, Hemlock Avenue to the East, San Sevaine to the West and Old Highland Avenue/210 Freeway to the North. The existing site undeveloped land with sparse vegetation and drains southerly to South Highland Avenue. The proposed drainage includes a number of underground infiltration/retention chamber systems, catch basins with insert filter for pre-treatment, ribbon-gutter, grate inlets and drain pipes. The overflow for the chamber systems will be the site 100 year storm drain. The larger storm flows will by- pass the proposed chamber systems at the catch basins or weir manhole allowing it to flow to the storm drain system. This storm drain system joins the existing storm drain 36” RCP in San Sevaine Avenue.				

Provide summary of Conceptual WQMP conditions (if previously submitted and approved). Attach complete copy.	Entire project drainage area consits of 3 Drainage Management Areas (DMAs) DMA-1 through DMA-3: On site drainage systems consist of catch basin with filter inserts, swales, grated inlets and pipes will convey the flows to the proposed Contech Chamber System for infiltration/retention of WQMP flow. The larger flow will bypass the chamber system and will continue flow via the project's storm drain.

Section 2 Project Description

2.1 Project Information

This section of the WQMP should provide the information listed below. The information provided for Conceptual/ Preliminary WQMP should give sufficient detail to identify the major proposed site design and LID BMPs and other anticipated water quality features that impact site planning. Final Project WQMP must specifically identify all BMP incorporated into the final site design and provide other detailed information as described herein. The purpose of this information is to help determine the applicable development category, pollutants of concern, watershed description, and long term maintenance responsibilities for the project, and any applicable water quality credits. This information will be used in conjunction with the information in Section 3, Site Description, to establish the performance criteria and to select the LID BMP or other BMP for the project or other alternative programs that the project will participate in, which are described in Section 4.

Form 2.1-1 Description of Proposed Project			
1 Development Category (Select all that apply):			
☐ Significant re-development involving the addition or replacement of 5,000 ft² or more of impervious surface on an already developed site	☒ New development involving the creation of 10,000 ft² or more of impervious surface collectively over entire site	☐ Automotive repair shops with standard industrial classification (SIC) codes 5013, 5014, 5541, 7532- 7534, 7536-7539	☐ Restaurants (with SIC code 5812) where the land area of development is 5,000 ft² or more
☐ Hillside developments of 5,000 ft² or more which are located on areas with known erosive soil conditions or where the natural slope is 25 percent or more	☐ Developments of 2,500 ft² of impervious surface or more adjacent to (within 200 ft) or discharging directly into environmentally sensitive areas or waterbodies listed on the CWA Section 303(d) list of impaired waters.	☐ Parking lots of 5,000 ft² or more exposed to storm water	☐ Retail gasoline outlets that are either 5,000 ft² or more, or have a projected average daily traffic of 100 or more vehicles per day
☐ Non-Priority / Non-Category Project May require source control LID BMPs and other LIP requirements. Please consult with local jurisdiction on specific requirements.			

2 Project Area (ft2):	435,600 sf	3 Number of Dwelling Units:	110	4 SIC Code:	6552

5 Is Project going to be phased? Yes ☐ No ☒ If yes, ensure that the WQMP evaluates each phase as a distinct DA, requiring LID BMPs to address runoff at time of completion.

6 Does Project include roads? Yes ☒ No ☐ If yes, ensure that applicable requirements for transportation projects are addressed (see Appendix A of TGD for WQMP)

2.2 Property Ownership/Management

Describe the ownership/management of all portions of the project and site. State whether any infrastructure will transfer to public agencies (City, County, Caltrans, etc.) after project completion. State if a homeowners or property owners association will be formed and be responsible for the long-term maintenance of project stormwater facilities. Describe any lot-level stormwater features that will be the responsibility of individual property owners.

Form 2.2-1 Property Ownership/Management
Describe property ownership/management responsible for long-term of WQMP stormwater facilities:
Stratham Homes, Inc. will be responsible to build the site and a HOA will maintain the post-developed BMPs upon completion of construction. Address: Stratham Homes, Inc. 2201 Dupoint Drive, Suite 300 Irvine, CA 92612 Phone Number: (949) 833-1554

2.3 Potential Stormwater Pollutants

Determine and describe expected stormwater pollutants of concern based on land uses and site activities (refer to Table 3-3 in the TGD for WQMP).

Form 2.3-1 Pollutants of Concern			
Pollutant	Please check: E=Expected, N=Not Expected		Additional Information and Comments
Pathogens (Bacterial / Virus)	E ☒	N ☐	Bacteria and viruses are a potential pollutant for Residential developments if the land use involves animal waste. Due to the nature of the development there will be minimal animal waste associated with this land use, and the site will be treated using site and source and treatment control BMPs. Bacteria and virus can also be detected in pavement runoff, therefore, the site has incorporated treatment control throughout. All paved and hardened surfaces will flow through basins as part of Low Impact Design (LID).
Phosphorous	E ☒	N ☐	
Nitrogen	E ☒	N ☐	
Sediment	E ☒	N ☐	
Metals	E ☐	N ☒	Not identified in TGD Table 3.3 with detached SFR lots.
Oil and Grease	E ☒	N ☐	
Trash/Debris	E ☒	N ☐	
Pesticides / Herbicides	E ☒	N ☐	
Organic Compounds	E ☒	N ☐	
Other: Nutrients	E ☒	N ☐	
Other: Oxygen Demanding Compounds	E ☒	N ☐	
Other:	E ☐	N ☐	

2.4 Water Quality Credits

A water quality credit program is applicable for certain types of development projects if it is not feasible to meet the requirements for on-site LID. Proponents for eligible projects, as described below, can apply for water quality credits that would reduce project obligations for selecting and sizing other treatment BMP or participating in other alternative compliance programs. Refer to Section 6.2 in the TGD for WQMP to determine if water quality credits are applicable for the project.

Form 2.4-1 Water Quality Credits

[1] Project Types that Qualify for Water Quality Credits: Select all that apply			
☐ Redevelopment projects that reduce the overall impervious footprint of the project site. [Credit = % impervious reduced]	Higher density development projects ☐ Vertical density [20%] ☐ 7 units/ acre [5%]	☐ Mixed use development, (combination of residential, commercial, industrial, office, institutional, or other land uses which incorporate design principles that demonstrate environmental benefits not realized through single use projects) [20%]	☐ Brownfield redevelopment (redevelop real property complicated by presence or potential of hazardous contaminants) [25%]
☐ Redevelopment projects in established historic district, historic preservation area, or similar significant core city center areas [10%]	☐ Transit-oriented developments (mixed use residential or commercial area designed to maximize access to public transportation) [20%]	☐ In-fill projects (conversion of empty lots & other underused spaces < 5 acres, substantially surrounded by urban land uses, into more beneficially used spaces, such as residential or commercial areas) [10%]	☐ Live-Work developments (variety of developments designed to support residential and vocational needs) [20%]
[2] Total Credit % 0 (Total all credit percentages up to a maximum allowable credit of 50 percent)			
Description of Water Quality Credit Eligibility (if applicable)	N/A		

Section 3 Site and Watershed Description

Describe the project site conditions that will facilitate the selection of BMP through an analysis of the physical conditions and limitations of the site and its receiving waters. Identify distinct drainage areas (DA) that collect flow from a portion of the site and describe how runoff from each DA (and sub-watershed DMAs) is conveyed to the site outlet(s). Refer to Section 3.2 in the TGD for WQMP. The form below is provided as an example. Then complete Forms 3.2 and 3.3 for each DA on the project site. If the project has more than one drainage area for stormwater management, then complete additional versions of these forms for each DA / outlet.

Form 3-1 Site Location and Hydrologic Features			
Site coordinates take GPS measurement at approximate center of site	Latitude 34.1350° N	Longitude 117.4772° W	Thomas Bros Map page PAGE ___ GRID _ _
[1] San Bernardino County climatic region: ☒ Valley ☐ Mountain			
[2] Does the site have more than one drainage area (DA): Yes☐ No☒ If no, proceed to Form 3-2. If yes, then use this form to show a conceptual schematic describing DMAs and hydrologic feature connecting DMAs to the site outlet(s). An example is provided below that can be modified for proposed project or a drawing clearly showing DMA and flow routing may be attached			
Conveyance			
DMA-1 through DMA-3	Entire project Drainage Area (DA-1) consist of eight (3) Onsite Drainage Management Area (s): DMA-1 through DMA-3. DMA-1 through DMA-3: On site drainage systems consist of catch basin with filter inserts, swales, grated inlets and pipes will convey the flows to the proposed Chamber Systems for infiltration/retention of WQMP flow. The larger flow will bypass the chamber system and will continue flow via the project's storm drain system.		

Form 3-2 Existing Hydrologic Characteristics for Drainage Areas (DMA-1 through DMA-3)				
For Drainage Areas 1-3 sub-watershed DMA, provide the following characteristics	DMA-1	DMA-2	DMA-3	
1 DMA drainage area (ft^2)	16,882 sf	6,546 sf	11,025 sf	
2 Existing site impervious area (ft^2)	0 sf	0 sf	0 sf	
3 Antecedent moisture condition For desert areas, use http://www.sbcounty.gov/dpw/floodcontrol/pdf/20100412_map.pdf	II	II	II	
4 Hydrologic soil group Refer to Watershed Mapping Tool – http://sbcounty.permitrack.com/WAP	A	A	A	
5 Longest flowpath length (ft)	850	380	510	
6 Longest flowpath slope (ft/ft)	1.3%	0.5%	1.7%	
7 Current land cover type(s) Select from Fig C-3 of Hydrology Manual	Undeveloped-Open Brush	Undeveloped-Open Brush	Undeveloped-Open Brush	
8 Pre-developed pervious area condition: Based on the extent of wet season vegetated cover good >75%; Fair 50-75%; Poor <50% Attach photos of site to support rating	100%	100%	100%	

Form 3-3 Watershed Description for Drainage Area(s) DA1	
Receiving waters Refer to Watershed Mapping Tool - http://sbcounty.permitrack.com/WAP See 'Drainage Facilities" link at this website	City master storm drain at S. Highland Blvd Etiwanda Creek Channel San Sevaine Channel Santa Ana River Reach 4 Predo Dam Santa Ana River Reach 3
Applicable TMDLs Refer to Local Implementation Plan	Etiwanda Creek Channel: None San Sevaine Channel: NONE Santa Ana River Reach 4: NONE Santa Ana River Reach 3: Pathogens "Bacterial Indicator TMLDs for Middle Santa Ana River Watershed Waterbodies (Bill Rice) Nitrate : Santa Ana River Reach 3 Nitrate TMDL (Hope Smythe) Prado Flood Control basin Pathogens "Bacterial Indicator TMLDs for Middle Santa Ana River Watershed Waterbodies (Bill Rice) Santa Ana River Reach 2 NONE Santa Ana River Reach 1 NONE Tidal Prism, Santa Ana River NONE
303(d) listed impairments Refer to Local Implementation Plan and Watershed Mapping Tool – http://sbcounty.permitrack.com/WAP and State Water Resources Control Board website – http://www.waterboards.ca.gov/santaana/water_issues/programs/tmdl/index.shtml	Expected pollutants of concern include organic compounds, trash/debris and oil/grease. Potential pollutants of concern include bacteria vitus, nutrients, pesticides, sediments, and oxygen demanding substances. There is no evidence to suggest that any other pollutants will be produced from the project site other than these 303(d) listed impairment: Prado Flood Control Basin: Pathogens and Nutrients Santa Ana River Reach 3: Pathogens, Metals (copper & lead) Santa Ana River Reach 2: Pathogens Santa Ana River Reach 1 and Tidal prism Santa Ana River : NONE
Environmentally Sensitive Areas (ESA) Refer to Watershed Mapping Tool – http://sbcounty.permitrack.com/WAP	NONE

Unlined Downstream Water Bodies Refer to Watershed Mapping Tool – http://sbcounty.permitrack.com/WAP	Etiwanda Creek Channel: Susceptibility - No, Material - EHM San Sevaine Channel: Susceptibility - No, Material - EHM Santa Ana River: Susceptibility - Yes
Hydrologic Conditions of Concern	☐ Yes Complete Hydrologic Conditions of Concern (HCOC) Assessment. Include Forms 4.2-2 through Form 4.2-5 and Hydromodification BMP Form 4.3-10 in submittal ☒ No
Watershed–based BMP included in a RWQCB approved WAP	☐ Yes Attach verification of regional BMP evaluation criteria in WAP • More Effective than On-site LID • Remaining Capacity for Project DCV • Upstream of any Water of the US • Operational at Project Completion • Long-Term Maintenance Plan ☒ No

Section 4 Best Management Practices (BMP)

4.1 Source Control BMP

4.1.1 Pollution Prevention

Non-structural and structural source control BMP are required to be incorporated into all new development and significant redevelopment projects. Form 4.1-1 and 4.1-2 are used to describe specific source control BMPs used in the WQMP or to explain why a certain BMP is not applicable. Table 7-3 of the TGD for WQMP provides a list of applicable source control BMP for projects with specific types of potential pollutant sources or activities. The source control BMP in this table must be implemented for projects with these specific types of potential pollutant sources or activities.

The preparers of this WQMP have reviewed the source control BMP requirements for new development and significant redevelopment projects. The preparers have also reviewed the specific BMP required for project as specified in Forms 4.1-1 and 4.1-2. All applicable non-structural and structural source control BMP shall be implemented in the project.

Form 4.1-1 Non-Structural Source Control BMPs

Identifier	Name	Check One		Describe BMP Implementation OR, if not applicable, state reason
		Included	Not Applicable	
N1	Education of Property Owners, Tenants and Occupants on Stormwater BMPs	☒	☐	Practical education materials will be provided to property owner and Summit at Rosena Maintenance staffs covering various water quality issues that will need to be addressed on their specific site. These materials will include general practices that contribute to the protection of storm water quality and BMP's that eliminate or reduce pollution during property improvements. The developer will request these materials in writing at least 30 days prior to intended distribution and will then be responsible for publication and distribution.
N2	Activity Restrictions	☒	☐	Restrictions may be developed by property owner or other mechanisms. Pesticide applications will be performed by an applicator certified by the California Department of Pesticide Regulation. Vehicle washing will be prohibited.
N3	Landscape Management BMPs	☒	☐	According to the California Stormwater Quality Associations Stormwater Best Management Practice Handbook, landscape planning is implemented to reduce groundwater and storm water contamination. This will be accomplished through an infiltration basins, and landscape areas.
N4	BMP Maintenance	☒	☐	Responsibility for implementation, inspection and maintenance of all BMPs (structural and non-structural) shall be consistent with the BMP Inspection and Maintenance Responsibilities Matrix provided in Section V of this WQMP, with documented records of inspections and maintenance activities completed. Cleaning of all structural BMP Facilities is scheduled by future HOA.
N5	Title 22 CCR Compliance (How development will comply)	☐	☒	The proposed residential development will not generate waste subject to Title 22 CCR Compliance.
N6	Local Water Quality Ordinances	☐	☒	Not applicable
N7	Spill Contingency Plan	☐	☒	Project is residential development.

Form 4.1-1 Non-Structural Source Control BMPs				
N8	Underground Storage Tank Compliance	☐	☒	No underground storage tank on the site.
N9	Hazardous Materials Disclosure Compliance	☐	☒	Project is residential development.

Form 4.1-1 Non-Structural Source Control BMPs				
Identifier	Name	Check One		Describe BMP Implementation OR, if not applicable, state reason
		Included	Not Applicable	
N10	Uniform Fire Code Implementation	☐	☒	The proposed residential project will not store toxic or highly toxic compressed gases.
N11	Litter/Debris Control Program	☒	☐	Litter control onsite will include the use of litter patrols, violation reporting and clean up during landscaping maintenance activities and as needed to ensure good housekeeping of the project's common areas.
N12	Employee Training	☒	☐	All employees, contractors and subcontractors of the property management shall be trained on the proper use and staging of landscaping and other materials with the potential to impact runoff and proper clean up of spills and materials.
N13	Housekeeping of Loading Docks	☐	☒	Not applicable
N14	Catch Basin Inspection Program	☒	☐	As required by the TGD, at least 80% of the project's private drainage facilities shall be inspected, cleaned/maintained annually, with 100% of facilities inspected and maintained within a two-year period. Drainage facilities include catch basins (storm drain inlets), detention basins, retention basins, open drainage channel.

N15	Vacuum Sweeping of Private Streets and Parking Lots	☒	☐	The project's private streets shall be swept, at minimum, prior to the start of the traditional rainy season and as needed.
N16	Other Non-structural Measures for Public Agency Projects	☐	☒	No other non-structural measures required.
N17	Comply with all other applicable NPDES permits	☐	☒	No other applicable NPDES permits required.

Form 4.1-2 Structural Source Control BMPs

Identifier	Name	Check One		Describe BMP Implementation OR, If not applicable, state reason
		Included	Not Applicable	
S1	Provide storm drain system stencilling and signage (CASQA New Development BMP Handbook SD-13)	☒	☐	Storm drain stencils or signage prohibiting dumping and discharge of materials ("No Dumping – Drains to Ocean") shall be provided adjacent to each of the project's proposed inlets. The stencils shall be inspected and re-stenciled as needed to maintain legibility.
S2	Design and construct outdoor material storage areas to reduce pollution introduction (CASQA New Development BMP Handbook SD-34)	☐	☒	Project does not propose outdoor storage areas.
S3	Design and construct trash and waste storage areas to reduce pollution introduction (CASQA New Development BMP Handbook SD-32)	☐	☒	No trash and waste storage areas are proposed on the project.
S4	Use efficient irrigation systems & landscape design, water conservation, smart controllers, and source control (Statewide Model Landscape Ordinance; CASQA New Development BMP Handbook SD-12)	☒	☐	In conjunction with routine landscaping maintenance activities, inspect irrigation for signs of leaks, overspray and repair or adjust accordingly. Adjust system cycle to accommodate seasonal fluctuations in water demand and temperatures. Ensure use of native or drought tolerant/non-invasive plant species to minimize water consumption.
S5	Finish grade of landscaped areas at a minimum of 1-2 inches below top of curb, sidewalk, or pavement	☒	☐	New landscaped areas will be constructed at a minimum of 1 inch below existing paved areas
S6	Protect slopes and channels and provide energy dissipation (CASQA New Development BMP Handbook SD-10)	☐	☒	Implemented the following design principles to the project: avoid disturbance of existing westerly channel, constructing retention and detention basins.
S7	Covered dock areas (CASQA New Development BMP Handbook SD-31)	☐	☒	No covered dock areas, Not applicable
S8	Covered maintenance bays with spill containment plans (CASQA New Development BMP Handbook SD-31)	☐	☒	No Bays, Not applicable
S9	Vehicle wash areas with spill containment plans (CASQA New Development BMP Handbook SD-33)	☐	☒	No Vehicle Wash at the site, Not applicable

S10	Covered outdoor processing areas (CASQA New Development BMP Handbook SD-36)	☐	☒	No outdoor Processing, Not applicable
		Included	Not Applicable	
S11	Equipment wash areas with spill containment plans (CASQA New Development BMP Handbook SD-33)	☐	☒	No equipment wash areas, Not applicable
S12	Fueling areas (CASQA New Development BMP Handbook SD-30)	☐	☒	No Fueling Areas, Not applicable
S13	Hillside landscaping (CASQA New Development BMP Handbook SD-10)	☐	☒	No Hillside Landscaping, Not applicable
S14	Wash water control for food preparation areas	☐	☒	No food Preparation, Not applicable
S15	Community car wash racks (CASQA New Development BMP Handbook SD-33)	☐	☒	No Community Car Wash, Not applicable

4.1.2 Preventative LID Site Design Practices

Site design practices associated with new LID requirements in the MS4 Permit should be considered in the earliest phases of a project. Preventative site design practices can result in smaller DCV for LID BMP and hydromodification control BMP by reducing runoff generation. Describe site design and drainage plan including:

- A narrative of site design practices utilized or rationale for not using practices
- A narrative of how site plan incorporates preventive site design practices
- Include an attached Site Plan layout which shows how preventative site design practices are included in WQMP

Refer to Section 5.2 of the TGD for WQMP for more details.

Form 4.1-3 Preventative LID Site Design Practices Checklist
Site Design Practices If yes, explain how preventative site design practice is addressed in project site plan. If no, other LID BMPs must be selected to meet targets
Minimize impervious areas: Yes ☒ No ☐ Explanation: We will build multiple park/planter areas in addition to an infiltration/retention chamber system.
Maximize natural infiltration capacity: Yes ☒ No ☐ Explanation: Contech Infiltration/retention chamber system will be implemented on site. Roof drains will discharge runoff towards pervious area of each lot, indirectly connecting impervious areas before runoff reaches the onsite storm drain
Preserve existing drainage patterns and time of concentration: Yes ☒ No ☐ Explanation: Drainage patterns of all the tributaries that drain through the project will remain unchanged. The time of concentration resulting from the project improvements will be mitigated.
Disconnect impervious areas: Yes ☒ No ☐ Explanation: Where feasible, runoff from the pads is drained towards pervious areas. Runoff from the roof is collected by downspouts and discharged over pervious areas.
Protect existing vegetation and sensitive areas: Yes ☐ No ☒ Explanation: There are no environmentally sensitive portions onsite and existing vegetation will be kept as much as possible.
Re-vegetate disturbed areas: Yes ☒ No ☐ Explanation: Part of the disturbed areas will be revegeated, see landscape plan.
Minimize unnecessary compaction in stormwater retention/infiltration basin/trench areas: Yes ☒ No ☐ Explanation: No compaction will be performed within the area where the Contech infiltration/retention chamber system are proposed.
Utilize vegetated drainage swales in place of underground piping or imperviously lined swales: Yes ☐ No ☒ Explanation: Runoff will also be intercepted by the infiltration basin and multiple landscaped areas.
Stake off areas that will be used for landscaping to minimize compaction during construction: Yes ☒ No ☐ Explanation: No compaction will be performed within the area where landscape areas are proposed.

4.2 Project Performance Criteria

The purpose of this section of the Project WQMP is to establish targets for post-development hydrology based on performance criteria specified in the MS4 Permit. These targets include runoff volume for water quality control (referred to as LID design capture volume), and runoff volume, time of concentration, and peak runoff for protection of any downstream waterbody segments with a HCOC. If the project has more than one outlet for stormwater runoff, then complete additional versions of these forms for each DA / outlet.

Methods applied in the following forms include:

- For LID BMP Design Capture Volume (DCV), the San Bernardino County Stormwater Program requires use of the P_6 method (MS4 Permit Section XI.D.6a.ii) – Form 4.2-1
- For HCOC pre- and post-development hydrologic calculation, the San Bernardino County Stormwater Program requires the use of the Rational Method (San Bernardino County Hydrology Manual Section D). Forms 4.2-2 through Form 4.2-5 calculate hydrologic variables including runoff volume, time of concentration, and peak runoff from the project site pre- and post-development using the Hydrology Manual Rational Method approach. For projects greater than 640 acres (1.0 mi^2), the Rational Method and these forms should not be used. For such projects, the Unit Hydrograph Method (San Bernardino County Hydrology Manual Section E) shall be applied for hydrologic calculations for HCOC performance criteria.

Refer to Section 4 in the TGD for WQMP for detailed guidance and instructions.

Form 4.2-1 LID BMP Performance Criteria for Design Capture Volume (DMA-1 through DMA-8) See attached summary table and calculation sheets for DCV		
1 Project area DA-1 (ft^2): 435,600	2 Imperviousness after applying preventative site design practices (Imp%): 0.70	3 Runoff Coefficient (Rc): 0.49 $R_c = 0.858(Imp\%)^3-0.78(Imp\%)^2+0.774(Imp\%)+0.04$
4 Determine 1-hour rainfall depth for a 2-year return period $P_{2yr-1hr}$ (in): 0.661 - http://hdsc.nws.noaa.gov/hdsc/pfds/sa/sca_pfds.html		
5 Compute P_6, Mean 6-hr Precipitation (inches): 0.9789 P_6 = Item 4 *C_1, where C_1 is a function of site climatic region specified in Form 3-1 Item 1 (Valley = 1.4807; Mountain = 1.909; Desert = 1.2371)		
6 Drawdown Rate Use 48 hours as the default condition. Selection and use of the 24 hour drawdown time condition is subject to approval by the local jurisdiction. The necessary BMP footprint is a function of drawdown time. While shorter drawdown times reduce the performance criteria for LID BMP design capture volume, the depth of water that can be stored is also reduced.		24-hrs ☐ 48-hrs ☒
7 Compute design capture volume, DCV (ft^3): 34,453 DCV = 1/12 * [Item 1* Item 3 *Item 5 * C_2], where C_2 is a function of drawdown rate (24-hr = 1.582; 48-hr = 1.963) Compute separate DCV for each outlet from the project site per schematic drawn in Form 3-1 Item 2		

Target Captured Volume
Watershed DMA-1

1) Calculate the "Watershed Imperviousness Ratio", I which is equal to the percent of impervious area in the BMP Drainage Area divided by 100

Imperviousness(i)= **0.7**

Total Acreage(A) = **4.90** **213,444** SF

2) Calculate the composite Runoff Coefficient C_{bmp} for the drainage area

$C_{bmp} = 0.858i^3-0.78i^2+0.774i+0.04$

C_{bmp} = 0.49

3) Determine which Regression Coefficient to use by region the project is located in

Valley	1.481
Mountain	1.909
Desert	1.237

Regression coefficient for this project is: 1.481

4) Determine the area averaged "6 hour Mean Storm Rainfall" , P_6

2 yr 1 Hr Rainfall Depth per NOAA Atlas 14= **0.661** inches

P_6 = 2 yr 1 hr Rainfall x Regression coefficient

P_6 = 0.9789 inches

5) Determine Regression Constant (a) for 48 hour drawdown

a for 24 hour = 1.582
a for 48 hour = 1.963

a = 1.963

6) Calculate the Maximized Detention Volume, P_0

P_0 = C x a x P6

Po(inches) = 0.9491

7) Calculate the Target Capture Volume, V_0, in acre feet

$V_0 = (P_0 * A)/12$

V_0 = 0.39 acre-feet
V_0 = 16,882 CF

Target Captured Volume
Watershed DMA-2

1) Calculate the "Watershed Imperviousness Ratio", I which is equal to the percent of impervious area in the BMP Drainage Area divided by 100

Imperviousness(i)= **0.7**

Total Acreage(A) = **1.90** **82,764** SF

2) Calculate the composite Runoff Coefficient C_{bmp} for the drainage area

$C_{bmp} = 0.858i^3-0.78i^2+0.774i+0.04$

C_{bmp} = 0.49

3) Determine which Regression Coefficient to use by region the project is located in

Valley	1.481
Mountain	1.909
Desert	1.237

Regression coefficient for this project is: 1.481

4) Determine the area averaged "6 hour Mean Storm Rainfall" , P_6

2 yr 1 Hr Rainfall Depth per NOAA Atlas 14= **0.661** inches

P_6 = 2 yr 1 hr Rainfall x Regression coefficient

P_6 = 0.9789 inches

5) Determine Regression Constant (a) for 48 hour drawdown

a for 24 hour = 1.582
a for 48 hour = 1.963

a = 1.963

6) Calculate the Maximized Detention Volume, P_0

P_0 = C x a x P6

Po(inches) = 0.9491

7) Calculate the Target Capture Volume, V_0, in acre feet

$V_0 = (P_0 * A)/12$

V_0 = 0.15 acre-feet
V_0 = 6,546 CF

Target Captured Volume
Watershed DMA-3

1) Calculate the "Watershed Imperviousness Ratio", I which is equal to the percent of impervious area in the BMP Drainage Area divided by 100

Imperviousness(i)= **0.7**

Total Acreage(A) = **3.20** **139,392** SF

2) Calculate the composite Runoff Coefficient C_{bmp} for the drainage area

$C_{bmp} = 0.858i^3-0.78i^2+0.774i+0.04$

C_{bmp} = 0.49

3) Determine which Regression Coefficient to use by region the project is located in

Valley	1.481
Mountain	1.909
Desert	1.237

Regression coefficient for this project is: 1.481

4) Determine the area averaged "6 hour Mean Storm Rainfall" , P_6

2 yr 1 Hr Rainfall Depth per NOAA Atlas 14= **0.661** inches

P_6 = 2 yr 1 hr Rainfall x Regression coefficient

P_6 = 0.9789 inches

5) Determine Regression Constant (a) for 48 hour drawdown

a for 24 hour = 1.582
a for 48 hour = 1.963

a = 1.963

6) Calculate the Maximized Detention Volume, P_0

P_0 = C x a x P6

Po(inches) = 0.9491

7) Calculate the Target Capture Volume, V_0, in acre feet

$V_0 = (P_0 * A)/12$

V_0 = 0.25 acre-feet
V_0 = 11,025 CF

NOAA Atlas 14, Volume 6, Version 2
Location name: Fontana, California, USA*
Latitude: 34.1351°, Longitude: -117.4733°
Elevation: 1451.81 ft**
* source: ESRI Maps
** source: USGS

POINT PRECIPITATION FREQUENCY ESTIMATES

Sanja Perica, Sarah Dietz, Sarah Heim, Lillian Hiner, Kazungu Maitaria, Deborah Martin, Sandra Pavlovic, Ishani Roy, Carl Trypaluk, Dale Unruh, Fenglin Yan, Michael Yekta, Tan Zhao, Geoffrey Bonnin, Daniel Brewer, Li-Chuan Chen, Tye Parzybok, John Yarchoan

NOAA, National Weather Service, Silver Spring, Maryland

PF_tabular | PF_graphical | Maps_&_aerials

PF tabular

PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches)[1]

Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	0.128 (0.107-0.156)	0.170 (0.141-0.207)	0.224 (0.186-0.273)	0.268 (0.221-0.330)	0.328 (0.261-0.417)	0.374 (0.291-0.487)	0.422 (0.320-0.562)	0.471 (0.347-0.646)	0.538 (0.379-0.770)	0.591 (0.402-0.876)
10-min	0.184 (0.153-0.223)	0.244 (0.203-0.296)	0.321 (0.266-0.391)	0.385 (0.316-0.473)	0.470 (0.374-0.598)	0.537 (0.417-0.698)	0.604 (0.458-0.806)	0.675 (0.497-0.925)	0.771 (0.544-1.10)	0.846 (0.576-1.26)
15-min	0.223 (0.185-0.270)	0.295 (0.245-0.358)	0.389 (0.322-0.473)	0.465 (0.382-0.571)	0.569 (0.452-0.724)	0.649 (0.505-0.844)	0.731 (0.554-0.974)	0.816 (0.601-1.12)	0.932 (0.658-1.33)	1.02 (0.697-1.52)
30-min	0.332 (0.276-0.403)	0.439 (0.365-0.534)	0.579 (0.480-0.706)	0.693 (0.570-0.852)	0.848 (0.674-1.08)	0.967 (0.752-1.26)	1.09 (0.826-1.45)	1.22 (0.895-1.67)	1.39 (0.980-1.99)	1.53 (1.04-2.26)
60-min	0.500 (0.416-0.606)	0.661 (0.550-0.804)	0.872 (0.723-1.06)	1.04 (0.858-1.28)	1.28 (1.01-1.62)	1.46 (1.13-1.89)	1.64 (1.24-2.19)	1.83 (1.35-2.51)	2.09 (1.48-3.00)	2.30 (1.57-3.41)
2-hr	0.770 (0.641-0.935)	1.01 (0.840-1.23)	1.32 (1.09-1.61)	1.56 (1.29-1.92)	1.89 (1.50-2.41)	2.14 (1.67-2.79)	2.39 (1.82-3.19)	2.65 (1.95-3.64)	3.00 (2.12-4.29)	3.26 (2.22-4.84)
3-hr	0.994 (0.827-1.21)	1.30 (1.08-1.58)	1.68 (1.40-2.05)	1.99 (1.64-2.45)	2.40 (1.91-3.05)	2.71 (2.10-3.52)	3.01 (2.28-4.01)	3.32 (2.45-4.56)	3.74 (2.64-5.35)	4.06 (2.76-6.02)
6-hr	1.47 (1.23-1.79)	1.92 (1.60-2.33)	2.48 (2.06-3.02)	2.92 (2.40-3.59)	3.50 (2.78-4.45)	3.93 (3.06-5.11)	4.36 (3.30-5.81)	4.79 (3.52-6.56)	5.35 (3.77-7.66)	5.78 (3.93-8.57)
12-hr	2.01 (1.67-2.44)	2.63 (2.18-3.19)	3.40 (2.82-4.14)	4.00 (3.29-4.92)	4.78 (3.80-6.08)	5.36 (4.16-6.96)	5.92 (4.48-7.88)	6.47 (4.77-8.88)	7.20 (5.08-10.3)	7.74 (5.27-11.5)
24-hr	2.73 (2.42-3.15)	3.63 (3.21-4.18)	4.73 (4.17-5.47)	5.59 (4.89-6.52)	6.70 (5.67-8.07)	7.51 (6.23-9.24)	8.30 (6.72-10.5)	9.08 (7.16-11.8)	10.1 (7.64-13.6)	10.8 (7.93-15.1)
2-day	3.34 (2.96-3.85)	4.53 (4.01-5.23)	6.04 (5.32-6.98)	7.23 (6.33-8.44)	8.82 (7.47-10.6)	10.0 (8.30-12.3)	11.2 (9.06-14.1)	12.4 (9.75-16.0)	14.0 (10.6-18.8)	15.2 (11.1-21.1)

3-day	**3.58** (3.17-4.12)	**4.92** (4.35-5.68)	**6.67** (5.88-7.72)	**8.09** (7.08-9.43)	**10.0** (8.48-12.1)	**11.5** (9.53-14.1)	**13.0** (10.5-16.4)	**14.5** (11.4-18.8)	**16.6** (12.6-22.4)	**18.2** (13.3-25.4)
4-day	**3.84** (3.40-4.42)	**5.33** (4.72-6.15)	**7.30** (6.44-8.45)	**8.91** (7.80-10.4)	**11.1** (9.42-13.4)	**12.8** (10.7-15.8)	**14.6** (11.8-18.4)	**16.4** (12.9-21.3)	**18.9** (14.3-25.5)	**20.9** (15.3-29.2)
7-day	**4.39** (3.89-5.06)	**6.17** (5.46-7.12)	**8.53** (7.53-9.87)	**10.5** (9.18-12.2)	**13.2** (11.2-15.9)	**15.3** (12.7-18.8)	**17.5** (14.2-22.0)	**19.8** (15.6-25.6)	**22.9** (17.3-30.9)	**25.4** (18.6-35.5)
10-day	**4.76** (4.21-5.48)	**6.74** (5.96-7.77)	**9.37** (8.27-10.8)	**11.6** (10.1-13.5)	**14.6** (12.4-17.6)	**17.0** (14.1-20.9)	**19.5** (15.8-24.5)	**22.1** (17.4-28.6)	**25.7** (19.4-34.7)	**28.6** (20.9-39.9)
20-day	**5.62** (4.98-6.48)	**8.06** (7.13-9.29)	**11.4** (10.0-13.1)	**14.1** (12.4-16.5)	**18.0** (15.3-21.7)	**21.1** (17.5-26.0)	**24.4** (19.8-30.7)	**27.9** (22.0-36.1)	**32.8** (24.8-44.2)	**36.7** (26.8-51.2)
30-day	**6.58** (5.83-7.59)	**9.45** (8.36-10.9)	**13.4** (11.8-15.5)	**16.7** (14.6-19.5)	**21.4** (18.1-25.8)	**25.2** (20.9-31.0)	**29.2** (23.7-36.8)	**33.6** (26.5-43.5)	**39.7** (30.1-53.6)	**44.7** (32.7-62.4)
45-day	**7.86** (6.96-9.05)	**11.2** (9.89-12.9)	**15.8** (13.9-18.3)	**19.7** (17.3-23.0)	**25.4** (21.5-30.6)	**30.0** (24.9-36.9)	**35.0** (28.3-44.1)	**40.3** (31.8-52.2)	**48.0** (36.3-64.8)	**54.4** (39.7-75.9)
60-day	**9.16** (8.11-10.6)	**12.9** (11.4-14.9)	**18.1** (16.0-20.9)	**22.6** (19.8-26.3)	**29.1** (24.6-35.0)	**34.4** (28.6-42.3)	**40.2** (32.5-50.6)	**46.4** (36.6-60.1)	**55.5** (42.0-74.9)	**63.1** (46.1-88.0)

[1] Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).

Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values.

Please refer to NOAA Atlas 14 document for more information.

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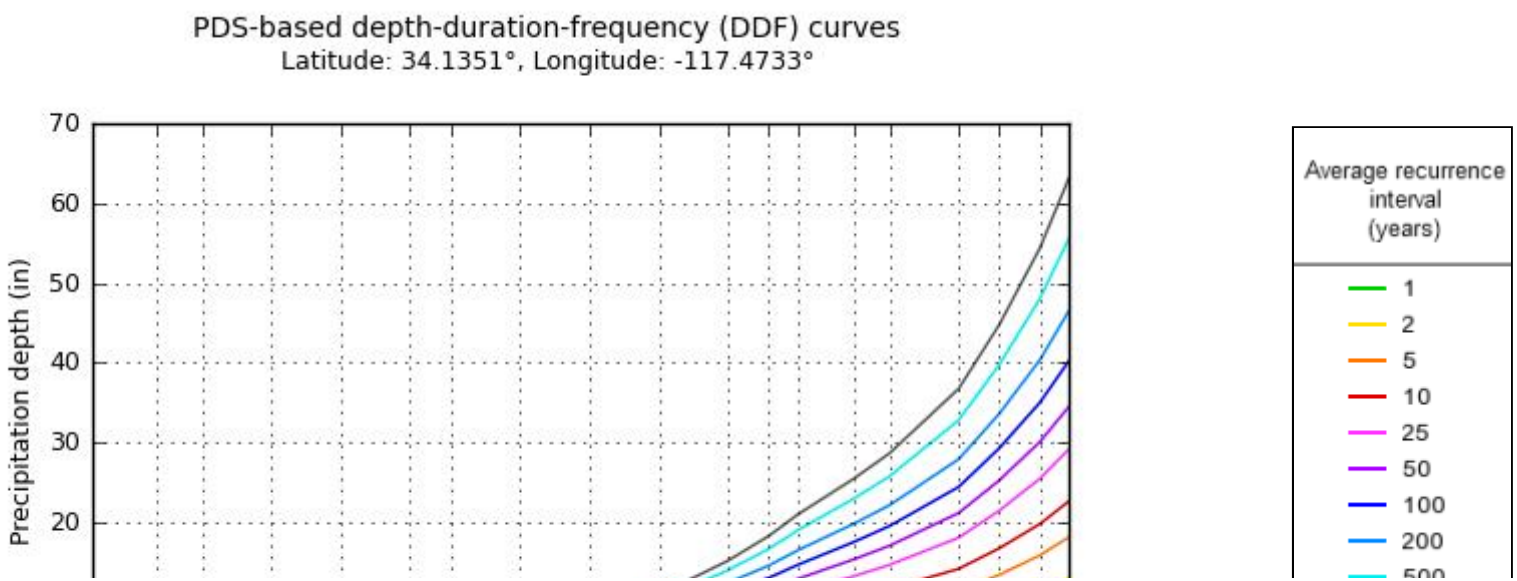
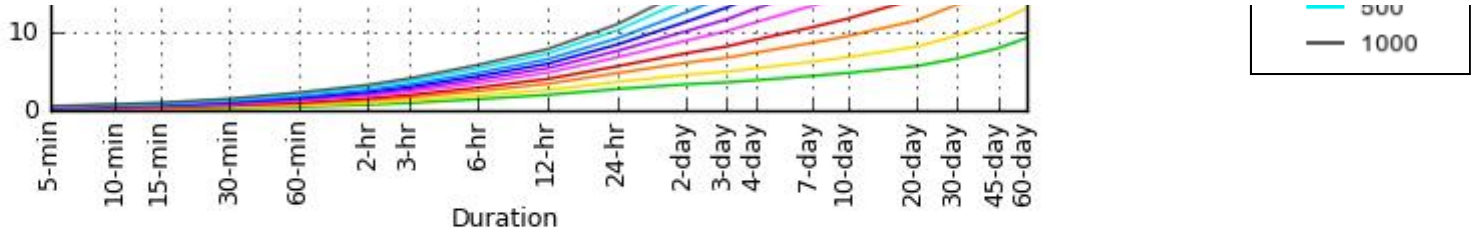
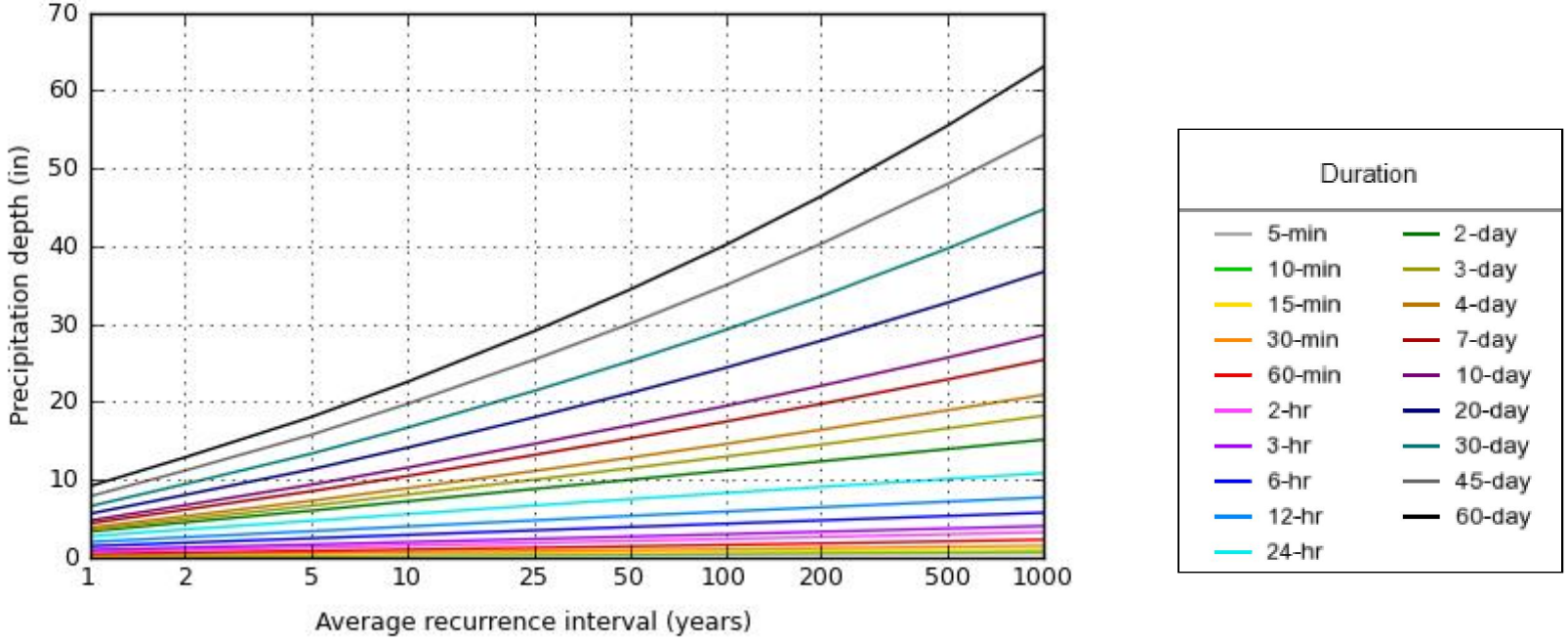
PF graphical







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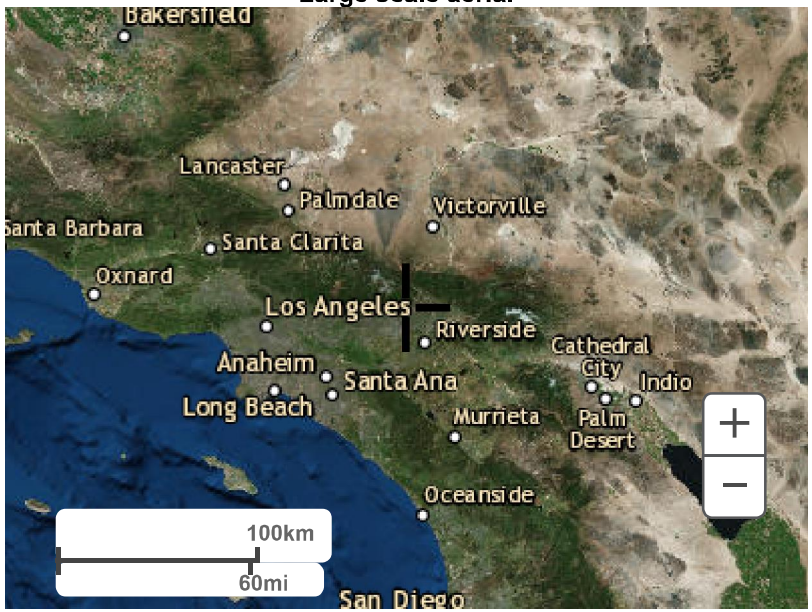
Maps & aerials

Small scale terrain

Large scale terrain

Large scale map

Large scale aerial



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US Department of Commerce
National Oceanic and Atmospheric Administration
National Weather Service
National Water Center
1325 East West Highway
Silver Spring, MD 20910
Questions?: HDSC.Questions@noaa.gov

Disclaimer

Refer to the attached design capture volume calculations for drainage management area(s) DMA-1 through DA-13 below:

Form 4.2-2 Summary of HCOC Assessment

Does project have the potential to cause or contribute to an HCOC in a downstream channel: Yes ☐ No ☒

Go to: http://sbcounty.permitrack.com/WAP

This project site located within the HCOC exempt area.

If "Yes", then complete HCOC assessment of site hydrology for 2yr storm event using Forms 4.2-3 through 4.2-5 and insert results below (Forms 4.2-3 through 4.2-5 may be replaced by computer software analysis based on the San Bernardino County Hydrology Manual)

If "No," then proceed to Section 4.3 Project Conformance Analysis

Condition	Runoff Volume (ft^3)	Time of Concentration (min)	Peak Runoff (cfs)
Pre-developed	1 Form 4.2-3 Item 12	2 Form 4.2-4 Item 13	3 Form 4.2-5 Item 10
Post-developed	4 Form 4.2-3 Item 13	5 Form 4.2-4 Item 14	6 Form 4.2-5 Item 14
Difference	7 Item 4 – Item 1	8 Item 5 – Item 2	9 Item 6 – Item 3
Difference (as % of pre-developed)	10 % Item 7 / Item 1	11 % Item 8 / Item 2	12 % Item 9 / Item 3

WQMP Project Report

County of San Bernardino Stormwater Program

Santa Ana River Watershed Geodatabase

Monday, July 29, 2019

Note: The information provided in this report and on the Stormwater Geodatabase for the County of San Bernardino Stormwater Program is intended to provide basic guidance in the preparation of the applicant's Water Quality Management Plan (WQMP) and should not be relied upon without independent verification.

Project Site Parcel Number(s):	022802108, 022802145, 022802109, 022802110, 022802107
Project Site Acreage:	16.546
HCOC Exempt Area:	Yes. Verify that the project is completely with the HCOC exemption area.
Closest Receiving Waters: (Applicant to verify based on local drainage facilities and topography.)	**System Number** - 812 **Facility Name** - Highland Channel **Owner** - SBCFCD
Closest channel segment's susceptibility to Hydromodification:	EHM
Highest downstream hydromodification susceptibility:	EHM
Is this drainage segment subject to TMDLs?	No
Are there downstream drainage segments subject to TMDLs?	No
Is this drainage segment a 303d listed stream?	No
Are there 303d listed streams downstream?	No
Are there unlined downstream waterbodies?	No
Project Site Onsite Soil Group(s):	A, B
Environmentally Sensitive Areas within 200':	Riversidian Alluvial Sage Scru
Groundwater Depth (FT):	-617
Parcels with potential septic tanks within 1000':	No
Known Groundwater Contamination Plumes within 1000':	No
Studies and Reports Related to Project Site:	Chino Basin Recharge Master Plan Chino Basin Water Master 32nd Annual Report Summary Report Master Storm Drainage Plan Study Summary Report Master Storm Drainage Plan Map FONTANA MPD FEE STUDY Master SD Hydrology Calcs for Fontana Vol III Master SD Hydrology Calcs For Fontana Vol II Master SD Hydrology Calcs for Fontana Vol V Master SD Hydrology Calcs for Fontana Vol IV San Sevaine - Boyle Map 0001 San Sevaine - Boyle Map 0002 San Sevaine - Boyle Map 0003 SBCounty CSDP Project No.2 Volume 1 SBCounty CSDP Project No.2 Volume 2 Volume 2 Map SBCounty CSDP Project No.3 Volume I SBCounty CSDP Project No.3 Volume II West Fontana Channel Preliminary Basin Study

Form 4.2-3 HCOC Assessment for Runoff Volume

Weighted Curve Number Determination for: Pre-developed DA								
1a Land Cover type								
2a Hydrologic Soil Group (HSG)								
3a DMA Area, ft^2 sum of areas of DMA should equal area of DA								
4a Curve Number (CN) use Items 1 and 2 to select the appropriate CN from Appendix C-2 of the TGD for WQMP								
Weighted Curve Number Determination for: Post-developed DA			DMA C	DMA D	DMA E	DMA F	DMA G	DMA H
1b Land Cover type								
2b Hydrologic Soil Group (HSG)								
3b DMA Area, ft^2 sum of areas of DMA should equal area of DA								
4b Curve Number (CN) use Items 5 and 6 to select the appropriate CN from Appendix C-2 of the TGD for WQMP								

5 Pre-Developed area-weighted CN:	7 Pre-developed soil storage capacity, S (in S = (1000 / Item 5) – 10	9 Initial abstraction, I_a (in): I_a = 0.2 * Item 7
6 Post-Developed area-weighted CN:	8 Post-developed soil storage capacity, S (in) S = (1000 / Item 6) – 10	10 Initial abstraction, I_a (in): I_a = 0.2 * Item 8

11 Precipitation for 2 yr, 24 hr storm (in):
Go to: http://hdsc.nws.noaa.gov/hdsc/pfds/sa/sca_pfds.html

12 Pre-developed Volume (ft^3):
V_{pre} =(1 / 12) * (Item sum of Item 3) * [(Item 11 – Item 9)^2 / ((Item 11 – Item 9 + Item 7)

13 Post-developed Volume (ft^3):
V_{pre} =(1 / 12) * (Item sum of Item 3) * [(Item 11 – Item 10)^2 / ((Item 11 – Item 10 + Item 8)

14 Volume Reduction needed to meet HCOC Requirement, (ft^3):
V_{HCOC} = (Item 13 * 0.95) – Item 12

Form 4.2-4 HCOC Assessment for Time of Concentration

Compute time of concentration for pre and post developed conditions for each DA (For projects using the Hydrology Manual complete the form below)

Variables	Pre-developed DA1 Use additional forms if there are more than 4 DMA				Post-developed DA1 Use additional forms if there are more than 4 DMA			
	DA 1	DMA B	DMA C	DMA D	DA 1	DMA B	DMA C	DMA D
1 Length of flowpath (ft) Use Form 3-2 Item 5 for pre-developed condition								
2 Change in elevation (ft)								
3 Slope (ft/ft), S_o = Item 2 / Item 1								
4 Land cover								
5 Initial DMA Time of Concentration (min) Appendix C-1 of the TGD for WQMP								
6 Length of conveyance from DMA outlet to project site outlet (ft) May be zero if DMA outlet is at project site outlet								
7 Cross-sectional area of channel (ft^2)								
8 Wetted perimeter of channel (ft)								
9 Manning's roughness of channel (n)								
10 Channel flow velocity (ft/sec) V_{fps} = (1.49 / Item 9) * (Item 7/Item 8)^0.67 * (Item 3)^0.5								
11 Travel time to outlet (min) T_t = Item 6 / (Item 10 * 60)								
12 Total time of concentration (min) T_c = Item 5 + Item 11								
13 Pre-developed time of concentration (min):								
14 Post-developed time of concentration (min):								
15 Additional time of concentration needed to meet HCOC requirement (min):								

Form 4.2-5 HCOC Assessment for Peak Runoff

Compute peak runoff for pre- and post-developed conditions

Variables	Pre-developed DA to Project Outlet (Use additional forms if more than 3 DMA)			Post-developed DA to Project Outlet (Use additional forms if more than 3 DMA)		
	DMA A	DMA B	DMA C	DMA A	DMA B	DMA C
1 Rainfall Intensity for storm duration equal to time of concentration I_{peak} = 10^(LOG Form 4.2-1 Item 4 - 0.6 LOG Form 4.2-4 Item 5 /60)						
2 Drainage Area of each DMA (ft^2) For DMA with outlet at project site outlet, include upstream DMA (Using example schematic in Form 3-1, DMA A will include drainage from DMA C)						
3 Ratio of pervious area to total area For DMA with outlet at project site outlet, include upstream DMA (Using example schematic in Form 3-1, DMA A will include drainage from DMA C)						
4 Pervious area infiltration rate (in/hr) Use pervious area CN and antecedent moisture condition with Appendix C-3 of the TGD for WQMP						
5 Maximum loss rate (in/hr) F_m = Item 3 * Item 4 Use area-weighted F_m from DMA with outlet at project site outlet, include upstream DMA (Using example schematic in Form 3-1, DMA A will include drainage from DMA C)						
6 Peak Flow from DMA (cfs) Q_p =Item 2 * 0.9 * (Item 1 - Item 5)						
7 Time of concentration adjustment factor for other DMA to site discharge point Form 4.2-4 Item 12 DMA / Other DMA upstream of site discharge point (If ratio is greater than 1.0, then use maximum value of 1.0) — DMA A	n/a			n/a		
DMA B		n/a			n/a	
DMA C			n/a			n/a

8 Pre-developed Q_p at T_c for DMA A: Q_p = Item 6_{DMAA} + [Item 6_{DMAB} * (Item 1_{DMAA} - Item 5_{DMAB})/(Item 1_{DMAB} - Item 5_{DMAB})* Item $7_{DMAA/2}$] + [Item 6_{DMAC} * (Item 1_{DMAA} - Item 5_{DMAC})/(Item 1_{DMAC} - Item 5_{DMAC})* Item $7_{DMAA/3}$]	9 Pre-developed Q_p at T_c for DMA B: Q_p = Item 6_{DMAB} + [Item 6_{DMAA} * (Item 1_{DMAB} - Item 5_{DMAA})/(Item 1_{DMAA} - Item 5_{DMAA})* Item $7_{DMAB/1}$] + [Item 6_{DMAC} * (Item 1_{DMAB} - Item 5_{DMAC})/(Item 1_{DMAC} - Item 5_{DMAC})* Item $7_{DMAB/3}$]	10 Pre-developed Q_p at T_c for DMA C: Q_p = Item 6_{DMAC} + [Item 6_{DMAA} * (Item 1_{DMAC} - Item 5_{DMAA})/(Item 1_{DMAA} - Item 5_{DMAA})* Item $7_{DMAC/1}$] + [Item 6_{DMAB} * (Item 1_{DMAC} - Item 5_{DMAB})/(Item 1_{DMAB} - Item 5_{DMAB})* Item $7_{DMAC/2}$]

10 Peak runoff from pre-developed condition confluence analysis (cfs): Maximum of Item 8, 9, and 10 (including additional forms as needed)

11 Post-developed Q_p at T_c for DMA A: Same as Item 8 for post-developed values	12 Post-developed Q_p at T_c for DMA B: Same as Item 9 for post-developed values	13 Post-developed Q_p at T_c for DMA C: Same as Item 10 for post-developed values

14 Peak runoff from post-developed condition confluence analysis (cfs): Maximum of Item 11, 12, and 13 (including additional forms as needed)

15 Peak runoff reduction needed to meet HCOC Requirement (cfs): $Q_{p\text{-}HCOC}$ = (Item 14 * 0.95) – Item 10

4.3 Project Conformance Analysis

Complete the following forms for each project site DA to document that the proposed LID BMPs conform to the project DCV developed to meet performance criteria specified in the MS4 Permit (WQMP Template Section 4.2). For the LID DCV, the forms are ordered according to hierarchy of BMP selection as required by the MS4 Permit (see Section 5.3.1 in the TGD for WQMP). The forms compute the following for on-site LID BMP:

- Site Design and Hydrologic Source Controls (Form 4.3-2)
- Retention and Infiltration (Form 4.3-3)
- Harvested and Use (Form 4.3-4) or
- Biotreatment (Form 4.3-5).

At the end of each form, additional fields facilitate the determination of the extent of mitigation provided by the specific BMP category, allowing for use of the next category of BMP in the hierarchy, if necessary.

The first step in the analysis, using Section 5.3.2.1 of the TGD for WQMP, is to complete Forms 4.3-1 and 4.3-3) to determine if retention and infiltration BMPs are infeasible for the project. For each feasibility criterion in Form 4.3-1, if the answer is “Yes,” provide all study findings that includes relevant calculations, maps, data sources, etc. used to make the determination of infeasibility.

Next, complete Forms 4.3-2 and 4.3-4 to determine the feasibility of applicable HSC and harvest and use BMPs, and, if their implementation is feasible, the extent of mitigation of the DCV.

If no site constraints exist that would limit the type of BMP to be implemented in a DA, evaluate the use of combinations of LID BMPs, including all applicable HSC BMPs to maximize on-site retention of the DCV. If no combination of BMP can mitigate the entire DCV, implement the single BMP type, or combination of BMP types, that maximizes on-site retention of the DCV within the minimum effective area.

If the combination of LID HSC, retention and infiltration, and harvest and use BMPs are unable to mitigate the entire DCV, then biotreatment BMPs may be implemented by the project proponent. If biotreatment BMPs are used, then they must be sized to provide sufficient capacity for effective treatment of the remainder of the volume-based performance criteria that cannot be achieved with LID BMPs (TGD for WQMP Section 5.4.4.2). Under no circumstances shall any portion of the DCV be released from the site without effective mitigation and/or treatment.

Form 4.3-1 Infiltration BMP Feasibility (DA 1)

Feasibility Criterion – Complete evaluation for each DA on the Project Site

1 Would infiltration BMP pose significant risk for groundwater related concerns? Yes ☐ No ☒

Refer to Section 5.3.2.1 of the TGD for WQMP

If Yes, Provide basis: (attach)

2 Would installation of infiltration BMP significantly increase the risk of geotechnical hazards? Yes ☐ No ☒

(Yes, if the answer to any of the following questions is yes, as established by a geotechnical expert):

- The location is less than 50 feet away from slopes steeper than 15 percent
- The location is less than eight feet from building foundations or an alternative setback.
- A study certified by a geotechnical professional or an available watershed study determines that stormwater infiltration would result in significantly increased risks of geotechnical hazards.

If Yes, Provide basis: (attach)

3 Would infiltration of runoff on a Project site violate downstream water rights? Yes ☐ No ☒

If Yes, Provide basis: (attach)

4 Is proposed infiltration facility located on hydrologic soil group (HSG) D soils or does the site geotechnical investigation indicate presence of soil characteristics, which support categorization as D soils?

Yes ☐ No ☒

If Yes, Provide basis: (attach)

5 Is the design infiltration rate, after accounting for safety factor of 2.0, below proposed facility less than 0.3 in/hr (accounting for soil amendments)? Yes ☐ No ☒

If Yes, Provide basis: (attach)

6 Would on-site infiltration or reduction of runoff over pre-developed conditions be partially or fully inconsistent with watershed management strategies as defined in the WAP, or impair beneficial uses? Yes ☐ No ☒

See Section 3.5 of the TGD for WQMP and WAP

If Yes, Provide basis: (attach)

7 Any answer from Item 1 through Item 3 is "Yes": Yes ☐ No ☒

If yes, infiltration of any volume is not feasible onsite. Proceed to Form 4.3-4, Harvest and Use BMP. If no, then proceed to Item 9 below.

8 Any answer from Item 4 through Item 6 is "Yes": Yes ☐ No ☒

If yes, infiltration is permissible but is not required to be considered. Proceed to Form 4.3-2, Hydrologic Source Control BMP.
If no, then proceed to Item 9, below.

9 All answers to Item 1 through Item 6 are "No":

Infiltration of the full DCV is potentially feasible, LID infiltration BMP must be designed to infiltrate the full DCV to the MEP.
Proceed to Form 4.3-2, Hydrologic Source Control BMP.

4.3.1 Site Design Hydrologic Source Control BMP

Section XI.E. of the Permit emphasizes the use of LID preventative measures; and the use of LID HSC BMPs reduces the portion of the DCV that must be addressed in downstream BMPs. Therefore, all applicable HSC shall be provided except where they are mutually exclusive with each other, or with other BMPs. Mutual exclusivity may result from overlapping BMP footprints such that either would be potentially feasible by itself, but both could not be implemented. Please note that while there are no numeric standards regarding the use of HSC, if a project cannot feasibly meet BMP sizing requirements or cannot fully address HCOCs, feasibility of all applicable HSC must be part of demonstrating that the BMP system has been designed to retain the maximum feasible portion of the DCV. Complete Form 4.3-2 to identify and calculate estimated retention volume from implementing site design HSC BMP. Refer to Section 5.4.1 in the TGD for more detailed guidance.

Form 4.3-2 Site Design Hydrologic Source Control BMPs (DA 1)			
1 Implementation of Impervious Area Dispersion BMP (i.e. routing runoff from impervious to pervious areas), excluding impervious areas planned for routing to on-lot infiltration BMP: Yes ☐ No ☒ If yes, complete Items 2-5; If no, proceed to Item 6	DA DMA BMP Type	DA DMA BMP Type	DA DMA BMP Type (Use additional forms for more BMPs)
2 Total impervious area draining to pervious area (ft^2)			
3 Ratio of pervious area receiving runoff to impervious area			
4 Retention volume achieved from impervious area dispersion (ft^3) V = Item2 * Item 3 * (0.5/12), assuming retention of 0.5 inches of runoff			
5 Sum of retention volume achieved from impervious area dispersion (ft^3): $V_{retention}$ =Sum of Item 4 for all BMPs			
6 Implementation of Localized On-lot Infiltration BMPs (e.g. on-lot rain gardens): Yes ☐ No ☒ If yes, complete Items 7-13 for aggregate of all on-lot infiltration BMP in each DA; If no, proceed to Item 14	DA DMA BMP Type	DA DMA BMP Type	DA DMA BMP Type (Use additional forms for more BMPs)
7 Ponding surface area (ft^2)			
8 Ponding depth (ft)			
9 Surface area of amended soil/gravel (ft^2)			
10 Average depth of amended soil/gravel (ft)			
11 Average porosity of amended soil/gravel			
12 Retention volume achieved from on-lot infiltration (ft^3) $V_{retention}$ = (Item 7 *Item 8) + (Item 9 * Item 10 * Item 11)			
13 Runoff volume retention from on-lot infiltration (ft^3): $V_{retention}$ =Sum of Item 12 for all BMPs			

Form 4.3-2 cont. Site Design Hydrologic Source Control BMPs (DA 1)

14 Implementation of evapotranspiration BMP (green, brown, or blue roofs): Yes ☐ No ☒ If yes, complete Items 15-20. If no, proceed to Item 21	DA DMA BMP Type	DA DMA BMP Type	DA DMA BMP Type (Use additional forms for more BMPs)
15 Rooftop area planned for ET BMP (ft^2)			
16 Average wet season ET demand (in/day) Use local values, typical ~ 0.1			
17 Daily ET demand (ft^3/day) Item 15 * (Item 16 / 12)			
18 Drawdown time (hrs) Copy Item 6 in Form 4.2-1			
19 Retention Volume (ft^3) $V_{retention}$ = Item 17 * (Item 18 / 24)			
20 Runoff volume retention from evapotranspiration BMPs (ft^3): 0 ft^3 $V_{retention}$ =Sum of Item 19 for all BMPs			
21 Implementation of Street Trees: Yes ☐ No ☒ If yes, complete Items 20-2. If no, proceed to Item 24	DA DMA BMP Type	DA DMA BMP Type	DA DMA BMP Type (Use additional forms for more BMPs)
22 Number of Street Trees			
23 Average canopy cover over impervious area (ft^2)			
24 Runoff volume retention from street trees (ft^3) $V_{retention}$ = Item 22 * Item 23 * (0.05/12) assume runoff retention of 0.05 inches			
25 Runoff volume retention from street tree BMPs (ft^3): 0 ft^3 $V_{retention}$ = Sum of Item 24 for all BMPs			
26 Implementation of residential rain barrels/cisterns: Yes ☐ No ☒ If yes, complete Items 27-28; If no, proceed to Item 29	DA DMA BMP Type	DA DMA BMP Type	DA DMA BMP Type (Use additional forms for more BMPs)
27 Number of rain barrels/cisterns			
28 Runoff volume retention from rain barrels/cisterns (ft^3) $V_{retention}$ = Item 27 * 3			
29 Runoff volume retention from residential rain barrels/Cisterns (ft3): 0 ft^3 $V_{retention}$ =Sum of Item 28 for all BMPs			
30 Total Retention Volume from Site Design Hydrologic Source Control BMPs: 0 ft^3 Sum of Items 5, 13, 20, 25 and 29			

4.3.2 Infiltration BMPs

Use Form 4.3-3 to compute on-site retention of runoff from proposed retention and infiltration BMPs. Volume retention estimates are sensitive to the percolation rate used, which determines the amount of runoff that can be infiltrated within the specified drawdown time. The infiltration safety factor reduces field measured percolation to account for potential inaccuracy associated with field measurements, declining BMP performance over time, and compaction during construction. Appendix D of the TGD for WQMP provides guidance on estimating an appropriate safety factor to use in Form 4.3-3.

If site constraints limit the use of BMPs to a single type and implementation of retention and infiltration BMPs mitigate no more than 40% of the DCV, then they are considered infeasible and the Project Proponent may evaluate the effectiveness of BMPs lower in the LID hierarchy of use (Section 5.5.1 of the TGD for WQMP)

If implementation of infiltrations BMPs is feasible as determined using Form 4.3-1, then LID infiltration BMPs shall be implemented to the MEP (section 4.1 of the TGD for WQMP).

Form 4.3-3.1 Infiltration LID BMP – Underground Chamber System

1 Remaining LID DCV not met by site design HSC BMP (ft^3): 34,453 ft^3 V_{unmet} = Form 4.2-1 Item 7 - Form 4.3-2 Item 30

BMP Type Use columns to the right to compute runoff volume retention from proposed infiltration BMP (select BMP from Table 5-4 in TGD for WQMP) - Use additional forms for more BMPs	DMA 1 BMP Type Chamber 1 System	DMA 2 BMP Type Chamber 2 System	DMA 3 BMP Type Chamber 3 System
2 Infiltration rate of underlying soils (in/hr) See Section 5.4.2 and Appendix D of the TGD for WQMP for minimum requirements for assessment methods	12.96	12.96	12.96
3 Infiltration safety factor See TGD Section 5.4.2 and Appendix D	3.75	3.75	3.75
4 Design percolation rate (in/hr) P_{design} = Item 2 / Item 3	3.46	3.46	3.46
5 Ponded water drawdown time (hr) Copy Item 6 in Form 4.2-1	48	48	48
6 Maximum ponding depth (ft) BMP specific, see Table 5-4 of the TGD for WQMP for BMP design details	-	-	-
7 Ponding Depth (ft) d_{BMP} = Minimum of (1/12*Item 4*Item 5) or Item 6	-	-	-
8 Infiltrating surface area, SA_{BMP} (ft^2) the lesser of the area needed for infiltration of full DCV or minimum space requirements from Table 5.7 of the TGD for WQMP	-	-	-
9 Amended soil depth, d_{media} (ft) Only included in certain BMP types, see Table 5-4 in the TGD for WQMP for reference to BMP design details	-	-	-
10 Amended soil porosity	-	-	-
11 Gravel depth, d_{media} (ft) Only included in certain BMP types, see Table 5-4 of the TGD for WQMP for BMP design details	-	-	-
12 Gravel porosity	-	-	-
13 Duration of storm as basin is filling (hrs) Typical ~ 3hrs	3	3	3
14 Above Ground Retention Volume (ft^3) $V_{retention}$ = Item 8 * [Item7 + (Item 9 * Item 10) + (Item 11 * Item 12) + (Item 13 * (Item 4 / 12))]	-	-	-
15 Underground Retention Volume (ft^3) Volume determined using manufacturer's specifications and calculations	10,902 ft^3	6,680 ft^3	9,692 ft^3

16 Total Retention Volume from LID Infiltration BMPs: ft^3 34,845 (Sum of Items 14 and 15 for all infiltration BMP included in plan)

17 Fraction of DCV achieved with infiltration BMP: 101% Retention% = Item 16 / Form 4.2-1 Item 7

18 Is full LID DCV retained on-site with combination of hydrologic source control and LID retention and infiltration BMPs? Yes ☒ No ☐

If yes, demonstrate conformance using Form 4.3-10; If no, then reduce Item 3, Factor of Safety to 2.0 and increase Item 8, Infiltrating Surface Area, such that the portion of the site area used for retention and infiltration BMPs equals or exceeds the minimum effective area thresholds (Table 5-7 of the TGD for WQMP) for the applicable category of development and repeat all above calculations.

4.3.3 Harvest and Use BMP

Harvest and use BMP may be considered if the full LID DCV cannot be met by maximizing infiltration BMPs. Use Form 4.3-4 to compute on-site retention of runoff from proposed harvest and use BMPs.

Volume retention estimates for harvest and use BMPs are sensitive to the on-site demand for captured stormwater. Since irrigation water demand is low in the wet season, when most rainfall events occur in San Bernardino County, the volume of water that can be used within a specified drawdown period is relatively low. The bottom portion of Form 4.3-4 facilitates the necessary computations to show infeasibility if a minimum incremental benefit of 40 percent of the LID DCV would not be achievable with MEP implementation of on-site harvest and use of stormwater (Section 5.5.4 of the TGD for WQMP).

Form 4.3-4 Harvest and Use BMPs			
1 Remaining LID DCV not met by site design HSC or infiltration BMP (ft^3): V_{unmet} = Form 4.2-1 Item 7 - Form 4.3-2 Item 30 – Form 4.3-3 Item 16			
BMP Type(s) Compute runoff volume retention from proposed harvest and use BMP (Select BMPs from Table 5-4 of the TGD for WQMP) - Use additional forms for more BMPs	DA DMA BMP Type	DA DMA BMP Type	DA DMA BMP Type (Use additional forms for more BMPs)
2 Describe cistern or runoff detention facility			
3 Storage volume for proposed detention type (ft^3) Volume of cistern			
4 Landscaped area planned for use of harvested stormwater (ft^2)			
5 Average wet season daily irrigation demand (in/day) Use local values, typical ~ 0.1 in/day			
6 Daily water demand (ft^3/day) Item 4 * (Item 5 / 12)			
7 Drawdown time (hrs) Copy Item 6 from Form 4.2-1			
8 Retention Volume (ft^3) $V_{retention}$ = Minimum of (Item 3) or (Item 6 * (Item 7 / 24))			
9 Total Retention Volume (ft^3) from Harvest and Use BMP Sum of Item 8 for all harvest and use BMP included in plan			
10 Is the full DCV retained with a combination of LID HSC, retention and infiltration, and harvest and use BMPs? Yes ☐ No ☐ If yes, demonstrate conformance using Form 4.3-10. If no, then re-evaluate combinations of all LID BMP and optimize their implementation such that the maximum portion of the DCV is retained on-site (using a single BMP type or combination of BMP types). If the full DCV cannot be mitigated after this optimization process, proceed to Section 4.3.4.			

4.3.4 Biotreatment BMP

Biotreatment BMPs may be considered if the full LID DCV cannot be met by maximizing retention and infiltration, and harvest and use BMPs. A key consideration when using biotreatment BMP is the effectiveness of the proposed BMP in addressing the pollutants of concern for the project (see Table 5-5 of the TGD for WQMP).

Use Form 4.3-5 to summarize the potential for volume based and/or flow based biotreatment options to biotreat the remaining unmet LID DCV w. Biotreatment computations are included as follows:

- Use Form 4.3-6 to compute biotreatment in small volume based biotreatment BMP (e.g. bioretention w/underdrains);
- Use Form 4.3-7 to compute biotreatment in large volume based biotreatment BMP (e.g. constructed wetlands);
- Use Form 4.3-8 to compute sizing criteria for flow-based biotreatment BMP (e.g. bioswales)

Form 4.3-5 Selection and Evaluation of Biotreatment BMP

1 Remaining LID DCV not met by site design HSC, infiltration, or harvest and use BMP for potential biotreatment (ft^3): 0 Form 4.2-1 Item 7 - Form 4.3-2 Item 30 – Form 4.3-3 Item 16- Form 4.3-4 Item 9	List pollutants of concern Copy from Form 2.3-1.	
2 Biotreatment BMP Selected (Select biotreatment BMP(s) necessary to ensure all pollutants of concern are addressed through Unit Operations and Processes, described in Table 5-5 of the TGD for WQMP)	Volume-based biotreatment Use Forms 4.3-6 and 4.3-7 to compute treated volume ☐ Bioretention with underdrain ☐ Planter box with underdrain ☐ Constructed wetlands ☐ Wet extended detention ☐ Dry extended detention	Flow-based biotreatment Use Form 4.3-8 to compute treated volume ☐ Vegetated swale ☐ Vegetated filter strip ☐ Proprietary biotreatment
3 Volume biotreated in volume based biotreatment BMP (ft^3): Form 4.3-6 Item 15 + Form 4.3-7 Item 13	4 Compute remaining LID DCV with implementation of volume based biotreatment BMP (ft^3): Item 1 – Item 3	5 Remaining fraction of LID DCV for sizing flow based biotreatment BMP: % Item 4 / Item 1
6 Flow-based biotreatment BMP capacity provided (cfs): Use Figure 5-2 of the TGD for WQMP to determine flow capacity required to provide biotreatment of remaining percentage of unmet LID DCV (Item 5), for the project's precipitation zone (Form 3-1 Item 1)		
7 Metrics for MEP determination: • Provided a WQMP with the portion of site area used for suite of LID BMP equal to minimum thresholds in Table 5-7 of the TGD for WQMP for the proposed category of development: ☐ If maximized on-site retention BMPs is feasible for partial capture, then LID BMP implementation must be optimized to retain and infiltrate the maximum portion of the DCV possible within the prescribed minimum effective area. The remaining portion of the DCV shall then be mitigated using biotreatment BMP.		

Form 4.3-6 Volume Based Biotreatment– Bioretention and Planter Boxes with Underdrains

Biotreatment BMP Type (Bioretention w/underdrain, planter box w/underdrain, other comparable BMP)	DA DMA BMP Type	DA DMA BMP Type	DA DMA BMP Type (Use additional forms for more BMPs)
1 Pollutants addressed with BMP List all pollutant of concern that will be effectively reduced through specific Unit Operations and Processes described in Table 5-5 of the TGD for WQMP			
2 Amended soil infiltration rate Typical ~ 5.0			
3 Amended soil infiltration safety factor Typical ~ 2.0			
4 Amended soil design percolation rate (in/hr) P_{design} = Item 2 / Item 3			
5 Ponded water drawdown time (hr) Copy Item 6 from Form 4.2-1			
6 Maximum ponding depth (ft) see Table 5-6 of the TGD for WQMP for reference to BMP design details			
7 Ponding Depth (ft) d_{BMP} = Minimum of (1/12 * Item 4 * Item 5) or Item 6			
8 Amended soil surface area (ft^2)			
9 Amended soil depth (ft) see Table 5-6 of the TGD for WQMP for reference to BMP design details			
10 Amended soil porosity, n			
11 Gravel depth (ft) see Table 5-6 of the TGD for WQMP for reference to BMP design details			
12 Gravel porosity, n			
13 Duration of storm as basin is filling (hrs) Typical ~ 3hrs			
14 Biotreated Volume (ft^3) $V_{biotreated}$ = Item 8 * [(Item 7/2) + (Item 9 * Item 10) +(Item 11 * Item 12) + (Item 13 * (Item 4 / 12))]			
15 Total biotreated volume from bioretention and/or planter box with underdrains BMP: Sum of Item 14 for all volume-based BMPs included in this form			

Form 4.3-7 Volume Based Biotreatment– Constructed Wetlands and Extended Detention

Biotreatment BMP Type Constructed wetlands, extended wet detention, extended dry detention, or other comparable proprietary BMP. If BMP includes multiple modules (e.g. forebay and main basin), provide separate estimates for storage and pollutants treated in each module.	DA DMA BMP Type		DA DMA BMP Type (Use additional forms for more BMPs)	
	Forebay	Basin	Forebay	Basin
1 Pollutants addressed with BMP forebay and basin List all pollutant of concern that will be effectively reduced through specific Unit Operations and Processes described in Table 5-5 of the TGD for WQMP				
2 Bottom width (ft)				
3 Bottom length (ft)				
4 Bottom area (ft^2) A_{bottom} = Item 2 * Item 3				
5 Side slope (ft/ft)				
6 Depth of storage (ft)				
7 Water surface area (ft^2) $A_{surface}$ =(Item 2 + (2 * Item 5 * Item 6)) * (Item 3 + (2 * Item 5 * Item 6))				
8 Storage volume (ft^3) For BMP with a forebay, ensure fraction of total storage is within ranges specified in BMP specific fact sheets, see Table 5-6 of the TGD for WQMP for reference to BMP design details V =Item 6 / 3 * [Item 4 + Item 7 + (Item 4 * Item 7)^0.5]				
9 Drawdown Time (hrs) Copy Item 6 from Form 2.1				
10 Outflow rate (cfs) Q_{BMP} = (Item $8_{forebay}$ + Item 8_{basin}) / (Item 9 * 3600)				
11 Duration of design storm event (hrs)				
12 Biotreated Volume (ft^3) $V_{biotreated}$ = (Item $8_{forebay}$ + Item 8_{basin}) +(Item 10 * Item 11 * 3600)				
13 Total biotreated volume from constructed wetlands, extended dry detention, or extended wet detention : (Sum of Item 12 for all BMP included in plan)				

Form 4.3-8 Flow Based Biotreatment

Biotreatment BMP Type Vegetated swale, vegetated filter strip, or other comparable proprietary BMP	DA DMA BMP Type	DA DMA BMP Type	DA DMA BMP Type (Use additional forms for more BMPs)
1 Pollutants addressed with BMP List all pollutant of concern that will be effectively reduced through specific Unit Operations and Processes described in TGD Table 5-5			
2 Flow depth for water quality treatment (ft) BMP specific, see Table 5-6 of the TGD for WQMP for reference to BMP design details			
3 Bed slope (ft/ft) BMP specific, see Table 5-6 of the TGD for WQMP for reference to BMP design details			
4 Manning's roughness coefficient			
5 Bottom width (ft) b_w = (Form 4.3-5 Item 6 * Item 4) / (1.49 * Item 2^1.67 * Item 3^0.5)			
6 Side Slope (ft/ft) BMP specific, see Table 5-6 of the TGD for WQMP for reference to BMP design details			
7 Cross sectional area (ft^2) A = (Item 5 * Item 2) + (Item 6 * Item 2^2)			
8 Water quality flow velocity (ft/sec) V = Form 4.3-5 Item 6 / Item 7			
9 Hydraulic residence time (min) Pollutant specific, see Table 5-6 of the TGD for WQMP for reference to BMP design details			
10 Length of flow based BMP (ft) L = Item 8 * Item 9 * 60			
11 Water surface area at water quality flow depth (ft^2) SA_{top} = (Item 5 + (2 * Item 2 * Item 6)) * Item 10			

4.3.5 Conformance Summary

Complete Form 4.3-9 to demonstrate how on-site LID DCV is met with proposed site design hydrologic source control, infiltration, harvest and use, and/or biotreatment BMP. The bottom line of the form is used to describe the basis for infeasibility determination for on-site LID BMP to achieve full LID DCV, and provides methods for computing remaining volume to be addressed in an alternative compliance plan. If the project has more than one outlet, then complete additional versions of this form for each outlet.

Form 4.3-9 Conformance Summary and Alternative Compliance Volume Estimate (DA 1)

1 Total LID DCV for the Project DMA-1 through DMA-10 (ft^3): 34,453 ft^3 Copy Item 7 in Form 4.2-1

2 On-site retention with site design hydrologic source control LID BMP (ft^3): 0 ft^3 Copy Item 30 in Form 4.3-2

3 On-site retention with LID infiltration BMP (ft^3): 34,845 ft^3 Copy Item 16 in Form 4.3-3

4 On-site retention with LID harvest and use BMP (ft^3): 0 ft^3 Copy Item 9 in Form 4.3-4

5 On-site biotreatment with volume based biotreatment BMP (ft^3): 0 ft^3 Copy Item 3 in Form 4.3-5

6 Flow capacity provided by flow based biotreatment BMP (cfs): 0 ft^3 Copy Item 6 in Form 4.3-5

7 LID BMP performance criteria are achieved if answer to any of the following is "Yes":

- Full retention of LID DCV with site design HSC, infiltration, or harvest and use BMP: Yes ☒ No ☐
  If yes, sum of Items 2, 3, and 4 is greater than Item 1
- Combination of on-site retention BMPs for a portion of the LID DCV and volume-based biotreatment BMP that address all pollutants of concern for the remaining LID DCV: Yes ☐ No ☐
  If yes, a) sum of Items 2, 3, 4, and 5 is greater than Item 1, and Items 2, 3 and 4 are maximized; or b) Item 6 is greater than Form 4.3--5 Item 6 and Items 2, 3 and 4 are maximized
- On-site retention and infiltration is determined to be infeasible and biotreatment BMP provide biotreatment for all pollutants of concern for full LID DCV: Yes ☐ No ☐
  If yes, Form 4.3-1 Items 7 and 8 were both checked yes

8 If the LID DCV is not achieved by any of these means, then the project may be allowed to develop an alternative compliance plan. Check box that describes the scenario which caused the need for alternative compliance:

- Combination of HSC, retention and infiltration, harvest and use, and biotreatment BMPs provide less than full LID DCV capture: ☐
  Checked yes for Form 4.3-5 Item 7, Item 6 is zero, and sum of Items 2, 3, 4, and 5 is less than Item 1. If so, apply water quality credits and calculate volume for alternative compliance, V_{alt} = (Item 1 – Item 2 – Item 3 – Item 4 – Item 5) * (100 - Form 2.4-1 Item 2)%
- An approved Watershed Action Plan (WAP) demonstrates that water quality and hydrologic impacts of urbanization are more effective when managed in at an off-site facility: ☐
  Attach appropriate WAP section, including technical documentation, showing effectiveness comparisons for the project site and regional watershed

4.3.6 Hydromodification Control BMP

Use Form 4.3-10 to compute the remaining runoff volume retention, after LID BMP are implemented, needed to address HCOC, and the increase in time of concentration and decrease in peak runoff necessary to meet targets for protection of waterbodies with a potential HCOC. Describe hydromodification control BMP that address HCOC, which may include off-site BMP and/or in-stream controls. Section 5.6 of the TGD for WQMP provides additional details on selection and evaluation of hydromodification control BMP.

Form 4.3-10 Hydromodification Control BMPs	
1 Volume reduction needed for HCOC performance criteria (ft^3): (Form 4.2-2 Item 4 * 0.95) – Form 4.2-2 Item 1	2 On-site retention with site design hydrologic source control, infiltration, and harvest and use LID BMP (ft^3): Sum of Form 4.3-9 Items 2, 3, and 4 Evaluate option to increase implementation of on-site retention in Forms 4.3-2, 4.3-3, and 4.3-4 in excess of LID DCV toward achieving HCOC volume reduction
3 Remaining volume for HCOC volume capture (ft^3): Item 1 – Item 2	4 Volume capture provided by incorporating additional on-site or off-site retention BMPs (ft^3): Existing downstream BMP may be used to demonstrate additional volume capture (if so, attach to this WQMP a hydrologic analysis showing how the additional volume would be retained during a 2-yr storm event for the regional watershed)
5 If Item 4 is less than Item 3, incorporate in-stream controls on downstream waterbody segment to prevent impacts due to hydromodification ☐ Attach in-stream control BMP selection and evaluation to this WQMP	
6 Is Form 4.2-2 Item 11 less than or equal to 5%: Yes ☐ No ☐ If yes, HCOC performance criteria is achieved. If no, select one or more mitigation options below: • Demonstrate increase in time of concentration achieved by proposed LID site design, LID BMP, and additional on-site or off-site retention BMP ☐ BMP upstream of a waterbody segment with a potential HCOC may be used to demonstrate increased time of concentration through hydrograph attenuation (if so, show that the hydraulic residence time provided in BMP for a 2-year storm event is equal or greater than the addition time of concentration requirement in Form 4.2-4 Item 15) • Increase time of concentration by preserving pre-developed flow path and/or increase travel time by reducing slope and increasing cross-sectional area and roughness for proposed on-site conveyance facilities ☐ • Incorporate appropriate in-stream controls for downstream waterbody segment to prevent impacts due to hydromodification, in a plan approved and signed by a licensed engineer in the State of California ☐	
7 Form 4.2-2 Item 12 less than or equal to 5%: Yes ☐ No ☐ If yes, HCOC performance criteria is achieved. If no, select one or more mitigation options below: • Demonstrate reduction in peak runoff achieved by proposed LID site design, LID BMPs, and additional on-site or off-site retention BMPs ☐ BMPs upstream of a waterbody segment with a potential HCOC may be used to demonstrate additional peak runoff reduction through hydrograph attenuation (if so, attach to this WQMP, a hydrograph analysis showing how the peak runoff would be reduced during a 2-yr storm event) • Incorporate appropriate in-stream controls for downstream waterbody segment to prevent impacts due to hydromodification, in a plan approved and signed by a licensed engineer in the State of California ☐	

4.4 Alternative Compliance Plan (if applicable)

Describe an alternative compliance plan (if applicable) for projects not fully able to infiltrate, harvest and use, or biotreat the DCV via on-site LID practices. A project proponent must develop an alternative compliance plan to address the remainder of the LID DCV. Depending on project type some projects may qualify for water quality credits that can be applied to reduce the DCV that must be treated prior to development of an alternative compliance plan (see Form 2.4-1, Water Quality Credits). Form 4.3-9 Item 8 includes instructions on how to apply water quality credits when computing the DCV that must be met through alternative compliance. Alternative compliance plans may include one or more of the following elements:

- On-site structural treatment control BMP - All treatment control BMP should be located as close to possible to the pollutant sources and should not be located within receiving waters;
- Off-site structural treatment control BMP - Pollutant removal should occur prior to discharge of runoff to receiving waters;
- Urban runoff fund or In-lieu program, if available

Depending upon the proposed alternative compliance plan, approval by the executive officer may or may not be required (see Section 6 of the TGD for WQMP).

Section 5 Inspection and Maintenance Responsibility for Post Construction BMP

All BMP included as part of the project WQMP are required to be maintained through regular scheduled inspection and maintenance (refer to Section 8, Post Construction BMP Requirements, in the TGD for WQMP). Fully complete Form 5-1 summarizing all BMP included in the WQMP. Attach additional forms as needed. The WQMP shall also include a detailed Operation and Maintenance Plan for all BMP and may require a Maintenance Agreement (consult the jurisdiction's LIP). If a Maintenance Agreement is required, it must also be attached to the WQMP.

Form 5-1 BMP Inspection and Maintenance (use additional forms as necessary)

BMP	Reponsible Party(s)	Inspection/ Maintenance Activities Required	Minimum Frequency of Activities
Infiltration / Retention Chamber System (N4) Chamber 1 through 8	Stratham Homes, Inc. & HOA	Inspect CMP Chamber through the manhole to determine the depth of sedim,ent. Follow local and OSHA rules for a confined space entry. JetVac maintenenace is recommended if sediment accumulation depth exceed 3”	2 times a year at the beginning and end of the rainy season (October to March)
Education of Property Owners, Tenants and Occupants on Stormwater BMPs (N1)	Stratham Homes, Inc. & HOA	Practical education materials will be provided to property owners covering various water quality issues that will need to be addressed on their specific site. These materials will include general good house keeping practices that contribute to the protection of storm water quality and BMP’s that eliminate or reduce pollution during property improvements.	Ongoing
Landscape maintenance (N3)	Stratham Homes, Inc. & HOA	Landscape planning is implemented to reduce groundwater and storm water contamination. This will be accomplished through an infiltration basin, and landscape areas.	Monthly
BMP maintenance (Hydrodynam-ic seperator, Flowgard filter Insert) (N4)	Stratham Homes, Inc. & HOA	See BMP fact sheets and Table 5-1 details hereon	
Litter debris control program (N11)	Stratham Homes, Inc. & HOA	Litter debris control program may be developed by City of Fontana	Ongoing with every visit

Employee training (N12)	Stratham Homes, Inc. & HOA	Employee training may be developed by City of Fontana	Ongoing with every visit
Catch basin inspection program (N14)	Stratham Homes, Inc. & HOA	Catch basins will be inspected a minimum of once every three months during the dry season and a minimum of once every two months during the rainy season.	As stated
Provide storm drain system stencilling and signage (S1)	Stratham Homes, Inc.	Signs will be placed above storm drain inlets to warn the public of prohibitions against waste disposal	Place at grate installation and inspect once a year
Use efficient irrigation systems & landscape design, water conservation, smart controllers, and source control (S4)	Stratham Homes, Inc.	Rain sensors will be incorporated into the onsite sprinkler system so that no unnecessary watering of landscaped areas occurs after storm events.	Once a year or according to Manufacturer Manuals
Finish grade of landscaped areas at a minimum of 1-2 inches below top of curb, sidewalk, or pavement (S5)	Stratham Homes, Inc.	New landscaped areas will be constructed at a minimum of 1 inch below existing paved areas	Once a year

Section 6 WQMP Attachments

6.1. Site Plan and Drainage Plan

Include a site plan and drainage plan sheet set containing the following minimum information:

- Project location
- Site boundary
- Land uses and land covers, as applicable
- Suitability/feasibility constraints
- Structural Source Control BMP locations
- Site Design Hydrologic Source Control BMP locations
- LID BMP details
- Drainage delineations and flow information
- Drainage connections

6.2 Electronic Data Submittal

Minimum requirements include submittal of PDF exhibits in addition to hard copies. Format must not require specialized software to open. If the local jurisdiction requires specialized electronic document formats (as described in their local Local Implementation Plan), this section will describe the contents (e.g., layering, nomenclature, geo-referencing, etc.) of these documents so that they may be interpreted efficiently and accurately.

6.3 Post Construction

Attach all O&M Plans and Maintenance Agreements for BMP to the WQMP.

6.4 Other Supporting Documentation

- BMP Educational Materials
- Activity Restriction – C, C&R's & Lease Agreements

Certification

Section 6

WQMP Certification

6.1 Certification

"This Water Quality Management Plan has been prepared for STRATHAM HOMES, INC. by Allard Engineering. It is intended to comply with the requirements of the County of San Bernardino for Rancho Palma Project requiring the preparation of a Water Quality Management Plan (WQMP). The undersigned is aware that Best Management Practices (BMPs) are enforceable pursuant to the City's Water Quality Ordinance. The undersigned, while it owns the subject property, is responsible for the implementation of the provisions of this plan and will ensure that this plan is amended as appropriate to reflect up-to-date conditions on the site consistent with San Bernardino County's Municipal Stormwater Management Program and the intent of the NPDES Permit for San Bernardino County and the incorporated cities of San Bernardino County within the Santa Ana Region. Once the undersigned transfers its interest in the property, its successors in interest and the city/county shall be notified of the transfer. The new owner will be informed of its responsibility under this WQMP. A copy of the approved WQMP shall be available on the subject site in perpetuity. "

"I certify under a penalty of law that the provisions (implementation, operation, maintenance, and funding) of the WQMP have been accepted and that the plan will be transferred to future successors."

STRATHAM HOMES, INC.

By: STRATHAM HOMES, INC.

By: _____ Date: _____

Name: Keyvan Razi

Applicant Telephone Number: (949) 833-1554

Certifications

I certify under penalty of law that this document and all the attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, the information submitted is to the best of my knowledge and belief, true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations

Developer's Project Engineer Signature

_____ _____
Signature Date

I/we certify that I/we am/are the legal owner of the project and hereby accept the responsibility for the implementation of the provisions of the SWQMP as long as I/we retain ownership of this property and that upon the sale of this land, I/we will deliver this plan to the future owner and inform him of the requirement to implement the plan.

Owner(s) Signature

STRATHAM HOMES, INC.

By: _____ Date: _____

Name: Kevan Razi

For the use by County of San Bernardino

Environmental Section Approval of SWQMP

I, and /or personnel acting under my direction and supervision, have reviewed this SWQMP and find that it meets the requirements set forth in the County of San Bernardino's Storm Water Ordinance.

Acceptance or approval of this Storm Water Quality Management Plan in no way precludes the authority of this agency to require modification to the plan as conditions warrant nor does this agency take responsibility for performance of BMP's provided for in the plan.

_____ _____
Signature Date of SWQMP approval

Memorandum of Agreement

RECORDING REQUESTED BY:

CITY OF FONTANA
ENGINEERING DEPARTMENT
8353 SIERRA AVENUE,
FONTANA CA 92335

SPACE ABOVE FOR RECORDER'S USE ONLY

Memorandum of Agreement for Water Quality Management Plan and Storm Water BMP Transfer, Access and Maintenance

OWNER/APPLICANT NAME: Keyvan Razi
PROPERTY ADDRESS: 15035 Highland Avene

Fontana, CA 92336

APN: 0228-021-08 & 0228-021-09

THIS Memorandum of Agreement hereinafter referred to as "Agreement" is made and entered on this _____ day of _____ , _____ by the undersigned herein after referred to as "Owner" and the City of Fontana, a municipal corporation, located in the County of San Bernardino, State of California hereinafter referred to as "CITY";

WHEREAS, the Owner owns real property ("Property") in the City of Fontana, County of San Bernardino, State of California, more specifically described in Exhibit "A" and depicted in Exhibit "B", each of which exhibits is attached hereto and incorporated herein by this reference;

WHEREAS, at the time of initial approval of development project within the Property described above, the City required the project to employ Best Management Practices, hereinafter referred to as "BMPs," to minimize pollutants in urban runoff;

WHEREAS, the Owner has chosen to install and/or implement BMPs as described in the Water Quality Management Plan as described in Exhibit "C" and on file with the City, hereinafter referred to as "WQMP", to minimize pollutants in urban runoff and to minimize other adverse impacts of urban runoff;

WHEREAS, said WQMP has been certified by the Owner and reviewed and approved by the City;

WHEREAS, said BMPs, with installation and/or implementation on private property and draining only private property, are part of a private facility with all maintenance or replacement, therefore, the sole responsibility of the Owner;

WHEREAS, the Owner is aware that periodic and continuous maintenance, including, but not necessarily limited to, filter material replacement and sediment removal, is required to assure peak performance of all BMPs in the WQMP and that, furthermore, such maintenance activity will require compliance with all Local, State, or Federal laws and regulations, including those pertaining to confined space and waste disposal methods, in effect at the time such maintenance occurs;

NOW THEREFORE, it is hereby agreed by the Owner as follows:

1. Owner hereby provides the City of City's designee complete access, of any duration, to the BMPs and their immediate vicinity at any time, upon reasonable notice, or in the event of emergency, as determined by City's Director of Public Works no advance notice, for the purpose of inspection, sampling, testing of the Device, and in case of emergency, to undertake all necessary repairs or other preventative measures at owner's expense as provided in paragraph 3 below. City shall make every effort at all times to minimize or avoid interference with Owner's use of the Property.

2. Owner shall use its best efforts diligently to maintain all BMPs in a manner assuring peak performance at all times. All reasonable precautions shall be exercised by Owner and Owner's representative or contractor in the removal and extraction of any material(s) from the BMPs and the ultimate disposal of the material(s) in a manner consistent with all relevant laws and regulations in effect at the time. As may be requested from time to time by the City, the Owner shall provide the City with documentation identifying the material(s) removed, the quantity, and disposal destination.

3. In the event Owner, or its successors or assigns, fails to accomplish the necessary maintenance contemplated by this Agreement, within five (5) days of being given written notice by the City, the City is hereby authorized to cause any maintenance necessary to be done and charge the entire cost and expense to the Owner or Owner's successors or assigns, including administrative costs, attorneys fees and interest thereon at the maximum rate authorized by the Civil Code from the date of the notice of expense until paid in full.

4. the Owner agrees to hold the City, its officials, officers, employees, volunteers, and agents free and harmless from any and all claims, demands, causes of action, costs, expenses, liability, loss, damage, or injury, in law or equity, to property or persons, arising from the imposition of the plan by the City;

5. The City may require the owner to post security in form and for a time period satisfactory to the city to guarantee the performance of the obligations state herein. Should the Owner fail to perform the obligations under the Agreement, the City may, in the case of a cash bond, act for the Owner using the proceeds from it, or in the case of a surety bond, require the sureties to perform the obligations of the Agreement. As an additional remedy, the Director may withdraw any previous storm water-related approval with respect to the property on which BMPs have been installed and/or implemented until such time as Owner repays to City its reasonable costs incurred in accordance with paragraph 3 above.

6. This agreement shall be recorded in the Office of the Recorder of San Bernardino County, California, at the expense of the Owner and shall constitute notice to all successors and assigns of the title to said Property of the obligation herein set forth, and also a lien in such amount as will fully reimburse the City, including interest as herein above set forth, subject to foreclosure in event of default in payment.

7. In event of legal action occasioned by any default or action of the Owner, or its successors or assigns, then the Owner and its successors or assigns agree(s) to pay all costs incurred by the City in enforcing the terms of this Agreement, including reasonable attorney's fees and costs, and that the same shall become a part of the lien against said Property.

8. It is the intent of the parties hereto that burdens and benefits herein undertaken shall constitute covenants that run with said Property and constitute a lien there against.

9. The obligations herein undertaken shall be binding upon the heirs, successors, executors, administrators and assigns of the parties hereto. The term "Owner" shall include not only the present Owner, but also its heirs, successors, executors, administrators, and assigns. Owner shall notify any successor to title of all or part of the Property about the existence of this Agreement. Owner shall provide such notice prior to such successor obtaining an interest in all or part of the Property. Owner shall provide a copy of such notice to the City at the same time such notice is provided to the successor.

10. This Agreement shall not be amended, modified or terminated without the prior written consent of the City, which consent to be effective, shall be contained in a document executed by the City and recorded against the Real Property.

OWNER:

Owner/Applicant Name: Keyvan Razi

Owner/Applicant Signature: _____

Date: _____

NOTARY

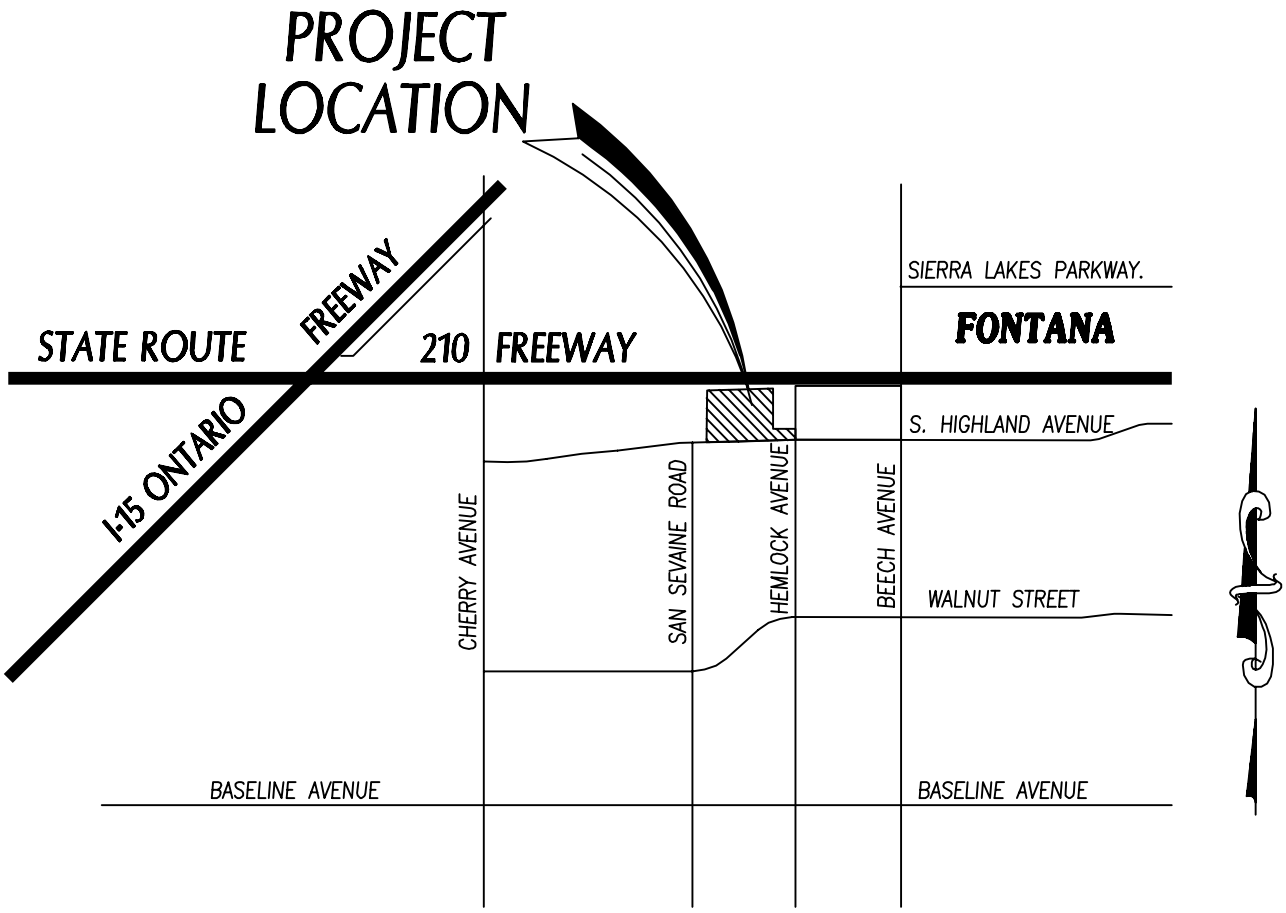
Notary acknowledgement is required for recordation (attach appropriate acknowledgement).

EXHIBIT A
(Legal Description)

LEGAL DESCRIPTION

A PORTION OF THE N1/2, OF THE NW1/4, OF THE NE1/4, OF SECTION 35, T1N, R6W, SBM.

EXHIBIT B
(Map/illustration)



VICINITY MAP

NTS

EXHIBIT C
WQMP Exhibit

Educational Material

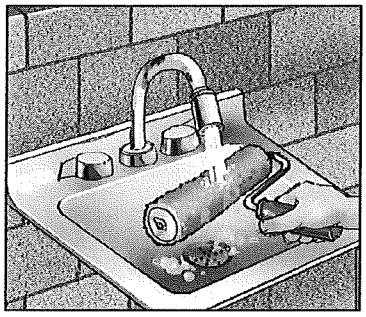
STORMWATER Pollution Prevention

PAINTING

Paints, solvents, adhesives and other toxic chemicals used in painting often make their way into the San Bernardino County storm drain system and do not get treated before reaching the Santa Ana River. This pollutes our drinking water and contaminates waterways, making them unsafe for people and wildlife. Follow these simple tips to prevent pollution and protect our health.

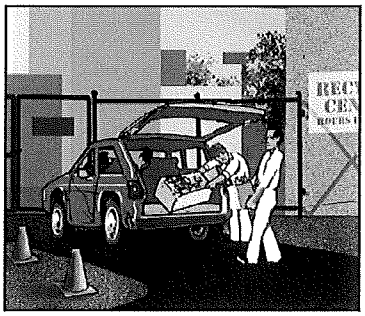
Water-Based Paints
Use water-based paints whenever possible. They are less toxic than oil-based paints and easier to clean up. Look for products labeled "latex" or "cleans with water."

Paint Removal
Sweep up paint stripping residue, chips and dust instead of hosing into the street and dispose of them safely at a household hazardous waste collection facility. Call (800) CLEANUP for the facility in your area.



Painting Cleanup
Never clean brushes or rinse paint containers in the street, gutter or near a storm drain. Clean water-based paints in the sink. Clean oil-based paints with thinner, which can be reused by putting it in a jar to settle out the paint particles and then pouring off the clear liquid for future use. Wrap dried paint residue in newspaper and dispose of it in the trash.

Exterior Paint Removal
When stripping or cleaning building exteriors with high-pressure water, block nearby storm drains and divert washwater onto a designated dirt area. Ask your local wastewater treatment authority if you can collect building cleaning water and discharge it to the sewer.



Recycling Paint
Recycle leftover paint at a household hazardous waste collection facility, save it for touch ups or give it to someone who can use it, like a theatre group, school, city or community organization.

To report illegal dumping or for more information on stormwater pollution prevention, call:

1 (800) CLEANUP

www.1800cleanup.org

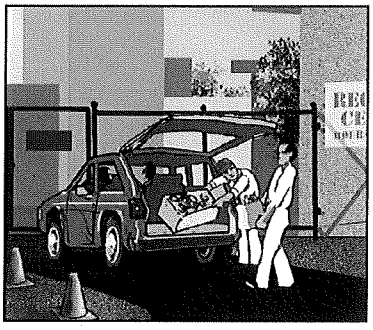
PUBLIC SERVICES
CITY OF FONTANA

San Bernardino County STORMWATER PROGRAM

STORMWATER Pollution Prevention

HOME & GARDEN

Yard waste and household toxics like paints and pesticides often make their way into the San Bernardino County storm drain system and do not get treated before reaching the Santa Ana River. This pollutes our drinking water and contaminates waterways, making them unsafe for people and wildlife. Follow these simple tips to prevent pollution and protect your health.

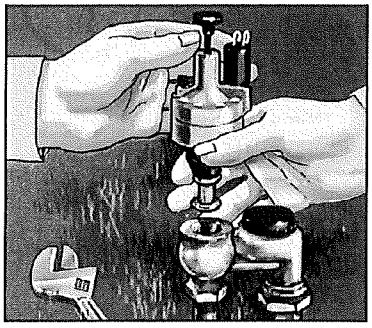


Recycle Household Hazardous Waste
Household products like paint, pesticides, solvents and cleaners are too dangerous to dump and too toxic to trash. Take them to be recycled at a convenient household hazardous waste collection facility. Call (800) CLEANUP for the facility in your area.

Disposing of Yard Waste
Recycle leaves, grass clippings and other yard waste, instead of blowing, sweeping or hosing into the street. Try grasscycling, leaving grass clippings on your lawn instead of using a grass catcher. The clippings act as a natural fertilizer, and because grass is mostly water, it also irrigates your lawn, conserving water.

Use Fertilizers & Pesticides Safely
Fertilizers and pesticides are often carried into the storm drain system by sprinkler runoff. Try using organic or non-toxic alternatives. If you use chemical fertilizers or pesticides, avoid applying near curbs and driveways and never apply before a rain.

Planting in the Yard
Produce less yard waste and save water by planting low maintenance, drought-tolerant trees and shrubs. Using drip irrigation, soaker hoses or micro-spray systems for flower beds and vegetation can also help reduce your water bill and prevent runoff.



Use Water Wisely
Cut your water costs and prevent runoff by controlling the amount of water and direction of sprinklers. The average lawn needs about an inch of water a week, including rainfall, or 10 to 20 minutes of watering. A half-inch per week is enough for fall and spring. Sprinklers should be on long enough to allow water to soak into the ground but not so long as to cause runoff.

PUBLIC SERVICES
CITY OF FONTANA

To report illegal dumping or for more information on stormwater pollution prevention, call:

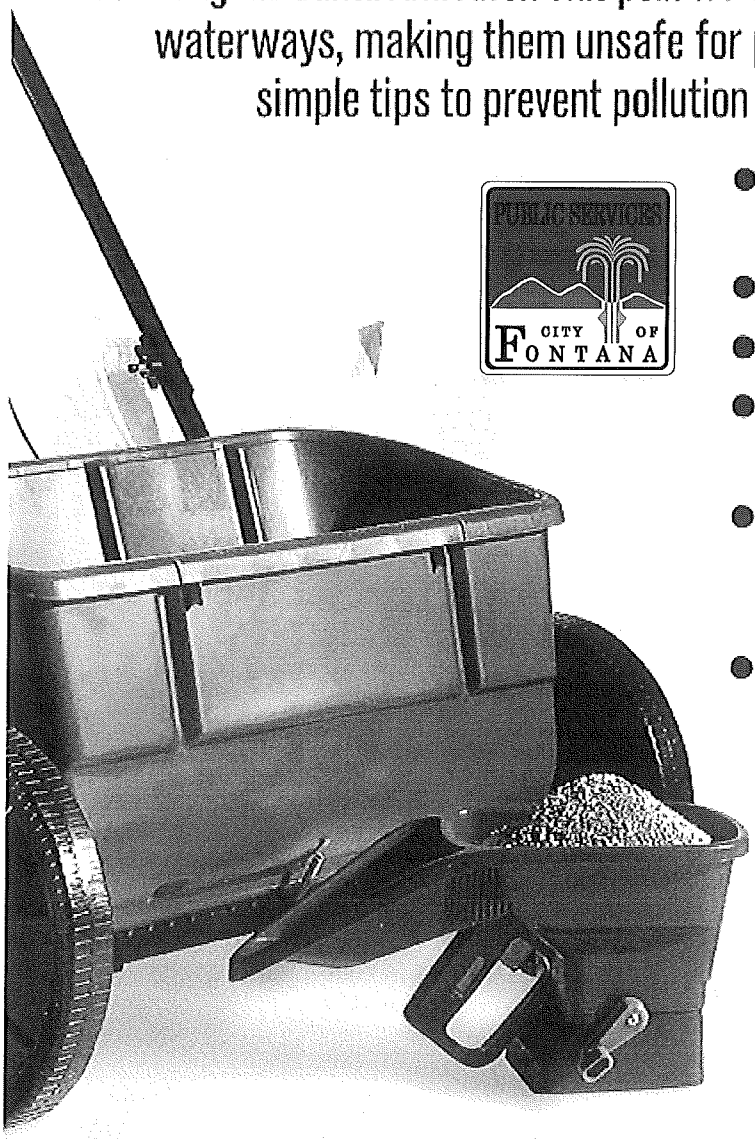
1 (800) CLEANUP

www.1800cleanup.org

San Bernardino County STORMWATER PROGRAM

Fertilizer Tips to Prevent Pollution

Water that runs off your lawn and garden can carry excess fertilizer into the San Bernardino County storm drain system, and it does not get treated before reaching the Santa Ana River. This pollutes our drinking water and contaminates waterways, making them unsafe for people and wildlife. Follow these simple tips to prevent pollution and protect your health:



PUBLIC SERVICES
CITY OF FONTANA

- Read the product label and follow the directions carefully, using only as directed.
- Avoid applying near driveways or gutters.
- Never apply fertilizer before a rain.
- Store fertilizers and chemicals in a covered area and in sealed, waterproof containers.
- Take unwanted lawn or garden chemicals to a household hazardous waste collection facility. Call (800) 253-2687.
- Use non-toxic products for your garden and lawn whenever possible.

San Bernardino County STORMWATER PROGRAM

To report illegal dumping or for more information on Stormwater pollution prevention, call:

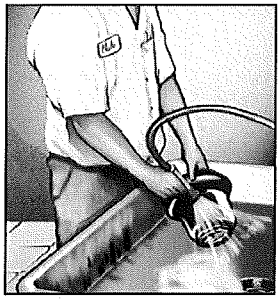
1 (800) CLEANUP

www.1800cleanup.org

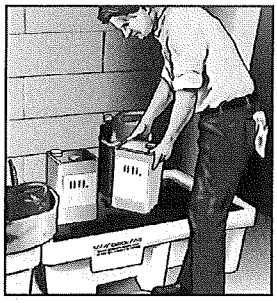
STORMWATER Pollution Prevention

AUTO MAINTENANCE

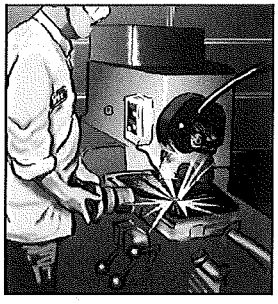
Oil, grease, anti-freeze and other toxic automotive fluids often make their way into the San Bernardino County storm drain system, and do not get treated before reaching the Santa Ana River. This pollutes our drinking water and contaminates waterways, making them unsafe for people and wildlife. Follow these best management practices to prevent pollution and protect public health.



Cleaning Auto Parts
Scrape parts with a wire brush or use a bake oven rather than liquid cleaners. Arrange drip pans, drying racks and drain boards so that fluids are directed back into the parts washer or the fluid holding tank. Do not wash parts or equipment in a shop sink, parking lot, driveway or street.



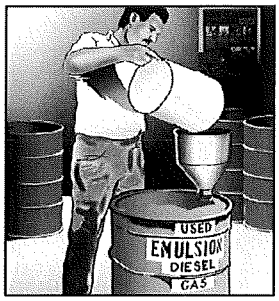
Storing Hazardous Waste
Keep your liquid waste segregated. Many fluids can be recycled via hazardous waste disposal companies if they are not mixed. Store all materials under cover with spill containment or inside to prevent contamination of rainwater runoff.



Metal Grinding and Polishing
Keep a bin under your lathe or grinder to capture metal filings. Send uncontaminated filings to a scrap metal recycler for reclamation. Store metal filings in a covered container or indoors.

Preventing Leaks and Spills
Place drip pans underneath to capture fluids. Use absorbent cleaning agents instead of water to clean work areas.

Cleaning Spills
Use dry methods for spill cleanup (sweeping, absorbent materials). Follow your hazardous materials response plan, as filed with your local fire department or other hazardous materials authority. Be sure that all employees are aware of the plan and are capable of implementing each phase. To report serious toxic spills, call 911.



Proper Disposal of Hazardous Waste
Recycle used motor oil and oil filters, anti-freeze and other hazardous automotive fluids, batteries, tires and metal filings collected from grinding or polishing auto parts. Contact a licensed hazardous waste hauler. For more recycling information, call (909) 386-8401.

PUBLIC SERVICES
CITY OF FONTANA

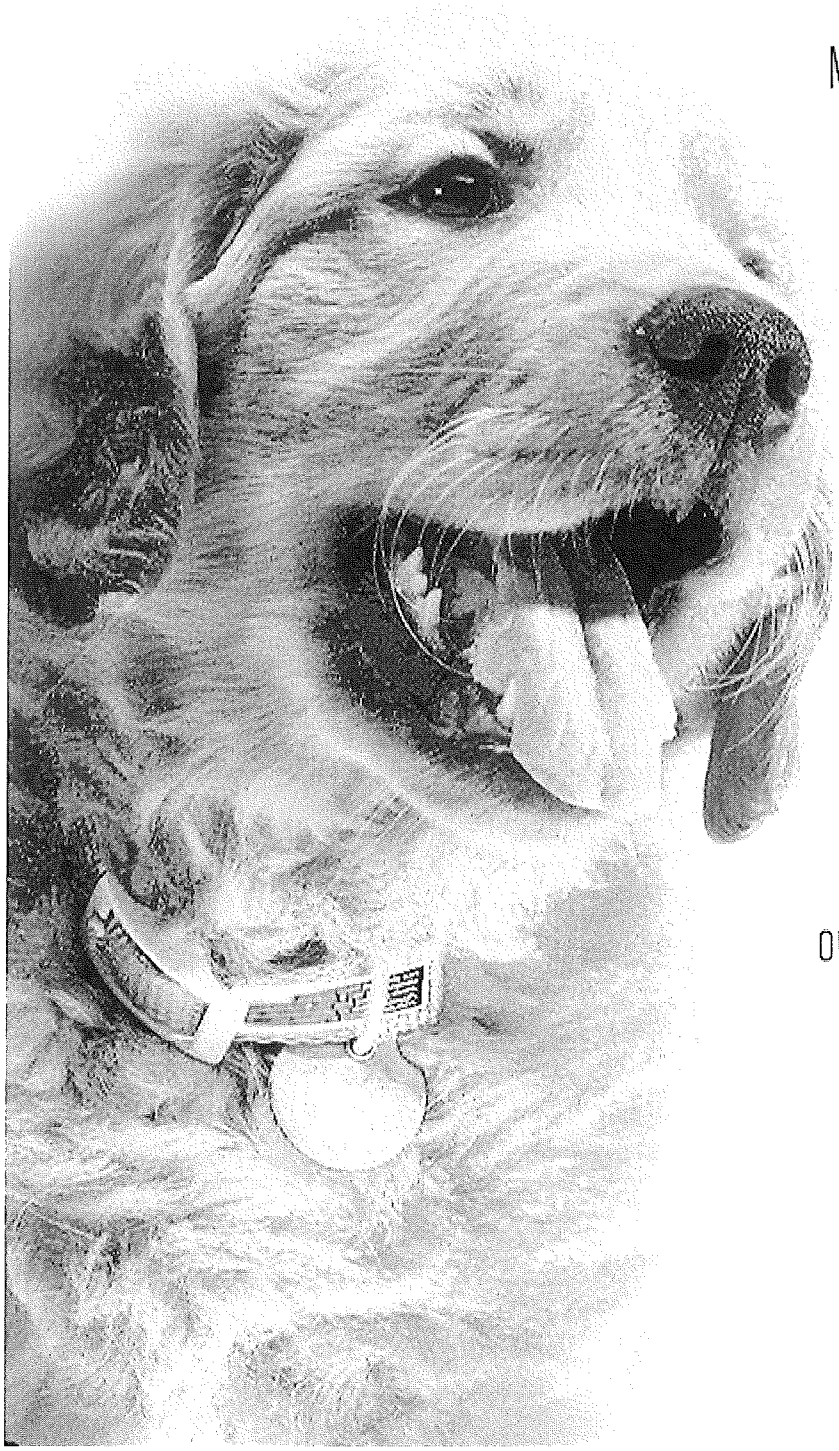
To report illegal dumping or for more information on stormwater pollution prevention, call:

1 (800) CLEANUP

www.1800cleanup.org

San Bernardino County STORMWATER PROGRAM

Pick up after your pooch to curb pollution.



Maybe you weren't aware, but dog waste left on the ground gets into storm drains, polluting rivers, lakes and beaches.

The bacteria and risk of disease threatens the health of our kids and communities. Wherever you live in San Bernardino County, this pollution is a problem. The answer? Pick up after your dog, to help prevent pollution and protect our health. It's in your hands.

PUBLIC SERVICES
CITY OF FONTANA

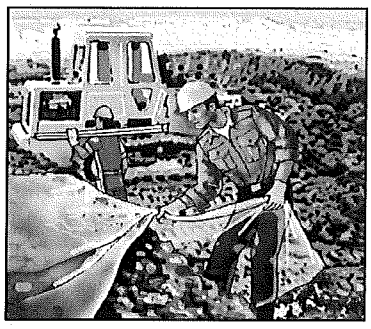
San Bernardino County
STORMWATER PROGRAM

Printed on recycled paper

STORMWATER Pollution Prevention

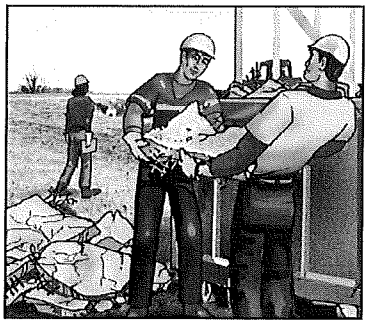
FRESH CONCRETE & MORTAR APPLICATION

Cement wash, sediment, vehicle fluids, dust and hazardous debris from construction sites often make their way into the San Bernardino County storm drain system and do not get treated before reaching the Santa Ana River. This pollutes our drinking water and contaminates waterways, making them unsafe for people and wildlife. Follow these best management practices to prevent pollution and protect public health.



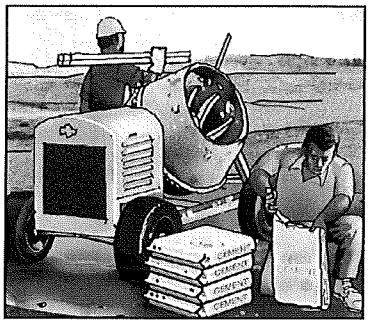
Storing Materials

Keep construction materials and debris away from the street, gutter and storm drains. Secure open bags of cement and cover exposed stockpiles of soil, sand or gravel and excavated material with plastic sheeting, protected from rain, wind and runoff.



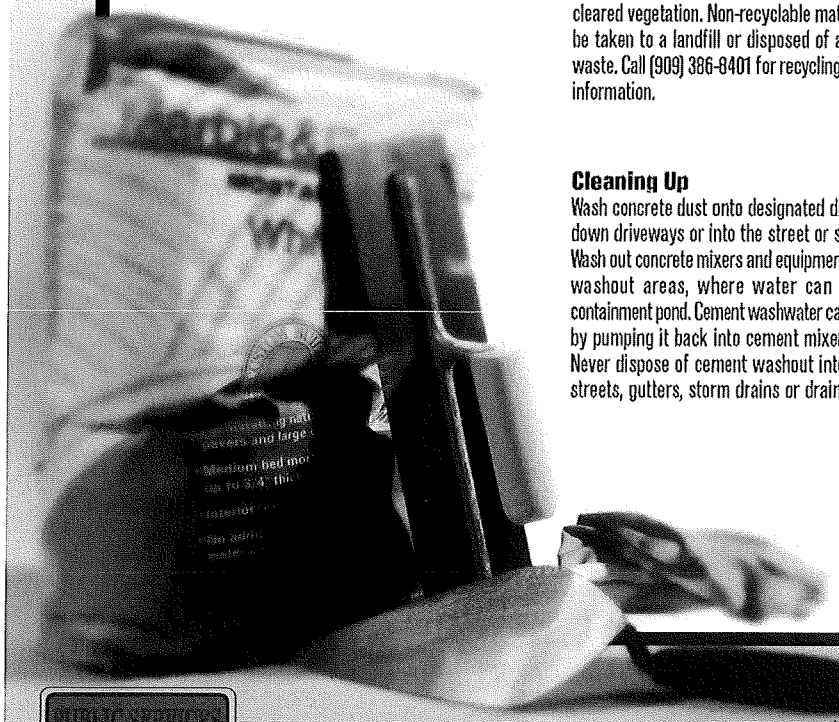
Ordering Materials & Recycling Waste

Reduce waste by ordering only the amounts of materials needed for the job. Use recycled or recyclable materials whenever possible. When breaking up paving, recycle the pieces at a crushing company. You can also recycle broken asphalt, concrete, wood, and cleared vegetation. Non-recyclable materials should be taken to a landfill or disposed of as hazardous waste. Call (909) 386-8401 for recycling and disposal information.



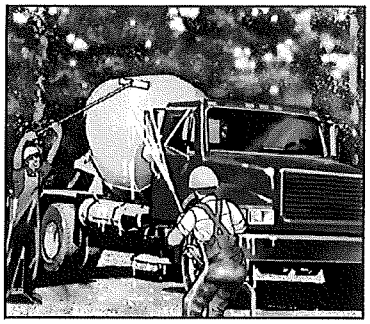
During Construction

Schedule excavation and grading during dry weather. Prevent mortar and cement from entering the street and storm drains by placing erosion controls. Setup small mixers on tarps or drop cloths, for easy cleanup of debris. Never bury waste material. Recycle or dispose of it as hazardous waste.



Cleaning Up

Wash concrete dust onto designated dirt areas, not down driveways or into the street or storm drains. Wash out concrete mixers and equipment in specified washout areas, where water can flow into a containment pond. Cement washwater can be recycled by pumping it back into cement mixers for reuse. Never dispose of cement washout into driveways, streets, gutters, storm drains or drainage ditches.



PUBLIC SERVICES
CITY OF FONTANA

To report illegal dumping or for more information on stormwater pollution prevention, call:

1 (800) CLEANUP

www.1800cleanup.org

San Bernardino County STORMWATER PROGRAM

STORMWATER Pollution Prevention

HOME REPAIR & REMODELING

Paints, solvents, adhesives and other toxic substances used in home repair and remodeling often make their way into the San Bernardino County storm drain system and do not get treated before reaching the Santa Ana River. This pollutes our drinking water and contaminates waterways, making them unsafe for people and wildlife. Follow these simple tips to prevent pollution and protect your health.

Construction Projects

Keep construction debris away from the street, gutter and storm drains. Schedule grading and excavation projects for dry weather. Cover excavated material and stockpiles of soil, sand or gravel, protected from rain, wind and runoff. Prevent erosion by planting fast-growing annual and perennial grass, which can shield and bind soil.

Recycle Household Hazardous Waste

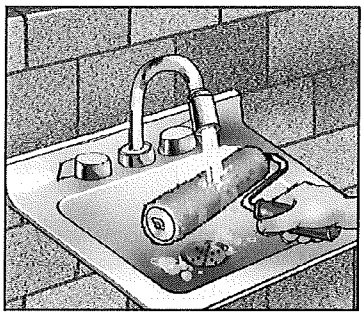
Household cleaners, paint and other home improvement products like wallpaper and tile adhesives are too toxic to trash. Recycle them instead, at a convenient household hazardous waste collection facility. Call (800) CLEANUP for the facility in your area.

Landscaping & Gardening

Avoid applying fertilizers or pesticide near curbs and driveways, and store covered, protected from rain, wind and runoff. Try using organic or non-toxic alternatives. Reduce runoff and lower your water bill by using drip irrigation, soaker hoses or micro-spray systems. Recycle leaves instead of blowing, sweeping or raking them into the street, gutter or storm drain.

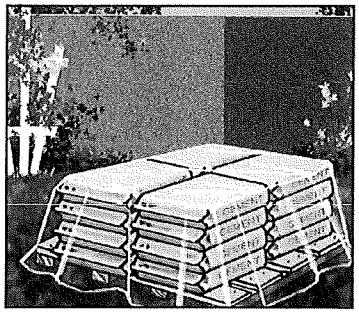
Paint Removal

Paint stripping residue, chips and dust from marine paints and paints containing lead or tributyl tin are hazardous wastes. Sweep them up instead of hosing into the street and dispose of them safely at a household hazardous waste collection facility.



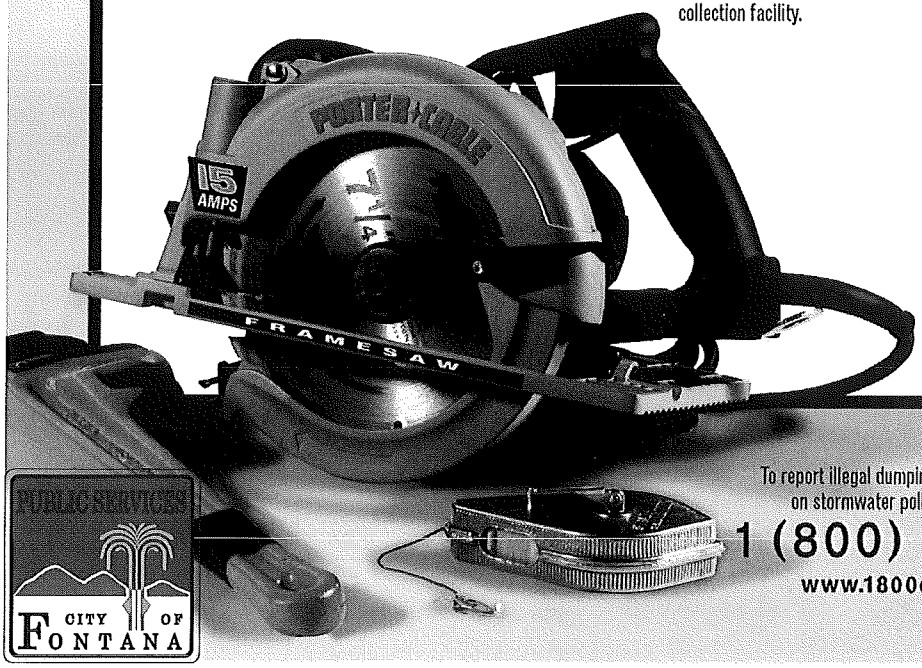
Painting Cleanup

Avoid cleaning brushes or rinsing paint containers in the street, gutter or near a storm drain. Clean water-based paints in the sink. Clean oil-based paints with thinner, which you can filter and reuse. Recycle leftover paint at a household hazardous waste collection facility, save it for touch ups or give it to someone who can use it, like a theatre group, school, city or community organization.



Concrete and Masonry

Store bags of cement and plaster away from gutters and storm drains, and cover them to protect against rain, wind and runoff. Sweep or scoop up cement washout or concrete dust instead of hosing into driveways, streets, gutters or storm drains.



To report illegal dumping or for more information on stormwater pollution prevention, call:

1 (800) CLEANUP

www.1800cleanup.org

PUBLIC SERVICES
CITY OF FONTANA

San Bernardino County STORMWATER PROGRAM

BMP for Home Owners Association

Stormwater Pollution Prevention

Best Management Practices for Homeowner's Associations, Property Managers and Property Owners

Your Guide To Maintaining Water Friendly Standards In Your Community

sbcountystormwater.org

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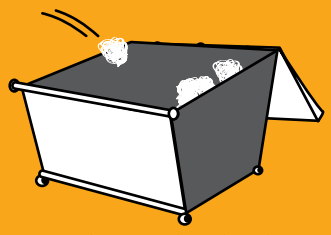
COMMERCIAL TRASH ENCLOSURES

FOLLOW THESE **REQUIREMENTS** TO **KEEP OUR WATERWAYS CLEAN**

Trash enclosures, such as those found in commercial and apartment complexes, typically contain materials that are intended to find their way to a landfill or a recycling facility. **These materials are NOT meant to go into our local lakes and rivers.**

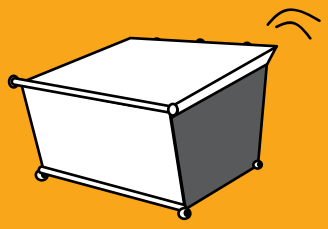
PROTECT WATER QUALITY BY FOLLOWING THESE SIMPLE STEPS

PUT TRASH INSIDE



Place trash inside the bin (preferably in sealed bags)

CLOSE THE LID



Prevent rain from entering the bin in order to avoid leakage of polluted water runoff

KEEP TOXICS OUT

- Paint
- Grease, fats and used oils
- Batteries, electronics and fluorescent lights

SOME ADDITIONAL GUIDELINES, INCLUDE

✓ SWEEP FREQUENTLY
Sweep trash enclosure areas frequently, instead of hosing them down, to prevent polluted water from flowing into the streets and storm drains.

✓ FIX LEAKS
Address trash bin leaks immediately by using dry clean up methods and report to your waste hauler to receive a replacement.

✓ CONSTRUCT ROOF
Construct a solid cover roof over the existing trash enclosure structure to prevent rainwater from coming into contact with trash and garbage. Check with your local City/County for Building Codes.

In San Bernardino County, stormwater pollution is caused by food waste, landscape waste, chemicals and other debris that are washed into storm drains and end up in our waterways - untreated! You can be part of the solution by maintaining a water-friendly trash enclosure.

THANK YOU FOR HELPING TO KEEP SAN BERNARDINO COUNTY CLEAN AND HEALTHY!

San Bernardino County STORMWATER PROGRAM

In the event of a spill or discharge to a storm drain or waterway, contact San Bernadino County Stormwater immediately: (877) WASTE18 | sbcountystormwater.org/report

sbcountystormwater.org

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CESQG PROGRAM

Conditionally Exempt Small Quantity Generator

WHAT IS A CESQG?

Businesses that generate 27 gallons or 220 lbs. of hazardous waste, or 2.2 lbs. of extremely hazardous waste per month are called "Conditionally Exempt Small Quantity Generators," or CESQGs. San Bernardino County Household Hazardous Program provides waste management services to CESQG businesses. The most common CESQGs in San Bernardino County are painters, print shops, auto shops, builders, agricultural operators and property managers, but there are many others. When you call, be ready to describe the types and amounts of waste your business generates in a typical month. If you generate hazardous waste on a regular basis, you must:

- Register with San Bernardino County Fire Department (909) 386-8401 as a hazardous waste generator.
- To obtain an EPA ID# and application form from the State visit www.dtsc.ca.gov.
- Manage hazardous waste in accordance with all applicable local, state and federal laws and regulations.

HOW DO I GET SERVICE?

To arrange an appointment for the CESQG Program, call 1-800-OILY CAT or 909-382-5401. Be ready to describe the type and amount of hazardous waste your business is ready to dispose of, and the types and size(s) of containers that the waste is in.

Waste Type and Cost

There is a small handling fee involved in the collection of hazardous waste from your business. Disposal costs depend on the type of waste.

Aerosols	$1.29/lb.
Automobile motor oil	$.73/gal.
Anti-freeze	$1.57/gal.
Contaminated oil	$4.48/gal.
Car batteries	$.62/ea.
Corrosive liquids, solids	$2.80/lb.
Flammable solids, liquids	$1.57/lb.
Latex Paint	$.73/lb.
Mercury	$10.08/lb.
NiCad/Alkaline Batteries	$2.13/lb.
Oil Base Paints	$1.00/lb.
Oil Filters	$.56/ea.
Oxidizers	$9.63/lb.
PCB Ballasts	$5.94/lb.
Pesticides (most)	$2.91/lb.
Photofixer, developer	$4.31/gal.
Television & Monitors	$11.20/ea.
Additional Handling	$138.00/hr.

Rates subject to change without notice

WE CANNOT ACCEPT

- Radioactives
- Water reactives
- Explosives
- Compressed gas cylinders
- Medical or biohazardous waste
- Asbestos
- Remediation wastes

HAZARDOUS WASTE

WHY IS THE FIRE DEPARTMENT COLLECTING HAZARDOUS WASTE?

Small Quantity Generators often have difficulty disposing of small quantities of hazardous waste. Hazardous waste companies usually have a minimum amount of waste that they will pick up, or charge a minimum fee for service. Typically, the minimum fee exceeds the cost of disposal for the hazardous waste. This leaves the small quantity generator in a difficult situation. Some respond by storing hazardous waste until it becomes economical for the hazardous waste transporter to pick it up, putting the business out of compliance by exceeding regulatory accumulation time limits. Other businesses simply store their hazardous wastes indefinitely, creating an unsafe work environment and exceeding accumulation time limits. Yet other businesses attempt to illegally dispose of their waste at household hazardous waste collection facilities. These facilities are not legally permitted to accept commercial wastes, nor are prepared to provide legal documentation for commercial hazardous waste disposal. In answer to the problems identified above, the San Bernardino County Fire Department Household Hazardous Program instituted the Conditionally Exempt Small Quantity Generator Program.

PAYMENT FOR SERVICES

The CESQG Program will prepare an invoice for your business at the time of service. You can pay at the time of service with cash or a check, or you can mail your payment to the Fire Department within 30 days. Please note that we do not accept credit card payments. The preferred method of payment is to handle payment at time of service. Additional charges may apply for accounts not paid within 30 days.

ARE THERE ANY OTHER WAYS THAT I CAN SAVE MONEY ON HAZARDOUS WASTE DISPOSAL?

Yes! First, start by reducing the amount of waste that you produce by changing processes or process chemicals, at your business. Next, examine if there is a way that you can recycle your waste back into your processes. Network with similar businesses or trade associations for waste minimization and pollution prevention solutions.

WHAT IF YOUR BUSINESS DOES NOT QUALIFY?

Call the San Bernardino County Fire Department Field Services Division for assistance with hazardous waste management at 909-386-8401. If you reduce the amount of waste you generate each month to 27 gallons or less, you may qualify in the future.

WHAT HAPPENS TO YOUR HAZARDOUS WASTE?

Hazardous waste collected by the CESQG Program is transported to a state permitted processing facility in San Bernardino. The waste is further processed at this point and packaged for off-site recycling (oil filters, oil, latex paint, antifreeze, and batteries) or destructive incineration (pesticides, corrosives, flammables, oil based paint).

San Bernardino County Fire Department
CESQG Program
2824 East "W" Street
San Bernardino, CA 92415-0799
Phone: 909-382-5401
Fax: 909-382-5413
www.sbcfire.org/hazmat/hhw.asp
Email: jschwab@sbcfire.org

WHEN WORKING OUTDOORS USE THE 3Cs

CUANDO TRABAJE AL AIRE LIBRE UTILICE LAS 3Cs

CONTROL | CONTROL

Locate the nearest storm drain and ensure nothing can enter or be discharged into it.

Ubique el desagüe de aguas pluviales más cercano y asegúrese de que nada pueda ingresar a éste ni descargarse en él.

CONTAIN | CONTENER

Isolate your area to prevent material from potentially flowing or being blown away.

Aísle su área para evitar que el material pueda discurrirse o ser llevado por el viento.

CAPTURE | CAPTURAR

Sweep up debris and place it in the trash. Clean up spills with an absorbent material (e.g. kitty litter) or vacuum with a Wet-Vac and dispose of properly.

Recoja los restos y colóquelos en la basura. Limpie los derrames con un material absorbente (como la arena para gatos) o aspírelos con una Wet-Vac (aspiradora de humedad) y deséchelos correctamente.

COMMERCIAL LANDSCAPE

DISCHARGE TO THE STORM DRAIN, **ACCIDENTAL OR NOT**, COULD LEAD TO ENFORCEMENT ACTIONS, WHICH COULD INCLUDE FINES.

Follow the best practices below to **prevent water pollution from landscaping activities.**

RECYCLE YARD WASTE

- Recycle leaves, grass clippings and other yard waste.
- Do not blow, sweep, rake or hose yard waste into the street or catch basin.
- **Try grasscycling:** the natural recycling of grass by leaving clippings on the lawn when mowing.

For more information, please visit: **www.calrecycle.ca.gov/organics/grasscycling**

USE FERTILIZERS, HERBICIDES AND PESTICIDES SAFELY

- Fertilizers, herbicides and pesticides are often carried into the storm drain system by sprinkler runoff. Use natural and non-toxic alternatives as often as possible.
- If you must use chemical fertilizers, herbicides or pesticides:
  - Spot apply, rather than blanketing entire areas.
  - Avoid applying near curbs and driveways, and **never** before a rain.
  - Apply fertilizers as needed: when plants could best use it and when the potential runoff would be low.
  - Follow the manufacturer's instructions carefully—this will not only give the best results, but will save money.

USE WATER WISELY

- Control the amount of water and direction of sprinklers. Sprinklers should only be on long enough to allow water to soak into the ground, but not so long as to cause runoff.
- Periodically inspect, fix leaks and realign sprinkler heads.
- Plant native vegetation to reduce the need of water, fertilizers, herbicides and pesticides.

HOMEOWNERS

KEEP THESE TIPS IN MIND WHEN HIRING PROFESSIONAL LANDSCAPERS AND REMIND AS NECESSARY.

Leftover pesticides, fertilizers, and herbicides contaminate landfills and should be disposed of through a Hazardous Waste Facility.

For more information on proper disposal call,

(909) 382-5401 or 1-800-OILY CAT.

*FREE for San Bernardino County residents only. Businesses can call for cost inquiries and to schedule an appointment.

In the event of a spill or discharge to a storm drain or waterway, contact San Bernadino County Stormwater immediately: (877) WASTE18 | sbcountystormwater.org/report

sbcountystormwater.org

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SIDEWALK, PLAZA, ENTRY MONUMENT & FOUNTAIN MAINTENANCE

Pollutants on sidewalks and other pedestrian traffic areas and plazas are typically due to littering and vehicle use. Fountain water containing chlorine and copperbased algaecides is toxic to aquatic life. Proper inspection, cleaning, and repair of pedestrian areas and HOA owned surfaces and structures can reduce pollutant runoff from these areas. Maintaining these areas may involve one or more of the following activities:

1. **Surface Cleaning**
2. **Graffiti Cleaning**
3. **Sidewalk Repair**
4. **Controlling Litter**
5. **Fountain Maintenance**

POLLUTION PREVENTION:

Pollution prevention measures have been considered and incorporated in the model procedures. Implementation of these measures may be more effective and reduce or eliminate the need to implement other more complicated or costly procedures. Possible pollution prevention measures for sidewalk, plaza, and fountain maintenance and cleaning include:

- Use dry cleaning methods whenever practical for surface cleaning activities.
- Use the least toxic materials available (e.g. water based paints, gels or sprays for graffiti removal).
- Once per year, educate HOA staff and tenants on pollution prevention measures.

MODEL PROCEDURES:

1. Surface Cleaning

Discharges of wash water to the storm water drainage system from cleaning or hosing of impervious surfaces is prohibited.
Sidewalks, Plazas

✓ Use dry methods (e.g. sweeping, backpack blowers, vacuuming) whenever practical to clean sidewalks and plazas rather than hosing, pressure washing, or steam cleaning. DO NOT sweep or blow material into curb; use devices that contain the materials.

✓ If water must be used, block storm drain inlets and contain runoff. Discharge wash water to landscaping or contain and dispose of properly.

SIDEWALK, PLAZA, ENTRY MONUMENT & FOUNTAIN MAINTENANCE

Parking Areas, Driveways, Drive-thru

✓ Parking facilities should be swept/vacuumed on a regular basis. Establish frequency of public parking lot sweeping based on usage and field observations of waste accumulation.

✓ If water must be used, block storm drain inlets and contain runoff. Discharge wash water to landscaping or contain and dispose of properly.

✓ Sweep all parking lots at least once before the onset of the wet season.

✓ Use absorbents to pick up oil; then dry sweep.

✓ Appropriately dispose of spilled materials and absorbents.

OPTIONAL:

- Consider increasing sweeping frequency based on factors such as traffic volume, land use, field observations of sediment and trash accumulation, proximity to water courses, etc.

Building Surfaces, Decks, etc., without loose paint

✓ Use high-pressure water, no soap.

✓ If water must be used, block storm drain inlets and contain runoff. Discharge wash water to landscaping or contain and dispose of properly.

Unpainted Building Surfaces, Wood Decks, etc.

✓ If water must be used, block storm drain inlets and contain runoff. Discharge wash water to landscaping or contain and dispose of properly.

✓ Use biodegradable cleaning agents to remove deposits.

✓ Make sure pH is between 6.5 and 8.5 THEN discharge to landscaping (if cold water without a cleaning agent) otherwise dispose of properly.

2. Graffiti Cleaning

Graffiti Removal

✓ Avoid graffiti abatement activities during rain events.

✓ When graffiti is removed by painting over, implement the procedures under Painting and Paint Removal in the Roads, Streets, and Highway Operation and Maintenance procedure sheet.

✓ Protect nearby storm drain inlets prior to removing graffiti from walls, signs, sidewalks, or other structures needing graffiti abatement. Clean up afterwards by sweeping or vacuuming thoroughly, and/or by using absorbent and properly disposing of the absorbent.

✓ Note that care should be taken when disposing of waste since it may need to be disposed of as hazardous waste.

OPTIONAL:

• Consider using a waterless and non-toxic chemical cleaning method for graffiti removal (e.g. gels or spray compounds).

3. Sidewalk Repair

Surface Removal and Repair

✓ Schedule surface removal activities for dry weather if possible.

✓ Avoid creating excess dust when breaking asphalt or concrete.

✓ Take measures to protect nearby storm drain inlets prior to breaking up asphalt or concrete (e.g. place hay bales or sand bags around inlets). Clean afterwards by sweeping up material.

✓ Designate an area for clean up and proper disposal of excess materials.

✓ Remove and recycle as much of the broken pavement as possible.

✓ When making saw cuts in pavement, use as little water as possible. Cover each storm drain inlet with filter fabric during the sawing operation and contain the slurry by placing straw bales, sandbags, or gravel dams around the inlets. After the liquid drains shovel or vacuum the slurry, remove from site and dispose of properly.

✓ Always dry sweep first to clean up tracked dirt. Use a street sweeper or vacuum truck. Do not dump vacuumed liquid in storm drains. Once dry sweeping is complete, the area may be hosed down if needed. Discharge wash water to landscaping, pump to the sanitary sewer if permitted to do so or contain and dispose of properly.

Concrete Installation and Repair

✓ Avoid mixing excess amounts of fresh concrete or cement mortar on-site. Only mix what is needed for the job.

✓ Wash concrete trucks off-site or in designated areas on-site, such that there is no discharge of concrete wash water into storm drain inlets, open ditches, streets, or other storm water conveyance structures. (See Concrete Waste Management BMP WM – 8)

- ✓ Store dry and wet concrete materials under cover, protected from rainfall and runoff and away from drainage areas. After job is complete remove temporary stockpiles (asphalt materials, sand, etc.) and other materials as soon as possible.
- ✓ Return leftover materials to the transit mixer. Dispose of small amounts of excess concrete, grout, and mortar in the trash.
- ✓ When washing concrete to remove fine particles and expose the aggregate, contain the wash water for proper disposal.
- ✓ Do not wash sweepings from exposed aggregate concrete into the street or storm drain. Collect and return sweepings to aggregate base stock pile, or dispose in the trash.
- ✓ Protect applications of fresh concrete from rainfall and runoff until the material has hardened.

4. Litter Control

- ✓ Enforce anti-litter laws.
- ✓ Provide litter receptacles in busy, high pedestrian traffic areas of the community, at recreational facilities, and at community events.
- ✓ Cover litter receptacles and clean out frequently to prevent leaking/spillage or overflow.

OPTIONAL:

- Post "No Littering" signs.

5. Fountain Maintenance

- ✓ Do not use copper-based algaecides. Control algae with chlorine or other alternatives, such as sodium bromide.
- ✓ Allow chlorine to dissipate for a few days and then recycle/reuse water by draining it gradually onto a landscaped area. Water must be tested prior to discharge to ensure that chlorine is not present (concentration must be less than 0.1 ppm).
- ✓ Contact local agency for approval to drain into sewer or storm drain.
- ✓ Avoid mixing excess amounts of fresh concrete or cement mortar on-site. Only mix what is needed for the job.

EQUIPMENT MAINTENANCE & REPAIR

Vehicle or equipment maintenance has the potential to be a significant source of stormwater pollution. Engine repair and service (parts cleaning, spilled fuel, oil, etc.), replacement of fluids, and outdoor equipment storage and parking (dripping engines) can all contaminate stormwater. Conducting the following activities in a controlled manner will reduce the potential for stormwater contamination:

1. **General Maintenance and Repair**
2. **Vehicle and Machine Repair**
3. **Waste Handling/Disposal**

Related vehicle maintenance activities are covered under the following program headings in this manual: "Vehicle and Equipment Cleaning", "Vehicle and Equipment Storage", and "Vehicle Fueling".

POLLUTION PREVENTION:

Pollution prevention measures have been considered and incorporated in the model procedures. Implementation of these measures may be more effective and reduce or eliminate the need to implement other more complicated or costly procedures. Possible pollution prevention measures for equipment maintenance and repair include:

- Review maintenance activities to verify that they minimize the amount of pollutants discharged to receiving waters. Keep accurate maintenance logs to evaluate materials removed and improvements made.
- Switch to non-toxic chemicals for maintenance when possible.
- Choose cleaning agents that can be recycled.
- Minimize use of solvents. Clean parts without using solvents whenever possible. Recycle used motor oil, diesel oil, and other vehicle fluids and parts whenever possible.
- Once per year, educate HOA staff and tenants on pollution prevention measures.

EQUIPMENT MAINTENANCE & REPAIR

MODEL PROCEDURES:

1. General Maintenance and Repair

General Guidelines

➔ *Note: Permission must be obtained for any discharge of wash water to the sanitary sewer from the local sewering agency.*

- ✓ Review maintenance activities to verify that they minimize the amount of pollutants discharged to receiving waters. Keep accurate maintenance logs to evaluate materials removed and improvements made.
- ✓ Regularly inspect vehicles and equipment for leaks.
- ✓ Move activity indoors or cover repair area with a permanent roof if feasible.
- ✓ Minimize contact of stormwater with outside operations through berming the local sewering and drainage routing.
- ✓ Place curbs around the immediate boundaries of the process equipment.
- ✓ Clean yard storm drain inlets regularly and stencil them.

Good Housekeeping

- ✓ Avoid hosing down work areas. If work areas are washed and if discharge to the sanitary sewer is allowed, treat water with an appropriate treatment device (e.g. clarifier) before discharging. If discharge to the sanitary sewer is not permitted, pump water to a tank and dispose of properly.
- ✓ Collect leaking or dripping fluids in drip pans or container. Fluids are easier to recycle or dispose of properly if kept separate.
- ✓ Keep a drip pan under the vehicle while you unclip hoses, unscrew filters, any discharge of or remove other parts. Place a drip pan under any vehicle that might leak while you work on it to keep splatters or drips off the shop floor.
- ✓ Educate employees on proper handling and disposal of engine fluids.
- ✓ Promptly transfer used fluids to the proper waste or recycling drums. Don't leave full drip pans or other open containers lying around.
- ✓ Do not pour liquid waste to floor drains, sinks, outdoor storm drain inlets, or other storm drains or sewer connections.
- ✓ Post signs at sinks and stencil outdoor storm drain inlets.

2. Vehicle Repair

General Guidelines

- ✓ Perform vehicle fluid removal or changing inside of a building or in a contained covered area, where feasible, to prevent the run-on of stormwater and the runoff of spills.
- ✓ Regularly inspect vehicles and equipment for leaks, and repair as needed.

- ✓ Use secondary containment, such as a drain pan or drop cloth, to catch spills or leaks when removing or changing fluids.
- ✓ Immediately drain all fluids from wrecked vehicles. Ensure that the drain pan or drip pan is large enough to contain drained fluids (e.g. larger pans are needed to contain antifreeze, which may gush from some vehicles).
- ✓ Promptly transfer used fluids to the proper waste or recycling drums. Don't leave full drip pans or other open containers lying around.
- ✓ Recycle used motor oil, diesel oil, and other vehicle fluids and parts whenever possible.
- ✓ Oil filters disposed of in trash cans or dumpsters can leak oil. Place the oil filter in a funnel over a waste oil recycling drum to drain excess oil before disposal. Oil filters can also be recycled. Ask your oil supplier or recycler about recycling oil filters.
- ✓ Store cracked batteries in a non-leaking secondary container and dispose of properly at recycling facilities or at County hazardous waste disposal site.

Vehicle Leak and Spill Control

- ✓ Use absorbent materials on small spills. Remove the absorbent materials promptly and dispose of properly.
- ✓ Place a stockpile of spill cleanup materials where it will be readily accessible.
- ✓ Sweep floor using dry absorbent material.

3. Machine Repair

- ✓ Keep equipment clean; don't allow excessive build-up of oil or grease.
- ✓ Minimize use of solvents.
- ✓ Use secondary containment, such as a drain pan or drop cloth, to catch spills or leaks when removing or changing fluids.
- ✓ Perform major equipment repairs at the corporation yard, when practical.
- ✓ Following good housekeeping measures in Vehicle Repair section.

4. Waste Handling/Disposal

Waste Reduction

- ✓ Prevent spills and drips of solvents and cleansers to the shop floor.
- ✓ Do liquid cleaning at a centralized station so the solvents and residues stay in one area. Recycle liquid cleaners when feasible.

✓ Locate drip pans, drain boards, and drying racks to direct drips back into a solvent sink or fluid holding tank for reuse.

OPTIONAL:

- If possible, eliminate or reduce the amount of hazardous materials and waste by substituting non-hazardous or less hazardous material:

  -Use non-caustic detergents instead of caustic cleaning for parts cleaning.

  -Use a water-based cleaning service and have tank cleaned. Use detergent-based or water-based cleaning systems in place of organic solvent degreasers.

  -Replace chlorinated organic solvents with non-chlorinated solvents. Non-chlorinated solvents like kerosene or mineral spirits are less toxic and less expensive to dispose of properly. Check list of active ingredients to see whether it contains chlorinated solvents.

  -Choose cleaning agents that can be recycled.

Recycling

OPTIONAL:

- Separate wastes for easier recycling. Keep hazardous and non-hazardous wastes separate, do not mix used oil and solvents, and keep chlorinated solvents separate from non-chlorinated solvents.

- Label and track the recycling of waste material (e.g. used oil, spent solvents, batteries).

- Purchase recycled products to support the market for recycled materials.

LIMITATIONS:

Space and time limitations may preclude all work being conducted indoors. It may not be possible to contain and clean up spills from vehicles/equipment brought on-site after working hours. Dry floor cleaning methods may not be sufficient for some spills – see spill prevention and control procedures sheet. Identification of engine leaks may require some use of solvents.

POOL MAINTENANCE

Pool chemicals and filter solids, when discharged to the City streets, gutters or storm drans, DO NOT GET TREATED before reaching the Santa Ana River. Chlorine, acid cleaning chemicals and metal-based algaecides used in pools can kill beneficial organisms in the food chain and pollute our drinking water.

When emptying your swimming pool, spa or fountain, please use one of the following best management practices to prevent water pollution:

- Reuse the water as landscape irrigation
- Empty the water into the sewer between midnight and 6:00 am
- Remove solids and floating debris and dispose of in the trash, de-chlorinate the water to a chlorine residual = 0, wait 24 hours, then discharge the water to the street or storm drain
- Try not to use metal-based algaecides (i.e. copper sulfate) in your pool or spa. If you have, empty your pool or spa into the sewer. *Prior to discharging pool water into the sanitary sewer system, contact your local agency.*
- If the pool contains algae and mosquito larvae, discharge the water to the sewer

When acid cleaning or other chemical cleaning:

- Neutralize the pool water to pH of 6.5 to 8.5, then discharge to the sewer

For swimming pool and spa filter backwash:

- Dispose of solids into trash bag, then wash filter into a landscape area
- Settle, dispose of solids in trash and discharge water to the sewer, never to the storm drain

» For Residents

*The following is a preview of the information we have available to residents. For more fact sheets, visit **sbcountystormwater.org***

Household Hazardous Waste Center Locations

TOO TOXIC TO TRASH

Dispose of your **HOUSEHOLD HAZARDOUS WASTE** (HHW) at a **FREE** HHW Center near you. Examples of items collected: pesticides, fertilizers, paints, cleaners, antifreeze, batteries, motor oil, oil filters, and electronic waste.

SERVICE AREA	LOCATION	DAYS OPEN	HOURS
Big Bear Lake (does not accept E-waste)	42040 Garstin Dr. (cross: Big Bear Blvd.)	Saturdays	9 a.m. - 2 p.m.
Chino	5050 Schaefer Ave. (cross: 4th St.)	2nd & 4th Sat.	8 a.m. - 1 p.m.
Fontana (Fontana residents only)	16454 Orange Way (cross: Cypress Ave.) Note: Provide a trash bill and a driver's license as proof of residency.	Saturdays	8 a.m. - 12 p.m.
Ontario	1430 S. Cucamonga Ave. (cross: Belmont St.)	Fri. & Sat.	9 a.m. - 2 p.m.
Rancho Cucamonga	8794 Lion Street. (Off 9th St, between Vineyard and Hellman)	Saturdays	8 a.m. - 12 p.m.
Redlands	500 Kansas St. (cross: Park Ave.)	Saturdays	9:30 a.m. - 12:30 p.m.
Rialto (does not accept E-waste)	246 Willow Ave. (cross: Rialto Ave.)	2nd & 4th Fri. & Sat.	8 a.m. - 12 p.m.
San Bernardino	2824 East 'W' St., 302 (cross: Victoria Ave.)	Mon. – Fri.	9 a.m. - 4 p.m.
Upland	1370 N. Benson Ave. (cross: 14th St.)	Saturdays	9 a.m. - 2 p.m.

San Bernardino County STORMWATER PROGRAM

To report illegal dumping, call (877) WASTE18
or visit sbcountystormwater.org

Artwork Courtesy of the City of Los Angeles Stormwater Program. Printed on recycled paper.

TAKE ONE

WE DID IT OURSELVES AND WE DID IT RIGHT

When painting your home, protect your family and community.

- **PAINTS** that are water-based are less toxic and should be used whenever possible.
- **BRUSHES** with water-based paint should be washed in the sink. Those with oil-based paint should be cleaned with paint thinner.
- **SAFELY** dispose of unwanted paint and paint thinner. The County of San Bernardino offers 9 HHW Centers that accept paint and other household hazardous waste from residents FREE of charge. For a list of acceptable materials, location information, and hours of operation call 1-800-OILY CAT.

VEHICLE MAINTENANCE

Oil, grease, anti-freeze and other toxic automotive fluids often make their way into the San Bernardino County storm drain system, and do not get treated before reaching the Santa Ana River. This pollutes our drinking water and contaminates waterways, making them unsafe for people and wildlife. Follow these best management practices to prevent pollution and protect public health.

Cleaning Auto Parts
Scrape parts with a wire brush or use a bake oven rather than liquid cleaners. Arrange drip pans, drying racks and drain boards so that fluids are directed back into the parts washer or the fluid holding tank. Do not wash parts or equipment in a sink, parking lot, driveway or street.

Storing Hazardous Waste
Keep your liquid waste segregated. Many fluids can be recycled via hazardous waste disposal companies if they are not mixed. Store all materials under cover with spill containment or inside to prevent contamination of rainwater runoff.

Preventing Leaks and Spills
Conduct all vehicle maintenance inside of a garage. Place drip pans underneath vehicle to capture fluids. Use absorbent materials instead of water to clean work areas.

Cleaning Spills
Use dry methods for spill cleanup (sweeping, absorbent materials). To report accidental spills into the street or storm drain call (877) WASTE18 or 911.

Proper Disposal of Hazardous Waste
Dispose of household hazardous waste by taking it to your nearest household hazardous waste center. For more information, call 1-800-OILY CAT or check out sbcountystormwater.org/Disposal.html

FREE

DOGGIE WASTE BAGS

Remember to pick up after your pet every time to keep San Bernardino County clean and healthy!

In the event of a spill or discharge to a storm drain or waterway, contact San Bernadino County Stormwater immediately: (877) WASTE18 | sbcountystormwater.org/report

sbcountystormwater.org

Big Bear • Chino • Chino Hills • Colton • Fontana • Grand Terrace • Highland • Loma Linda • Montclair • Ontario • Rancho Cucamonga
Redlands • Rialto • San Bernadino • San Bernadino County • San Bernadino County Flood Control District • Upland • Yucaipa

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sbcountystormwater.org/report

» Email
info@sbcountystormwater.org

BMP Fact Sheets

Site Design & Landscape Planning SD-10

Design Objectives

- ☑ Maximize Infiltration
- ☑ Provide Retention
- ☑ Slow Runoff
- ☑ Minimize Impervious Land Coverage
- Prohibit Dumping of Improper Materials
- Contain Pollutants
- Collect and Convey

Description

Each project site possesses unique topographic, hydrologic, and vegetative features, some of which are more suitable for development than others. Integrating and incorporating appropriate landscape planning methodologies into the project design is the most effective action that can be done to minimize surface and groundwater contamination from stormwater.

Approach

Landscape planning should couple consideration of land suitability for urban uses with consideration of community goals and projected growth. Project plan designs should conserve natural areas to the extent possible, maximize natural water storage and infiltration opportunities, and protect slopes and channels.

Suitable Applications

Appropriate applications include residential, commercial and industrial areas planned for development or redevelopment.

Design Considerations

Design requirements for site design and landscapes planning should conform to applicable standards and specifications of agencies with jurisdiction and be consistent with applicable General Plan and Local Area Plan policies.

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Designing New Installations

Begin the development of a plan for the landscape unit with attention to the following general principles:

- Formulate the plan on the basis of clearly articulated community goals. Carefully identify conflicts and choices between retaining and protecting desired resources and community growth.
- Map and assess land suitability for urban uses. Include the following landscape features in the assessment: wooded land, open unwooded land, steep slopes, erosion-prone soils, foundation suitability, soil suitability for waste disposal, aquifers, aquifer recharge areas, wetlands, floodplains, surface waters, agricultural lands, and various categories of urban land use. When appropriate, the assessment can highlight outstanding local or regional resources that the community determines should be protected (e.g., a scenic area, recreational area, threatened species habitat, farmland, fish run). Mapping and assessment should recognize not only these resources but also additional areas needed for their sustenance.

Project plan designs should conserve natural areas to the extent possible, maximize natural water storage and infiltration opportunities, and protect slopes and channels.

Conserve Natural Areas during Landscape Planning

If applicable, the following items are required and must be implemented in the site layout during the subdivision design and approval process, consistent with applicable General Plan and Local Area Plan policies:

- Cluster development on least-sensitive portions of a site while leaving the remaining land in a natural undisturbed condition.
- Limit clearing and grading of native vegetation at a site to the minimum amount needed to build lots, allow access, and provide fire protection.
- Maximize trees and other vegetation at each site by planting additional vegetation, clustering tree areas, and promoting the use of native and/or drought tolerant plants.
- Promote natural vegetation by using parking lot islands and other landscaped areas.
- Preserve riparian areas and wetlands.

Maximize Natural Water Storage and Infiltration Opportunities Within the Landscape Unit

- Promote the conservation of forest cover. Building on land that is already deforested affects basin hydrology to a lesser extent than converting forested land. Loss of forest cover reduces interception storage, detention in the organic forest floor layer, and water losses by evapotranspiration, resulting in large peak runoff increases and either their negative effects or the expense of countering them with structural solutions.
- Maintain natural storage reservoirs and drainage corridors, including depressions, areas of permeable soils, swales, and intermittent streams. Develop and implement policies and

regulations to discourage the clearing, filling, and channelization of these features. Utilize them in drainage networks in preference to pipes, culverts, and engineered ditches.

- Evaluating infiltration opportunities by referring to the stormwater management manual for the jurisdiction and pay particular attention to the selection criteria for avoiding groundwater contamination, poor soils, and hydrogeological conditions that cause these facilities to fail. If necessary, locate developments with large amounts of impervious surfaces or a potential to produce relatively contaminated runoff away from groundwater recharge areas.

Protection of Slopes and Channels during Landscape Design

- Convey runoff safely from the tops of slopes.
- Avoid disturbing steep or unstable slopes.
- Avoid disturbing natural channels.
- Stabilize disturbed slopes as quickly as possible.
- Vegetate slopes with native or drought tolerant vegetation.
- Control and treat flows in landscaping and/or other controls prior to reaching existing natural drainage systems.
- Stabilize temporary and permanent channel crossings as quickly as possible, and ensure that increases in run-off velocity and frequency caused by the project do not erode the channel.
- Install energy dissipaters, such as riprap, at the outlets of new storm drains, culverts, conduits, or channels that enter unlined channels in accordance with applicable specifications to minimize erosion. Energy dissipaters shall be installed in such a way as to minimize impacts to receiving waters.
- Line on-site conveyance channels where appropriate, to reduce erosion caused by increased flow velocity due to increases in tributary impervious area. The first choice for linings should be grass or some other vegetative surface, since these materials not only reduce runoff velocities, but also provide water quality benefits from filtration and infiltration. If velocities in the channel are high enough to erode grass or other vegetative linings, riprap, concrete, soil cement, or geo-grid stabilization are other alternatives.
- Consider other design principles that are comparable and equally effective.

Redeveloping Existing Installations

Various jurisdictional stormwater management and mitigation plans (SUSMP, WQMP, etc.) define "redevelopment" in terms of amounts of additional impervious area, increases in gross floor area and/or exterior construction, and land disturbing activities with structural or impervious surfaces. The definition of " redevelopment" must be consulted to determine whether or not the requirements for new development apply to areas intended for redevelopment. If the definition applies, the steps outlined under "designing new installations" above should be followed.

Redevelopment may present significant opportunity to add features which had not previously been implemented. Examples include incorporation of depressions, areas of permeable soils, and swales in newly redeveloped areas. While some site constraints may exist due to the status of already existing infrastructure, opportunities should not be missed to maximize infiltration, slow runoff, reduce impervious areas, disconnect directly connected impervious areas.

Other Resources

A Manual for the Standard Urban Stormwater Mitigation Plan (SUSMP), Los Angeles County Department of Public Works, May 2002.

Stormwater Management Manual for Western Washington, Washington State Department of Ecology, August 2001.

Model Standard Urban Storm Water Mitigation Plan (SUSMP) for San Diego County, Port of San Diego, and Cities in San Diego County, February 14, 2002.

Model Water Quality Management Plan (WQMP) for County of Orange, Orange County Flood Control District, and the Incorporated Cities of Orange County, Draft February 2003.

Ventura Countywide Technical Guidance Manual for Stormwater Quality Control Measures, July 2002.

Roof Runoff Controls SD-11

Rain Garden

Design Objectives

- ☑ Maximize Infiltration
- ☑ Provide Retention
- ☑ Slow Runoff
- Minimize Impervious Land Coverage
- Prohibit Dumping of Improper Materials
- ☑ Contain Pollutants
- Collect and Convey

Description

Various roof runoff controls are available to address stormwater that drains off rooftops. The objective is to reduce the total volume and rate of runoff from individual lots, and retain the pollutants on site that may be picked up from roofing materials and atmospheric deposition. Roof runoff controls consist of directing the roof runoff away from paved areas and mitigating flow to the storm drain system through one of several general approaches: cisterns or rain barrels; dry wells or infiltration trenches; pop-up emitters, and foundation planting. The first three approaches require the roof runoff to be contained in a gutter and downspout system. Foundation planting provides a vegetated strip under the drip line of the roof.

Approach

Design of individual lots for single-family homes as well as lots for higher density residential and commercial structures should consider site design provisions for containing and infiltrating roof runoff or directing roof runoff to vegetative swales or buffer areas. Retained water can be reused for watering gardens, lawns, and trees. Benefits to the environment include reduced demand for potable water used for irrigation, improved stormwater quality, increased groundwater recharge, decreased runoff volume and peak flows, and decreased flooding potential.

Suitable Applications

Appropriate applications include residential, commercial and industrial areas planned for development or redevelopment.

Design Considerations

Designing New Installations

Cisterns or Rain Barrels

One method of addressing roof runoff is to direct roof downspouts to cisterns or rain barrels. A cistern is an above ground storage vessel with either a manually operated valve or a permanently open outlet. Roof runoff is temporarily stored and then released for irrigation or infiltration between storms. The number of rain

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barrels needed is a function of the rooftop area. Some low impact developers recommend that every house have at least 2 rain barrels, with a minimum storage capacity of 1000 liters. Roof barrels serve several purposes including mitigating the first flush from the roof which has a high volume, amount of contaminants, and thermal load. Several types of rain barrels are commercially available. Consideration must be given to selecting rain barrels that are vector proof and childproof. In addition, some barrels are designed with a bypass valve that filters out grit and other contaminants and routes overflow to a soak-away pit or rain garden.

If the cistern has an operable valve, the valve can be closed to store stormwater for irrigation or infiltration between storms. This system requires continual monitoring by the resident or grounds crews, but provides greater flexibility in water storage and metering. If a cistern is provided with an operable valve and water is stored inside for long periods, the cistern must be covered to prevent mosquitoes from breeding.

A cistern system with a permanently open outlet can also provide for metering stormwater runoff. If the cistern outlet is significantly smaller than the size of the downspout inlet (say ¼ to ½ inch diameter), runoff will build up inside the cistern during storms, and will empty out slowly after peak intensities subside. This is a feasible way to mitigate the peak flow increases caused by rooftop impervious land coverage, especially for the frequent, small storms.

Dry wells and Infiltration Trenches

Roof downspouts can be directed to dry wells or infiltration trenches. A dry well is constructed by excavating a hole in the ground and filling it with an open graded aggregate, and allowing the water to fill the dry well and infiltrate after the storm event. An underground connection from the downspout conveys water into the dry well, allowing it to be stored in the voids. To minimize sedimentation from lateral soil movement, the sides and top of the stone storage matrix can be wrapped in a permeable filter fabric, though the bottom may remain open. A perforated observation pipe can be inserted vertically into the dry well to allow for inspection and maintenance.

In practice, dry wells receiving runoff from single roof downspouts have been successful over long periods because they contain very little sediment. They must be sized according to the amount of rooftop runoff received, but are typically 4 to 5 feet square, and 2 to 3 feet deep, with a minimum of 1-foot soil cover over the top (maximum depth of 10 feet).

To protect the foundation, dry wells must be set away from the building at least 10 feet. They must be installed in solids that accommodate infiltration. In poorly drained soils, dry wells have very limited feasibility.

Infiltration trenches function in a similar manner and would be particularly effective for larger roof areas. An infiltration trench is a long, narrow, rock-filled trench with no outlet that receives stormwater runoff. These are described under Treatment Controls.

Pop-up Drainage Emitter

Roof downspouts can be directed to an underground pipe that daylights some distance from the building foundation, releasing the roof runoff through a pop-up emitter. Similar to a pop-up irrigation head, the emitter only opens when there is flow from the roof. The emitter remains flush to the ground during dry periods, for ease of lawn or landscape maintenance.

Foundation Planting

Landscape planting can be provided around the base to allow increased opportunities for stormwater infiltration and protect the soil from erosion caused by concentrated sheet flow coming off the roof. Foundation plantings can reduce the physical impact of water on the soil and provide a subsurface matrix of roots that encourage infiltration. These plantings must be sturdy enough to tolerate the heavy runoff sheet flows, and periodic soil saturation.

Redeveloping Existing Installations

Various jurisdictional stormwater management and mitigation plans (SUSMP, WQMP, etc.) define "redevelopment" in terms of amounts of additional impervious area, increases in gross floor area and/or exterior construction, and land disturbing activities with structural or impervious surfaces. The definition of " redevelopment" must be consulted to determine whether or not the requirements for new development apply to areas intended for redevelopment. If the definition applies, the steps outlined under "designing new installations" above should be followed.

Supplemental Information

Examples

- City of Ottawa's Water Links Surface –Water Quality Protection Program
- City of Toronto Downspout Disconnection Program
- City of Boston, MA, Rain Barrel Demonstration Program

Other Resources

Hager, Marty Catherine, Stormwater, "Low-Impact Development", January/February 2003. www.stormh2o.com

Low Impact Urban Design Tools, Low Impact Development Design Center, Beltsville, MD. www.lid-stormwater.net

Start at the Source, Bay Area Stormwater Management Agencies Association, 1999 Edition

Efficient Irrigation SD-12

Design Objectives

- ☑ Maximize Infiltration
- ☑ Provide Retention
- ☑ Slow Runoff
- Minimize Impervious Land Coverage
- Prohibit Dumping of Improper Materials
- Contain Pollutants
- Collect and Convey

Description

Irrigation water provided to landscaped areas may result in excess irrigation water being conveyed into stormwater drainage systems.

Approach

Project plan designs for development and redevelopment should include application methods of irrigation water that minimize runoff of excess irrigation water into the stormwater conveyance system.

Suitable Applications

Appropriate applications include residential, commercial and industrial areas planned for development or redevelopment. (Detached residential single-family homes are typically excluded from this requirement.)

Design Considerations

Designing New Installations

The following methods to reduce excessive irrigation runoff should be considered, and incorporated and implemented where determined applicable and feasible by the Permittee:

- Employ rain-triggered shutoff devices to prevent irrigation after precipitation.
- Design irrigation systems to each landscape area's specific water requirements.
- Include design featuring flow reducers or shutoff valves triggered by a pressure drop to control water loss in the event of broken sprinkler heads or lines.
- Implement landscape plans consistent with County or City water conservation resolutions, which may include provision of water sensors, programmable irrigation times (for short cycles), etc.

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- Design timing and application methods of irrigation water to minimize the runoff of excess irrigation water into the storm water drainage system.
- Group plants with similar water requirements in order to reduce excess irrigation runoff and promote surface filtration. Choose plants with low irrigation requirements (for example, native or drought tolerant species). Consider design features such as:
  - Using mulches (such as wood chips or bar) in planter areas without ground cover to minimize sediment in runoff
  - Installing appropriate plant materials for the location, in accordance with amount of sunlight and climate, and use native plant materials where possible and/or as recommended by the landscape architect
  - Leaving a vegetative barrier along the property boundary and interior watercourses, to act as a pollutant filter, where appropriate and feasible
  - Choosing plants that minimize or eliminate the use of fertilizer or pesticides to sustain growth
- Employ other comparable, equally effective methods to reduce irrigation water runoff.

Redeveloping Existing Installations

Various jurisdictional stormwater management and mitigation plans (SUSMP, WQMP, etc.) define "redevelopment" in terms of amounts of additional impervious area, increases in gross floor area and/or exterior construction, and land disturbing activities with structural or impervious surfaces. The definition of " redevelopment" must be consulted to determine whether or not the requirements for new development apply to areas intended for redevelopment. If the definition applies, the steps outlined under "designing new installations" above should be followed.

Other Resources

A Manual for the Standard Urban Stormwater Mitigation Plan (SUSMP), Los Angeles County Department of Public Works, May 2002.

Model Standard Urban Storm Water Mitigation Plan (SUSMP) for San Diego County, Port of San Diego, and Cities in San Diego County, February 14, 2002.

Model Water Quality Management Plan (WQMP) for County of Orange, Orange County Flood Control District, and the Incorporated Cities of Orange County, Draft February 2003.

Ventura Countywide Technical Guidance Manual for Stormwater Quality Control Measures, July 2002.

Storm Drain Signage SD-13

Design Objectives

- Maximize Infiltration
- Provide Retention
- Slow Runoff
- Minimize Impervious Land Coverage
- ☑ Prohibit Dumping of Improper Materials
- Contain Pollutants
- Collect and Convey

Description

Waste materials dumped into storm drain inlets can have severe impacts on receiving and ground waters. Posting notices regarding discharge prohibitions at storm drain inlets can prevent waste dumping. Storm drain signs and stencils are highly visible source controls that are typically placed directly adjacent to storm drain inlets.

Approach

The stencil or affixed sign contains a brief statement that prohibits dumping of improper materials into the urban runoff conveyance system. Storm drain messages have become a popular method of alerting the public about the effects of and the prohibitions against waste disposal.

Suitable Applications

Stencils and signs alert the public to the destination of pollutants discharged to the storm drain. Signs are appropriate in residential, commercial, and industrial areas, as well as any other area where contributions or dumping to storm drains is likely.

Design Considerations

Storm drain message markers or placards are recommended at all storm drain inlets within the boundary of a development project. The marker should be placed in clear sight facing toward anyone approaching the inlet from either side. All storm drain inlet locations should be identified on the development site map.

Designing New Installations

The following methods should be considered for inclusion in the project design and show on project plans:

- Provide stenciling or labeling of all storm drain inlets and catch basins, constructed or modified, within the project area with prohibitive language. Examples include "NO DUMPING

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– DRAINS TO OCEAN" and/or other graphical icons to discourage illegal dumping.

- Post signs with prohibitive language and/or graphical icons, which prohibit illegal dumping at public access points along channels and creeks within the project area.

Note - Some local agencies have approved specific signage and/or storm drain message placards for use. Consult local agency stormwater staff to determine specific requirements for placard types and methods of application.

Redeveloping Existing Installations

Various jurisdictional stormwater management and mitigation plans (SUSMP, WQMP, etc.) define "redevelopment" in terms of amounts of additional impervious area, increases in gross floor area and/or exterior construction, and land disturbing activities with structural or impervious surfaces. If the project meets the definition of "redevelopment", then the requirements stated under " designing new installations" above should be included in all project design plans.

Additional Information

Maintenance Considerations

- Legibility of markers and signs should be maintained. If required by the agency with jurisdiction over the project, the owner/operator or homeowner's association should enter into a maintenance agreement with the agency or record a deed restriction upon the property title to maintain the legibility of placards or signs.

Placement

- Signage on top of curbs tends to weather and fade.

- Signage on face of curbs tends to be worn by contact with vehicle tires and sweeper brooms.

Supplemental Information

Examples

- Most MS4 programs have storm drain signage programs. Some MS4 programs will provide stencils, or arrange for volunteers to stencil storm drains as part of their outreach program.

Other Resources

A Manual for the Standard Urban Stormwater Mitigation Plan (SUSMP), Los Angeles County Department of Public Works, May 2002.

Model Standard Urban Storm Water Mitigation Plan (SUSMP) for San Diego County, Port of San Diego, and Cities in San Diego County, February 14, 2002.

Model Water Quality Management Plan (WQMP) for County of Orange, Orange County Flood Control District, and the Incorporated Cities of Orange County, Draft February 2003.

Ventura Countywide Technical Guidance Manual for Stormwater Quality Control Measures, July 2002.

Infiltration Test

Map Scale: 1:1,760 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0 25 50 100 150

Feet: 0 50 100 200 300

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 11N WGS84

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Map Unit Polygons

Soil Map Unit Lines

Soil Map Unit Points

Special Point Features

Blowout

Borrow Pit

Clay Spot

Closed Depression

Gravel Pit

Gravelly Spot

Landfill

Lava Flow

Marsh or swamp

Mine or Quarry

Miscellaneous Water

Perennial Water

Rock Outcrop

Saline Spot

Sandy Spot

Severely Eroded Spot

Sinkhole

Slide or Slip

Sodic Spot

Spoil Area

Stony Spot

Very Stony Spot

Wet Spot

Other

Special Line Features

Water Features

Streams and Canals

Transportation

Rails

Interstate Highways

US Routes

Major Roads

Local Roads

Background

Aerial Photography

MAP INFORMATION

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

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

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

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

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

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

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

Soil Survey Area: San Bernardino County Southwestern Part, California
Survey Area Data: Version 10, Sep 12, 2018

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

Date(s) aerial images were photographed: Apr 1, 2018—Jun 30, 2018

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

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
TvC	Tujunga gravelly loamy sand, 0 to 9 percent slopes	15.2	100.0%
Totals for Area of Interest		**15.2**	**100.0%**

San Bernardino County Southwestern Part, California

TvC—Tujunga gravelly loamy sand, 0 to 9 percent slopes

Map Unit Setting

National map unit symbol: hcl2
Elevation: 10 to 1,500 feet
Mean annual precipitation: 10 to 25 inches
Mean annual air temperature: 59 to 64 degrees F
Frost-free period: 250 to 350 days
Farmland classification: Not prime farmland

Map Unit Composition

Tujunga and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Tujunga

Setting

Landform: Alluvial fans
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from granite

Typical profile

H1 - 0 to 36 inches: gravelly loamy sand
H2 - 36 to 60 inches: gravelly sand

Properties and qualities

Slope: 0 to 9 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Somewhat excessively drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): High to very high (5.95 to 19.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: Rare
Frequency of ponding: None
Available water storage in profile: Low (about 3.8 inches)

Interpretive groups

Land capability classification (irrigated): 4s
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: A
Hydric soil rating: No

Minor Components

Unnamed
Percent of map unit: 5 percent
Landform: Drainageways
Hydric soil rating: Yes

Soboba, gravelly loamy sand
Percent of map unit: 5 percent
Hydric soil rating: No

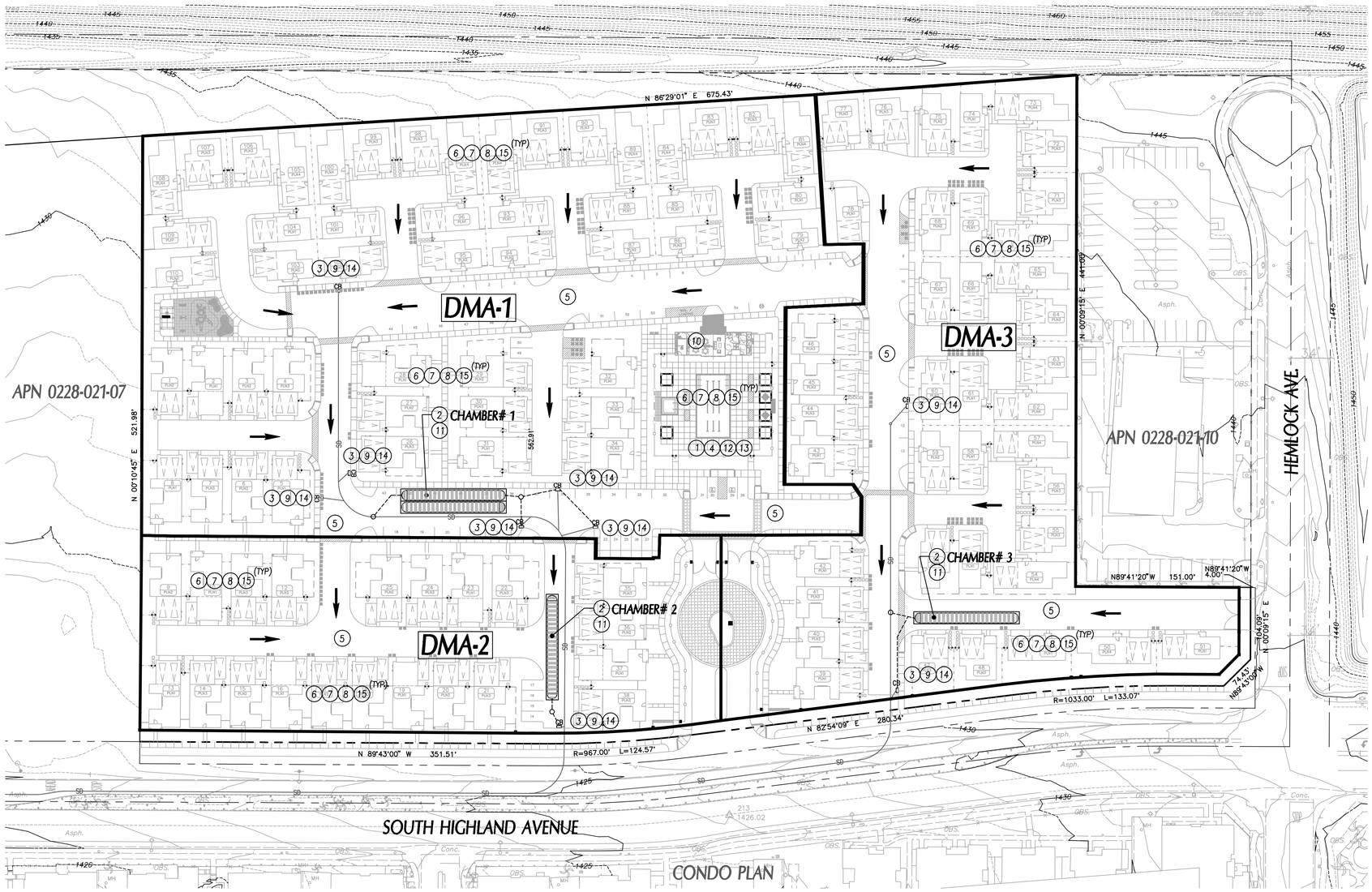
Delhi, fine sand
Percent of map unit: 5 percent
Hydric soil rating: No

Data Source Information

Soil Survey Area: San Bernardino County Southwestern Part, California
Survey Area Data: Version 10, Sep 12, 2018

Site Plan

(WQMP Exhibit)



BMP LIST:

1. EDUCATION OF PROPERTY OWNERS (N1)
2. INFILTRATION/RETENTION CHAMBER SYSTEM
3. CATCH BASIN WITH FLOGARD INSERT FILTER OR APPROVED EQUAL FOR PRE-TREATMENT
4. EMPLOYEE TRAINING (N12)
5. STREET/DRIVE WAY SWEEPING/VACUUMING (N15)
6. LANDSCAPE MANAGEMENT (N3)
7. ROOF RUNOFF CONTROLS (SD-11)
8. EFFICIENT IRRIGAION (S4)
9. STORM DRAIN SIGNAGE (S1)
10. TRASH STORAGE AREAS (SD-32)
11. BMP MAINTENANCE (N4)
12. ACTIVITY RESTRICTION (N2)
13. LITTER/DEBRIS CONTROL PROGRAM (N11)
14. CATCH BASIN INSPECTION PROGRAM (N14)
15. FINISH GRADE OF LANDSCAPE AREAS AT A MIN. OF 1-2 INCHS BELOW SURB/SIDEWALK/PAVEMENT (S5)

LEGEND:

- DMA-3 — DRAINAGE MANAGEMENT AREA NUMBER
- DRAINAGE AREA BOUNDARY
- CONTECH CHAMBER SYSTEM
- FLOW DIRECTION
- SD — PROPOSED ONSITE STORM DRAIN
- PROPOSED WQMP LOW FLOW STORM DRAIN
- CB — CATCH BASIN INLET

GRAPHIC SCALE

50 0 25 50 100 200

(IN FEET)
1 inch = 50 ft.

BMP STATISTICS:

DRAINAGE MANAGEMENT AREA	AREA (AC)	PROPOSED BMP	DESIGN CAPTURED VOLUME (CF)	BMP PROVIDED VOLUME VOLUME (CF)
DMA-1	4.9	CHAMBER SYSTEM #1	16,882	16,930
DMA-2	1.9	CHAMBER SYSTEM #2	6,546	6,650
DMA-3	3.2	CHAMBER SYSTEM #3	11,025	11,265
TOTAL	10.0		34,453	34,845

LATITUDE & LONGITUDE
34.1350° N, 117.4772° W

LENGTH OF PARKWAY FRONTAGE IMPROVEMENT = 1,100-FT
FRONTAGE IMPROVEMENTS INCLUDE SIDEWALK AND CURB & GUTTER IMPROVEMENTS. ACCORDING TO THE COUNTY OF SAN BERNARDINO TRANSPORTATION TOTAL GUIDANCE DOCUMENT (TGD) CRITERIA, PROJECTS WITH LESS THAN 1/2 MILE (2,640-FT) OF STREET FRONTAGE IMPROVEMENTS ARE EXEMPT FROM TREATMENT.

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CITY OF FONTANA
CALIFORNIA

TENTATIVE TRACT MAP 20297
WQMP SITE EXHIBIT PLAN

PLOT DATE: August 03, 2019 reynoldallard
Filename: I:\Stratham Homes-129\Chow Property- Fontana\DWG's\ENTITLEMENT\EXHIBITS\WQMP EXHIBIT.dwg

Appendix M
Noise Data

HIGHLAND RESIDENTIAL PROJECT
INITIAL STUDY

Michael Baker INTERNATIONAL

We Make a Difference

MEMORANDUM

To: Emily Elliot, Michael Baker International

From: Eddie Torres, Michael Baker International
Pierre Glaize, Michael Baker International

Date: April 23, 2020

Subject: Highland Residential Project – Noise Technical Memorandum

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PURPOSE

The purpose of this technical memorandum is to evaluate potential short- and long-term noise and ground-borne vibration impacts as a result of the proposed Highland Residential Project (project), located in the City of Fontana (City), California.

PROJECT LOCATION

The project is located at 14973 South Highland Avenue, on the north side of South Highland Avenue between Hemlock Avenue and San Sevaine Road in the City. The City is located in the southwestern portion of San Bernardino County (County). The City is bounded by the San Bernardino National Forest to the north, the City of Rialto to the east, the Jurupa Hills to the south, and unincorporated San Bernardino County and the Cities of Rancho Cucamonga and Ontario to the west. The City's Sphere of Influence extends north to the San Bernardino National Forest and west to the Cities of Rancho Cucamonga and Ontario.

Regional access to the site is available via State Route 210 (SR-210) at the Cherry Avenue exit, which is approximately one-half mile to the west of the site, and via Interstate 15 (I-15) at the Sierra Avenue exit, which is approximately 2.2 miles to the southwest of the site. Local access to the site is provided via South Highland Avenue and San Sevaine Road.

The project includes two parcels (APNs: 0228-021-08 and 0228-021-09) totaling approximately 10.2 acres.

EXISTING SITE CONDITIONS

The proposed project site is located on the gently sloping alluvial plain descending southward from the San Gabriel Mountains within the northern portion of the City. The project site currently consists of vacant land and the site's natural vegetation has been largely removed. The site is unimproved and there are no existing structures onsite. The topography of the site is relatively flat. The site drains to the southwest, the highest elevation is approximately 1,449 feet at the northeast corner of the site, and the lowest elevation is approximately 1,424 feet in the southwest corner of the site, an approximate elevation

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difference of 25 feet. Concrete debris and cobbles and concrete slabs exist onsite, which appear to cover a cistern system. The project site is surrounded by SR-210 to the north; a church facility to the east; residential development to the south; and vacant land to the west.

PROJECT DESCRIPTION

The project proposes development of a residential community involving construction of 107 multi-family detached units and associated infrastructure and improvements including private roads, sidewalks, landscaping, utilities, infiltration basins/drainage facilities, and parking. The community would be gate guarded and would construct on-site recreational facilities, including a community pool and clubhouse, tot lot, dog park, and exercise area. The dwelling units would be two-stories with two-car attached garages ranging in size from 1,400 square feet to 2,200 square feet. The project would also include General Plan Amendment No. 19-006 (General Commercial to Medium Density Residential) and Zone Change (General Commercial to Medium Density Residential).

Project construction would occur over approximately 14 months, beginning in March 2021. Construction of the project would include the following phases: site preparation, grading, building construction, paving, and architectural coating. It is anticipated that the project would be completed and operational by April 2022.

FUNDAMENTALS OF SOUND AND ENVIRONMENTAL NOISE

Sound is mechanical energy transmitted by pressure waves in a compressible medium such as air and is characterized by both its amplitude and frequency (or pitch). The human ear does not hear all frequencies equally. In particular, the ear deemphasizes low and very high frequencies. To better approximate the sensitivity of human hearing, the A-weighted decibel scale (dBA) has been developed. Decibels are based on the logarithmic scale. The logarithmic scale compresses the wide range in sound pressure levels to a more usable range of numbers in a manner similar to the Richter scale used to measure earthquakes. In terms of human response to noise, a sound 10 dBA higher than another is perceived to be twice as loud and 20 dBA higher is perceived to be four times as loud, and so forth. Everyday sounds normally range from 30 dBA (very quiet) to 100 dBA (very loud). On this scale, the human range of hearing extends from approximately 3 dBA to around 140 dBA.

Noise is generally defined as unwanted or excessive sound, which can vary in intensity by over one million times within the range of human hearing; therefore, a logarithmic scale, known as the decibel scale (dB), is used to quantify sound intensity. Noise can be generated by a number of sources, including mobile sources such as automobiles, trucks, and airplanes, and stationary sources such as construction sites, machinery, and industrial operations. Noise generated by mobile sources typically attenuates (is reduced) at a rate between 3 dBA and 4.5 dBA per doubling of distance. The rate depends on the ground surface and the number or type of objects between the noise source and the receiver. Hard and flat surfaces, such as concrete or asphalt, have an attenuation rate of 3 dBA per doubling of distance. Soft surfaces, such as uneven or vegetated terrain, have an attenuation rate of about 4.5 dBA per doubling of distance. Noise generated by stationary sources typically attenuates at a rate between 6 dBA and about 7.5 dBA per doubling of distance.

There are several metrics used to characterize community noise exposure, which fluctuate constantly over time. One such metric, the equivalent sound level (L_{eq}), represents a constant sound that, over the

specified period, has the same sound energy as the time-varying sound. Noise exposure over a longer period is often evaluated based on the Day-Night Sound Level (L_{dn}). This is a measure of 24-hour noise levels that incorporates a 10-dBA penalty for sounds occurring between 10:00 p.m. and 7:00 a.m. The penalty is intended to reflect the increased human sensitivity to noises occurring during nighttime hours, particularly at times when people are sleeping and there are lower ambient noise conditions. Typical L_{dn} noise levels for light and medium density residential areas range from 55 dBA to 65 dBA.

FUNDAMENTALS OF ENVIRONMENTAL GROUNDBORNE VIBRATION

Sources of earth-borne vibrations include natural phenomena (earthquakes, volcanic eruptions, sea waves, landslides, etc.) or man-made causes (explosions, machinery, traffic, trains, construction equipment, etc.). Vibration sources may be continuous (e.g., factory machinery) or transient (e.g., explosions). Ground vibration consists of rapidly fluctuating motions or waves with an average motion of zero. Several different methods are typically used to quantify vibration amplitude. One is the peak particle velocity (PPV); another is the root mean square (RMS) velocity. The PPV is defined as the maximum instantaneous positive or negative peak of the vibration wave. The RMS velocity is defined as the average of the squared amplitude of the signal. The PPV and RMS vibration velocity amplitudes are used to evaluate human response to vibration.

Table 1, *Human Reaction and Damage to Buildings for Continuous or Frequent Intermittent Vibration Levels*, displays the reactions of people and the effects on buildings produced by continuous vibration levels. The annoyance levels shown in the table should be interpreted with care since vibration may be found to be annoying at much lower levels than those listed, depending on the level of activity or the sensitivity of the individual. To sensitive individuals, vibrations approaching the threshold of perception can be annoying. Low-level vibrations frequently cause irritating secondary vibration, such as a slight rattling of windows, doors, or stacked dishes. The rattling sound can give rise to exaggerated vibration complaints, even though there is very little risk of actual structural damage.

Table 1
Human Reaction and Damage to Buildings for Continuous or Frequent Intermittent Vibration Levels

Peak Particle Velocity (inches/second)	Approximate Vibration Velocity Level (VdB)	Human Reaction	Effect on Buildings
0.006–0.019	64–74	Range of threshold of perception.	Vibrations unlikely to cause damage of any type.
0.08	87	Vibrations readily perceptible.	Recommended upper level to which ruins and ancient monuments should be subjected.
0.1	92	Level at which continuous vibrations may begin to annoy people, particularly those involved in vibration sensitive activities.	Virtually no risk of architectural damage to normal buildings.
0.2	94	Vibrations may begin to annoy people in buildings.	Threshold at which there is a risk of architectural damage to normal dwellings.
0.4–0.6	98–104	Vibrations considered unpleasant by people subjected to continuous vibrations and unacceptable to some people walking on bridges.	Architectural damage and possibly minor structural damage.

Source: California Department of Transportation, *Transportation Related Earthborne Vibrations*, 2002.

Ground vibration can be a concern in instances where buildings shake and substantial rumblings occur. However, it is unusual for vibration from typical urban sources such as buses and heavy trucks to be perceptible. Common sources for groundborne vibration are planes, trains, and construction activities such as earth-moving which requires the use of heavy-duty earth moving equipment. For the purposes of this analysis, a PPV descriptor with units of inches per section (in/sec) is used to evaluate construction-generated vibration for building damage and human complaints.

EXISTING SETTING

Noise Sensitive Receptors

Noise-sensitive land uses are generally considered to include those uses where noise exposure could result in health-related risks to individuals, as well as places where quiet is an essential element of their intended purpose. Residential dwellings are of primary concern because of the potential for increased and prolonged exposure of individuals to both interior and exterior noise levels. Additional land uses such as parks, historic sites, cemeteries, and recreation areas are considered sensitive to increases in exterior noise levels. Schools, churches, hotels, libraries, and other places where low interior noise levels are essential are also considered noise-sensitive land uses. The nearest sensitive receptor to the project site boundaries is the Island Valley Islamic Society Mosque, adjacent to the east.

Existing Stationary Noise Levels

The project area is mostly residential use with a mosque nearby . The primary sources of stationary noise in the project vicinity are urban-related activities (i.e., mechanical equipment, parking areas, and pedestrians). The noise associated with these sources may represent a single-event noise occurrence, short-term, or long-term/continuous noise.

Existing Ambient Noise Levels

On March 19, 2020, California Governor Gavin Newsom passed Executive Order N-33-20 in response to the growing spread of COVID-19.[1] Executive Order N-33-30 requires that all individuals living in the State of California shall stay at home or at their place of residence, except as needed to maintain continuity of the operations of the Federal critical infrastructure. As such, on-site noise measurements while Executive Order N-33-20 is active would not correctly reflect the ambient noise level near the project site. Thus, in order to assess the ambient noise levels, the existing ambient noise levels from mobile sources were modeled using the Federal Highway Administration's Highway Noise Prediction Model (FHWA RD-77-108).

The RD-77-108 model calculates the average noise level at specific locations based on traffic volumes, average speeds represented by the posted speed limit, roadway geometry, and site environmental conditions. The majority of vehicular traffic near the project site are along San Sevaine Road, South Highland Avenue, and Beech Avenue. These roadways generate the majority of existing noise in the immediate project vicinity. Noise projections are based on modeled vehicular traffic as derived from the *Highland Residential (MC No. 19-096) Focused Traffic Impact Analysis* (Traffic Impact Analysis); refer to Appendix A for modeling assumptions and vehicle speeds along the roadway segments. As shown in Table

[1] COVID-19 stands for Coronavirus Disease 2019, a quickly spreading global viral infection that causes mild upper respiratory tract illnesses and in some cases death.

2, *Existing Ambient Noise Levels*, existing ambient noise levels from mobile sources in the vicinity of the site range from 44.9 to 60.6 dBA Community Noise Equivalent Level (CNEL).

Table 2
Existing Ambient Noise Levels

Roadway Segment	Existing Conditions				
	ADT	dBA @ 100 Feet from Roadway Centerline	Distance from Roadway Centerline to: (Feet)		
			60 CNEL Noise Contour	65 CNEL Noise Contour	70 CNEL Noise Contour
San Sevaine Road					
North of South Highland Avenue	3,800	56.0	54	-	-
South of South Highland Avenue	4,300	56.5	58	-	-
South Highland Avenue					
West of San Sevaine Road	5,900	59.2	88	-	
San Sevaine Road to South Highland Driveway	6,300	59.5	92	-	-
South Highland Driveway to Hemlock Avenue	6,300	59.5	92	-	-
Hemlock Avenue to Posh Lane	6,900	59.9	98	45	-
Posh Lane to Beech Avenue	6,900	59.9	98	45	-
East of Beech Avenue	7,800	60.4	106	49	-
Hemlock Avenue					
North of South Highland Avenue	300	44.9	-	-	-
South of South Highland Avenue	2,000	53.2	35	-	-
Beech Avenue					
North of South Highland Avenue	10,800	60.6	109	51	-
South of South Highland Avenue	10,100	60.3	104	48	-

Notes: ADT = average daily traffic; dBA = A-weighted decibels; CNEL = Community Noise Equivalent Level, - = no data

Source: Noise modeling is based on traffic data within Urban Crossroads' *Highland Residential (MC No. 19-096) Focused Traffic Impact Analysis*, dated March 10, 2020.

REGULATORY SETTING

State of California

California Noise Control Act of 1973

Sections 46000 through 46080 of the California Health and Safety Code, known as the California Noise Control Act, find that excessive noise is a serious hazard to public health and welfare and that exposure to certain levels of noise can result in physiological, psychological, and economic damage. The act also finds that there is a continuous and increasing bombardment of noise in urban, suburban, and rural areas. The California Noise Control Act declares that the State of California has a responsibility to protect the health and welfare of its citizens by the control, prevention, and abatement of noise. It is the policy of the state to provide an environment for all Californians that is free from noise that jeopardizes their health or welfare.

Office of Planning and Research

The State Office of Planning and Research's *Noise Element Guidelines* include recommended exterior and interior noise level standards for local jurisdictions to identify and prevent the creation of incompatible land uses due to noise. The *Noise Element Guidelines* contain a land use compatibility table that describes the compatibility of various land uses with a range of environmental noise levels in terms of the CNEL. Table 3, *Land Use Compatibility for Community Noise Environments*, presents guidelines for determining acceptable and unacceptable community noise exposure limits for various land use categories. The guidelines also present adjustment factors that may be used to arrive at noise acceptability standards that reflect the noise control goals of the community, the particular community's sensitivity to noise, and the community's assessment of the relative importance of noise pollution.

Table 3
Land Use Compatibility for Community Noise Environments

Land Use Category	Community Noise Exposure (L_{dn} or CNEL, dBA)			
	Normally Acceptable	Conditionally Acceptable	Normally Unacceptable	Clearly Unacceptable
Residential - Low Density, Single-Family, Duplex, Mobile Homes	50 – 60	55 - 70	70-75	75-85
Residential - Multiple Family	50 – 65	60 - 70	70 – 75	70 - 85
Transient Lodging - Motel, Hotels	50 – 65	60 - 70	70 – 80	80 - 85
Schools, Libraries, Churches, Hospitals, Nursing Homes	50 – 70	60 - 70	70 – 80	80 - 85
Auditoriums, Concert Halls, Amphitheaters	NA	50 - 70	NA	65 - 85
Sports Arenas, Outdoor Spectator Sports	NA	50 - 75	NA	70 - 85
Playgrounds, Neighborhood Parks	50 – 70	NA	67.5 – 75	72.5 - 85
Golf Courses, Riding Stables, Water Recreation, Cemeteries	50 – 70	NA	70 – 80	80 - 85
Office Buildings, Business Commercial and Professional	50 – 70	67.5 - 77.5	75 – 85	NA
Industrial, Manufacturing, Utilities, Agriculture	50 – 75	70 - 80	75 – 85	NA

Notes: NA: Not Applicable; L_{dn}: average day/night sound level; CNEL: Community Noise Equivalent Level, dBA: A-weighted Decibel

Normally Acceptable - Specified land use is satisfactory, based upon the assumption that any buildings involved are of normal conventional construction, without any special noise insulation requirements.

Conditionally Acceptable - New construction or development should be undertaken only after a detailed analysis of the noise reduction requirements is made and needed noise insulation features included in the design. Conventional construction, but with closed windows and fresh air supply systems or air conditioning will normally suffice.
Normally Unacceptable - New construction or development should be discouraged. If new construction or development does proceed, a detailed analysis of the noise reduction requirements must be made and needed noise insulation features included in the design.
Clearly Unacceptable – New construction or development should generally not be undertaken.

Source: Office of Planning and Research, *State of California General Plan Guidelines*, October 2017.

City of Fontana

City of Fontana General Plan Update 2015-2035

Goal 8		The City of Fontana protects sensitive land uses from excessive noise by diligent planning through 2035.
	Policy 8.1	New sensitive land uses shall be prohibited in incompatible areas.
	Policy 8.2	Noise-tolerant land uses shall be guided into areas irrevocably committed to land uses that are noise producing, such as transportation corridors.
	Policy 8.3	Where sensitive uses are to be placed along transportation routes, mitigation shall be provided to ensure compliance with state-mandated noise levels.
	Policy 8.4	Noise spillover or encroachment from commercial, industrial, and education land uses shall be minimized in adjoining residential neighborhoods or noise-sensitive uses.
Goal 9		The City of Fontana provides a diverse and efficiently operated ground transportation system that generates the minimum feasible noise on residents through 2035.
	Policy 9.1	All noise sections of the State Motor Vehicle Code shall be enforced.
	Policy 9.2	Roads shall be maintained such that the paving is in good condition and free from cracks, bumps, and potholes.
	Policy 9.3	Noise-mitigation measures shall be included in the design of new roadway projects in the city.
Goal 10		City of Fontana residents are protected from the negative effects of "spillover" noise.
	Policy 10.1	Residential land uses and areas identified as noise-sensitive shall be protected from excessive noise from non-transportation sources, including industrial, commercial, and residential activities and equipment.

City of Fontana Municipal Code

Chapter 18, Article II. Section 18-63. – Prohibited Noises

(b) The following acts, which create loud, excessive, impulsive or intrusive sound or noise that annoys or disturbs persons of ordinary sensibilities from a distance of 50 feet or more from the edge of the property, structure or unit in which the source is located, are declared to be in violation of this article, but such enumeration shall not be deemed to be exclusive, namely:

Section 18-63(b)(6) Loading, unloading or opening boxes. The creation of load, excessive or intrusive and excessive noise in connection with loading or unloading of any vehicle or the opening and destruction of bales, boxes, crates and containers.

Section 18-63(b)(7) Construction or repairing of buildings or structures. The erection (including excavating), demolition, alteration or repair of any building or structure other than between the hours of 7:00 a.m. and 6:00 p.m. on weekdays and between the hours of 8:00 a.m. and 5:00 p.m. on Saturdays, except in case of urgent necessity in the interest of public health and safety, and then only with a permit from the building inspector, which permit may be granted for a period not to exceed three days or less while the emergency continues and which permit may be renewed for periods of three days or less while the emergency continues. If the building inspector should determine that the public health and safety will not be impaired by the erection, demolition, alteration or repair of any building or structure or the excavation of streets and highways within the hours of 6:00 p.m. and 7:00 a.m., and if he shall further determine that loss or inconvenience would result to any party in interest, he may grant permission for such work to be done on weekdays within the hours of 6:00 p.m. and 7:00 a.m., upon application being made at the time the permit for the work is awarded or during the progress of the work.

Section 18-63(b)(8) Noise near schools, courts, place of worship or hospitals. The creation of any loud, excessive, impulsive or intrusive noise on any street adjacent to any school, institution of learning, places of worship or court while the premises are in use, or adjacent to any hospital which unreasonably interferes with the workings of such institution or which disturbs or unduly annoys patients in the hospital; provided conspicuous signs are displayed in such streets indicating that the street is a school, hospital or court street.

Chapter 30, Article V. Division 6, Sec. 30-469. – Noise

(a) *No use shall create or cause to be created any sound that exceeds the ambient noise standards outlined in Table 30-469* (referred to as Table 4, *Noise Standards*).

(b) *No use shall create or cause creation of noise from a portable electronic device such as a car stereo, portable radio and/or cassette/compact disc player or similar device which exceeds the ambient noise standards outlined in Table 30-469* referred to as Table 4).

Table 4
Noise Standards

Location of Measurement	Maximum Allowable	
All Residential Zoning Districts	7:00 a.m. to 10:00 p.m.	10:00 p.m. to 7:00 a.m.
Interior	45 dB	45 dB
Exterior	65 dB	65 dB
Source: Fontana Municipal Code, Chapter 30, Article V. Division 6, Sec. 30-182. - Noise		

Chapter 30, Article V. Division 6, Sec. 30-470. – Vibration

No use shall create or cause to be created any activity that causes a vibration that can be felt beyond the property line with or without the aid of an instrument.

CALIFORNIA ENVIRONMENTAL QUALITY ACT (CEQA) THRESHOLDS

The environmental analysis in this memorandum is patterned after the Initial Study Checklist recommended by the *CEQA Guidelines*. The issues presented in the Initial Study Checklist have been utilized as thresholds of significance in this section. Accordingly, a project may have a significant adverse impact related to noise and vibration if it would do any of the following:

- Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies (refer to Impact Statement NOI-1);

- Generation of excessive groundborne vibration or groundborne noise levels (refer to Impact Statement NOI-2); and/or

- For a project located within the vicinity of a private airstrip or 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 (refer to Impact Statement NOI-3).

IMPACT ANALYSIS

NOI-1 Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?

Less Than Significant Impact. The City's General Plan Noise Element contains the City's policies on noise. The Noise Element is a comprehensive program to limit the exposure of the community to excessive noise levels. The Noise Element establishes guidelines for controlling both construction and operational noise in the City. For operational noise standards, the City identifies noise-sensitive land uses and noise sources with the intent of separating these uses. Noise-sensitive land uses are those that may be subject to stress and/or interference from excessive noise. Noise-sensitive land uses include public schools, hospitals, and institutional uses such as churches, museums, and private schools. Typically, residential uses are also considered noise-sensitive receptors. Industrial and commercial land uses are generally not considered sensitive to noise.

Construction Noise Impacts

Temporary increases in ambient noise levels as a result of the project would predominantly be associated with construction activities. Project construction would occur over approximately 14 months, beginning in March 2021. Construction of the project would include the following phases: site preparation, grading, building construction, paving, and architectural coating. It is anticipated that the project would be completed and operational by April 2022. Typical noise levels generated by construction equipment are shown in Table 5, *Maximum Noise Levels Generated by Construction Equipment*.

As shown in Table 5, typical construction-generated maximum noise levels would range from 77 dBA to 90 dBA at a distance of 50 feet. It should be noted that the noise levels identified in Table 5 are maximum sound levels (L_{max}), which are the highest individual sound occurring at an individual time period.

Operating cycles for these types of construction equipment may involve one or two minutes of full power operation followed by three to four minutes at lower power settings. Other primary sources of acoustical disturbance would be due to random incidents, which would last less than one minute (such as dropping large pieces of equipment or the hydraulic movement of machinery lifts). Construction would occur across the entire project site and would not be localized to this sensitive receptor distance. The City's Noise Ordinance does not have specific construction noise limits. In addition, all construction activities would comply with the City's Municipal Code which limits construction to between the hours of 7:00 a.m. and 6:00 p.m. on weekdays and between the hours of 8:00 a.m. and 5:00 p.m. on Saturdays, except in cases of emergency. Therefore, noise impact from short-term construction activities would be less than significant following compliance with the City's allowable construction hours.

Table 5
Maximum Noise Levels Generated by Construction Equipment

Type of Equipment	Acoustical Use Factor[1]	L_{max} at 50 Feet (dBA)
Concrete Saw	20	90
Crane	16	81
Concrete Mixer Truck	40	79
Backhoe	40	78
Dozer	40	82
Excavator	40	81
Forklift	40	78
Paver	50	77
Roller	20	80
Tractor	40	84
Water Truck	40	80
Grader	40	85
General Industrial Equipment	50	85

Note:
1. Acoustical Use Factor (percent): Estimates the fraction of time each piece of construction equipment is operating at full power (i.e., its loudest condition) during a construction operation.

Source: Federal Highway Administration, *Roadway Construction Noise Model (FHWA-HEP-05-054)*, January 2006.

Long-Term Operational Noise Impacts

Off-Site Mobile Noise

The proposed project would result in additional traffic on adjacent roadways from daily activities, thereby increasing vehicular noise in the vicinity of existing and proposed land uses.

Daily Activities

Based on the Traffic Impact Analysis, typical daily activities are forecasted to generate 1,010 average daily trips, including 80 trips during the a.m. peak hour and 106 trips during the p.m. peak hour. The "Horizon Year Without Project" and "Horizon Year With Project" scenarios are compared in Table 6, *Future Traffic Noise Levels*. As depicted in Table 6, under the "Horizon Year Without Project" scenario, noise levels at

100 feet from roadway centerline would range from approximately 46.2 dBA to 65.5 dBA, with the highest noise levels occurring along the Beech Avenue, to the south of South Highland Avenue. The "Horizon Year With Project" scenario noise levels at 100 feet from roadway centerline would also range from approximately 46.2 dBA to 65.5 dBA, with the highest noise levels occurring along Beech Avenue, to the south of South Highland Avenue.

Table 6
Future Traffic Noise Levels

Roadway Segment	Horizon Year Without Project					Horizon Year With Project					Difference In dBA @ 100 Feet from Roadway
	ADT	dBA @ 100 Feet from Roadway Centerline	Distance from Roadway Centerline to: (Feet)			ADT	dBA @ 100 Feet from Roadway Centerline	Distance from Roadway Centerline to: (Feet)			
			60 CNEL Noise Contour	65 CNEL Noise Contour	70 CNEL Noise Contour			60 CNEL Noise Contour	65 CNEL Noise Contour	70 CNEL Noise Contour	
San Sevaine Road											
North of South Highland Avenue	7.800	59.1	87	40	-	7,900	59.1	88	41	-	0.0
South of South Highland Avenue	5,900	57.9	72	34	-	6,100	58.0	74	34	-	0.1
South Highland Avenue											
West of San Sevaine Road	10,900	61.9	133	62	-	11,100	61.9	135	62	-	0.0
San Sevaine Road to South highland Driveway	14,500	63.1	161	75	-	15,000	63.2	164	76	-	0.1
South Highland Driveway to Hemlock Avenue	11,000	61.9	134	62	-	11,500	62.1	138	64	-	0.2
Hemlock Avenue to Posh Lane	12,900	62.6	149	69	-	13,400	62.7	153	71	-	0.1
Posh Lane to Beech Avenue	12,900	62.6	149	69	-	13,400	62.7	153	71	-	0.1
East of Beech Avenue	14,300	63.0	159	74	-	14,500	63.1	161	75	-	0.1
Hemlock Avenue											
North of South Highland Avenue	400	46.2	-	-	-	400	46.2	-	-	-	0.0
South of South Highland Avenue	4,400	56.6	59	-	-	4,400	56.6	59	-	-	0.0
Beech Avenue											
North of South Highland Avenue	22,900	63.8	180	83	-	23,000	63.8	180	84	-	0.0
South of South Highland Avenue	33,600	65.5	232	108	50	33,800	65.5	223	108	50	0.0

Notes: ADT = average daily traffic; dBA = A-weighted decibels; CNEL = community noise equivalent level

Source: Noise modeling is based on traffic data within Urban Crossroads' *Highland Residential (MC No. 19-096) Focused Traffic Impact Analysis*, dated March 10, 2020.

Table 6 also shows the difference between the "Horizon Year Without Project" scenario and the "Horizon Year With Project" scenario. As depicted in Table 6, traffic associated with the proposed project would result in a maximum increase of 0.2 dBA along South Highland Avenue, from the existing South Highland Driveway to Hemlock Avenue. A significant impact would result only if both of the following occur: an exceedance of the City's residential exterior noise standards (i.e., 65 dBA CNEL) and a perceptible increase in traffic noise levels (i.e., noise increase would be greater than 3.0 dBA).

As shown in Table 6, daily traffic levels with the project would not cause a perceptible increase in traffic noise levels (i.e., noise increase would be greater than 3.0 dBA) along any of the surrounding roads. The only segment that would exceed the City's residential exterior noise standard of 65 dBA CNEL under the

"Horizon Year With Project" scenario is the Beech Avenue segment; refer to Table 6. However, this segment would also exceed the City's residential exterior noise standards under the "Horizon Year Without Project" scenario and would not result in an imperceptible increase in traffic noise (i.e., less than 3.0 dBA). As the project would not cause an exceedance of the City's residential exterior noise standards in combination with a perceptible increase in traffic noise levels, the proposed project would not significantly increase noise levels along the roadway segments analyzed. Therefore, a less than significant impact would occur in this regard.

Cumulative Mobile Source Impacts

A project's contribution to a cumulative traffic noise increase would be considered significant when the combined effect exceeds the perception level (i.e., auditory level increase) threshold. The combined effect compares the "cumulative with project" condition to "existing" conditions. This comparison accounts for the traffic noise increase generated by a project combined with the traffic noise increase generated by cumulative projects. The following criteria have been utilized to evaluate the combined effect of cumulative noise increase.

- *Combined Effect*. The cumulative with project noise level ("Cumulative (2024) With Project") would cause a significant cumulative impact if a 3.0 dBA increase over existing conditions occurs and the resulting noise level exceeds the applicable exterior standard at a sensitive use. Although there may be a significant noise increase due to the proposed project in combination with other related projects, it must also be demonstrated that the project has an incremental effect. In other words, a significant portion of the noise increase must be due to the proposed project. The following criteria have been utilized to evaluate the incremental effect of the cumulative noise increase.

- *Incremental Effects*. The "Cumulative (2024) With Project" causes a 1.0 dBA increase in noise above the "Cumulative (2024) Without Project" noise level.

A significant impact would result only if both the combined (including an exceedance of the applicable exterior standard at a sensitive use) and incremental effects criteria have been exceeded. Noise, by definition, is a localized phenomenon and reduces as distance from the source increases. Consequently, only the proposed project and growth due to occur in the site vicinity would contribute to cumulative noise impacts. Table 7, *Cumulative Traffic Noise*, lists the traffic noise effects along roadway segments in the project vicinity for "Existing," "Cumulative (2024) Without Project," and "Cumulative (2024) With Project" conditions, including incremental and net cumulative impacts.

As indicated in Table 7, the "Combined Effects" criterion of 3.0 dBA and "Incremental Effects" criterion of 1.0 dBA is not exceeded along any of the study area roadways. Therefore, the proposed project would result in less than significant impacts in this regard.

Table 7
Cumulative Traffic Noise

Roadway Segment	dBA @ 100 Feet from Roadway Centerline			Combined Effects	Incremental Effects	Cumulatively Significant Impact?[1]
	Existing	Cumulative (2023) without Project	Cumulative (2023) with Project	Difference in dBA Between Cumulative With Project and Existing	Difference in dBA Between Cumulative With Project and Cumulative Without Project	
San Sevaine Road						
North of South Highland Avenue	56.0	56.2	56.2	0.2	0.0	No
South of South Highland Avenue	56.5	56.7	56.7	0.2	0.0	No
South Highland Avenue						
West of San Sevaine Road	59.2	61.0	61.0	1.8	0.0	No
San Sevaine Road to South highland Driveway	59.5	61.2	61.2	1.7	0.0	No
South Highland Driveway to Hemlock Avenue	59.5	61.2	61.2	1.7	0.0	No
Hemlock Avenue to Posh Lane	59.9	62.0	62.0	2.1	0.0	No
Posh Lane to Beech Avenue	59.9	62.0	62.0	2.1	0.0	No
East of Beech Avenue	60.4	61.3	61.3	0.9	0.0	No
Hemlock Avenue						
North of South Highland Avenue	44.9	46.2	46.2	1.3	0.0	No
South of South Highland Avenue	53.2	53.2	53.2	0.0	0.0	No
Beech Avenue						
North of South Highland Avenue	60.6	61.2	61.2	0.6	0.0	No
South of South Highland Avenue	60.3	61.0	61.0	0.7	0.0	No

Notes:
1. A cumulative impact would occur if the "Combined Effects" and "Incremental Effects" criterion are exceeded and the modeled noise level exceeds the City's exterior noise standard shown in Table 5.

Source: Noise modeling is based on traffic data within Urban Crossroads' *Highland Residential (MC No. 19-096) Focused Traffic Impact Analysis*, dated March 10, 2020.

Stationary Noise

As stated above, the project community would be gate guarded and would construct on-site recreational facilities, including a community pool and clubhouse, tot lot, dog park, and exercise area. The 107 dwelling units would be two-stories with two-car attached garages ranging in size from 1,400 square feet to 2,200 square feet. Stationary noise sources associated with the project would include the operation of mechanical equipment, parking lot activities, and garbage trucks.

Mechanical Equipment Noise

Heating Ventilation and Air Conditioning (HVAC) units would be installed on the roof of the proposed recreational facilities building. Typically, mechanical equipment noise is 55 dBA at 50 feet from the source.[2] The closest distance between on-site HVAC units and the nearest sensitive receptor (a Mosque) would be approximately 25 feet. At this distance, HVAC noise levels would approximately 61 dBA assuming no attenuation from intervening structures, walls, sound propagation, etc. Therefore, HVAC noise levels would not exceed the City's exterior noise standards of 65 dBA CNEL. A less than significant impact would occur this regard.

[2] Elliott H. Berger, Rick Neitzel, and Cynthia A. Kladden, *Noise Navigator Sound Level Database with Over 1700 Measurement Values*, July 6, 2010.

Garbage Trucks

The proposed project would involve occasional trash/recycling pickups from slow-moving garbage trucks. Trash/recycling pickup would occur throughout the site. Low-speed truck noise results from a combination of engine, exhaust, and tire noise as well as the intermittent sounds of back-up alarms and releases of compressed air associated with truck air-brakes. However, trash/recycling truck operations would be short-term and irregular and are considered part of standard operations in the area (i.e., existing trash/recycling collection activities at adjacent uses). Therefore, trash/recycling pickups would not introduce a new intrusive noise source compared to existing conditions. As such, a less than significant impact would occur in this regard.

Parking Lots

The project proposes residential parking spaces with a minimum of two enclosed garage spaces per unit for a total of approximately 245 spaces. There would also be an additional 91 outdoor parking spaces with 16 additional private driveway spaces. In total, the site would provide approximately 352 parking spaces.

Traffic associated with residential parking areas is typically not of sufficient volume to exceed community noise standards, which are based on a time-averaged scale such as the day-night average sound level (DNL) (or L_{dn}) scale. However, the instantaneous maximum sound levels generated by a car door slamming, engine starting up, and car passbys may be an annoyance to adjacent noise-sensitive receptors. Estimates of the maximum noise levels associated with some parking activities are presented in Table 8, *Maximum Noise Levels Generated by Parking Lots*.

Table 8
Maximum Noise Levels Generated by Parking Lots

Noise Source	Maximum Noise Levels at 50 Feet from Source
Car door slamming	61 dBA L_{eq}
Car starting	60 dBA L_{eq}
Car idling	53 dBA L_{eq}

Notes: dBA = A-weighted Decibels; L_{eq} = Equivalent Sound Level
Source: Kariel, H. G., *Noise in Rural Recreational Environments*, Canadian Acoustics 19(5), 3-10, 1991.

As shown in Table 8, parking lot activities can result in noise levels up to 61 dBA at a distance of 50 feet. It is noted that parking lot noise are instantaneous noise levels compared to noise standards in the CNEL scale, which are averaged over time. As a result, actual noise levels over time resulting from parking lot activities would be far lower than what is identified in Table 8. The nearest sensitive receptor (a mosque to the east) is approximately 80 feet to the north of the proposed parking spaces on the southeastern portion of the project site, near the dog parks. At this distance, parking lot noise would vary from 49 to 57 dBA, which would be below the City's exterior noise standard of 65 dBA CNEL. Therefore, impacts would be less than significant in this regard.

Mitigation Measures: No mitigation is required.

NOI-2 Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?

Less Than Significant Impact. Project construction can generate varying degrees of groundborne vibration, depending on the construction procedure and construction equipment. Operation of construction equipment generates vibrations that spread through the ground and diminish in amplitude with distance from the source. The effect on buildings located in the vicinity of the construction site often varies depending on soil type, ground strata, and construction characteristics of the receiver building(s). The results from vibration can range from no perceptible effects at the lowest vibration levels, to low rumbling sounds and perceptible vibration at moderate levels, to slight damage at the highest levels. Groundborne vibrations from construction activities rarely reach levels that damage structures.

Construction vibration impacts include human annoyance and building damage. Human annoyance occurs when construction vibration rises significantly above the threshold of human perception for extended periods of time. Building damage can be cosmetic or structural. Ordinary buildings that are not particularly fragile would not experience any cosmetic damage (e.g., plaster cracks) at distances beyond 30 feet. This distance can vary substantially depending on the soil composition and underground geological layer between vibration source and receiver. In addition, not all buildings respond similarly to vibration generated by construction equipment. For example, buildings that are constructed with typical timber frames and masonry show that a vibration level of up to 0.2 inch-per-second PPV is considered safe and would not result in any construction vibration damage.[3] This evaluation uses the Federal Transit Administration (FTA) architectural damage criterion for continuous vibrations at non-engineered timber and masonry buildings of 0.2 inch-per-second peak particle velocity (PPV) and human annoyance criterion of 0.1 inch-per-second PPV in accordance with California Department of Transportation guidance.[4] The FTA has published standard vibration velocities for construction equipment operations. Typical vibration produced by construction equipment is detailed in Table 9, *Typical Vibration Levels for Construction Equipment*.

Groundborne vibration decreases rapidly with distance. The nearest structure is located approximately 45 feet east of the of the proposed construction area (eastern portion of the site). As indicated in Table 9, vibration velocities from typical heavy construction equipment used during project construction would range from 0.0015 (a small bulldozer) to 0.0870 (vibratory roller) inch-per-second PPV at 45 feet from the source of activity, which would not exceed the FTA's 0.2 inch-per-second PPV threshold. This portion of this site would not require vibratory rollers. Further, construction vibration would not cause excessive human annoyance as the highest groundborne vibration at nearest sensitive receptors (i.e., 0.0870 inch-per-second PPV) would not exceed the 0.1 inch-per-second PPV human annoyance criteria. Therefore, proposed construction activities associated with the project would not expose sensitive receptors to excessive groundborne vibration levels. Vibration impacts associated with construction would be less than significant and no mitigation measures are required.

[3] Federal Transit Administration, *Transit Noise and Vibration Impact Assessment Manual*, September 2018.

[4] California Department of Transportation, *Transportation and Construction Vibration Guidance Manual, Table 20*, September 2013.

Table 9
Typical Vibration Levels for Construction Equipment

Equipment	Approximate peak particle velocity at 25 feet (inches/second)[1]	Approximate peak particle velocity at 45 feet (inches/second)[1]
Large bulldozer	0.089	0.0369
Loaded trucks	0.076	0.0315
Small bulldozer	0.003	0.0012
Jackhammer	0.035	0.0145
Vibratory Rollers	0.210	0.0870

Notes:
1. Calculated using the following formula:

$PPV_{equip} = PPV_{ref} \times (25/D)^{1.5}$

where: PPV (equip) = the peak particle velocity in in/sec of the equipment adjusted for the distance

PPV (ref) = the reference vibration level in in/sec from Table 7-4 of the FTA *Transit Noise and Vibration Impact Assessment Manual.*

D = the distance from the equipment to the receiver

Source: Federal Transit Administration, *Transit Noise and Vibration Impact Assessment Manual*, September 2018. Table 7-4 *Vibration Source Levels for Construction Equipment.*

Mitigation Measures: No mitigation is required.

NOI-3 For a project located within the vicinity of a private airstrip or 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 closest airport is the Ontario International Airport, located approximately 7.87 miles to the southwest of the site. The site is not within the Ontario International Airport influence area where aircraft noise levels are a concern.[5] Thus, the proposed project would not expose people residing or working in the area to excessive noise levels. No impacts would occur in this regard.

Mitigation Measures: No mitigation is required.

[5] City of Ontario, *RLA/Ontario International Airport Land Use Compatibility Plan*, adopted April 19, 2011.

REFERENCES

Documents

1. California Department of Transportation, *Technical Noise Supplement to the Traffic Noise Analysis Protocol*, 2013.

2. City of Fontana, *General Plan Update 2015-2035*, adopted November 13, 2018.

3. City of Fontana, Municipal Code, https://library.municode.com/ca/fontana/codes/code_of_ordinances, accessed August 4, 2019.

4. City of Ontario, RLA/Ontario International Airport Land Use Compatibility Plan, adopted April 19, 2011

5. Elliott H. Berger, Rick Neitzel, and Cynthia A. Kladden, *Noise Navigator Sound Level Database with Over 1700 Measurement Values*, July 6, 2010.

6. Federal Highway Administration, *Roadway Construction Noise Model User's Guide,* January 2006.

7. Federal Transit Administration, *Transit Noise and Vibration Impact Assessment Manual*, September 2018.

8. Harris, Cyril, *Handbook of Noise Control,* 1979.

9. Kariel, H. G., *Noise in Rural Recreational Environments*, Canadian Acoustics 19(5), March 10, 1991.

10. National Institute on Deafness and Other Communication Disorders, *Noise-Induced Hearing Loss*, https://www.nidcd.nih.gov/sites/default/files/Documents/health/hearing/NoiseInducedHearingLoss.pdf, accessed August 12, 2019.

11. State Office of Planning and Research, *State of California General Plan Guidelines*, October 2017.

12. U.S. Department of Transportation, *Highway Traffic Noise Analysis and Abatement Policy and Guidance*, https://www.fhwa.dot.gov/environMent/noise/regulations_and_guidance/polguide/polguide02.cfm, accessed April 15, 2020.

13. U.S. Environmental Protection Agency, *Noise Effects Handbook – A Desk Reference to Health and Welfare Effects of Noise*, October 1979 (revised July 1981).

14. Urban Crossroads, *Highland Residential (MC No.19-096) Focused Traffic Impact analysis*, March 10, 2020.

Websites / Programs

1. Google Earth, 2019.

Appendix A
Noise Data

TRAFFIC NOISE LEVELS AND NOISE CONTOURS

Project Number: 176500
Project Name: Highland Residential
Scenario: Existing

Background Information

Model Description: FHWA Highway Noise Prediction Model (FHWA-RD-77-108) with California Vehicle Noise (CALVENO) Emission Levels.
Source of Traffic Volumes: Urban Crossroads (2020)
Community Noise Descriptor: L_{dn}: _____ CNEL: x

Assumed 24-Hour Traffic Distribution:	Day	Evening	Night
Total ADT Volumes	77.50%	12.90%	9.60%
Medium-Duty Trucks	84.80%	4.90%	10.30%
Heavy-Duty Trucks	86.50%	2.70%	10.80%

Analysis Condition				Design		Vehicle Mix		Distance from Centerline of Roadway					
		Median	ADT	Speed	Alpha	Medium	Heavy	CNEL at	Distance to Contour				Calc
Roadway, Segment	Lanes	Width	Volume	(mph)	Factor	Trucks	Trucks	100 Feet	70 CNEL	65 CNEL	60 CNEL	55 CNEL	Dist
San Sevaine Road													
North of South Highland Avenue	2	0	3,800	40	0.5	1.8%	0.7%	56.0	-	-	54	116	100
South of South Highland Avenue	2	0	4,300	40	0.5	1.8%	0.7%	56.5	-	-	58	126	100
Hemlock Avenue													
North of South Highland Avenue	2	0	300	40	0.5	1.8%	0.7%	44.9	-	-	-	-	100
South of South Highland Avenue	2	0	2,000	40	0.5	1.8%	0.7%	53.2	-	-	35	76	100
South Highland Avenue													
West of San Sevaine Road	3	14	5,900	45	0.5	1.8%	0.7%	59.2	-	-	88	190	100
San Sevaine Road to South Highland Driveway	3	14	6,300	45	0.5	1.8%	0.7%	59.5	-	-	92	199	100
Souh Highland Driveway to Hemlock Avenue	3	14	6,300	45	0.5	1.8%	0.7%	59.5	-	-	92	199	100
Hemlock Avenue to Posh Lane	3	14	6,900	45	0.5	1.8%	0.7%	59.9	-	45	98	211	100
Posh Lane to Beech Avenue	3	14	6,900	45	0.5	1.8%	0.7%	59.9	-	45	98	211	100
East of Beech Avenue	3	14	7,800	45	0.5	1.8%	0.7%	60.4	-	49	106	229	100
Beech Avenue													
North of South Highland Avenue	2	16	10,800	40	0.5	1.8%	0.7%	60.6	-	51	109	235	100
South of South Highland Avenue	2	16	10,100	40	0.5	1.8%	0.7%	60.3	-	48	104	224	100

[1] Distance is from the centerline of the roadway segment to the receptor location.
"-" = contour is located within the roadway right-of-way.

TRAFFIC NOISE LEVELS AND NOISE CONTOURS

Project Number: 176500
Project Name: Highland Residential
Scenario: Existing + Project

Background Information

Model Description: FHWA Highway Noise Prediction Model (FHWA-RD-77-108) with California Vehicle Noise (CALVENO) Emission Levels.
Source of Traffic Volumes: Urban Crossroads (2020)
Community Noise Descriptor: L_{dn}: _____ CNEL: x

Assumed 24-Hour Traffic Distribution:	Day	Evening	Night
Total ADT Volumes	77.50%	12.90%	9.60%
Medium-Duty Trucks	84.80%	4.90%	10.30%
Heavy-Duty Trucks	86.50%	2.70%	10.80%

Analysis Condition				Design		Vehicle Mix		Distance from Centerline of Roadway					
		Median	ADT	Speed	Alpha	Medium	Heavy	CNEL at	Distance to Contour				Calc
Roadway, Segment	Lanes	Width	Volume	(mph)	Factor	Trucks	Trucks	100 Feet	70 CNEL	65 CNEL	60 CNEL	55 CNEL	Dist
San Sevaine Road													
North of South Highland Avenue	2	0	4,000	40	0.5	1.8%	0.7%	56.2	-	-	56	120	100
South of South Highland Avenue	2	0	4,500	40	0.5	1.8%	0.7%	56.7	-	-	60	130	100
Hemlock Avenue													
North of South Highland Avenue	2	0	300	40	0.5	1.8%	0.7%	44.9	-	-	-	-	100
South of South Highland Avenue	2	0	2,000	40	0.5	1.8%	0.7%	53.2	-	-	35	76	100
South Highland Avenue													
West of San Sevaine Road	3	14	6,200	45	0.5	1.8%	0.7%	59.4	-	-	91	197	100
San Sevaine Road to South Highland Driveway	3	14	6,800	45	0.5	1.8%	0.7%	59.8	-	45	97	209	100
Souh Highland Driveway to Hemlock Avenue	3	14	6,800	45	0.5	1.8%	0.7%	59.8	-	45	97	209	100
Hemlock Avenue to Posh Lane	3	14	7,400	45	0.5	1.8%	0.7%	60.2	-	48	103	221	100
Posh Lane to Beech Avenue	3	14	7,400	45	0.5	1.8%	0.7%	60.2	-	48	103	221	100
East of Beech Avenue	3	14	8,000	45	0.5	1.8%	0.7%	60.5	-	50	108	233	100
Beech Avenue													
North of South Highland Avenue	2	16	11,000	40	0.5	1.8%	0.7%	60.6	-	51	110	238	100
South of South Highland Avenue	2	16	10,200	40	0.5	1.8%	0.7%	60.3	-	49	105	226	100

[1] Distance is from the centerline of the roadway segment to the receptor location.
"-" = contour is located within the roadway right-of-way.

TRAFFIC NOISE LEVELS AND NOISE CONTOURS

Project Number: 176500
Project Name: Highland Residential
Scenario: Opening Year Cumulative (2023) without Project

Background Information

Model Description: FHWA Highway Noise Prediction Model (FHWA-RD-77-108) with California Vehicle Noise (CALVENO) Emission Levels.
Source of Traffic Volumes: Urban Crossroads (2020)
Community Noise Descriptor: L_{dn}: _____ CNEL: x

Assumed 24-Hour Traffic Distribution:	Day	Evening	Night
Total ADT Volumes	77.50%	12.90%	9.60%
Medium-Duty Trucks	84.80%	4.90%	10.30%
Heavy-Duty Trucks	86.50%	2.70%	10.80%

Analysis Condition				Design		Vehicle Mix		Distance from Centerline of Roadway					
		Median	ADT	Speed	Alpha	Medium	Heavy	CNEL at	Distance to Contour				Calc
Roadway, Segment	Lanes	Width	Volume	(mph)	Factor	Trucks	Trucks	100 Feet	70 CNEL	65 CNEL	60 CNEL	55 CNEL	Dist
San Sevaine Road													
North of South Highland Avenue	2	0	4,000	40	0.5	1.8%	0.7%	56.2	-	-	56	120	100
South of South Highland Avenue	2	0	4,500	40	0.5	1.8%	0.7%	56.7	-	-	60	130	100
Hemlock Avenue													
North of South Highland Avenue	2	0	400	40	0.5	1.8%	0.7%	46.2	-	-	-	-	100
South of South Highland Avenue	2	0	2,000	40	0.5	1.8%	0.7%	53.2	-	-	35	76	100
South Highland Avenue													
West of San Sevaine Road	3	14	9,000	45	0.5	1.8%	0.7%	61.0	-	54	117	252	100
San Sevaine Road to South Highland Driveway	3	14	9,400	45	0.5	1.8%	0.7%	61.2	-	56	120	259	100
Souh Highland Driveway to Hemlock Avenue	3	14	9,400	45	0.5	1.8%	0.7%	61.2	-	56	120	259	100
Hemlock Avenue to Posh Lane	3	14	11,300	45	0.5	1.8%	0.7%	62.0	-	63	136	293	100
Posh Lane to Beech Avenue	3	14	11,300	45	0.5	1.8%	0.7%	62.0	-	63	136	293	100
East of Beech Avenue	3	14	9,700	45	0.5	1.8%	0.7%	61.3	-	57	123	265	100
Beech Avenue													
North of South Highland Avenue	2	16	12,400	40	0.5	1.8%	0.7%	61.2	-	55	119	257	100
South of South Highland Avenue	2	16	11,900	40	0.5	1.8%	0.7%	61.0	-	54	116	250	100

[1] Distance is from the centerline of the roadway segment to the receptor location.
"-" = contour is located within the roadway right-of-way.

TRAFFIC NOISE LEVELS AND NOISE CONTOURS

Project Number: 176500
Project Name: Highland Residential
Scenario: Opening Year Cumulative (2023) with Project

Background Information

Model Description: FHWA Highway Noise Prediction Model (FHWA-RD-77-108) with California Vehicle Noise (CALVENO) Emission Levels.
Source of Traffic Volumes: Urban Crossroads (2020)
Community Noise Descriptor: L_{dn}: _____ CNEL: x

Assumed 24-Hour Traffic Distribution:	Day	Evening	Night
Total ADT Volumes	77.50%	12.90%	9.60%
Medium-Duty Trucks	84.80%	4.90%	10.30%
Heavy-Duty Trucks	86.50%	2.70%	10.80%

Analysis Condition				Design		Vehicle Mix		Distance from Centerline of Roadway					
		Median	ADT	Speed	Alpha	Medium	Heavy	CNEL at	Distance to Contour				Calc
Roadway, Segment	Lanes	Width	Volume	(mph)	Factor	Trucks	Trucks	100 Feet	70 CNEL	65 CNEL	60 CNEL	55 CNEL	Dist
San Sevaine Road													
North of South Highland Avenue	2	0	4,100	40	0.5	1.8%	0.7%	56.3	-	-	57	122	100
South of South Highland Avenue	2	0	4,600	40	0.5	1.8%	0.7%	56.8	-	-	61	132	100
Hemlock Avenue													
North of South Highland Avenue	2	0	400	40	0.5	1.8%	0.7%	46.2	-	-	-	-	100
South of South Highland Avenue	2	0	2,000	40	0.5	1.8%	0.7%	53.2	-	-	35	76	100
South Highland Avenue													
West of San Sevaine Road	3	14	9,200	45	0.5	1.8%	0.7%	61.1	-	55	119	256	100
San Sevaine Road to South Highland Driveway	3	14	9,900	45	0.5	1.8%	0.7%	61.4	-	58	125	269	100
Souh Highland Driveway to Hemlock Avenue	3	14	9,900	45	0.5	1.8%	0.7%	61.4	-	58	125	269	100
Hemlock Avenue to Posh Lane	3	14	11,800	45	0.5	1.8%	0.7%	62.2	-	65	140	302	100
Posh Lane to Beech Avenue	3	14	11,800	45	0.5	1.8%	0.7%	62.2	-	65	140	302	100
East of Beech Avenue	3	14	9,900	45	0.5	1.8%	0.7%	61.4	-	58	125	269	100
Beech Avenue													
North of South Highland Avenue	2	16	12,500	40	0.5	1.8%	0.7%	61.2	-	56	120	259	100
South of South Highland Avenue	2	16	12,100	40	0.5	1.8%	0.7%	61.1	-	55	118	253	100

[1] Distance is from the centerline of the roadway segment to the receptor location.
"-" = contour is located within the roadway right-of-way.

TRAFFIC NOISE LEVELS AND NOISE CONTOURS

Project Number: 176500
Project Name: Highland Residential
Scenario: Horizon Year (2040) without Project

Background Information

Model Description: FHWA Highway Noise Prediction Model (FHWA-RD-77-108) with California Vehicle Noise (CALVENO) Emission Levels.
Source of Traffic Volumes: Urban Crossroads (2020)
Community Noise Descriptor: L_{dn}: _____ CNEL: x

Assumed 24-Hour Traffic Distribution:	Day	Evening	Night
Total ADT Volumes	77.50%	12.90%	9.60%
Medium-Duty Trucks	84.80%	4.90%	10.30%
Heavy-Duty Trucks	86.50%	2.70%	10.80%

Analysis Condition				Design		Vehicle Mix		Distance from Centerline of Roadway					
		Median	ADT	Speed	Alpha	Medium	Heavy	CNEL at	Distance to Contour				Calc
Roadway, Segment	Lanes	Width	Volume	(mph)	Factor	Trucks	Trucks	100 Feet	70 CNEL	65 CNEL	60 CNEL	55 CNEL	Dist
San Sevaine Road													
North of South Highland Avenue	2	0	7,800	40	0.5	1.8%	0.7%	59.1	-	40	87	187	100
South of South Highland Avenue	2	0	5,900	40	0.5	1.8%	0.7%	57.9	-	34	72	156	100
Hemlock Avenue													
North of South Highland Avenue	2	0	400	40	0.5	1.8%	0.7%	46.2	-	-	-	-	100
South of South Highland Avenue	2	0	4,400	40	0.5	1.8%	0.7%	56.6	-	-	59	128	100
South Highland Avenue													
West of San Sevaine Road	3	14	10,900	45	0.5	1.8%	0.7%	61.9	-	62	133	286	100
San Sevaine Road to South Highland Driveway	3	14	14,500	45	0.5	1.8%	0.7%	63.1	-	75	161	346	100
Souh Highland Driveway to Hemlock Avenue	3	14	11,000	45	0.5	1.8%	0.7%	61.9	-	62	134	288	100
Hemlock Avenue to Posh Lane	3	14	12,900	45	0.5	1.8%	0.7%	62.6	-	69	149	320	100
Posh Lane to Beech Avenue	3	14	12,900	45	0.5	1.8%	0.7%	62.6	-	69	149	320	100
East of Beech Avenue	3	14	14,300	45	0.5	1.8%	0.7%	63.0	-	74	159	343	100
Beech Avenue													
North of South Highland Avenue	2	16	22,900	40	0.5	1.8%	0.7%	63.8	-	83	180	387	100
South of South Highland Avenue	2	16	33,600	40	0.5	1.8%	0.7%	65.5	50	108	232	500	100

[1] Distance is from the centerline of the roadway segment to the receptor location.
"-" = contour is located within the roadway right-of-way.

TRAFFIC NOISE LEVELS AND NOISE CONTOURS

Project Number: 176500
Project Name: Highland Residential
Scenario: Horizon Year (2040) with Project

Background Information

Model Description: FHWA Highway Noise Prediction Model (FHWA-RD-77-108) with California Vehicle Noise (CALVENO) Emission Levels.
Source of Traffic Volumes: Urban Crossroads (2020)
Community Noise Descriptor: L_{dn}: _____ CNEL: x

Assumed 24-Hour Traffic Distribution:	Day	Evening	Night
Total ADT Volumes	77.50%	12.90%	9.60%
Medium-Duty Trucks	84.80%	4.90%	10.30%
Heavy-Duty Trucks	86.50%	2.70%	10.80%

Analysis Condition				Design		Vehicle Mix		Distance from Centerline of Roadway					
		Median	ADT	Speed	Alpha	Medium	Heavy	CNEL at	Distance to Contour				Calc
Roadway, Segment	Lanes	Width	Volume	(mph)	Factor	Trucks	Trucks	100 Feet	70 CNEL	65 CNEL	60 CNEL	55 CNEL	Dist
San Sevaine Road													
North of South Highland Avenue	2	0	7,900	40	0.5	1.8%	0.7%	59.1	-	41	88	189	100
South of South Highland Avenue	2	0	6,100	40	0.5	1.8%	0.7%	58.0	-	34	74	159	100
Hemlock Avenue													
North of South Highland Avenue	2	0	400	40	0.5	1.8%	0.7%	46.2	-	-	-	-	100
South of South Highland Avenue	2	0	4,400	40	0.5	1.8%	0.7%	56.6	-	-	59	128	100
South Highland Avenue													
West of San Sevaine Road	3	14	11,100	45	0.5	1.8%	0.7%	61.9	-	62	135	290	100
San Sevaine Road to South Highland Driveway	3	14	15,000	45	0.5	1.8%	0.7%	63.2	-	76	164	354	100
Souh Highland Driveway to Hemlock Avenue	3	14	11,500	45	0.5	1.8%	0.7%	62.1	-	64	138	297	100
Hemlock Avenue to Posh Lane	3	14	13,400	45	0.5	1.8%	0.7%	62.7	-	71	153	329	100
Posh Lane to Beech Avenue	3	14	13,400	45	0.5	1.8%	0.7%	62.7	-	71	153	329	100
East of Beech Avenue	3	14	14,500	45	0.5	1.8%	0.7%	63.1	-	75	161	346	100
Beech Avenue													
North of South Highland Avenue	2	16	23,000	40	0.5	1.8%	0.7%	63.8	-	84	180	388	100
South of South Highland Avenue	2	16	33,800	40	0.5	1.8%	0.7%	65.5	50	108	233	502	100

[1] Distance is from the centerline of the roadway segment to the receptor location.
"-" = contour is located within the roadway right-of-way.

Appendix N
Traffic Impact Analysis

HIGHLAND RESIDENTIAL PROJECT
INITIAL STUDY

Highland Residential (MC No. 19-096) (MC No. 19-096)

FOCUSED TRAFFIC IMPACT ANALYSIS

CITY OF FONTANA

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MARCH 10, 2020

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LIST OF ABBREVIATED TERMS

(1)	Reference
ADT	Average Daily Traffic
CA MUTCD	California Manual on Uniform Transportation Control Devices
Caltrans	California Department of Transportation
CEQA	California Environmental Quality Act
CMP	Congestion Management Program
DIF	Development Impact Fee
DU	Dwelling Unit
E+P	Existing plus Project
HCM	Highway Capacity Manual
ITE	Institute of Transportation Engineers
LOS	Level of Service
N/A	Not Applicable
NCHRP	National Cooperative Highway Research Program
PHF	Peak Hour Factor
Project	Highland Residential (MC No. 19-096)
RTP	Regional Transportation Plan
SBCTA	San Bernardino County Transportation Authority
SBTAM	San Bernardino Transportation Analysis Model
SCAG	Southern California Association of Governments
SCS	Sustainable Communities Strategy
TIA	Traffic Impact Analysis
vphg	Vehicles Per Hour of Green

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1 INTRODUCTION

This report presents the results of the focused traffic impact analysis (TIA) for the proposed Highland Residential (MC No. 19-096) (Tentative Tract Map No. 19-011) development ("Project"), which is located on the northwest corner of Hemlock Avenue and S. Highland Avenue in the City of Fontana, as shown on Exhibit 1-1.

The purpose of this focused traffic impact analysis is to evaluate the potential impacts to traffic and circulation associated with the proposed establishment of the Highland Residential (MC No. 19-096) development allowing the development of 107 single family detached residential dwelling units. Based on discussions with City staff, the scope of this TIA is consistent with other recently completed TIAs in the area and follows the City of Fontana's Draft Traffic Study Guidelines and the San Bernardino County Congestion Management Program (CMP). (1) (2)

1.1 SUMMARY OF FINDINGS

Trips generated by the Project's proposed land uses have been estimated based on trip generation rates collected by the Institute of Transportation Engineers (ITE) Trip Generation Manual, (10th Edition, 2017). (3) The Project is estimated to generate a total of 1,010 trip-ends per day on a typical weekday with approximately 80 AM peak hour trips and 106 PM peak hour trips. The assumptions and methods used to estimate the Project's trip generation characteristics are discussed in greater detail in Section 4.1 *Project Trip Generation* of this report.

Based on the City of Fontana's significance criteria as discussed in Section 2.6 *Thresholds of Significance* and the 50 peak hour trip criteria, the addition of Project traffic is anticipated to result in a significant cumulative impact at the following study area intersection for E+P, Opening Year Cumulative (2023), and Horizon Year (2040) traffic conditions:

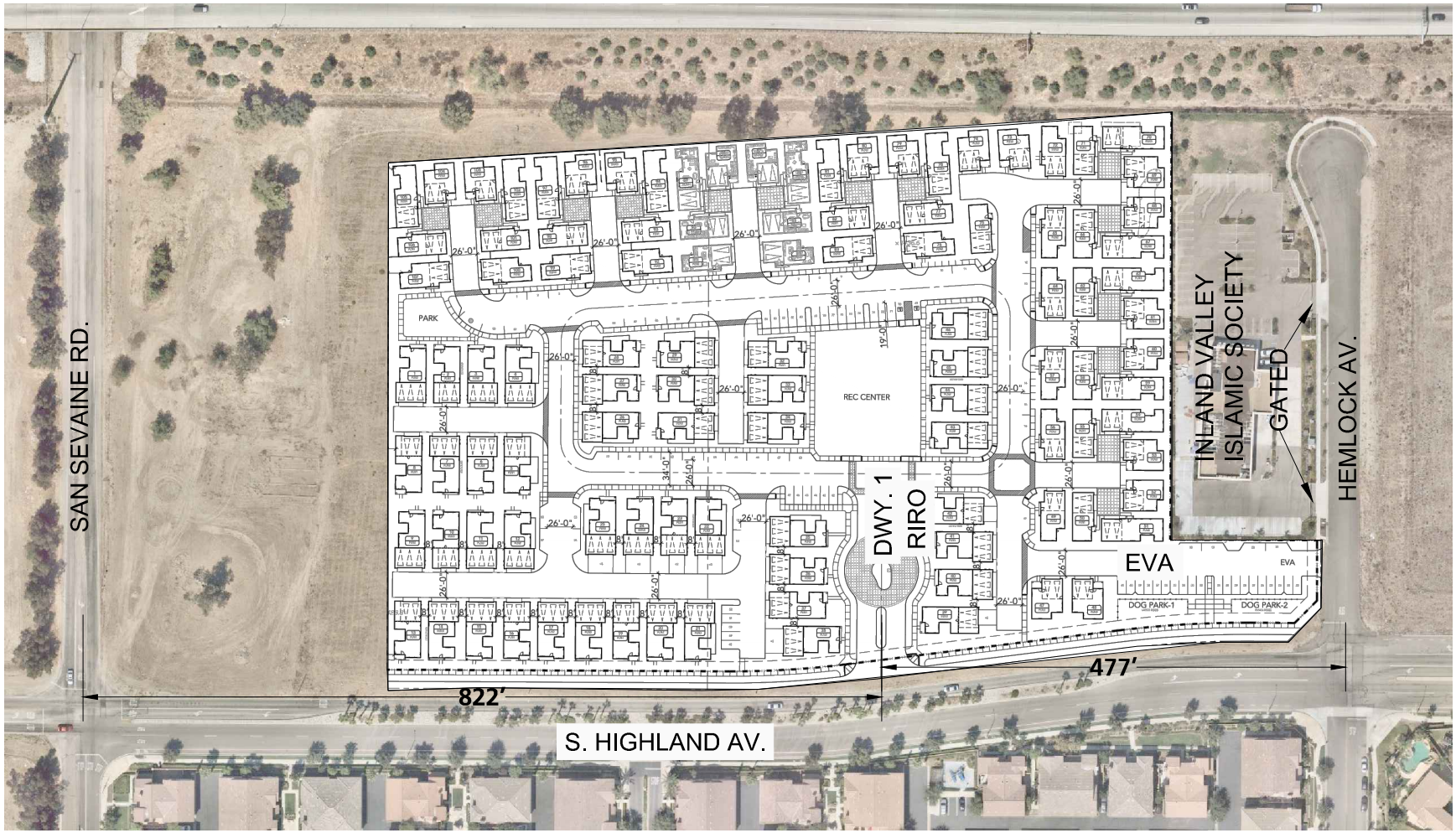
- San Sevaine Rd. & S. Highland Av. (#1)

The following mitigation measure has been recommended to address cumulative impacts:

Mitigation Measure 1.1 – Prior to the issuance of building permits, the Project Applicant shall participate in the City's Development Impact Fee (DIF) program by paying the requisite DIF fee at the time of building permit, or as agreed to by the City and Project Applicant, for the improvements not included in a pre-existing fee program.

The Project will construct its ultimate half-section of S. Highland Avenue (Primary Highway) along the Project's frontage. Although Hemlock Avenue is built to its ultimate cross-section, the Project should construct curb, gutter, sidewalk, and landscaping improvements along the Project's frontage.

EXHIBIT 1-1: PRELIMINARY SITE PLAN



LEGEND:

RIRO = RIGHT-IN/RIGHT-OUT ONLY ACCESS
EVA = EMERGENCY VEHICLE ACCESS

N

1.2 PROJECT OVERVIEW

Exhibit 1-1 illustrates the preliminary site use plan for the Project. As indicated on Exhibit 1-1, the Project is to consist of 107 single family detached residential dwelling units. Access to the Project site will be provided the right-in/right-out only driveway on S. Highland Avenue. There is an emergency vehicle access driveway on Hemlock Avenue.

1.3 ANALYSIS SCENARIOS

For the purposes of this traffic study, potential impacts to traffic and circulation have been assessed for each of the following conditions:

- Existing (2020) (1 scenario)
- Existing plus Project (E+P) (1 scenario)
- Opening Year Cumulative (2023) Without and With Project (2 scenarios)
- Horizon Year (2040) Without and With Project (2 scenarios)

1.3.1 EXISTING (2020) CONDITIONS

Information for Existing (2020) conditions is disclosed to represent the baseline traffic conditions as they existed at the time this report was prepared.

1.3.2 EXISTING PLUS PROJECT CONDITIONS

The Existing plus Project (E+P) analysis determines significant traffic impacts that would occur on the existing roadway system with the addition of Project traffic. The E+P analysis is intended to identify the Project-specific impacts associated solely with the development of the Project based on a comparison of the E+P traffic conditions to Existing conditions.

1.3.3 OPENING YEAR CUMULATIVE (2023) CONDITIONS

The Opening Year Cumulative (2023) conditions analysis determines the near-term cumulative traffic impacts based on a comparison of the With Project traffic scenarios to the Without Project traffic scenario. The Opening Year Cumulative (2023) conditions analyses uniquely identifies the specific traffic impacts associated with the proposed Project. To account for background traffic growth, traffic associated with other known cumulative development projects in conjunction with an ambient growth of 1.38 percent per year compounded over 3 years ($1.38^{3\ \text{years}}$) from Existing conditions is included for Opening Year Cumulative (2023) traffic conditions.

The currently adopted Southern California Association of Governments (SCAG) 2016 Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS) (April 2016) growth forecasts for the City of Fontana identifies projected growth in population of 200,200 in 2012 to 280,900 in 2040, or a 40.31% increase over the 28-year period. (4) The change in population equates to roughly a 1.22 percent growth rate compounded annually. Similarly, growth over the same 28-year period in households is projected to increase by 49.19 percent, or 1.44 percent growth rate, compounded annually. Finally, growth in employment over the same 28-year period is projected to increase by 50.6 percent, or a 1.47 percent annual growth rate. The average annual growth

rate between population, households, and employment is 1.38 percent per year and has been used for the purposes of this analysis.

1.3.4 HORIZON YEAR (2040) CONDITIONS

Traffic projections for Horizon Year (2040) Without Project conditions were derived from the San Bernardino County Transportation Analysis Model (SBTAM), the sub-regional model for San Bernardino County for the study area intersections located within the County of San Bernardino. The Horizon Year (2040) traffic conditions is utilized to determine long-term cumulative traffic impacts. The initial estimate of the future Horizon Year (2040) Without Project peak hour turning movements were then reviewed by Urban Crossroads for reasonableness, and in some cases, were adjusted to achieve flow conservation, reasonable growth, and reasonable diversion between parallel routes. Project traffic was then added to determine Horizon Year (2040) With Project traffic forecasts.

The Horizon Year (2040) conditions analysis will be utilized to determine if improvements funded through regional transportation mitigation fee programs, such as the City's DIF program, or other approved funding mechanisms can accommodate the long-range cumulative traffic at the target level of service (LOS) identified by the City of Fontana (lead agency). It should be noted that the City of Fontana has updated their DIF program to also include appropriate contributions towards regionally significant improvements that have been identified via the San Bernardino County CMP regional fee program study. If the planned and funded improvements can provide the target LOS, then the Project's payment into established fee programs will be considered as cumulative mitigation. Other improvements needed beyond the "funded" improvements (such as localized improvements to non-DIF facilities) are identified as such.

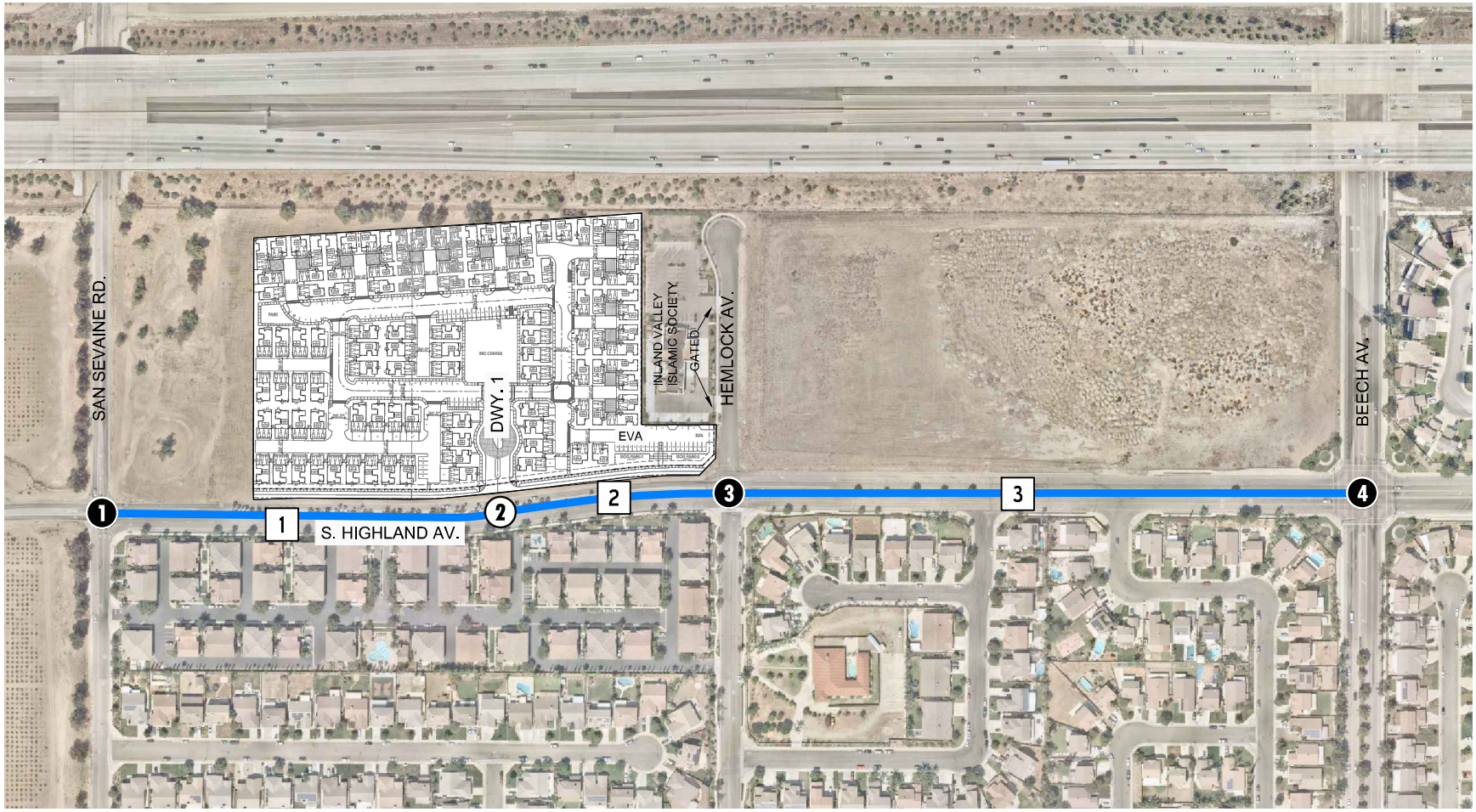
1.4 STUDY AREA

1.4.1 INTERSECTIONS

The following 4 study area intersection locations shown on Exhibit 1-2 and listed on Table 1-1 were selected for this TIA based on the City of Fontana's Traffic Study Guidelines and in consultation with the City of Fontana staff. Pursuant to the Traffic Study Guidelines, the City requires analysis of intersections where the Project would contribute 50 or more peak-hour trips.[1]

[1] The "50 or more peak hour trips" intersection analytic protocol stipulated in the City's Traffic Study Guidelines is consistent with standard industry practice. It is noted further that the 50 peak hour trip threshold is employed by other agencies throughout southern California including Caltrans, County of Riverside, County of San Bernardino, and the County of Orange.

EXHIBIT 1-2: LOCATION MAP



LEGEND:

- ❶ = EXISTING INTERSECTION ANALYSIS LOCATION
- ⓪ = FUTURE INTERSECTION ANALYSIS LOCATION
- 00 = ROADWAY SEGMENT ANALYSIS LOCATION

N

13232 - locmap.dwg

URBAN CROSSROADS

The intent of a CMP is to more directly link land use, transportation, and air quality, thereby prompting reasonable growth management programs that will effectively utilize new transportation funds, alleviate traffic congestion and related impacts, and improve air quality. Counties within California have developed CMPs with varying methods and strategies to meet the intent of the CMP legislation. The County of San Bernardino CMP became effective with the passage of Proposition 111 in 1990 and updated most recently in 2016. The San Bernardino County Transportation Authority (SBCTA) adopted the 2016 CMP for the County of San Bernardino in June 2016. (2) There are no CMP facilities within the study area.

TABLE 1-1: INTERSECTION ANALYSIS LOCATIONS

ID	Intersection Location	Jurisdiction	CMP?
1	San Sevaine Road & S. Highland Avenue	City of Fontana	No
2	Driveway 1 & S. Highland Avenue – Future Intersection	City of Fontana	No
3	Hemlock Avenue & S. Highland Avenue	City of Fontana	No
4	Beech Avenue & S. Highland Avenue	City of Fontana	No

1.4.2 ROADWAY SEGMENT ANALYSIS

Pursuant to the request of City staff, a roadway segment analysis has been evaluated for the following 3 study area roadway segments:

TABLE 1-2: ROADWAY SEGMENT ANALYSIS LOCATIONS

ID	Roadway Segment	Jurisdiction
1	S. Highland Avenue between San Sevaine Road & Driveway 1	Fontana
2	S. Highland Avenue between Driveway 1 & Hemlock Avenue	Fontana
3	S. Highland Avenue between Hemlock Avenue & Beach Avenue	Fontana

As stated in the City of Fontana's Traffic Impact Analysis Guidelines, roadway link analysis could be required where the ultimate street cross sections are not constructed. The roadway segment analysis has been conducted for each analysis scenario using the roadway capacities obtained from the City of Fontana General Plan Circulation Element. (1)

1.5 ANALYSIS FINDINGS

This section provides a summary of the analysis results for Existing, E+P, Opening Year Cumulative (2023), and Horizon Year (2040) traffic conditions.

1.5.1 EXISTING (2020) CONDITIONS

Intersection Operations Analysis

A summary of LOS results for Existing traffic conditions is presented on Exhibit 1-3. For Existing (2020) traffic conditions, the following intersection currently operates at an unacceptable level of service (LOS) (i.e., LOS D or worse) during one or more of the peak hours:

- San Sevaine Road & S. Highland Avenue (#1) – LOS E AM peak hour only

Traffic Signal Warrant Analysis

The following intersections currently meet peak hour volume-based traffic signal warrants under Existing traffic conditions:

- San Sevaine Road & S. Highland Avenue (#1)
- Hemlock Avenue & S. Highland Avenue (#3)

Traffic signal warrant analyses has not been conducted for any other future analysis scenario as there are no other unsignalized study area intersection from those identified above. Driveway 1 is proposed for right-in/right-out access only and is proposed to be unsignalized, however, a traffic signal warrant is not necessary at this location due to the proposed access restriction.

Roadway Segment Operations

All of the study area roadway segments are currently operating at acceptable capacities based on the Existing daily volumes and available roadway capacity.

1.5.2 E+P CONDITIONS

Intersection Operations Analysis

As shown in Exhibit 1-3, there are no additional intersections anticipated to operate at an unacceptable LOS for E+P traffic conditions, in addition to the intersection identified under Existing (2020) traffic conditions. Based on the City of Fontana's significance criteria as discussed in Section 2.6 *Thresholds of Significance* and the 50 peak hour trip threshold, the addition of Project traffic is anticipated to result in a significant cumulative impact at the intersection of San Sevaine Road and S. Highland Avenue.

It should be noted the westbound right turn lane at the intersection of Hemlock Avenue and S. Highland Avenue would be restriped as a shared through-right turn lane for With Project traffic conditions only.

EXHIBIT 1-3: SUMMARY OF LOS

#	Intersection	Existing (2020)	E+P	Opening Year Cumulative (2023) Without Project	Opening Year Cumulative (2023) With Project	Horizon Year (2040) Without Project	Horizon Year (2040) With Project
1	San Sevaine Rd. & S. Highland Av.						
2	Dwy. 1 & S. Highland Av.	NA		NA		NA	
3	Hemlock Av. & S. Highland Av.						
4	Beech Av. & S. Highland Av.						

LEGEND:

- = AM PEAK HOUR
- = PM PEAK HOUR
- = ACCEPTABLE LOS A-C
- = DEFICIENT LOS D-E
- = DEFICIENT LOS F
- NA = NOT AN ANALYSIS LOCATION FOR THIS SCENARIO

#	Roadway Segment	Existing (2020)	E+P	Opening Year Cumulative (2023) Without Project	Opening Year Cumulative (2023) With Project	Horizon Year (2040) Without Project	Horizon Year (2040) With Project
1	Highland Av., San Sevaine Rd. to Dwy. 1						
2	Highland Av., Dwy. 1 to Hemlock Av.						
3	Highland Av., Hemlock Av. to Beech Av.						

LEGEND:

- = ACCEPTABLE LOS A-D
- = DEFICIENT LOS D-E
- = DEFICIENT LOS F

Roadway Segment Operations

Consistent with Existing (2020) traffic conditions, the study area roadway segments are anticipated to continue to operate at an acceptable LOS with the addition of Project traffic for E+P traffic conditions.

Impacts and Recommended Improvements

Based on the City of Fontana's significance criteria as discussed in Section 2.6 *Thresholds of Significance*, the following intersection is anticipated to be cumulatively impacted by the Project during one or more peak hours:

- San Sevaine Road & S. Highland Avenue (#1)

The following improvements have been recommended to address the cumulatively impacted intersection identified above:

San Sevaine Road & S. Highland Avenue (#1) – The following improvement is necessary to improve the intersection's peak hour operations to pre-project conditions or better, thus reducing the cumulative impact to less than significant:

- Contribute fair share (via payment of fees) towards the installation of a traffic signal.

1.5.3 OPENING YEAR CUMULATIVE (2023) CONDITIONS

Intersection Operations Analysis

As shown in Exhibit 1-3, there are no additional study area intersections anticipated to operate at an unacceptable LOS for Opening Year Cumulative (2023) Without Project traffic conditions, in addition to the location identified under Existing traffic conditions. It should be noted the westbound right turn lane at the intersection of Hemlock Avenue and S. Highland Avenue would be restriped as a shared through-right turn lane for With Project traffic conditions only.

Roadway Segment Operations

The study area roadway segments are anticipated to operate at an acceptable LOS for Opening Year Cumulative (2023) Without and With Project traffic conditions.

Impacts and Recommended Improvements

Based on the City of Fontana's significance criteria as discussed in Section 2.6 *Thresholds of Significance*, the following intersection is anticipated to be cumulatively impacted by the Project during one or more peak hours:

- San Sevaine Road & S. Highland Avenue (#1)

The following improvements have been recommended to address the cumulatively impacted intersection identified above:

San Sevaine Road & S. Highland Avenue (#1) – The following improvement is necessary to improve the intersection's peak hour operations to pre-project conditions or better, thus reducing the cumulative impact to less than significant:

- Contribute fair share (via payment of fees) towards the installation of a traffic signal, addition of a 2nd westbound through lane, and 2nd eastbound through lane.

1.5.4 HORIZON YEAR (2040) CONDITIONS

Intersection Operations

The following study area intersections are anticipated to operate at an unacceptable LOS under Horizon Year (2040) Without Project traffic conditions during one or both peak hours:

- San Sevaine Road & S. Highland Avenue (#1) – LOS F AM and PM peak hours
- Hemlock Avenue & S. Highland Avenue (#3) – LOS E AM peak hour; LOS D PM peak hour
- Beech Avenue & S. Highland Avenue (#4) – LOS D AM peak hour only

The addition of Project traffic is not anticipated to result in any new deficiencies at the study area intersections in addition to those previously identified for Horizon Year (2040) Without Project traffic conditions. It should be noted the westbound right turn lane at the intersection of Hemlock Avenue and S. Highland Avenue would be restriped as a shared through-right turn lane for With Project traffic conditions only. As such, the peak hour operations are anticipated to improve for With Project traffic conditions.

Roadway Segment Operations

The study area roadway segments are anticipated to operate at an acceptable LOS for Horizon Year (2040) Without and With Project traffic conditions.

Impacts and Recommended Improvements

Based on the City of Fontana's significance criteria as discussed in Section 2.6 *Thresholds of Significance*, the following intersection is anticipated to be cumulatively impacted by the Project during one or more peak hours:

- San Sevaine Road & S. Highland Avenue (#1)

The following improvements have been recommended to address the cumulatively impacted intersection identified above:

San Sevaine Road & S. Highland Avenue (#1) – The following improvement is necessary to improve the intersection's peak hour operations to pre-project conditions or better, thus reducing the cumulative impact to less than significant:

- Contribute fair share (via payment of fees) towards the installation of a traffic signal, addition of a 2nd westbound through lane, and 2nd eastbound through lane (same as Opening Year Cumulative traffic conditions).

1.6 LOCAL AND REGIONAL FUNDING MECHANISMS

Transportation improvements within the City of Fontana are funded through a combination of direct project mitigation, development impact fee programs or fair share contributions, such as the City of Fontana DIF program. Identification and timing of needed improvements is generally determined through local jurisdictions based upon a variety of factors.

1.6.1 MEASURE "I" FUNDS

In 2004, the voters of San Bernardino County approved the 30-year extension of Measure "I", a one-half of one percent sales tax on retail transactions, through the year 2040, for transportation projects including, but not limited to, infrastructure improvements, commuter rail, public transit, and other identified improvements. The Measure "I" extension requires that a regional traffic impact fee be created to ensure development is paying its fair share. A regional Nexus study was prepared by SBCTA and concluded that each jurisdiction should include a regional fee component in their local programs in order to meet the Measure "I" requirement. The regional component assigns specific facilities and cost sharing formulas to each jurisdiction and was most recently updated in May 2018. Revenues collected through these programs are used in tandem with Measure "I" funds to deliver projects identified in the Nexus Study.

While Measure "I" is a self-executing sales tax administered by SBCTA, it bears discussion here because the funds raised through Measure "I" have funded in the past and will continue to fund new transportation facilities in San Bernardino County, including within the City of Fontana.

1.6.2 CITY OF FONTANA DEVELOPMENT IMPACT FEE (DIF)

The City of Fontana adopted the latest update to their DIF program in February 2016. Fees from new residential, commercial and industrial development are collected to fund Measure "I" compliant regional facilities as well as local facilities. Under the City's DIF program, the City may grant to developers a credit against specific components of fees when those developers construct certain facilities and landscaped medians identified in the list of improvements funded by the DIF program.

After the City's DIF fees are collected, they are placed in a separate restricted use account pursuant to the requirements of Government Code sections 66000 *et seq*. The timing to use the DIF fees is established through periodic capital improvement programs which are overseen by the City's Engineering Department. Periodic traffic counts, review of traffic accidents, and a review of traffic trends throughout the City are also periodically performed by City staff and consultants. The City uses this data to determine the timing of the improvements listed in its facilities list. The City also uses this data to ensure that the improvements listed on the facilities list are constructed before the LOS falls below the LOS performance standards adopted by the City. In this way, the improvements are constructed before the LOS falls below the City's LOS performance thresholds. The City's DIF program establishes a timeline to fund, design, and build the improvements.

1.7 CUMULATIVE IMPACTS

A summary of the cumulatively impacted study area intersections and recommended mitigation measures to address cumulatively significant impacts are described in detail within Section 6.0 *Horizon Year (2040) Traffic Conditions*. Cumulative impacts are deficiencies that would not be directly caused by the Project. The Project would, however, contribute traffic to these deficient facilities along with other cumulative development projects, resulting in a cumulatively considerable impact. The following mitigation measure is based on the improvements needed for either Opening Year Cumulative (2023) or Horizon Year (2040) traffic conditions.

1.7.1 RECOMMENDED IMPROVEMENTS TO ADDRESS DEFICIENCIES AT INTERSECTIONS

A summary of off-site improvements needed to address cumulative traffic impacts for Horizon Year (2040) traffic conditions were included on Table 1-3. Improvements found to be included in City of Fontana (lead agency) DIF program have been identified as such. For improvements that are not in the City's DIF program, a fair share financial contribution based on the Project's fair share impact shall be imposed (for City of Fontana facilities) and may be imposed by other jurisdictions in order to mitigate the Project's share of impacts in lieu of construction. Because the City of Fontana does not have plenary control over intersections under other jurisdictions, the City of Fontana cannot guarantee that such improvements will be constructed. These fees (both to the City of Fontana, and as determined, to surrounding agencies as fair-share contributions) are collected as part of a funding mechanism aimed at ensuring that regional highways and arterial expansions keep pace with the projected vehicle trip increases. These estimates are a rough order of magnitude only as they are intended only for discussion purposes and do not imply any legal responsibility or formula for contributions or mitigation.

1.7.2 CUMULATIVE MITIGATION MEASURES

Mitigation Measure 1.1 – Prior to the issuance of building permits, the Project Applicant shall participate in the City's DIF program by paying the requisite DIF fee at the time of building permit, or as agreed to by the City and Project Applicant, for the improvements identified on Table 1-3 which are consistent with the improvements shown on Table 7-3, but not included in a pre-existing fee program.

Table 1-3

Summary of Intersection Improvements and Project Fair Share

#	Intersection Location	Jurisdiction	Analysis Scenarios			Improvements included in Fee Program?[1]	Mechanism for Mitigation[2]	Total Cost[3]	Fair Share %[4]	Estimated Fair Share Cost
			E+P	Opening Year Cumulative (2023) With Project	2040 With Project					
1	San Sevaine Rd. & S. Highland Av.	Fontana	Install a Traffic Signal	Same	Same	No	Fee Payment	$0	--	$0
				Add a 2nd EB through lane	Same	Yes	Fee Payment	$0		$0
				Add a 2nd WB through lane	Same	Yes	Fee Payment	$0		$0
							Total	**$0**		**$0**
Total Costs for Horizon Year (2040) Improvements								**$0**		**$0**
Total Project Fair Share Contribution to the City of Fontana (non-DIF)[5]								**$0**		

[1] Improvements are included in the SBCTA Nexus Study Fee program or the Measure I Funding.

[2] Identifies the Project's responsibility to construct an improvement or contribute fair share or fee payment towards the implementation of the improvements shown.

[3] Costs have been estimated using the data provided in Appendix G of the San Bernardino County CMP (2016 Update) for preliminary construction costs. Appendix G costs escalated by a factor of 1.568 to reflect 2020 conditions, except for

[4] If applicable, program improvements constructed may be eligible for fee credit, at discretion of City.

[5] Total project fair share contribution consists of the improvements which are not already included in the City of Fontana's DIF for those intersections wholly or partially within the City of Fontana.

1.8 ON-SITE ROADWAY IMPROVEMENTS

Roadway improvements necessary to provide site access and on-site circulation are assumed to be constructed in conjunction with site development and are described below. These improvements should be in place prior to occupancy.

1.8.1 SITE ADJACENT ROADWAY IMPROVEMENTS

The recommended site-adjacent roadway improvements for the Project are described below. Exhibit 1-4 illustrates the site-adjacent roadway improvement recommendations. The recommended site-adjacent roadway improvements are described below. These improvements need to be incorporated prior to project approval or imposed as conditions of approval as part of the project approval.

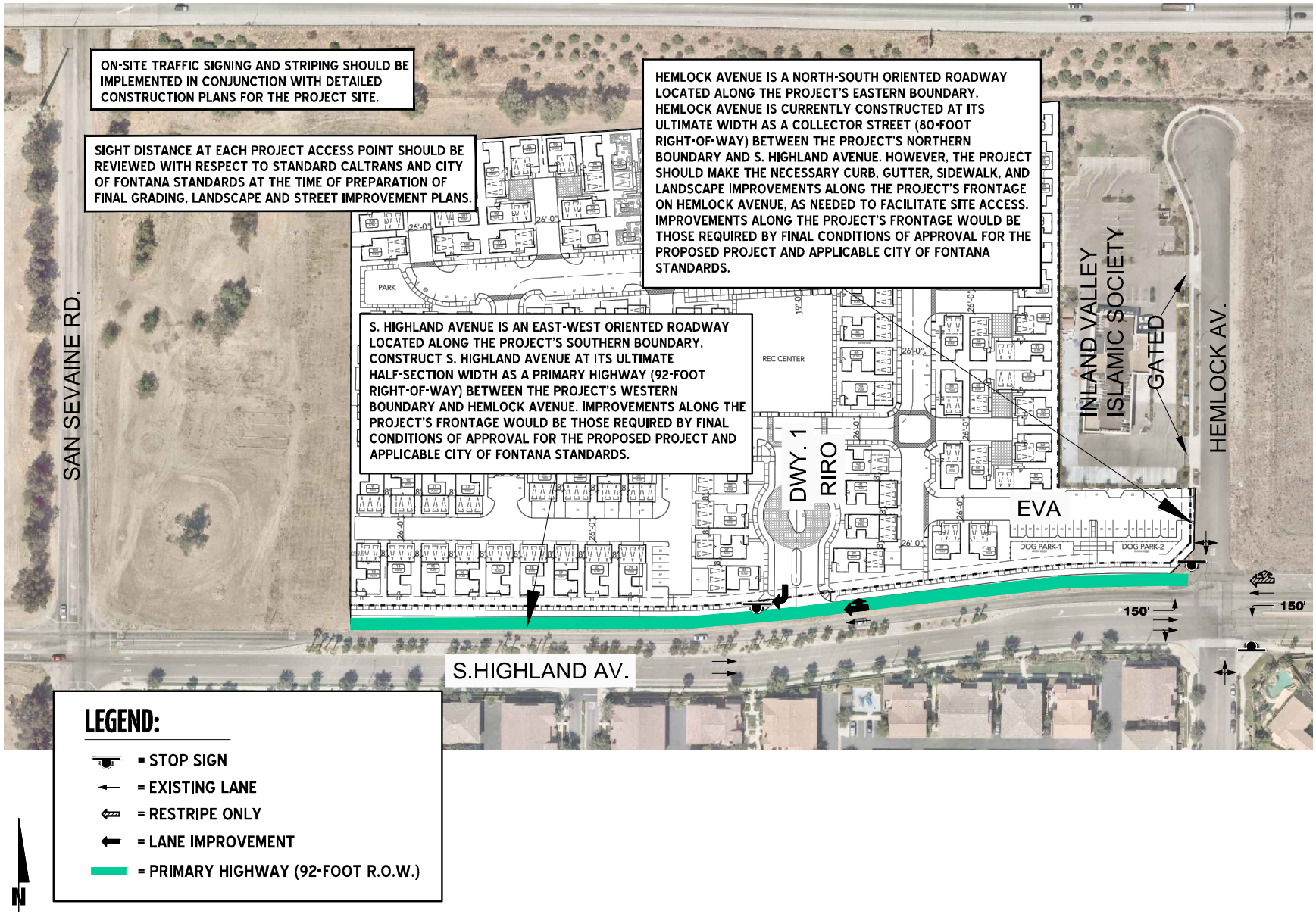
S. Highland Avenue – S. Highland Avenue is an east-west oriented roadway located along the Project's southern boundary. Construct S. Highland Avenue at its ultimate half-section width as a primary highway (92-foot right-of-way) between the Project's western boundary and Hemlock Avenue. Improvements along the Project's frontage would be those required by final conditions of approval for the proposed Project and applicable City of Fontana standards.

Hemlock Avenue – Hemlock Avenue is a north-south oriented roadway located along the Project's eastern boundary. Hemlock Avenue is currently constructed to its ultimate width as a collector street (80-foot right-of-way) between the Project's northern boundary and S. Highland Avenue. However, the Project should make the necessary curb, gutter, sidewalk, and landscape improvements along its frontage on Hemlock Avenue, as needed to facilitate site access. Improvements along the Project's frontage would be those required by final conditions of approval for the proposed project and applicable City of Fontana standards.

On-site traffic signing and striping should be implemented in conjunction with detailed construction plans for the project site.

Sight distance at each project access point should be reviewed with respect to standards Caltrans and City of Fontana standards at the time of preparation of final grading, landscape and street improvement plans.

EXHIBIT 1-4: SITE ADJACENT ROADWAY AND SITE ACCESS RECOMMENDATIONS



1.9 SITE ACCESS IMPROVEMENTS

The recommended site access driveway improvements for the Project are described below. Exhibit 1-4 also illustrates the site access improvements. Construction of on-site and site adjacent improvements shall occur in conjunction with adjacent Project development activity or as needed for Project access purposes.

***Driveway 1 & S. Highland Avenue* (#2)** – Install a stop control on the southbound approach and construct the intersection with the following geometrics:

- Northbound Approach: Not Applicable (N/A)
- Southbound Approach: One right turn lane.
- Eastbound: Two through lanes.
- Westbound Approach: One through lane and one shared through-right turn lane.

***Hemlock Avenue & S. Highland Avenue* (#3)** – Maintain the existing traffic control and other lane geometrics, however, restripe the existing westbound right turn lane as a shared through-right turn lane.

Wherever necessary, roadways adjacent to the Project, site access points and site-adjacent intersections will be constructed to be consistent with the identified roadway classifications and respective cross-sections in the County of Riverside General Plan Circulation Element.

2 METHODOLOGIES

This section of the report presents the methodologies used to perform the traffic analyses summarized in this report. The methodologies described are consistent with City of Fontana's Traffic Study Guidelines. (1)

2.1 LEVEL OF SERVICE

Traffic operations of roadway facilities are described using the term "Level of Service" (LOS). LOS is a qualitative description of traffic flow based on several factors such as speed, travel time, delay, and freedom to maneuver. Six levels are typically defined ranging from LOS A, representing completely free-flow conditions, to LOS F, representing breakdown in flow resulting in stop-and-go conditions. LOS E represents operations at or near capacity, an unstable level where vehicles are operating with the minimum spacing for maintaining uniform flow.

2.2 INTERSECTION CAPACITY ANALYSIS

The definitions of LOS for interrupted traffic flow (flow restrained by the existence of traffic signals and other traffic control devices) differ slightly depending on the type of traffic control. The LOS is typically dependent on the quality of traffic flow at the intersections along a roadway. The 6th Edition Highway Capacity Manual (HCM) methodology expresses the LOS at an intersection in terms of delay time for the various intersection approaches. (6) The HCM uses different procedures depending on the type of intersection control.

2.2.1 SIGNALIZED INTERSECTIONS

The City of Fontana requires signalized intersection operations analysis based on the methodology described in the HCM. (6)

Intersection LOS operations are based on an intersection's average control delay. Control delay includes initial deceleration delay, queue move-up time, stopped delay, and final acceleration delay. For signalized intersections LOS is directly related to the average control delay per vehicle and is correlated to a LOS designation as described on Table 2-1.

TABLE 2-1: SIGNALIZED INTERSECTION LOS THRESHOLDS

Description	Average Control Delay (Seconds), V/C ≤ 1.0	Level of Service, V/C ≤ 1.0	Level of Service, V/C > 1.0
Operations with very low delay occurring with favorable progression and/or short cycle length.	0 to 10.00	A	F
Operations with low delay occurring with good progression and/or short cycle lengths.	10.01 to 20.00	B	F

Description	Average Control Delay (Seconds), V/C ≤ 1.0	Level of Service, V/C ≤ 1.0	Level of Service, V/C > 1.0
Operations with average delays resulting from fair progression and/or longer cycle lengths. Individual cycle failures begin to appear.	20.01 to 35.00	C	F
Operations with longer delays due to a combination of unfavorable progression, long cycle lengths, or high V/C ratios. Many vehicles stop and individual cycle failures are noticeable.	35.01 to 55.00	D	F
Operations with high delay values indicating poor progression, long cycle lengths, and high V/C ratios. Individual cycle failures are frequent occurrences. This is considered to be the limit of acceptable delay.	55.01 to 80.00	E	F
Operation with delays unacceptable to most drivers occurring due to over saturation, poor progression, or very long cycle lengths.	80.01 and up	F	F

Source: HCM, 6th Edition

The traffic modeling and signal timing optimization software package Synchro (Version 10) has been utilized to analyze signalized intersections within the study area. Synchro is a macroscopic traffic software program that is based on the signalized intersection capacity analysis as specified in the HCM (6th Edition). (6) Macroscopic level models represent traffic in terms of aggregate measures for each movement at the study intersections. Equations are used to determine measures of effectiveness such as delay and queue length. The LOS and capacity analysis performed by Synchro takes into consideration optimization and coordination of signalized intersections within a network.

The LOS analysis for signalized intersections has been performed using existing signal timing for Existing, E+P, Opening Year Cumulative (2023), and Horizon Year (2040) traffic conditions. Appropriate time for pedestrian crossings has also been considered in the signalized intersection analysis.

The peak hour traffic volumes have been adjusted using a peak hour factor (PHF) to reflect peak 15-minute volumes. Common practice for LOS analysis is to use a peak 15-minute rate of flow. However, flow rates are typically expressed in vehicles per hour. The PHF is the relationship between the peak 15-minute flow rate and the full hourly volume (e.g. PHF = [Hourly Volume] / [4 x Peak 15-minute Flow Rate]). The use of a 15-minute PHF produces a more detailed analysis as compared to analyzing vehicles per hour. Existing PHFs have been used for all analysis scenarios. Per the HCM (6th Edition), PHF values over 0.95 often are indicative of high traffic volumes with capacity constraints on peak hour flows while lower PHF values are indicative of greater variability of flow during the peak hour. (6)

Saturation flow rates of 1,900 vehicles per hour of green (vphg) has been utilized, consistent with the recommended values in the City's traffic study guidelines. (1)

2.2.2 UNSIGNALIZED INTERSECTIONS

The City of Fontana requires the operations of unsignalized intersections be evaluated using the methodology described in the HCM. (6) The LOS rating is based on the weighted average control delay expressed in seconds per vehicle (see Table 2-2).

TABLE 2-2: UNSIGNALIZED INTERSECTION LOS THRESHOLDS

Description	Average Control Delay Per Vehicle (Seconds)	Level of Service, V/C ≤ 1.0	Level of Service, V/C > 1.0
Little or no delays.	0 to 10.00	A	F
Short traffic delays.	10.01 to 15.00	B	F
Average traffic delays.	15.01 to 25.00	C	F
Long traffic delays.	25.01 to 35.00	D	F
Very long traffic delays.	35.01 to 50.00	E	F
Extreme traffic delays with intersection capacity exceeded.	> 50.00	F	F

Source: HCM, 6th Edition

At two-way or side-street stop-controlled intersections, LOS is calculated for each controlled movement and for the left turn movement from the major street, as well as for the intersection as a whole. For approaches composed of a single lane, the delay is computed as the average of all movements in that lane. For all-way stop controlled intersections, LOS is computed for the intersection as a whole.

2.3 ROADWAY SEGMENT CAPACITY ANALYSIS METHODOLOGY

Roadway segment operations have been evaluated using the applicable average daily traffic (ADT) roadway capacity values provided in the City of Fontana General Plan. The roadway capacities utilized for the purposes of this analysis are considered "rule of thumb" estimates for planning purposes and are affected by such factors as intersections (spacing, configuration and control features), degree of access control, roadway grades, design geometrics (horizontal and vertical alignment standards), sight distance, vehicle mix (truck and bus traffic) and pedestrian bicycle traffic.

While using ADT for planning purposes is suitable with regards to evaluating potential volume to capacity with future forecasts, it is not suitable for operational analysis because it does not account for the factors listed previously. As such, where the ADT based roadway segment analysis indicates a deficiency (unacceptable LOS), a review of the more detailed peak hour intersection analysis and progression analysis are undertaken. The more detailed peak hour intersection analysis explicitly accounts for factors that affect roadway capacity. Therefore, roadway segment widening is typically only recommended if the peak hour intersection analysis indicates the need for additional through lanes.

2.4 TRAFFIC SIGNAL WARRANT ANALYSIS METHODOLOGY

The term "signal warrants" refers to the list of established criteria used by the California Department of Transportation (Caltrans) and other public agencies to quantitatively justify or ascertain the potential need for installation of a traffic signal at an otherwise unsignalized intersection. This TIA uses the signal warrant criteria presented in the latest edition of the Caltrans California Manual on Uniform Traffic Control Devices (CA MUTCD). (7)

The signal warrant criteria for Existing study area intersections are based upon several factors, including volume of vehicular and pedestrian traffic, frequency of accidents, and location of school areas. The CA MUTCD indicates that the installation of a traffic signal should be considered if one or more of the signal warrants are met. (7) Specifically, this TIA utilizes the Peak Hour Volume-based Warrant 3 as the appropriate representative traffic signal warrant analysis for existing traffic conditions. Warrant 3 is appropriate to use for this TIA because it provides specialized warrant criteria for intersections with rural characteristics (e.g. located in communities with populations of less than 10,000 persons or with adjacent major streets operating above 40 miles per hour). For the purposes of this study, the speed limit was the basis for determining whether Urban or Rural warrants were used for a given intersection.

Traffic signal warrant analyses were performed for the following study area intersection shown on Table 2-3:

TABLE 2-3: TRAFFIC SIGNAL WARRANT ANALYSIS LOCATIONS

ID	Intersection Location	Jurisdiction
1	San Sevaine Road & S. Highland Avenue	City of Fontana
2	Hemlock Avenue & S. Highland Avenue	City of Fontana

The Existing conditions traffic signal warrant analysis is presented in the subsequent section, Section 3 *Area Conditions* of this report. Traffic signal warrant analyses has not been conducted for any other future analysis scenario as there are no other unsignalized study area intersection from those identified above. Driveway 1 is proposed for right-in/right-out access only and is proposed to be unsignalized, however, a traffic signal warrant is not necessary at this location due to the proposed access restriction.

It is important to note that a signal warrant defines the minimum condition under which the installation of a traffic signal might be warranted. Meeting this threshold condition does not require that a traffic control signal be installed at a particular location, but rather, that other traffic factors and conditions be evaluated in order to determine whether the signal is truly justified. It should also be noted that signal warrants do not necessarily correlate with LOS. An intersection may satisfy a signal warrant condition and operate at or above acceptable LOS or operate below acceptable LOS and not meet a signal warrant.

2.5 MINIMUM LEVEL OF SERVICE (LOS)

The definition of an intersection deficiency has been obtained from each of the applicable jurisdictions.

2.5.1 CITY OF FONTANA

The City of Fontana has set the goal for acceptable LOS as LOS C or better, wherever feasible (see City's Traffic Study Guidelines). However, in some instances maintaining the LOS C threshold within a built environment may require extensive roadway widening that could affect existing uses, property rights and substantial costs associated with implementing these improvements. In the event that the improvements required to maintain LOS C is determined to be infeasible, the City of Fontana recognizes that LOS D may be considered the worst acceptable level of service in urbanized areas of the City. Where feasible, LOS C has been utilized as the minimum LOS criteria for intersections located within the City of Fontana. (1)

2.5.2 SAN BERNARDINO COUNTY CMP

The CMP definition of deficiency is based on maintaining a level of service standard of LOS E or better, where feasible, except where an existing LOS F condition is identified in the CMP document. (2) However, for the purposes of this TIA, LOS C has been utilized consistent with the City of Fontana LOS criteria.

2.6 THRESHOLDS OF SIGNIFICANCE

This section outlines the methodology used in this analysis related to identifying circulation system deficiencies. For purposes of analyzing California Environmental Quality Act (CEQA) impacts, the E+P scenario will be used to establish direct project impacts.

City of Fontana:

For the intersections that lie within the City of Fontana, determination of significant impacts will be based on a comparison of without and with project levels of service for each analysis year. A Significant Impact occurs if project traffic increases the average delay at an intersection by more than the thresholds identified on Table 2-4. The thresholds for LOS A, B, and C do not apply to projects consistent with the General Plan.

TABLE 2-4: THRESHOLDS OF SIGNIFICANT IMPACT

Pre-Project LOS	Significant Impact Threshold[1]
A/B	10.0 Seconds
C	8.0 Seconds
D	5.0 Seconds
E	2.0 Seconds
F	1.0 Second

* Thresholds for A, B, and C do not apply to projects consistent with the General Plan.

Source: Fontana Traffic Study Guidelines, October 2019.

[1] Increase in delay

Cumulative traffic impacts are deficiencies that are not directly caused by the Project, but occur as a result of regional growth combined with that or other nearby cumulative development projects. Cumulative impacts utilize the same thresholds of significant impacts as shown on Table 2-4. The Project's contribution to a particular cumulative transportation deficiency is deemed cumulatively considerable if the Project adds significant traffic to the forecasted deficiency (Per Table 2-4). A Project's contribution to a cumulatively considerable impact can be reduced to less than significant if the Project is required to implement or fund its fair share of improvements designed to alleviate the potential cumulative impact. If full funding of future cumulative improvements is not reasonably assured, a temporary unmitigated cumulative impact may occur until the needed improvement is fully funded and constructed.

3 AREA CONDITIONS

This section provides a summary of the existing circulation network, the City of Fontana, County of San Bernardino, and City of Jurupa Valley General Plan Circulation Networks, and a review of existing peak hour intersection operations, roadway segment operations, and traffic signal warrant analyses.

3.1 EXISTING CIRCULATION NETWORK

Pursuant to discussion with City of Fontana staff, the study area includes a total of 30 existing and future intersections as shown previously on Exhibit 1-2. Exhibit 3-1 illustrates the study area intersections located near the proposed Project and identifies the number of through traffic lanes for existing roadways and intersection traffic controls.

3.2 CITY OF FONTANA AND CITY OF JURUPA VALLEY GENERAL PLAN CIRCULATION ELEMENTS

As previously noted, the Project site is located within the City of Fontana. Exhibit 3-2 shows the City of Fontana Circulation Master Plan and Exhibit 3-3 illustrates the City of Fontana General Plan roadway cross-sections. The roadway classifications and planned (ultimate) roadway cross-sections of the major roadways within the study area, as identified on the City of Fontana Circulation Master Plan, are described subsequently.

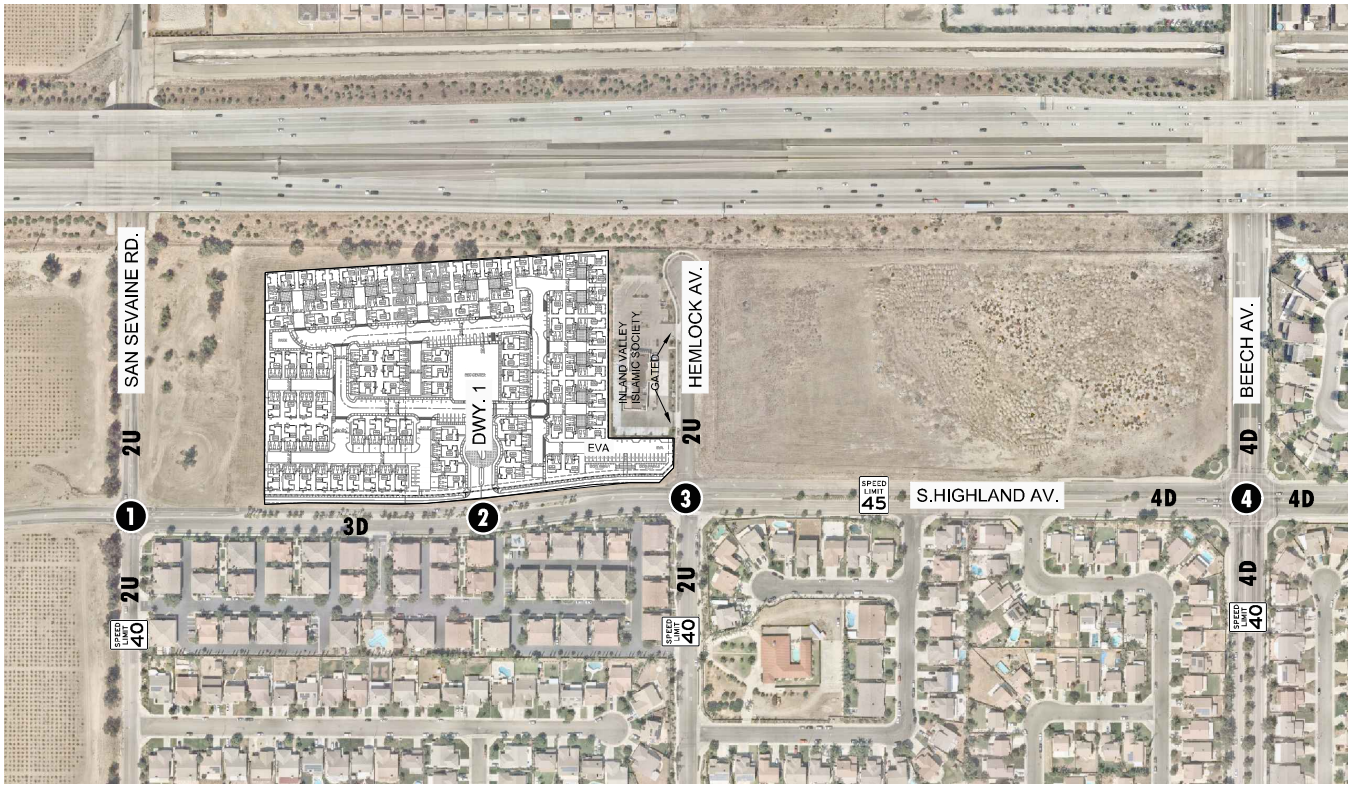
Primary Highways are designed to accommodate four travel lanes with a median, within a typical 104-foot right of way, carry high traffic volumes and provide limited access. Their primary function is to link the major highways to the secondary highways as well as to carry vehicles entering and exiting the City from neighboring areas. Driveway access is also typically limited on these facilities, where feasible. The following study area roadways within the City of Fontana are classified as Primary Highways:

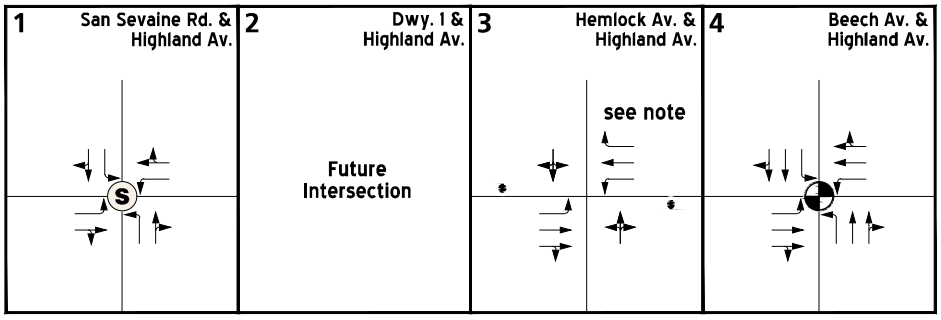
- S. Highland Avenue
- Beech Avenue

Secondary Highways are typically four-lane streets, providing two lanes in each direction. These highways carry traffic along the perimeters of major developments, provide support to the major and primary highways, and are also through streets enabling traffic to travel uninterrupted for longer distances through the City. Secondary highways have a 92-foot wide right of way, which includes sidewalks. The following study area roadway within the City of Fontana is classified as a Secondary Highway:

- San Sevaine Road, north of S. Highland Avenue

EXHIBIT 3-1: EXISTING NUMBER OF THROUGH LANES AND INTERSECTION CONTROLS





LEGEND:

- = TRAFFIC SIGNAL
- S = ALL WAY STOP
- = STOP SIGN
- 4 = NUMBER OF LANES
- D = DIVIDED
- U = UNDIVIDED
- SPEED LIMIT 25 = SPEED LIMIT (MPH)

NOTE: ANALYSIS TO ASSUME WBR WILL BE RESTRIPED AS SHARED THROUGH-RIGHT TURN LANE FOR WITH PROJECT CONDITIONS ONLY.

N

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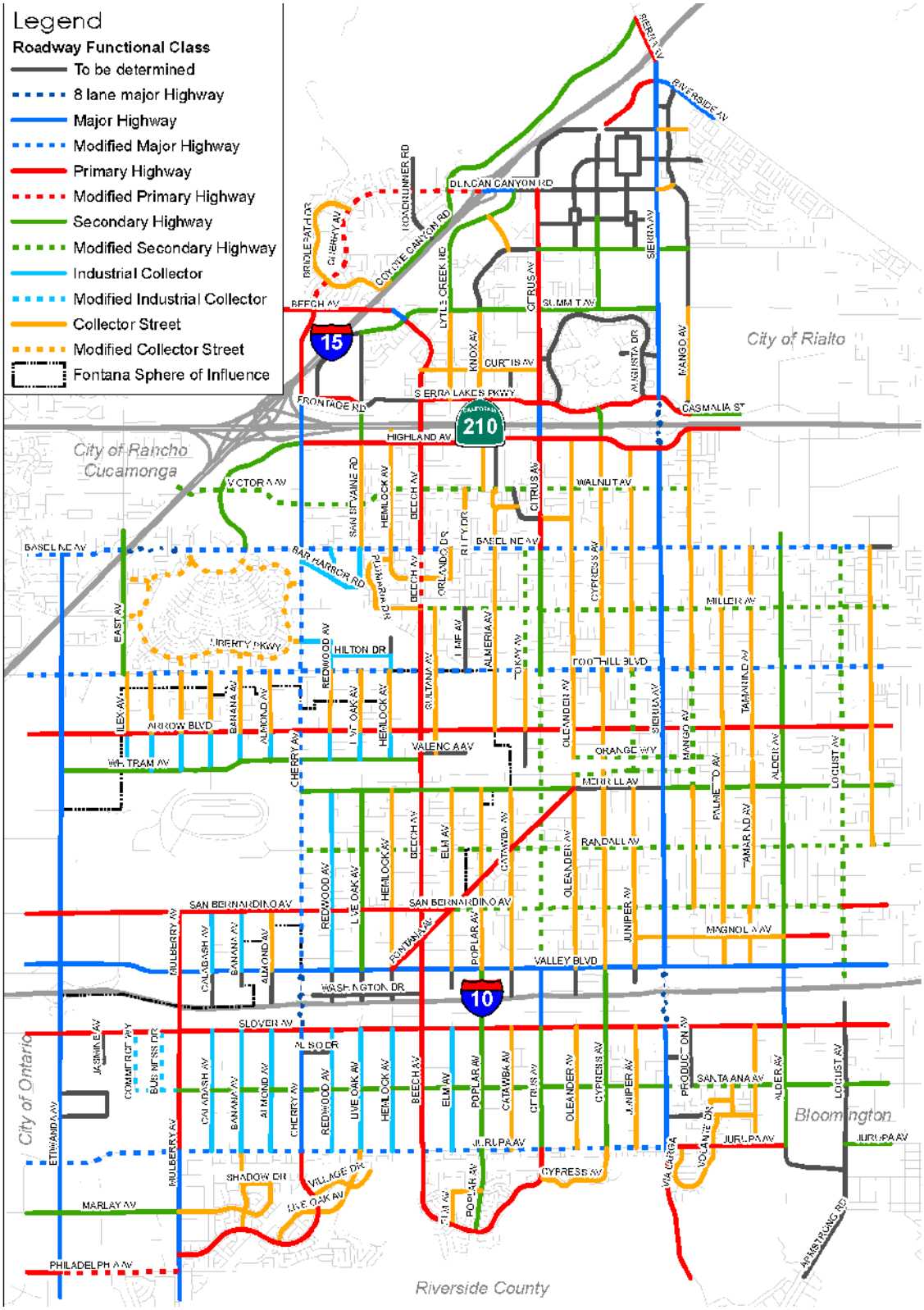
URBAN CROSSROADS

EXHIBIT 3-2: CITY OF FONTANA CIRCULATION MASTER PLAN



Source: City of Fontana
November 2018

EXHIBIT 3-3 (1OF2): CITY OF FONTANA GENERAL PLAN ROADWAY CROSS-SECTIONS

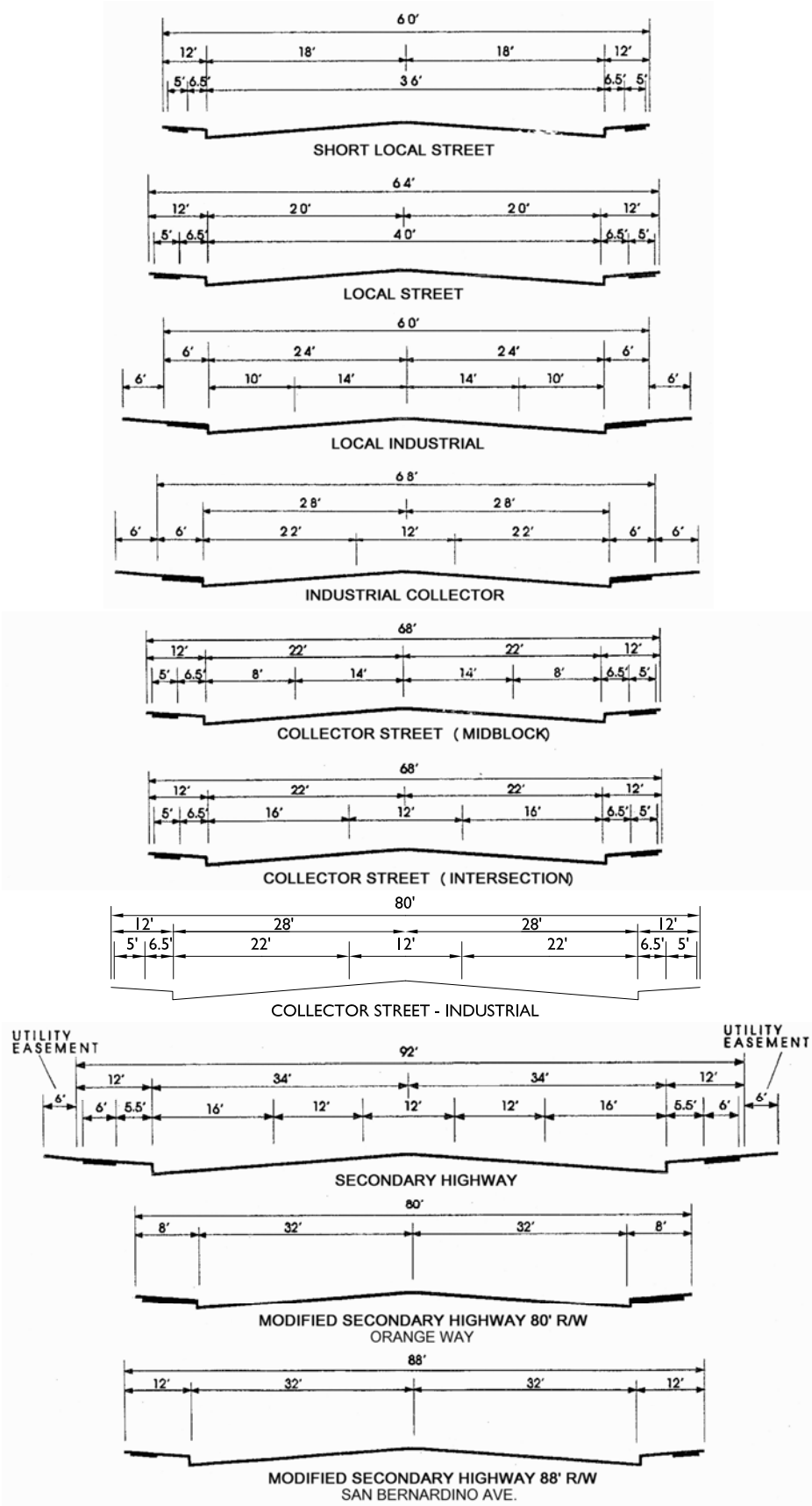
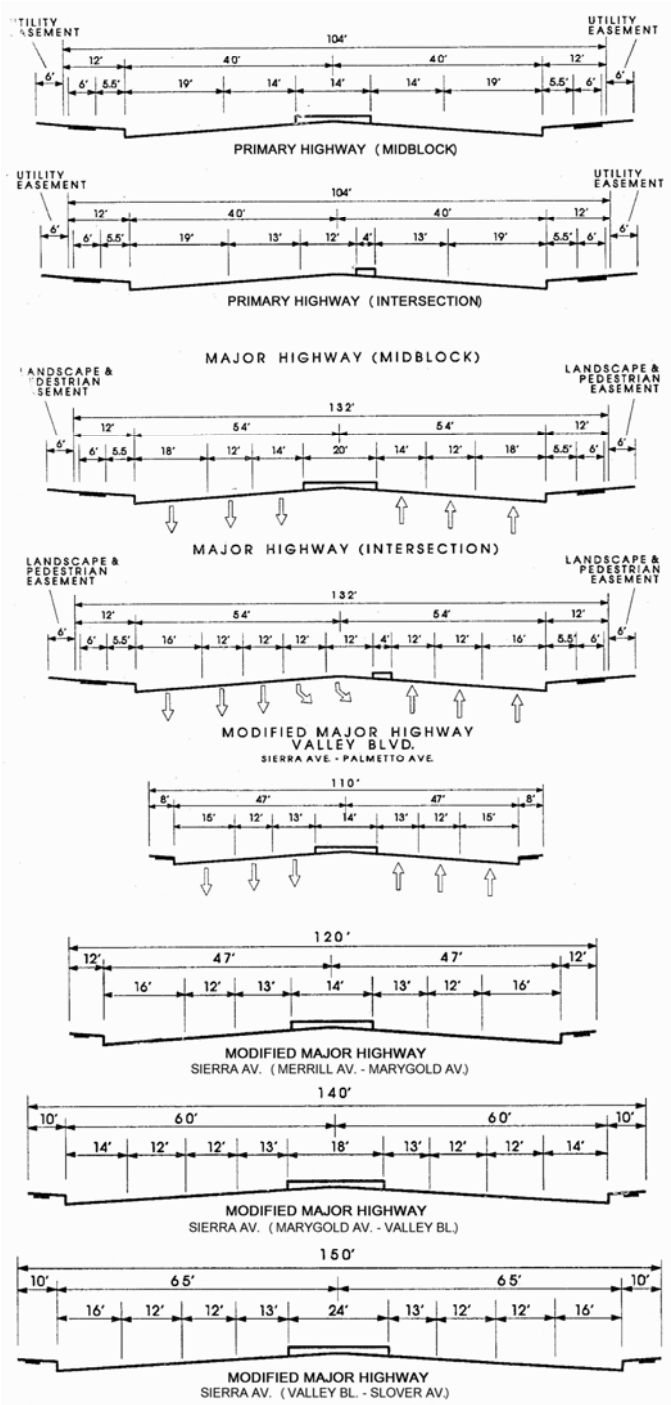


EXHIBIT 3-3 (2OF2): CITY OF FONTANA GENERAL PLAN ROADWAY CROSS-SECTIONS



Collector Streets are typically two-lane streets that connect the local streets with the secondary highways allowing local traffic to access the regional transportation facilities. Collector streets have a 68-foot wide right of way and Industrial Collectors have an 80-foot right of way. The following study area roadways within the City of Fontana are classified as Collector Streets:

- San Sevaine Road, south of S. Highland Avenue
- Hemlock Avenue

3.3 BICYCLE & PEDESTRIAN FACILITIES

The City of Fontana General Plan Bikeways and Trails are shown on Exhibit 3-4 and 3-5, respectively. As shown on Exhibit 3-4 and 3-5, there are existing Class II bike lanes along S. Highland Avenue and Beech Avenue within the study area. There is a proposed Class I bike path/trail north of the I-210 Freeway. Existing pedestrian facilities within the study area are shown on Exhibit 3-6. Field observations indicate nominal pedestrian and bicycle activity within the study area.

3.4 TRANSIT SERVICE

The study area is currently served by Omnitrans, a public transit agency serving various jurisdictions within San Bernardino County, with bus service along Beech Avenue (Summit Avenue to Curtis Avenue) via Route 82 and along Baseline Road to the south via Route 67. However, there are no currently existing bus routes operating within the study area in the immediate vicinity of the Project. Transit service is reviewed and updated by Omnitrans periodically to address ridership, budget and community demand needs. Changes in land use can affect these periodic adjustments which may lead to either enhanced or reduced service where appropriate.

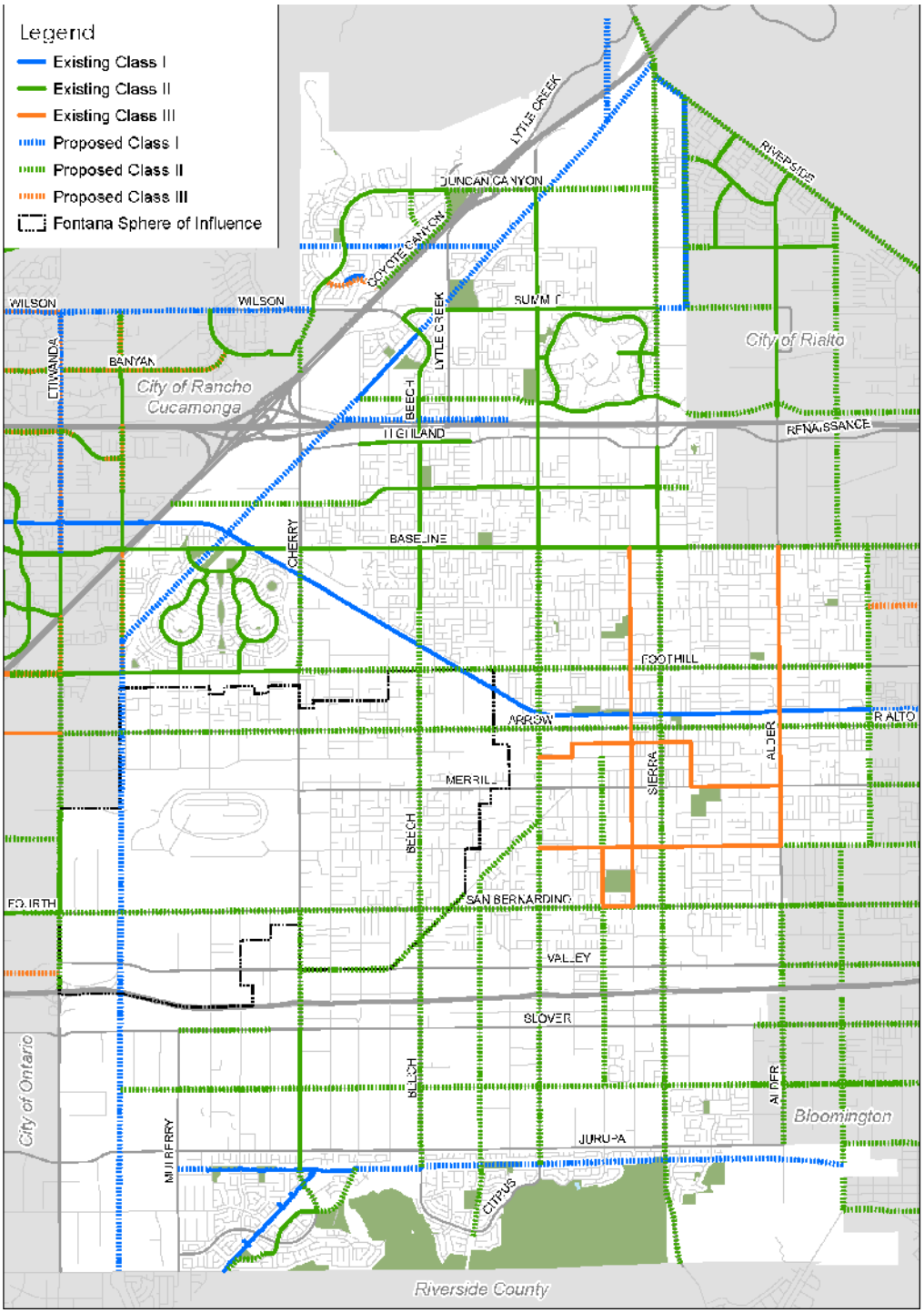
3.5 EXISTING TRAFFIC COUNTS

Manual AM and PM peak hour turning movement counts were conducted in February 2020. The raw manual peak hour turning movement traffic count data sheets are included in Appendix 3.1. Existing average daily traffic (ADT) volumes on arterial highways throughout the study area are based upon factored intersection peak hour counts collected by Urban Crossroads, Inc. using the following formula for each intersection leg:

Weekday PM Peak Hour (Approach Volume + Exit Volume) x 10.2168 = Leg Volume

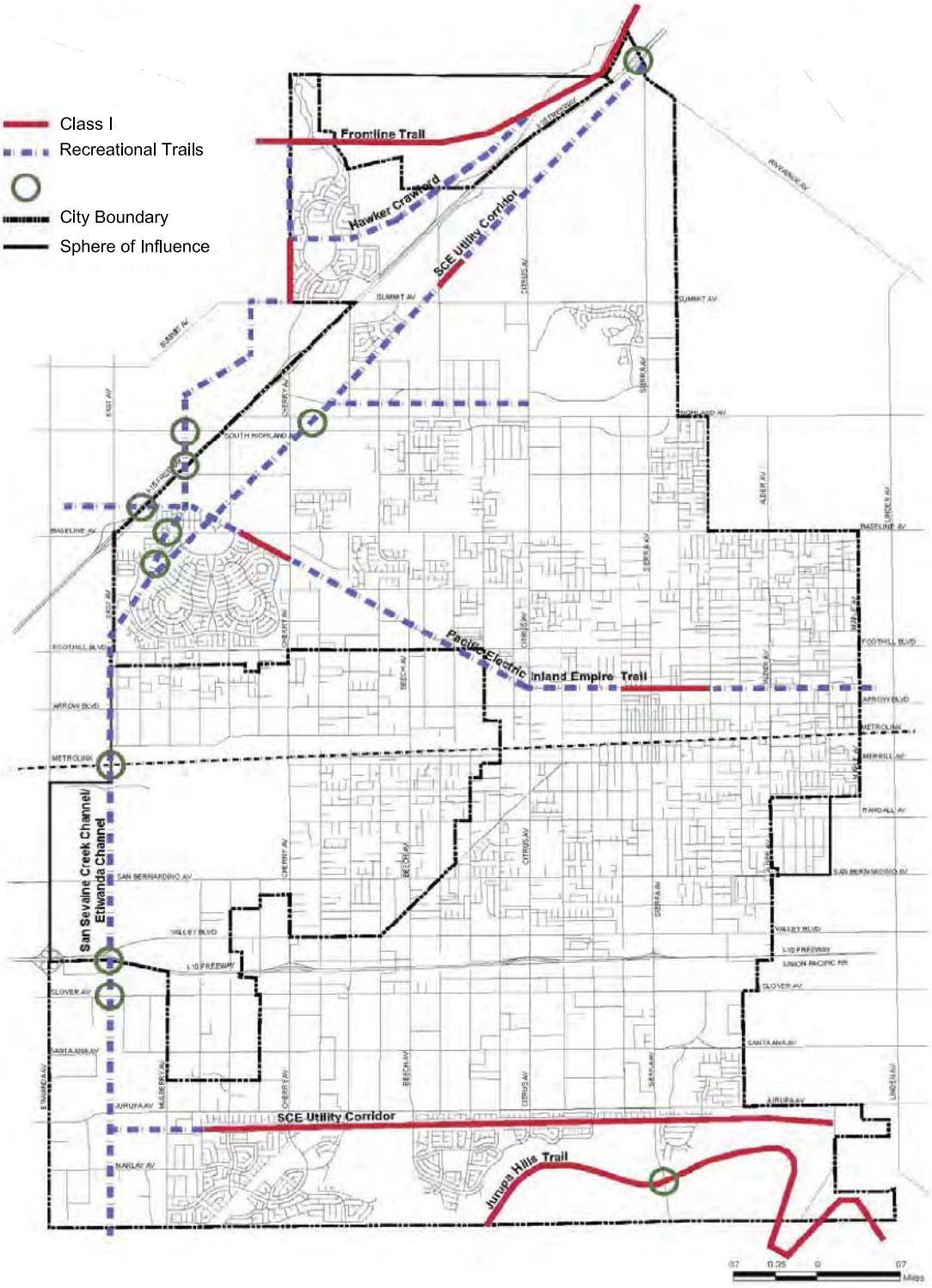
A comparison of the PM peak hour and daily traffic volumes of various roadway segments within the study area indicated that the peak-to-daily relationship is approximately 9.79 percent. As such, the above equation utilizing a factor of 10.2168 estimates the ADT volumes on the study area roadway segments assuming a peak-to-daily relationship of approximately 9.79 percent (i.e., 1/0.0979 = 10.2168) and was assumed to sufficiently estimate ADT volumes for planning-level analyses. Existing ADT volumes are shown on Exhibit 3-7, weekday AM and PM peak hour intersection volumes are also shown on Exhibit 3-7.

EXHIBIT 3-4: CITY OF FONTANA GENERAL PLAN BIKEWAYS



Source: City of Fontana
November 2018

EXHIBIT 3-5: CITY OF FONTANA GENERAL PLAN TRAILS



City of Fontana General Plan

EXHIBIT 3-6: EXISTING PEDESTRIAN FACILITIES

LEGEND:

- = SIDEWALK
- 0 = NO CROSSWALK
- 0 = FUTURE INTERSECTION
- 0 = CROSSWALK ON FOUR APPROACHES

N

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URBAN CROSSROADS

EXHIBIT 3-7: EXISTING (2020) TRAFFIC VOLUMES

1 San Sevaine Rd. & Highland Av.	2 Dwy. 1 & Highland Av.	3 Hemlock Av. & Highland Av.	4 Beech Av. & Highland Av.
127(26) 255(103) 63(31)	Future Intersection	3(9) 0(2) 1(5)	168(53) 515(375) 29(99)
30(21) 355(114) 114(38)		1(4) 434(143) 56(59)	67(75) 299(142) 83(63)
36(50) 113(335) 21(36)		3(4) 174(397) 39(44)	121(75) 158(309) 40(72)
81(20) 116(145) 40(79)		62(21) 0(2) 185(64)	53(22) 541(382) 51(72)

LEGEND:

10.0 = ACTUAL (COUNT-BASED) VEHICLES PER DAY (1000'S)

10.0 = ESTIMATED VEHICLES PER DAY (1000'S)

10(10) = AM(PM) PEAK HOUR INTERSECTION VOLUMES

N

3.6 EXISTING CONDITIONS INTERSECTION OPERATIONS ANALYSIS

Existing (2020) peak hour traffic operations have been evaluated for the study area intersections based on the analysis methodologies presented in Section 2.2 *Intersection Capacity Analysis* of this report. The intersection operations analysis results are summarized on Table 3-1 which indicates that the existing study area intersections are currently operating at acceptable LOS, with the exception of the following:

- San Sevaine Road & S. Highland Avenue (#1) – LOS E AM peak hour only

Consistent with Table 3-1, a summary of the peak hour intersection LOS for Existing conditions are shown on Exhibit 3-8. The intersection operations analysis worksheets are included in Appendix 3.2 of this TIA.

3.7 EXISTING CONDITIONS TRAFFIC SIGNAL WARRANTS ANALYSIS

The traffic signal warrant analysis for Existing traffic conditions are based on existing peak hour intersection turning volumes. The following study area intersections currently meet traffic signal warrants based on peak hour volumes:

- San Sevaine Road & S. Highland Avenue (#1)
- Hemlock Avenue & S. Highland Avenue (#3)

However, the intersection of the Hemlock Avenue and S. Highland Avenue currently operates at an acceptable LOS without the installation of a traffic signal. The intersection should be monitored, and a traffic signal should be installed at the City Traffic Engineer's discretion. The traffic signal warrant analysis worksheets are included in Appendix 3.3 of this TIA.

3.8 ROADWAY SEGMENT ANALYSIS

These roadway segment capacities are approximate figures only and are used at the General Plan level to assist in determining the roadway functional classification (number of through lanes) needed to meet traffic demand. Table 3-2 provides a summary of the Existing (2020) conditions roadway segment capacity analysis based on the City of Fontana Roadway Segment Capacity Thresholds. As shown on Table 3-2, all study area roadway segments currently operate at an acceptable LOS based on the City's planning level daily roadway capacity thresholds.

Table 3-1

Intersection Analysis for Existing (2020) Conditions

#	Intersection	Traffic Control[3]	Intersection Approach Lanes[1]												Delay[2] (secs.)		Level of Service		Acceptable Level of Service
			Northbound			Southbound			Eastbound			Westbound							
			L	T	R	L	T	R	L	T	R	L	T	R	AM	PM	AM	PM	
1	San Sevaine Rd. & S. Highland Av.	AWS	1	1	0	1	1	0	1	1	0	1	1	0	**39.4**	15.0	**E**	B	C
2	Driveway 1 & S. Highland Av.		Future Intersection																C
3	Hemlock Av. & S. Highland Av.	CSS	0	1	0	0	1	0	1	2	0	1	1	1	14.0	11.7	B	B	C
4	Beech Av. & S. Highland Av.	TS	1	2	0	1	2	0	1	2	0	1	2	0	20.8	17.8	C	B	C

* **BOLD** = Level of Service (LOS) does not meet the applicable jurisdictional requirements (i.e., unacceptable LOS).

1 When a right turn is designated, the lane can either be striped or unstriped. To function as a right turn lane there must be sufficient width for right turning vehicles to travel outside the through lanes.
L = Left; T = Through; R = Right

2 Per the Highway Capacity Manual (6th Edition), overall average intersection delay and level of service are shown for intersections with a traffic signal or all way stop control. For intersections with cross street stop control, the delay and level of service for the worst individual movement (or movements sharing a single lane) are shown.

3 CSS = Cross-street Stop; AWS = All-Way Stop; TS = Traffic Signal

Table 3-2

Roadway Segment Capacity Analysis for Existing (2020) Conditions

#	Roadway	Segment Limits	Roadway Section	LOS Capacity[1]	Existing 2020	V/C[2]	LOS[3]	Acceptable LOS
1	S. Highland Av.	San Sevaine Rd. to Driveway 1	3D	27,000	6,324	0.23	A	C
2		Driveway 1 to Hemlock Av.	3D	27,000	6,314	0.23	A	C
3		Hemlock Av. to Beech Av.	4D	36,000	6,867	0.19	A	C

[1] These maximum roadway capacities assume 9,000 vehicles per lane per day for arterials.

[2] V/C = Volume to Capacity Ratio

[3] LOS = Level of Service

EXHIBIT 3-8: EXISTING (2020) SUMMARY OF LOS

LEGEND:

- = AM PEAK HOUR
- = PM PEAK HOUR
- = LOS A-C
- = LOS D-E
- = LOS F
- NA = NOT AN ANALYSIS LOCATION FOR THIS SCENARIO

LEGEND:

- = ACCEPTABLE LOS A-C
- = DEFICIENT LOS D-E
- = DEFICIENT LOS F

N

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URBAN CROSSROADS

4 PROJECTED FUTURE TRAFFIC

This section presents the traffic volumes estimated to be generated by the Project, as well as the Project's trip assignment onto the study area roadway network. For the purposes of this traffic analysis, the Project is proposed to be developed in a single phase with an anticipated Opening Year of 2023. The Project consists of the development of up to 107 single family residential dwelling units.

4.1 PROJECT TRIP GENERATION

Trip generation represents the amount of traffic which is both attracted to and produced by a development. Determining traffic generation for a specific project is therefore based upon forecasting the amount of traffic that is expected to be both attracted to and produced by the specific land uses being proposed for a given development. Trip generation rates used to estimate Project traffic are shown on Table 4-1. The trip generation rates used for this analysis are based upon information collected by the Institute of Transportation Engineers (ITE) as provided in their Trip Generation Manual, 10th Edition, 2017. (3) The Project is estimated to generate a total of 1,010 trip-ends per day on a typical weekday with 80 AM peak hour trips and 106 PM peak hour trips, as shown on Table 4-1.

4.2 PROJECT TRIP DISTRIBUTION

Trip distribution is the process of identifying the probable destinations, directions, or traffic routes that will be utilized by Project traffic. The potential interaction between the planned land uses and surrounding regional access routes are considered, to identify the route where the Project traffic would distribute.

The trip distribution patterns are heavily influenced by the geographical location of the site, the location of surrounding uses, and the proximity to the regional freeway system. The existing and retuning trips utilize different routes due to the proposed right-in/right-out only access restriction at Driveway 1 on S. Highland Avenue. Exhibit 4-1 shows the Project's trip distributions patterns.

4.3 MODAL SPLIT

The potential for Project trips to be reduced by the use of public transit, walking or bicycling have not been included as part of the Project's estimated trip generation. Essentially, the Project's traffic projections are "conservative" in that these alternative travel modes would reduce the forecasted traffic volumes.

Table 4-1

Project Trip Generation Summary

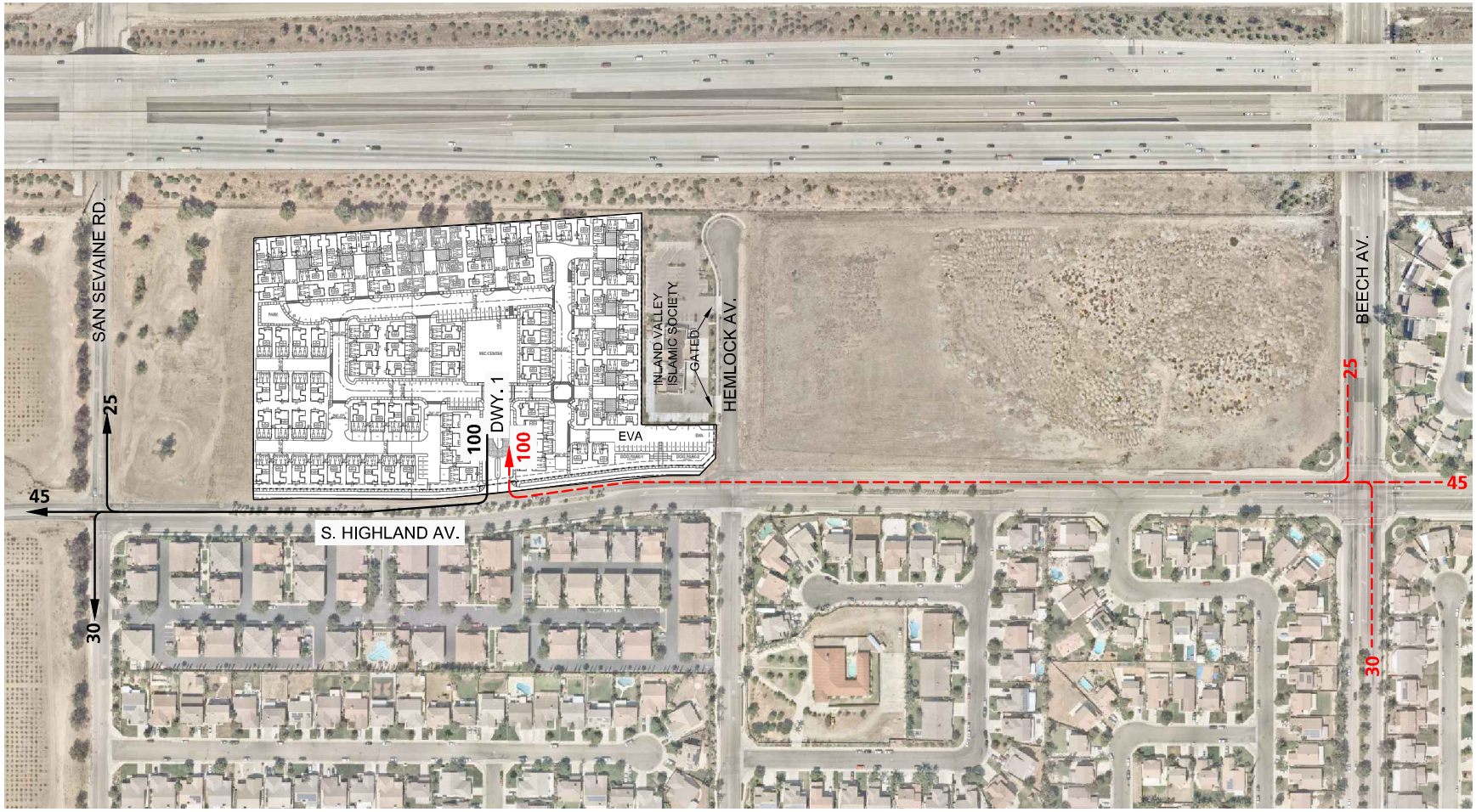
Land Use[1]	ITE LU Code	Units[2]	AM Peak Hour			PM Peak Hour			Daily
			In	Out	Total	In	Out	Total	
Project Trip Generation Rates									
Single Family Residential Detached	210	DU	0.19	0.56	0.74	0.62	0.37	0.99	9.44

Project	Quantity	Units[2]	AM Peak Hour			PM Peak Hour			Daily
			In	Out	Total	In	Out	Total	
Project Trip Generation Summary									
Highland Residential (MC No. 19-096)	107	DU	20	60	80	66	40	106	1,010

[1] Trip Generation Source: Institute of Transportation Engineers (ITE), Trip Generation Manual, Tenth Edition (2017).

[2] DU = Dwelling Units

EXHIBIT 4-1: PROJECT TRIP DISTRIBUTION



LEGEND:

10 = PERCENT TO/FROM PROJECT

← = OUTBOUND

← - - = INBOUND

N

4.4 PROJECT TRIP ASSIGNMENT

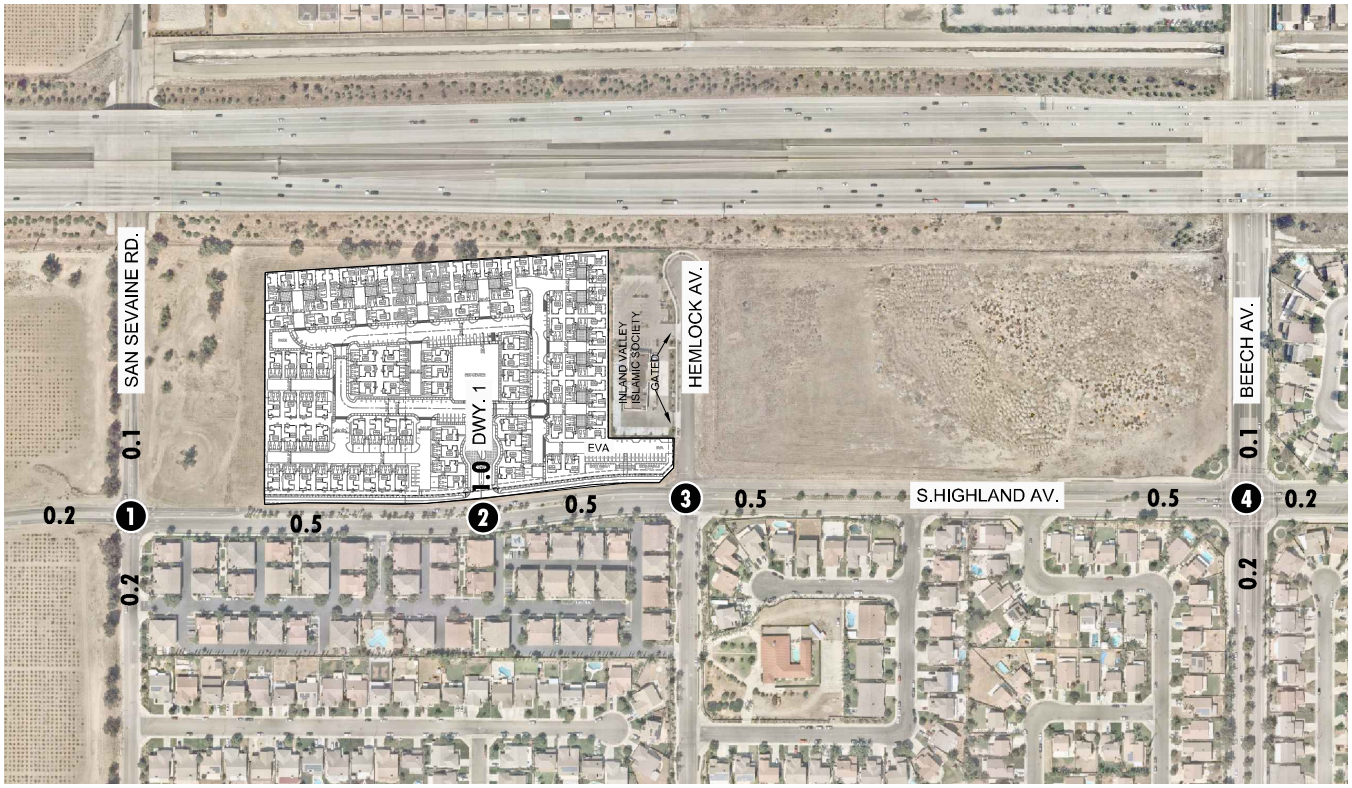
The assignment of traffic from the Project to the adjoining roadway system is based upon the Project trip generation, trip distribution, and the arterial highway and local street system improvements that would be in place by the time of initial occupancy of the Project. Based on the identified Project traffic generation and trip distribution patterns, Project ADTs and AM and PM peak hour volumes are shown on Exhibit 4-2.

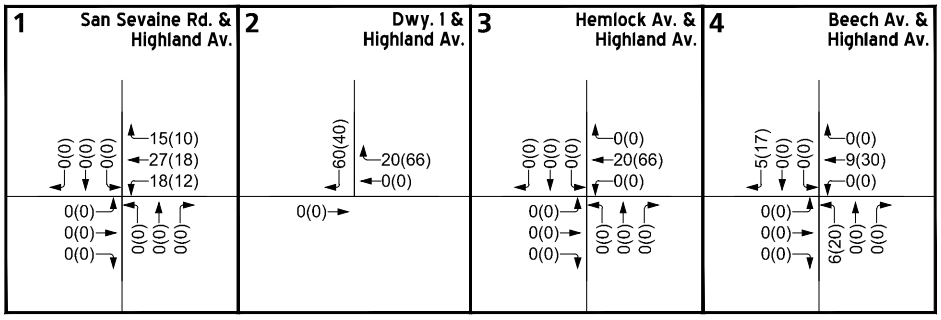
4.5 BACKGROUND TRAFFIC

The currently adopted SCAG 2016 RTP/SCS (April 2016) growth forecasts City of Fontana identifies projected growth in population of 200,200 in 2012 to 280,900 in 2040, or a 40.31% increase over the 28-year period. (4) The change in population equates to roughly a 1.22 percent growth rate compounded annually. Similarly, growth over the same 28-year period in households is projected to increase by 49.19 percent, or 1.44 percent growth rate, compounded annually. Finally, growth in employment over the same 28-year period is projected to increase by 50.6 percent, or a 1.47 percent annual growth rate. The average annual growth rate between population, households, and employment is 1.38 percent per year and has been used for the purposes of this analysis.

Based on a comparison of Existing (2020) traffic volumes to the Horizon Year (2040) forecasts, the average growth rate is estimated at approximately 2.81 percent per year, compounded annually between Existing (2020) and Horizon Year (2040) traffic conditions. The annual growth rate at each individual intersection is not lower than 1.91 percent per year to as high as 3.89 percent per year, compounded annually over the same time period. Therefore, the annual growth rate utilized for the purposes of this analysis would appear to conservatively approximate the anticipated regional growth in traffic volumes in the City of Fontana for Horizon Year (2040) traffic conditions. As such, the growth in traffic volumes assumed in this traffic impact analysis would tend to overstate as opposed to understate the potential impacts to traffic and circulation.

EXHIBIT 4-2: PROJECT ONLY TRAFFIC VOLUMES





LEGEND:

10(10) = AM(PM) PEAK HOUR INTERSECTION VOLUMES

10.0 = VEHICLES PER DAY (1000'S)

N

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4.6 CUMULATIVE DEVELOPMENT TRAFFIC

California Environmental Quality Act (CEQA) guidelines require that other reasonably foreseeable development projects which are either approved or being processed concurrently in the study area also be included as part of a cumulative analysis scenario. A cumulative project list was developed for the purposes of this analysis through consultation with planning and engineering staff from the City of Fontana. The cumulative project list includes known and foreseeable projects that are anticipated to contribute traffic to one or more study area intersections.

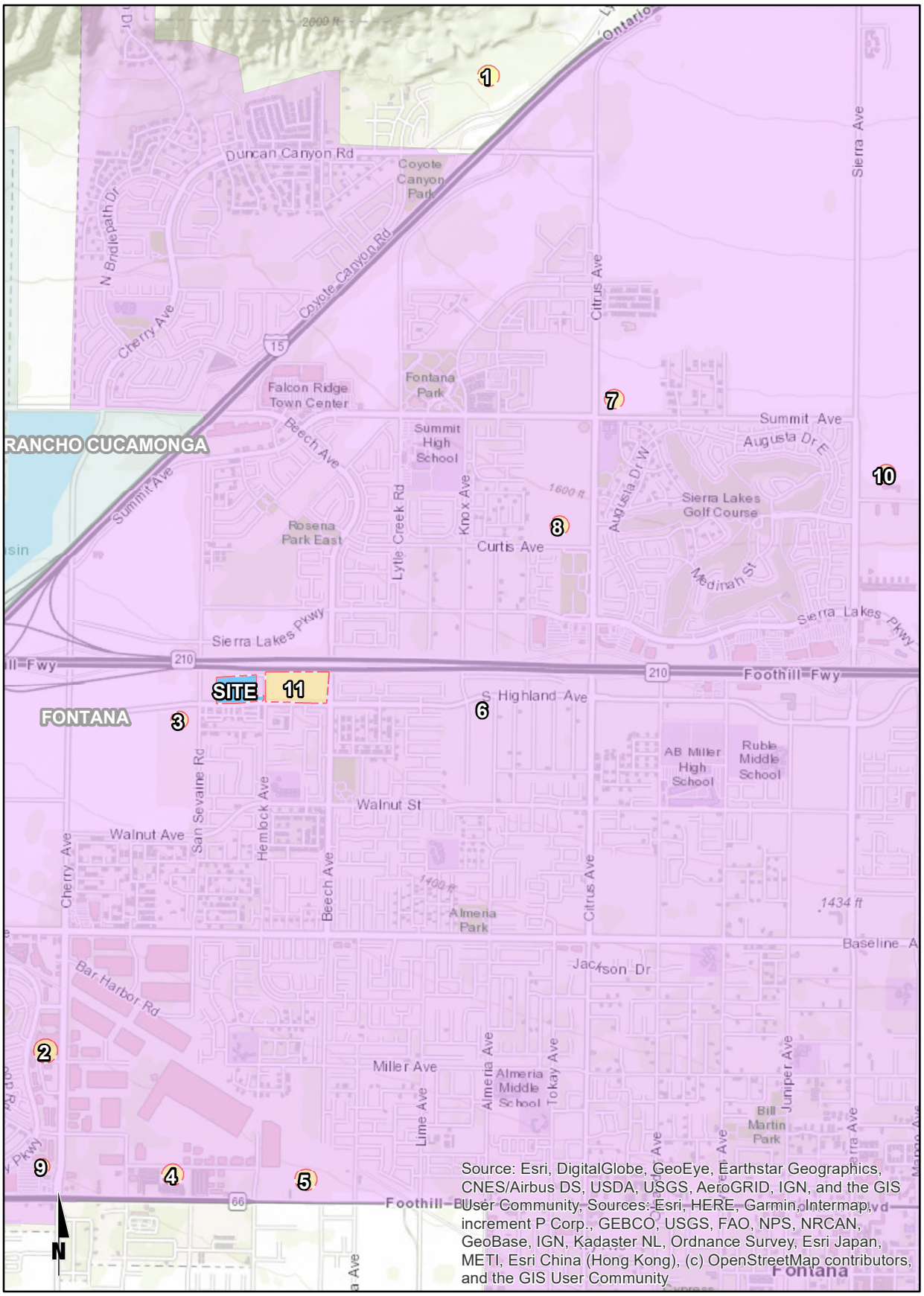
Where applicable, cumulative projects anticipated to contribute measurable traffic (i.e. 50 or more peak hour trips) to study area intersections have been manually added to the study area network to generate EAPC forecasts. In other words, this list of cumulative development projects has been reviewed to determine which projects would likely contribute measurable traffic through the study area intersections (e.g., those cumulative projects in close proximity to the proposed Project). For the purposes of this analysis, the cumulative projects that were determined to affect one or more of the study area intersections are shown on Exhibit 4-3, listed on Table 4-2, and have been considered for inclusion.

Although it is unlikely that all of these cumulative projects would be fully built and occupied by Year 2023, they have been included in an effort to conduct a conservative analysis and overstate as opposed to understate potential traffic impacts. Any other cumulative projects located beyond the cumulative study area that are not expected to contribute measurable traffic to study area intersections have not been included since the traffic would dissipate due to the distance from the Project site and study area intersections. Any additional traffic generated by other projects not on the cumulative projects list is accounted for through background ambient growth factors that have been applied to the peak hour volumes at study area intersections as discussed in Section 4.5 *Background Traffic*. Cumulative only traffic volumes are shown on Exhibit 4-4.

4.7 HORIZON YEAR (2040) VOLUME DEVELOPMENT

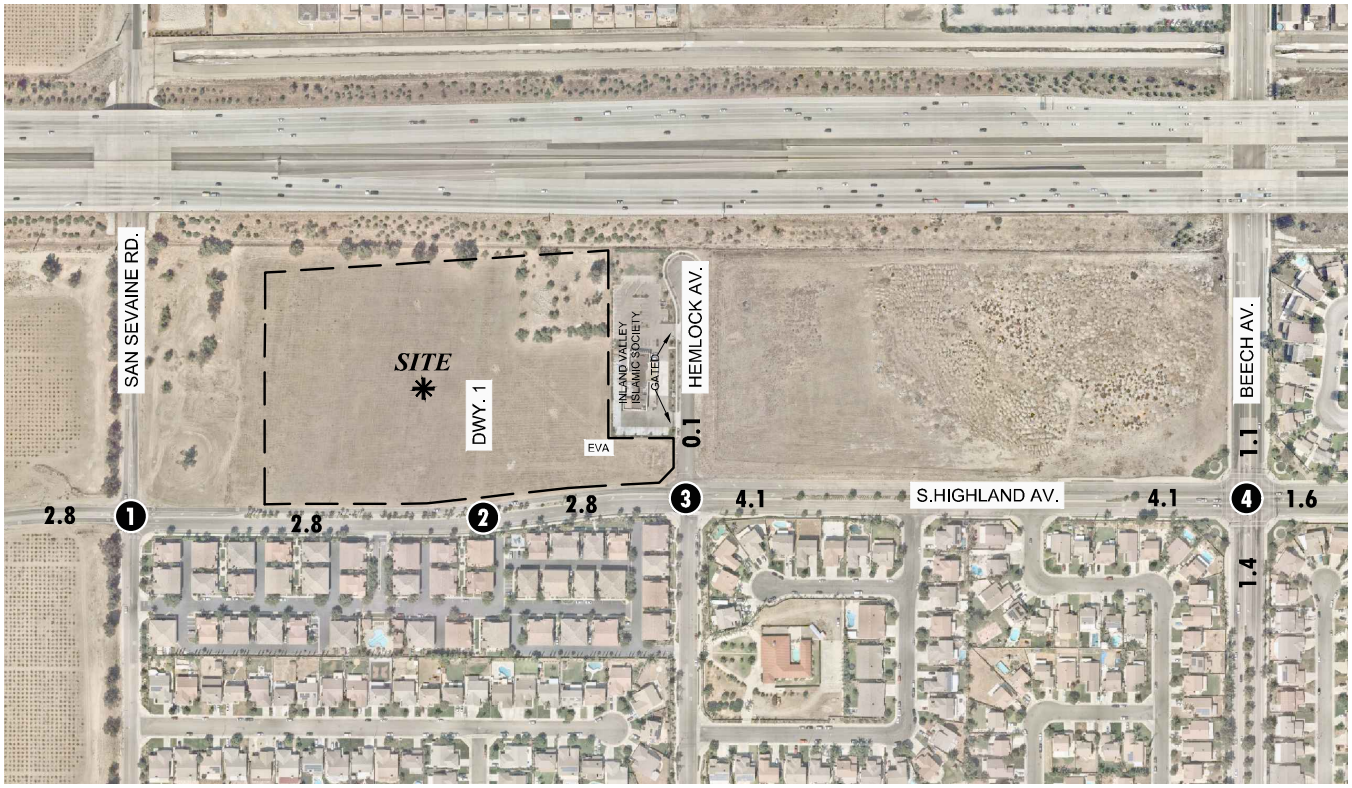
Traffic projections for Horizon Year (2040) without Project conditions were derived from the SBTAM using accepted procedures for model forecast refinement and smoothing for study area intersections located within the City of Fontana. The traffic forecasts reflect the area-wide growth anticipated between Existing (2020) conditions and Horizon Year (2040) traffic conditions. In most instances the traffic model zone structure is not designed to provide accurate turning movements along arterial roadways unless refinement and reasonableness checking is performed. Therefore, the Horizon Year (2040) peak hour forecasts were refined using the model derived long range forecasts, base (validation) year model forecasts, along with existing peak hour traffic count data collected at each analysis location in February 2020. The SBTAM has a base (validation) year of 2012 and a horizon (future forecast) year of 2040. The difference in model volumes (2040-2012) defines the growth in traffic over the 28-year period.

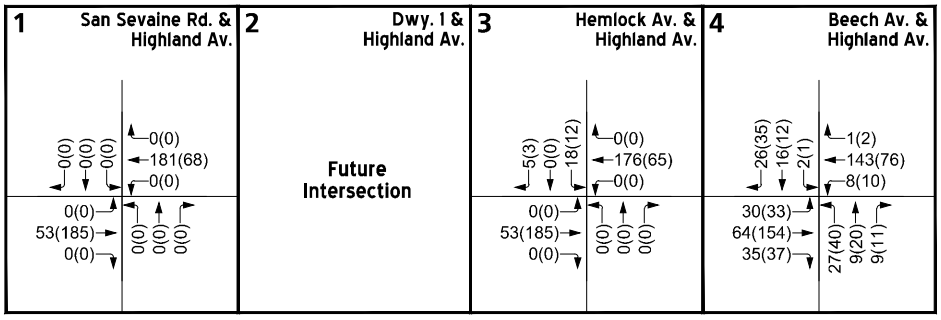
EXHIBIT 4-3: CUMULATIVE DEVELOPMENT LOCATION MAP



Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community, Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community

EXHIBIT 4-4: CUMULATIVE ONLY TRAFFIC VOLUMES





LEGEND:

10(10) = AM(PM) PEAK HOUR INTERSECTION VOLUMES

10.0 = VEHICLES PER DAY (1000'S)

N

Table 4-2

Cumulative Development Land Use Summary

#	Project Name/Location	Land Use	Quantity[1]	
1	Monarch Hills	Single Family Detached	223	DU
		Multifamily Housing (Low-Rise)	239	DU
2	7470 Cherry Av.	Convenience Store	2.1	TSF
3	14311 Highland Av.	Industrial Buildings	1,082.265	TSF
4	Hilton Logistics Center	Logistics Warehouse	80.000	TSF
5	15186 Foothill Bl.	Senior Housing	65	DU
6	Kia Dealership	New Auto Sales	25.433	TSF
7	5559 Citrus Av.	Single Family Detached	77	DU
8	5924 Citrus Av. - Citrus Homes	Single Family Detached	105	DU
9	7798 Cherry Av.	Medical Offices	4.118	TSF
10	SEC Sierra/Clubhouse Dr.	Warehouse	340.715	TSF
11	The Retreat	Single Family Detached	96	DU
		Multifamily Housing (Low-Rise)	100	DU

[1] TSF = Thousand Square Feet; DU = Dwelling Units

The refined future peak hour approach and departure volumes obtained from the model output data are then entered into a spreadsheet program consistent with the National Cooperative Highway Research Program (NCHRP Report 255), along with initial estimates of turning movement proportions. A linear programming algorithm is used to calculate individual turning movements which match the known directional roadway segment forecast volumes computed in the previous step. This program computes a likely set of intersection turning movements from intersection approach counts and the initial turning proportions from each approach leg.

The SBTAM uses an AM peak period-to-peak hour factor of 0.35 and a PM peak period-to-peak hour factor of 0.27. These factors represent the relationship of the highest single AM peak hour to the modeled 3-hour AM peak period (an even distribution would result in a factor of 0.33) and the highest single PM peak hour to the modeled 4-hour PM peak period (an even distribution would result in a factor of 0.25).

Typically, the model growth is prorated and is subsequently added to the existing (base validation) traffic volumes to represent Horizon Year traffic conditions. In an effort to conduct a conservative analysis, reductions to traffic forecasts from either Existing or Opening Year Cumulative traffic conditions were not assumed as part of this analysis. As such, in conjunction with the addition of cumulative projects that are not consistent with the General Plan, additional growth has also been applied on a movement-by-movement basis, where applicable, to estimate reasonable Horizon Year (2040) forecasts. Horizon Year (2040) turning volumes were compared to Opening Year Cumulative (2023) volumes in order to ensure a minimum growth as a part of the refinement process. The minimum growth includes any additional growth between Opening Year Cumulative (2023) and Horizon Year (2040) traffic conditions that is not accounted for by the traffic generated by cumulative development projects and ambient growth rates assumed between Existing (2020) and Opening Year Cumulative (2023) conditions. Future estimated peak hour traffic data was used for new intersections and intersections with an anticipated change in travel patterns to further refine the Horizon Year (2040) peak hour forecasts.

The future Horizon Year (2040) without Project peak hour turning movements were then reviewed by Urban Crossroads, Inc. for reasonableness, and in some cases, were adjusted to achieve flow conservation, reasonable growth, and reasonable diversion between parallel routes. Flow conservation checks ensure that traffic flow between two closely spaced intersections, such as two adjacent driveway locations, is verified in order to make certain that vehicles leaving one intersection are entering the adjacent intersection and that there is no unexplained loss of vehicles. The result of this traffic forecasting procedure is a series of traffic volumes which are suitable for traffic operations analysis. Post-processing worksheets for Horizon Year (2040) Without Project traffic conditions are provided in Appendix 4.1.

5 E+P TRAFFIC CONDITIONS

This section discusses the traffic forecasts for E+P conditions and the resulting intersection operations and roadway segment analyses. Project impacts to baseline traffic conditions (i.e., existing conditions) have been identified along with improvements necessary to reduce impacts to less than significant.

5.1 ROADWAY IMPROVEMENTS

The lane configurations and traffic controls assumed to be in place for E+P conditions are consistent with those shown previously on Exhibit 3-1. In other words, no other off-site improvements are assumed to be in place beyond those that currently exist.

5.2 E+P TRAFFIC VOLUME FORECASTS

This scenario includes Existing (2020) traffic volumes plus Project traffic (as shown on Table 4-2). The ADT volumes and AM and PM peak hour intersection turning movement volumes are shown on Exhibit 5-1.

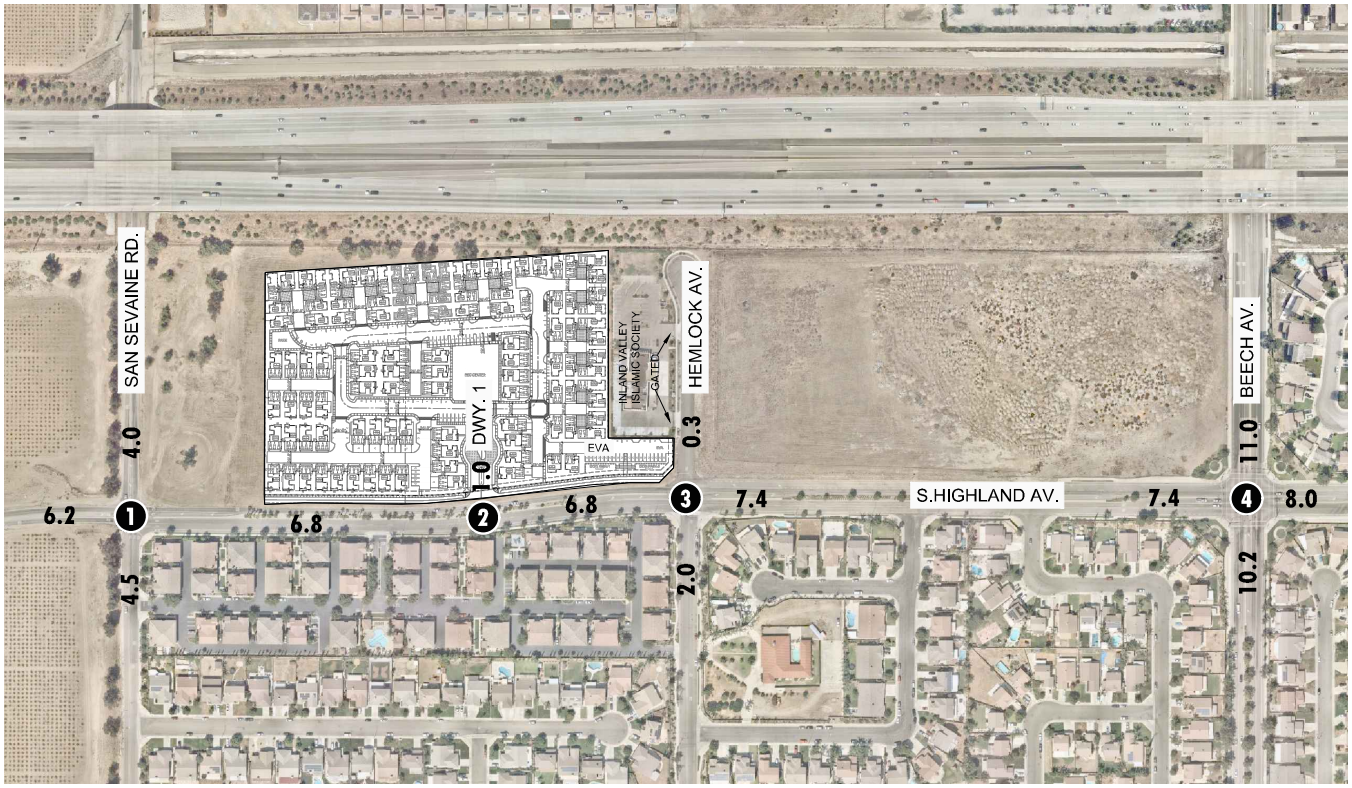
5.3 INTERSECTION OPERATIONS ANALYSIS

E+P peak hour traffic operations have been evaluated for the study area intersections based on the analysis methodologies presented in Section 2 *Methodologies* of this TIA. The intersection analysis results are summarized on Table 5-1, which indicates there are no additional study area intersections that are anticipated to operate at a deficient LOS, in addition to those currently operating at a deficient LOS under Existing (2020) traffic conditions. A summary of the peak hour intersection LOS for E+P conditions are shown on Exhibit 5-2. The intersection operations analysis worksheets for E+P traffic conditions are included in Appendix 5.1 of this TIA.

5.4 TRAFFIC SIGNAL WARRANTS ANALYSIS

Traffic signal warrant analyses has not been conducted for E+P traffic conditions as there are no other unsignalized study area intersection from those warranted under Existing traffic conditions. Driveway 1 is proposed for right-in/right-out access only and would be unsignalized, however, a traffic signal warrant is not necessary at this location due to the proposed access restriction.

EXHIBIT 5-1: E+P TRAFFIC VOLUMES



1 San Sevaine Rd. & Highland Av.	2 Dwy. 1 & Highland Av.	3 Hemlock Av. & Highland Av.	4 Beech Av. & Highland Av.
127(26) 255(103) 63(31)	60(40)	3(9) 0(2) 1(5)	173(70) 515(375) 29(99)
45(31) 382(132) 132(50)	20(66) 499(173)	1(4) 454(209) 56(59)	67(75) 308(172) 83(63)
36(50) 113(335) 21(36)	216(445)	3(4) 174(397) 39(44)	121(75) 158(309) 40(72)
81(20) 116(145) 40(79)		62(21) 0(2) 185(64)	59(42) 541(382) 51(72)

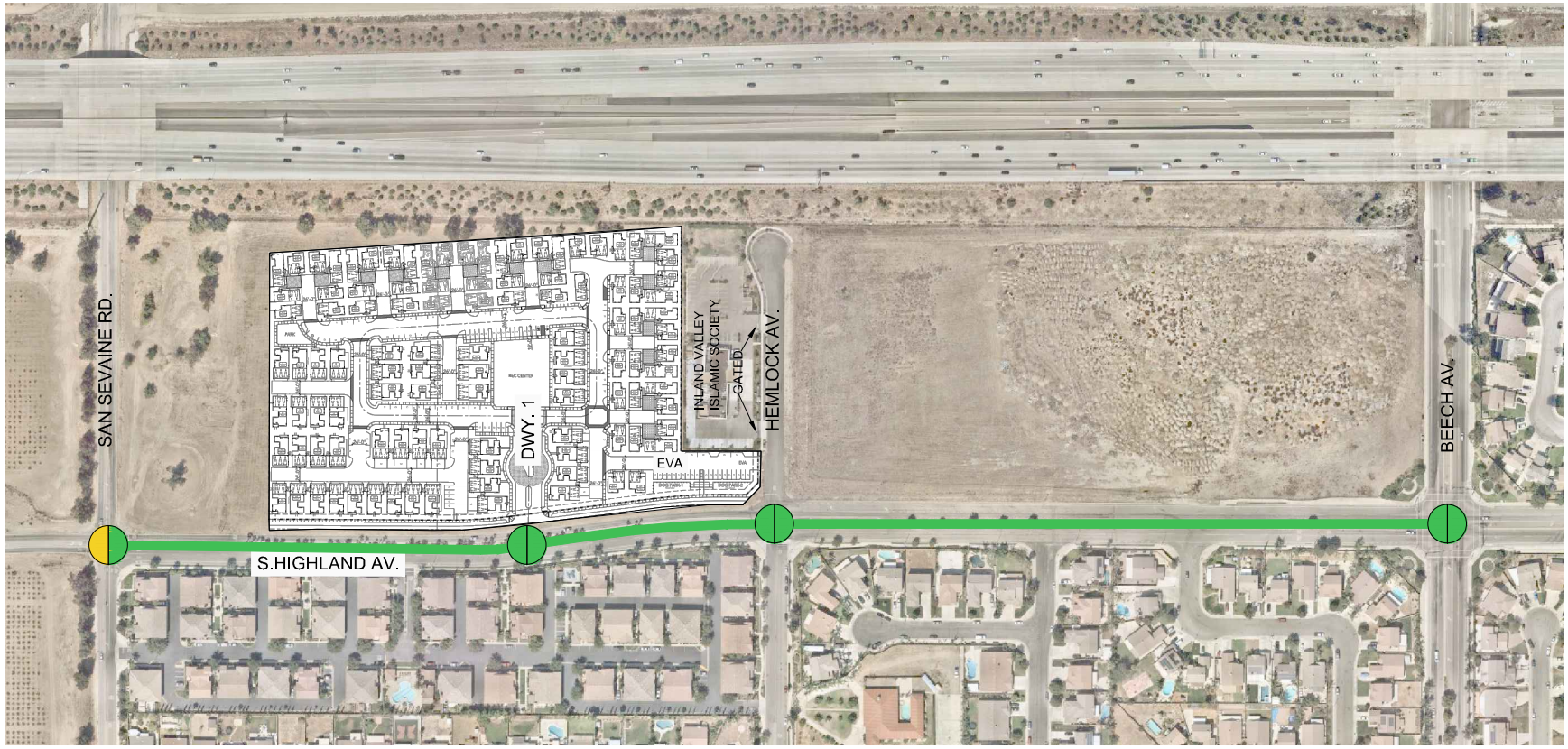
LEGEND:

10(10) = **AM(PM) PEAK HOUR INTERSECTION VOLUMES**

10.0 = **VEHICLES PER DAY (1000'S)**

N

EXHIBIT 5-2: E+P SUMMARY OF LOS



LEGEND:

- = AM PEAK HOUR
- = PM PEAK HOUR
- = LOS A-C
- = LOS D-E
- = LOS F

LEGEND:

- = ACCEPTABLE LOS A-C
- = DEFICIENT LOS D-E
- = DEFICIENT LOS F

N

Table 5-1

Intersection Analysis for E+P Conditions

#	Intersection	Traffic Control[2]	Existing (2020) Delay[1] (secs.) AM	Existing (2020) Delay[1] (secs.) PM	Existing (2020) Level of Service AM	Existing (2020) Level of Service PM	E+P Delay[1] (secs.) AM	E+P Delay[1] (secs.) PM	E+P Level of Service AM	E+P Level of Service PM	Difference in Delay (sec.) AM	Difference in Delay (sec.) PM	Significant Impact?[3]
1	San Sevaine Rd. & S. Highland Av.	AWS	**39.4**	15.0	**E**	B	**46.6**	15.5	**E**	C	**7.2**	0.5	**Yes**
2	Driveway 1 & S. Highland Av.	**CSS**	Future Intersection				10.3	9.2	B	A	--	--	No
3	Hemlock Av. & S. Highland Av.[4]	CSS	14.0	11.7	B	B	12.7	11.7	B	B	-1.3	0.0	No
4	Beech Av. & S. Highland Av.	TS	20.8	17.8	C	B	21.2	18.1	C	B	0.4	0.3	No

* **BOLD** = Level of Service (LOS) does not meet the applicable jurisdictional requirements (i.e., unacceptable LOS).

1 Per the Highway Capacity Manual (6th Edition), overall average intersection delay and level of service are shown for intersections with a traffic signal or all way stop control. For intersections with cross street stop control, the delay and level of service for the worst individual movement (or movements sharing a single lane) are shown.

2 CSS = Cross-street Stop; AWS = All-Way Stop; TS = Traffic Signal

3 Significant near-term impacts have been identified based on each applicable agency's threshold of significance and if the Project contributes 50 or more peak hour trips.

4 The westbound approach is assumed to be restriped with one through and one shared through-right for "With Project" conditions.

5.5 ROADWAY SEGMENT ANALYSIS

The roadway segment capacities are approximate figures only and are used at the General Plan level to assist in determining the roadway functional classification (number of through lanes) needed to meet traffic demand. Table 5-2 provides a summary of the E+P conditions roadway segment capacity analysis based on the City of Fontana Roadway Segment Capacity Thresholds. As shown on Table 5-2, the study area roadway segments are anticipated to continue to operate at an acceptable LOS based on the City's planning level daily roadway capacity thresholds, consistent with Existing (2020) traffic conditions.

5.6 IMPACTS AND MITIGATION MEASURES

Improvement strategies have been recommended at intersections and freeway segments that have been identified as impacted under E+P traffic conditions in an effort to achieve an acceptable LOS.

5.6.1 RECOMMENDED IMPROVEMENTS TO ADDRESS DEFICIENCIES AT INTERSECTIONS

Based on the City of Fontana's significance criteria as discussed in Section 2.6 *Thresholds of Significance*, the following intersection is anticipated to be cumulatively impacted by the Project during one or more peak hours:

- San Sevaine Road & S. Highland Avenue (#1)

The effectiveness of the recommended improvements to address E+P traffic deficiencies are presented on Table 5-3. Improvement strategies identified on Table 5-3 have been recommended at intersections that have been identified as cumulatively impacted to reduce each location's peak hour delay to acceptable levels. The following improvements have been recommended to address the cumulatively impacted intersection identified above:

San Sevaine Road & S. Highland Avenue (#1) – The following improvement is necessary to improve the intersection's peak hour operations to pre-project conditions or better, thus reducing the cumulative impact to less than significant:

- Contribute fair share (via payment of fees) towards the installation of a traffic signal.

The intersection operations analysis worksheets for E+P, with improvements, traffic conditions are included in Appendix 5.2 of this TIA.

5.6.2 RECOMMENDED IMPROVEMENTS TO ADDRESS ROADWAY SEGMENTS

As shown previously on Table 5-2, there are no roadway segment deficiencies anticipated for E+P traffic conditions. As such, no improvements have been recommended.

Table 5-2

Roadway Segment Capacity Analysis for E+P Conditions

#	Roadway	Segment Limits	Roadway Section	LOS Capacity[1]	Existing 2020	V/C[2]	LOS[3]	E+P	V/C[2]	LOS[3]	Acceptable LOS
1	S. Highland Av.	San Sevaine Rd. to Driveway 1	3D	27,000	6,324	0.23	A	6,829	0.25	A	C
2		Driveway 1 to Hemlock Av.	3D	27,000	6,314	0.23	A	6,819	0.25	A	C
3		Hemlock Av. to Beech Av.	4D	36,000	6,867	0.19	A	7,372	0.20	A	C

[1] These maximum roadway capacities assume 9,000 vehicles per lane per day for arterials.

[2] V/C = Volume to Capacity Ratio

[3] LOS = Level of Service

Table 5-3

Intersection Analysis for E+P Conditions With Improvements

#	Intersection	Traffic Control[3]	Intersection Approach Lanes[1]												Delay[2] (secs.)		Level of Service	
			Northbound			Southbound			Eastbound			Westbound						
			L	T	R	L	T	R	L	T	R	L	T	R	AM	PM	AM	PM
1	San Sevaine Rd. & S. Highland Av.																	
	- Without Improvements	AWS	1	1	0	1	1	0	1	1	0	1	1	0	**46.6**	15.5	**E**	C
	- With Improvements	**TS**	1	1	0	1	1	0	1	**2**	0	1	**2**	0	25.1	17.4	C	B

[1] When a right turn is designated, the lane can either be striped or unstriped. To function as a right turn lane there must be sufficient width for right turning vehicles to travel outside the through lanes.

L = Left; T = Through; R = Right; **1** = Improvement

[2] Per the Highway Capacity Manual (6th Edition), overall average intersection delay and level of service are shown for intersections with a traffic signal or all way stop control. For intersections with cross street stop control, the delay and level of service for the worst individual movement (or movements sharing a single lane) are shown.

[3] AWS = All-Way Stop; TS = Traffic Signal; **TS** = Improvement

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6 OPENING YEAR CUMULATIVE (2023) TRAFFIC CONDITIONS

This section discusses the methods used to develop Opening Year Cumulative (2023) Without and With Project traffic forecasts, and the resulting intersection operations and roadway segment analyses.

6.1 ROADWAY IMPROVEMENTS

The lane configurations and traffic controls assumed to be in place for Opening Year Cumulative (2023) conditions are consistent with those shown previously on Exhibit 3-1, with the exception of Project driveways and those facilities assumed to be constructed by the Project and cumulative developments to provide site access are also assumed to be in place for Opening Year Cumulative (2023) traffic conditions.

6.2 OPENING YEAR CUMULATIVE (2023) WITHOUT PROJECT TRAFFIC VOLUME FORECASTS

The weekday ADT and AM and PM peak hour traffic volumes which can be expected for Opening Year Cumulative (2023) Without Project traffic conditions are shown on Exhibit 6-1.

6.3 OPENING YEAR CUMULATIVE (2023) WITH PROJECT TRAFFIC VOLUME FORECASTS

The weekday ADT and AM and PM peak hour traffic volumes which can be expected for Opening Year Cumulative (2023) With Project traffic conditions are shown on Exhibit 6-2.

6.4 INTERSECTION OPERATIONS ANALYSIS

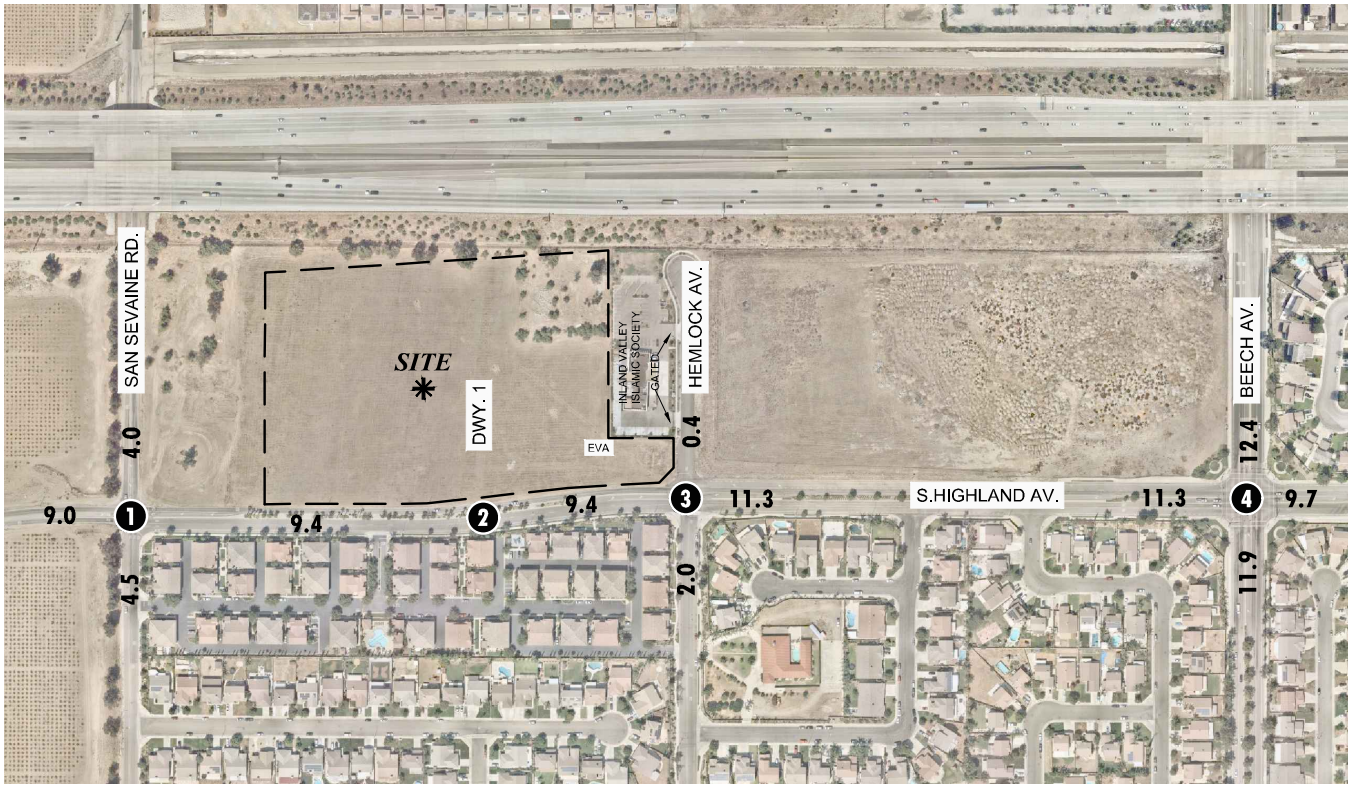
6.4.1 OPENING YEAR CUMULATIVE (2023) WITHOUT PROJECT TRAFFIC CONDITIONS

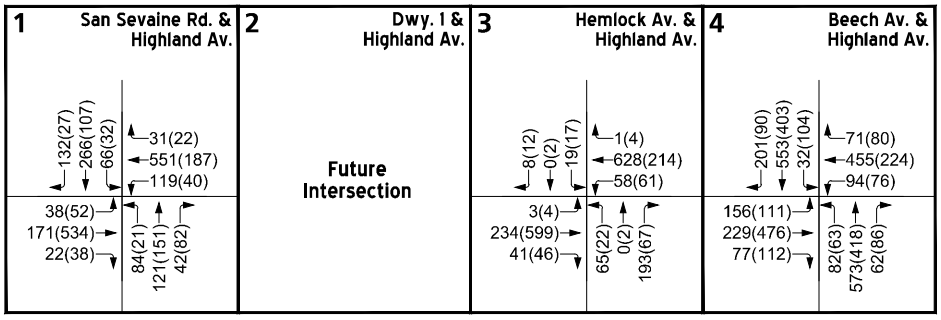
LOS calculations were conducted for the study intersections to evaluate their operations under Opening Year Cumulative (2023) Without Project conditions with roadway and intersection geometrics consistent with Section 6.1 *Roadway Improvements*. As shown on Table 6-1, the following study area intersection is anticipated to operate at a deficient LOS (i.e., LOS D or worse) during one or more peak hours for Opening Year Cumulative (2023) Without Project traffic conditions:

- San Sevaine Road & S. Highland Avenue (#1) – LOS E AM peak hour only

A summary of the peak hour intersection LOS for Opening Year Cumulative (2023) Without Project conditions are shown on Exhibit 6-3. The intersection operations analysis worksheets for Opening Year Cumulative (2023) Without Project traffic conditions are included in Appendix 6.1 of this TIA.

EXHIBIT 6-1: OPENING YEAR CUMULATIVE (2023) WITHOUT PROJECT TRAFFIC VOLUMES





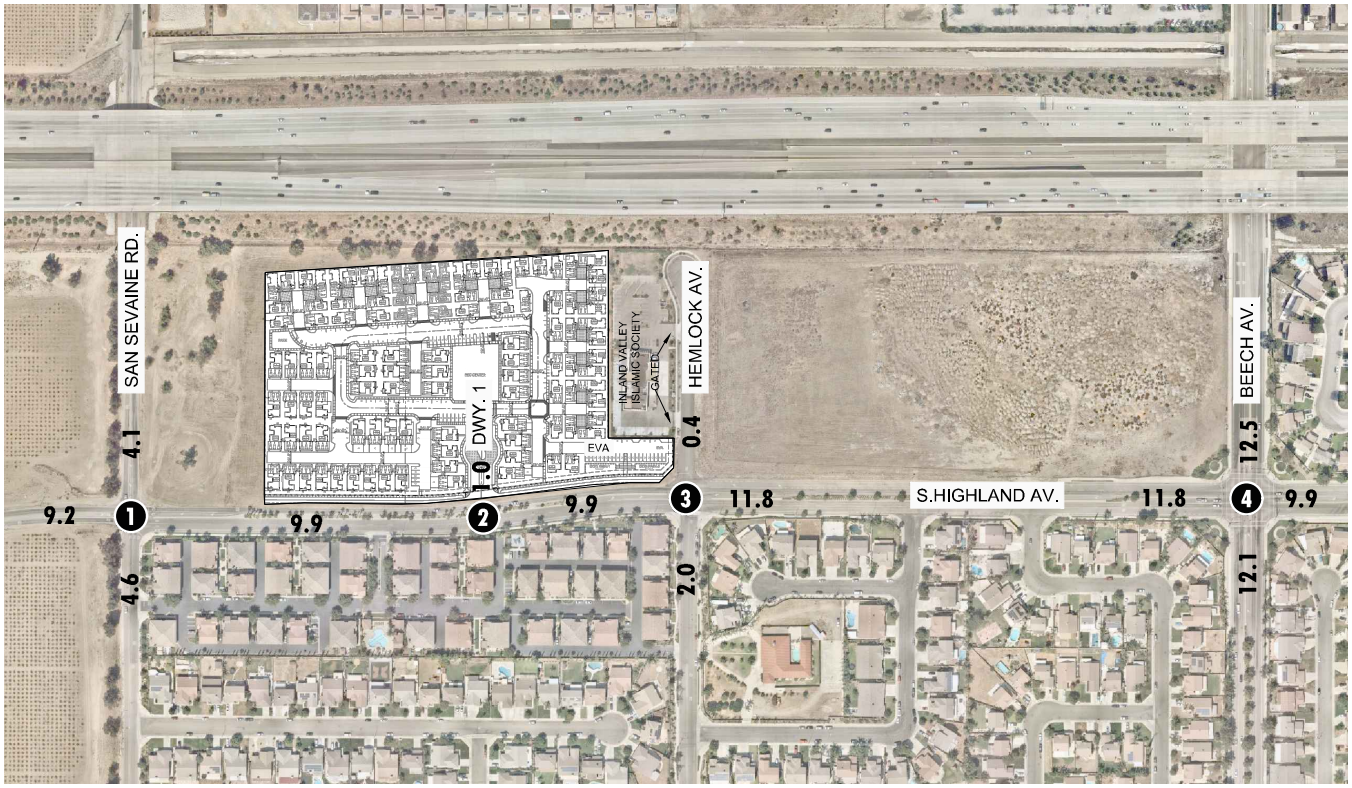
LEGEND:

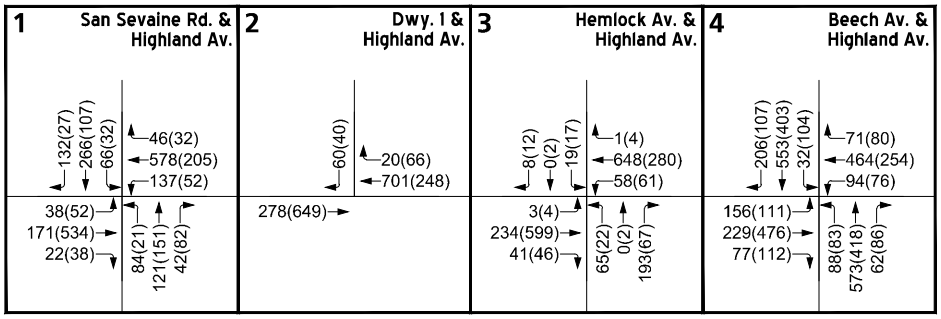
10(10) = **AM(PM) PEAK HOUR INTERSECTION VOLUMES**

10.0 = **VEHICLES PER DAY (1000'S)**

N

EXHIBIT 6-2: OPENING YEAR CUMULATIVE (2023) WITH PROJECT TRAFFIC VOLUMES





LEGEND:

10(10) = **AM(PM) PEAK HOUR INTERSECTION VOLUMES**

10.0 = **VEHICLES PER DAY (1000'S)**

N

EXHIBIT 6-3: OPENING YEAR CUMULATIVE (2023) WITHOUT PROJECT SUMMARY OF LOS

LEGEND:

- = AM PEAK HOUR
- = PM PEAK HOUR
- = LOS A-C
- = LOS D-E
- = LOS F
- (NA) = NOT AN ANALYSIS LOCATION FOR THIS SCENARIO

LEGEND:

- = ACCEPTABLE LOS A-C
- = DEFICIENT LOS D-E
- = DEFICIENT LOS F

N

Table 6-1

Intersection Analysis for Opening Year Cumulative (2023) Conditions

#	Intersection	Traffic Control[2]	2023 Without Project				2023 With Project				Difference in Delay (sec.)	Difference in Delay (sec.)	Significant Impact?[3]
			Delay[1] (secs.)		Level of Service		Delay[1] (secs.)		Level of Service				
			AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	
1	San Sevaine Rd. & S. Highland Av.	AWS	**118.0**	**48.2**	**F**	**E**	**137.7**	**50.4**	**F**	**F**	**19.7**	**2.2**	**Yes**
2	Driveway 1 & S. Highland Av.	**CSS**	Future Intersection				11.6	9.5	B	A	--	--	No
3	Hemlock Av. & S. Highland Av.[4]	CSS	17.7	13.8	C	B	17.9	13.7	C	B	0.2	-0.1	No
4	Beech Av. & S. Highland Av.	TS	29.1	20.1	C	C	29.9	20.4	C	C	0.8	0.3	No

* **BOLD** = Level of Service (LOS) does not meet the applicable jurisdictional requirements (i.e., unacceptable LOS).

1 Per the Highway Capacity Manual (6th Edition), overall average intersection delay and level of service are shown for intersections with a traffic signal or all way stop control. For intersections with cross street stop control, the delay and level of service for the worst individual movement (or movements sharing a single lane) are shown.

2 CSS = Cross-street Stop; AWS = All-Way Stop; TS = Traffic Signal

3 Significant near-term impacts have been identified based on each applicable agency's threshold of significance and if the Project contributes 50 or more peak hour trips.

4 The westbound approach is assumed to be restriped with one through and one shared through-right for "With Project" conditions.

6.4.2 OPENING YEAR CUMULATIVE (2023) WITH PROJECT TRAFFIC CONDITIONS

As shown on Table 6-1 and illustrated on Exhibit 6-6, the addition of Project traffic is not anticipated to result in any additional deficiencies, in addition to the location previously identified under Opening Year Cumulative (2023) Without Project conditions. The intersection operations analysis worksheets for Opening Year Cumulative (2023) With Project conditions are included in Appendix 6.2 of this TIA. Measures to address deficiencies for Opening Year Cumulative (2023) traffic conditions are discussed in Section 6.7 *Opening Year Cumulative (2023) Impacts and Recommended Improvements*.

A summary of the peak hour intersection LOS for Opening Year Cumulative (2023) Without Project conditions are shown on Exhibit 6-4. The intersection operations analysis worksheets for Opening Year Cumulative (2023) Without Project traffic conditions are included in Appendix 6.1 of this TIA.

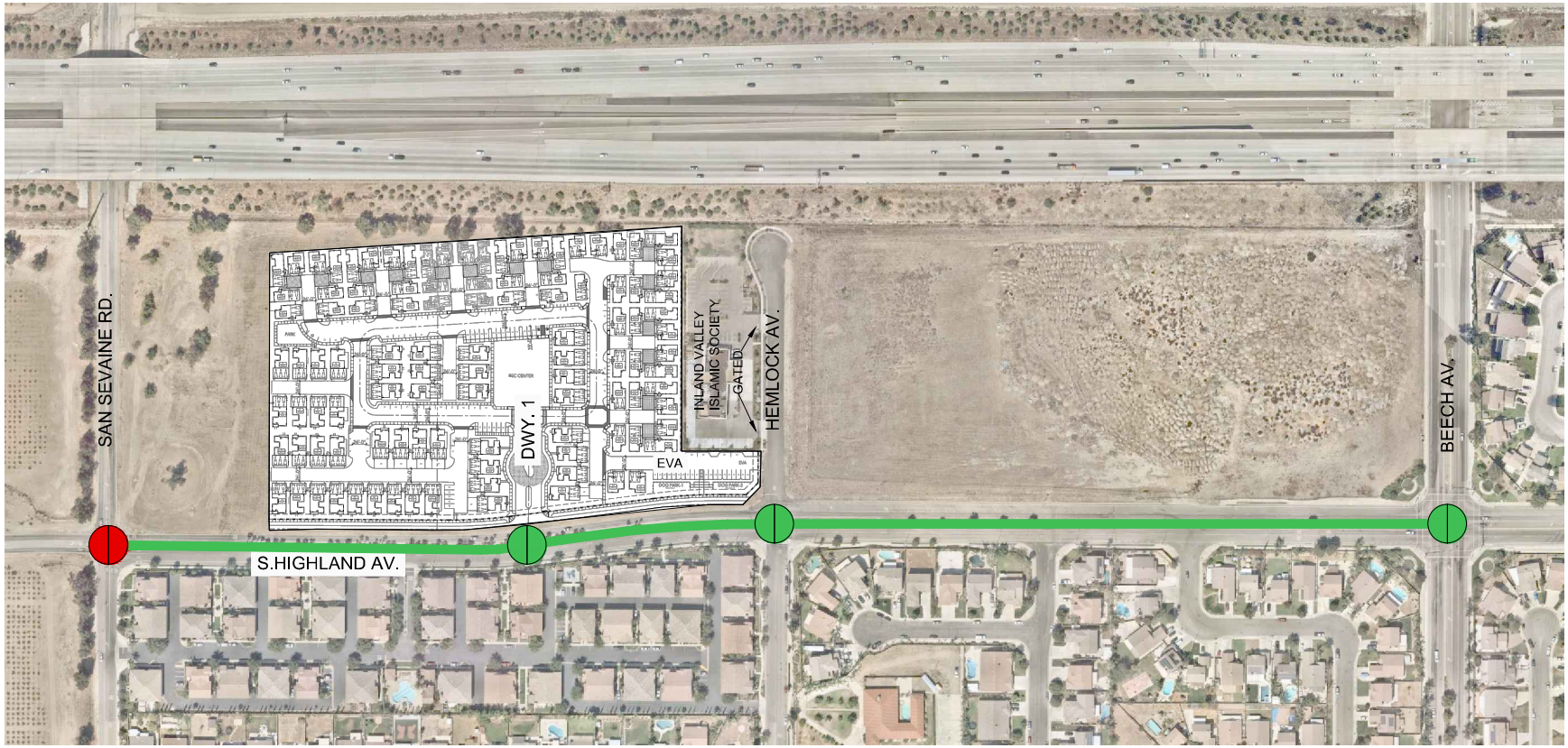
6.5 TRAFFIC SIGNAL WARRANTS ANALYSIS

Traffic signal warrant analyses has not been conducted for Opening Year Cumulative (2023) traffic conditions as there are no other unsignalized study area intersection from those warranted under Existing traffic conditions. Driveway 1 is proposed for right-in/right-out access only and would be unsignalized, however, a traffic signal warrant is not necessary at this location due to the proposed access restriction.

6.6 ROADWAY SEGMENT ANALYSIS

The roadway segment capacities are approximate figures only and are used at the General Plan level to assist in determining the roadway functional classification (number of through lanes) needed to meet traffic demand. Table 6-2 provides a summary of the Opening Year Cumulative (2023) conditions roadway segment capacity analysis based on the City of Fontana Roadway Segment Capacity Thresholds. As shown on Table 6-2, the study area roadway segments are anticipated to continue to operate at an acceptable LOS based on the City's planning level daily roadway capacity thresholds, consistent with Existing (2020) traffic conditions.

EXHIBIT 6-4: OPENING YEAR CUMULATIVE (2023) WITH PROJECT SUMMARY OF LOS



LEGEND:

- = AM PEAK HOUR
- = PM PEAK HOUR
- = LOS A-C
- = LOS D-E
- = LOS F

LEGEND:

- = ACCEPTABLE LOS A-C
- = DEFICIENT LOS D-E
- = DEFICIENT LOS F

N

Table 6-2

Roadway Segment Capacity Analysis for Opening Year Cumulative (2023) Conditions

#	Roadway	Segment Limits	Roadway Section	LOS Capacity[1]	2023 NP	V/C[2]	LOS[3]	2023 WP	V/C[2]	LOS[3]	Acceptable LOS
1	S. Highland Av.	San Sevaine Rd. to Driveway 1	3D	27,000	9,393	0.35	A	9,898	0.37	A	C
2		Driveway 1 to Hemlock Av.	3D	27,000	9,383	0.35	A	9,888	0.37	A	C
3		Hemlock Av. to Beech Av.	4D	36,000	11,270	0.31	A	11,775	0.33	A	C

[1] These maximum roadway capacities assume 9,000 vehicles per lane per day for arterials.

[2] V/C = Volume to Capacity Ratio

[3] LOS = Level of Service

6.7 OPENING YEAR CUMULATIVE (2023) IMPACTS AND RECOMMENDED IMPROVEMENTS

Improvement strategies have been recommended at intersections, roadway segments, and freeway facility that have been identified as impacted under Opening Year Cumulative (2023) traffic conditions in an effort to achieve an acceptable LOS.

6.7.1 RECOMMENDED IMPROVEMENTS TO ADDRESS DEFICIENCIES AT INTERSECTIONS

Based on the City of Fontana's significance criteria as discussed in Section 2.6 *Thresholds of Significance*, the following intersection is anticipated to be cumulatively impacted by the Project during one or more peak hours:

- San Sevaine Road & S. Highland Avenue (#1)

The effectiveness of the recommended improvements to address Opening Year Cumulative (2023) traffic impacts are presented on Table 6-3. Improvement strategies identified on Table 6-3 have been recommended at intersections that have been identified as cumulatively impacted to reduce each location's peak hour delay to acceptable levels.

San Sevaine Road & S. Highland Avenue (#1) – The following improvement is necessary to improve the intersection's peak hour operations to pre-project conditions or better, thus reducing the cumulative impact to less than significant:

- Contribute fair share (via payment of fees) towards the installation of a traffic signal, addition of a 2nd westbound through lane, and 2nd eastbound through lane.

The intersection operations analysis worksheets for Opening Year Cumulative (2023) With Project traffic conditions, with improvements, are included in Appendix 6.3 of this TIA.

6.7.2 RECOMMENDED IMPROVEMENTS TO ADDRESS ROADWAY SEGMENTS

As shown previously on Table 6-2, there are no roadway segment deficiencies anticipated for Opening Year Cumulative (2023) traffic conditions. As such, no improvements have been recommended.

Table 6-3

Intersection Analysis for Opening Year Cumulative (2023) Conditions With Improvements

#	Intersection	Traffic Control[3]	Intersection Approach Lanes[1]												Delay[2] (secs.)		Level of Service	
			Northbound			Southbound			Eastbound			Westbound						
			L	T	R	L	T	R	L	T	R	L	T	R	AM	PM	AM	PM
1	San Sevaine Rd. & S. Highland Av.																	
	- Without Improvements	AWS	1	1	0	1	1	0	1	1	0	1	1	0	**137.7**	**50.4**	**F**	**F**
	- With Improvements	**TS**	1	1	0	1	1	0	1	**2**	0	1	**2**	0	25.1	17.4	C	B

[1] When a right turn is designated, the lane can either be striped or unstriped. To function as a right turn lane there must be sufficient width for right turning vehicles to travel outside the through lanes.

L = Left; T = Through; R = Right; **1** = Improvement

[2] Per the Highway Capacity Manual (6th Edition), overall average intersection delay and level of service are shown for intersections with a traffic signal or all way stop control. For intersections with cross street stop control, the delay and level of service for the worst individual movement (or movements sharing a single lane) are shown.

[3] AWS = All-Way Stop; TS = Traffic Signal; **TS** = Improvement

7 HORIZON YEAR (2040) TRAFFIC CONDITIONS

This section discusses the methods used to develop Horizon Year (2040) Without and With Project traffic forecasts, and the resulting intersection operations and roadway segment analyses.

7.1 ROADWAY IMPROVEMENTS

The lane configurations and traffic controls assumed to be in place for Horizon Year (2040) conditions are consistent with those shown previously on Exhibit 3-1, with the exception of Project driveways and those facilities assumed to be constructed by the Project and cumulative developments to provide site access are also assumed to be in place for Horizon Year (2040) traffic conditions.

Although not evaluated, other future regional infrastructure improvements have also been assumed to be in place. The Horizon Year (2040) forecasts are based on the SBTAM traffic model which assumes future facilities such as the interchange connections at the I-10 Freeway and Beech Avenue. New regional connections could potentially result in reduced traffic volumes at other adjacent interchanges and/or study area intersections.

7.2 HORIZON YEAR (2040) WITHOUT PROJECT TRAFFIC VOLUME FORECASTS

This scenario includes the refined post-process volumes obtained from the SBTAM (see Section 4.7 *Horizon Year (2040) Volume Development* of this TIA for a detailed discussion on the post-processing methodology). The ADT and peak hour volumes for Horizon Year (2040) Without Project traffic conditions are shown on Exhibit 7-1.

7.3 HORIZON YEAR (2040) WITH PROJECT TRAFFIC VOLUME FORECASTS

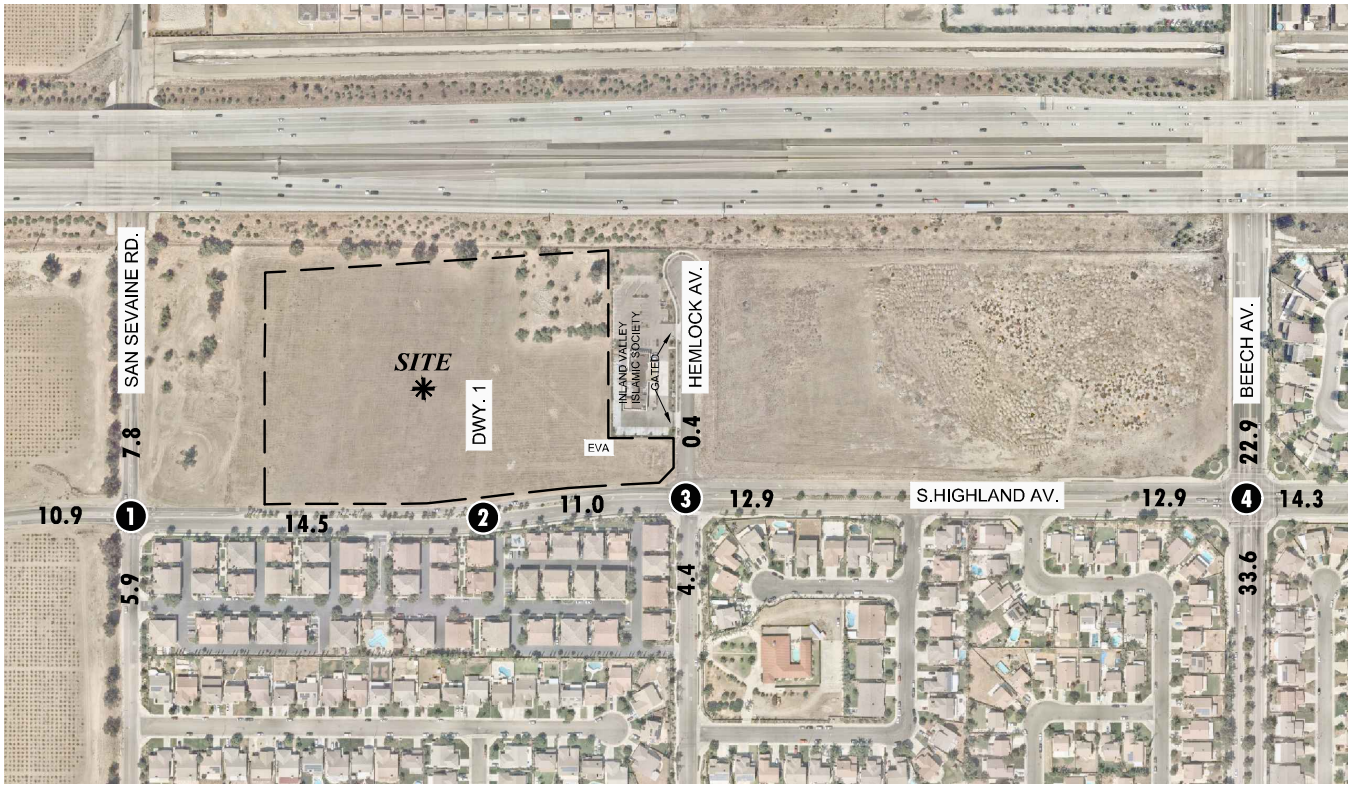
This scenario includes the refined post-process volumes obtained from the SBTAM, plus Project traffic. The ADT and AM and PM peak hour volumes for Horizon Year (2040) With Project traffic conditions are shown on Exhibit 7-2.

7.4 INTERSECTION OPERATIONS ANALYSIS

LOS calculations were conducted for the study intersections to evaluate their operations under Horizon Year (2040) Without Project conditions with roadway and intersection geometrics consistent with Section 7.1 *Roadway Improvements*. As shown on Table 7-1, the following intersections are anticipated to operate at an unacceptable LOS during the peak hours under Horizon Year (2040) Without Project traffic conditions:

- San Sevaine Road & S. Highland Avenue (#1) – LOS F AM and PM peak hours
- Hemlock Avenue & S. Highland Avenue (#3) – LOS E AM peak hour; LOS D PM peak hour
- Beech Avenue & S. Highland Avenue (#4) – LOS D AM peak hour only

EXHIBIT 7-1: HORIZON YEAR (2040) WITHOUT PROJECT TRAFFIC VOLUMES



1 San Sevaine Rd. & Highland Av.	2 Dwy. 1 & Highland Av.	3 Hemlock Av. & Highland Av.	4 Beech Av. & Highland Av.
146(85) 292(118) 74(257)	Future Intersection	9(31) 0(2) 21(19)	221(99) 714(451) 48(115)
158(201) 606(379) 131(44)		1(5) 801(518) 95(74)	78(88) 500(396) 128(145)
41(71) 188(587) 24(41)		3(5) 258(659) 78(57)	172(122) 251(524) 84(193)
93(23) 133(166) 46(91)		85(75) 0(2) 212(104)	90(69) 688(584) 106(145)

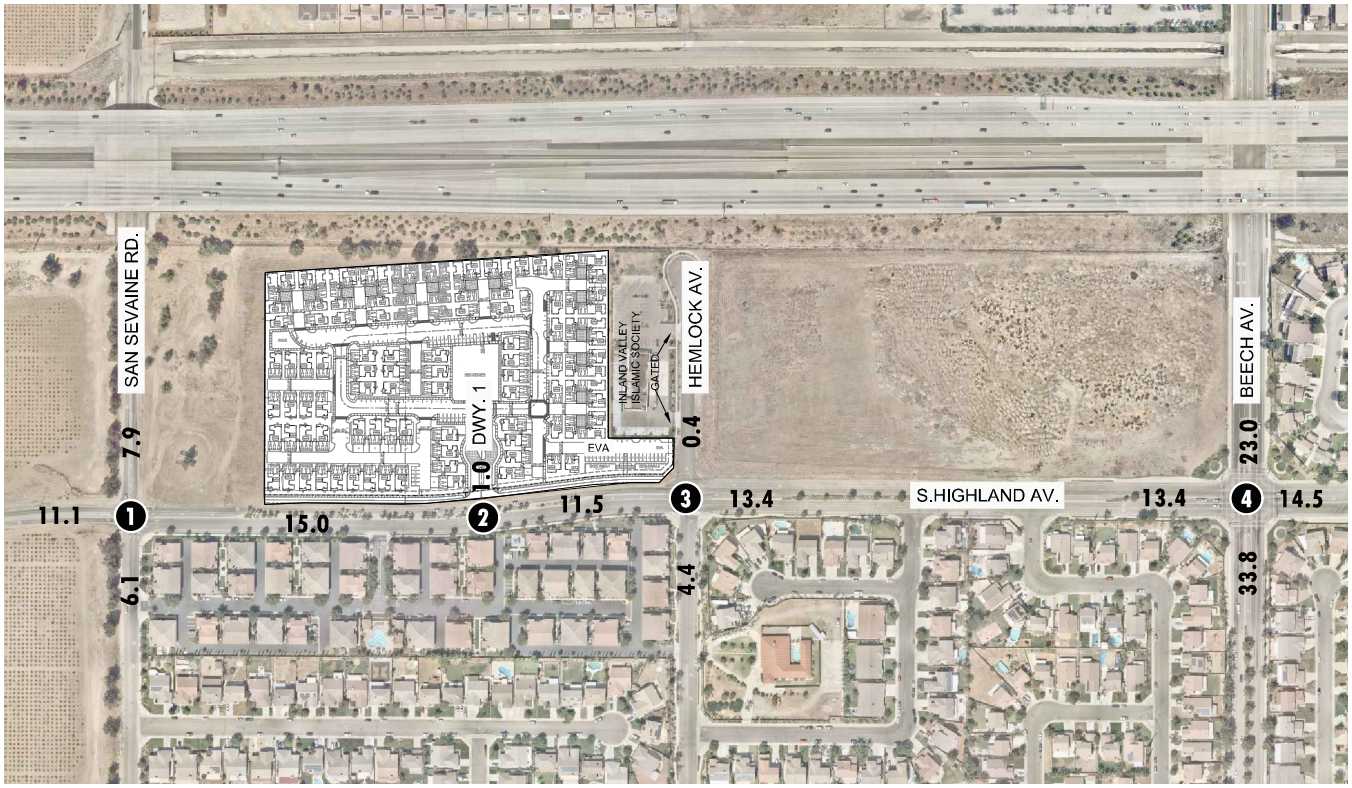
LEGEND:

10(10) = AM(PM) PEAK HOUR INTERSECTION VOLUMES

10.0 = VEHICLES PER DAY (1000'S)

N

EXHIBIT 7-2: HORIZON YEAR (2040) WITH PROJECT TRAFFIC VOLUMES



1 San Sevaine Rd. & Highland Av.	2 Dwy. 1 & Highland Av.	3 Hemlock Av. & Highland Av.	4 Beech Av. & Highland Av.
146(85) 292(118) 74(257)	60(40)	9(31) 0(2) 21(19)	226(116) 714(451) 48(115)
173(211) 633(397) 149(56)	20(66) 895(624)	1(5) 821(584) 95(74)	78(88) 509(426) 128(145)
41(71) 188(587) 24(41)	339(720)	3(5) 258(659) 78(57)	172(122) 251(524) 84(193)
93(23) 133(166) 46(91)		85(75) 0(2) 212(104)	96(89) 688(584) 106(145)

LEGEND:

10(10) = AM(PM) PEAK HOUR INTERSECTION VOLUMES

10.0 = VEHICLES PER DAY (1000'S)

N

Table 7-1

Intersection Analysis for Horizon Year (2040) Conditions

#	Intersection	Traffic Control[2]	2040 Without Project				2040 With Project				Difference in Delay (sec.)	Difference in Delay (sec.)	Significant Impact?[3]
			Delay[1] (secs.)		Level of Service		Delay[1] (secs.)		Level of Service				
			AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	
1	San Sevaine Rd. & S. Highland Av.	AWS	**219.2**	**170.6**	**F**	**F**	**242.6**	**179.8**	**F**	**F**	**23.4**	**9.2**	**Yes**
2	Driveway 1 & S. Highland Av.	**CSS**	Future Intersection				12.9	11.2	B	B	--	--	No
3	Hemlock Av. & S. Highland Av.[4]	CSS	**37.8**	**29.3**	**E**	**D**	24.3	24.1	C	C	-13.5	-5.2	No
4	Beech Av. & S. Highland Av.	TS	**35.6**	24.8	**D**	C	**36.9**	25.1	**D**	C	1.3	0.3	No

* **BOLD** = Level of Service (LOS) does not meet the applicable jurisdictional requirements (i.e., unacceptable LOS).

1 Per the Highway Capacity Manual (6th Edition), overall average intersection delay and level of service are shown for intersections with a traffic signal or all way stop control. For intersections with cross street stop control, the delay and level of service for the worst individual movement (or movements sharing a single lane) are shown.

2 CSS = Cross-street Stop; AWS = All-Way Stop; TS = Traffic Signal

3 Significant near-term impacts have been identified based on each applicable agency's threshold of significance and if the Project contributes 50 or more peak hour trips.

4 The westbound approach is assumed to be restriped with one through and one shared through-right for "With Project" conditions.

A summary of the peak hour intersection LOS for Horizon Year (2040) Without Project conditions are shown on Exhibit 7-3. The intersection operations analysis worksheets for Horizon Year (2040) Without Project traffic conditions are included in Appendix 7.1 of this TIA.

7.4.2 HORIZON YEAR (2040) WITH PROJECT TRAFFIC CONDITIONS

As shown on Table 7-1 and illustrated on Exhibit 7-4, there are no additional intersections anticipated to operate at an unacceptable LOS with the addition of Project traffic, in addition to those intersections previously identified under Horizon Year (2040) Without Project conditions. It should be noted the westbound right turn lane at the intersection of Hemlock Avenue and S. Highland Avenue would be restriped as a shared through-right turn lane for With Project traffic conditions only. As such, the peak hour operations are anticipated to improve for With Project traffic conditions. The intersection operations analysis worksheets for Horizon Year (2040) With Project conditions are included in Appendix 7.2 of this TIA. Measures to address deficiencies for Horizon Year (2040) traffic conditions are discussed in Section 7.7 *Horizon Year (2040) Impacts and Recommended Improvements*.

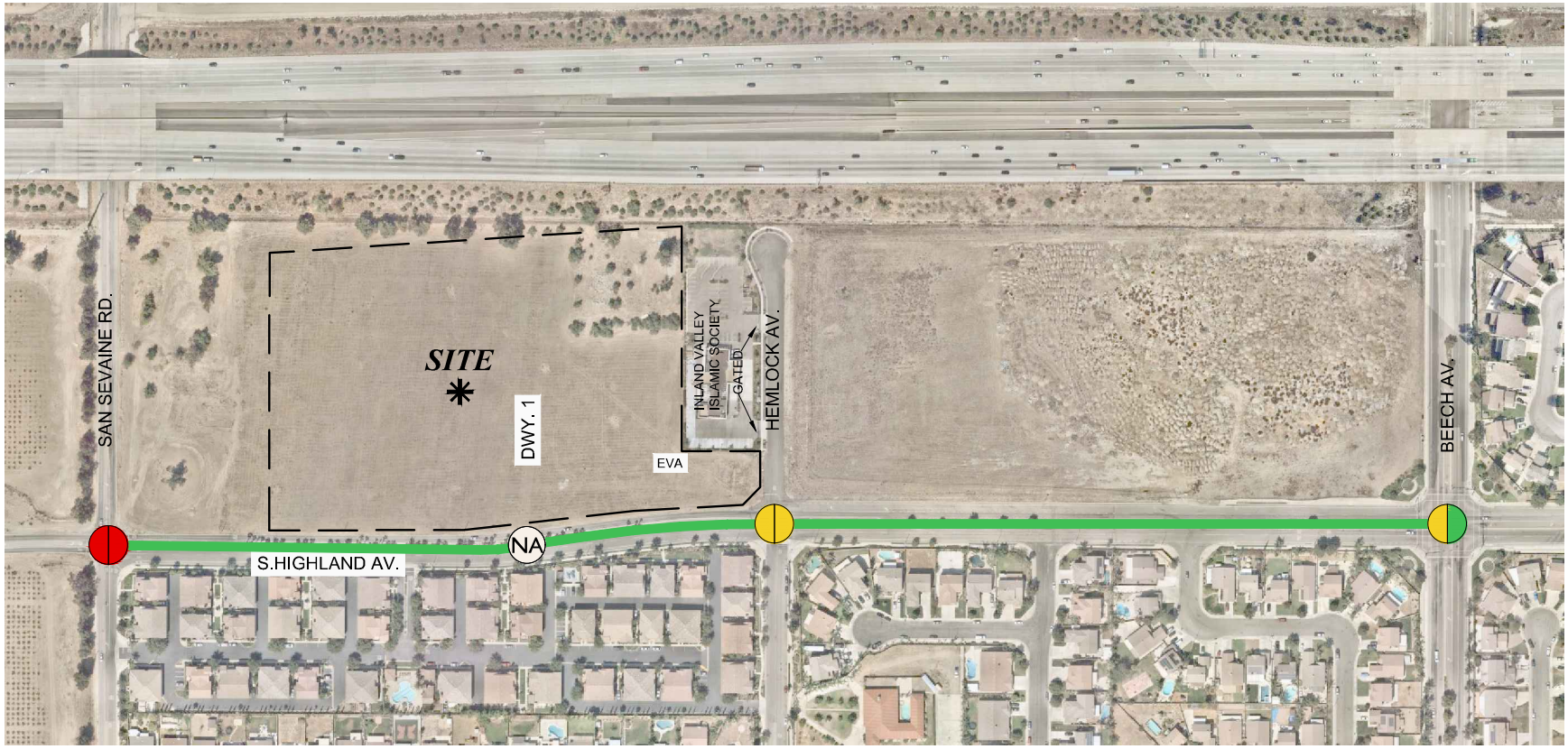
7.5 TRAFFIC SIGNAL WARRANTS ANALYSIS

Traffic signal warrant analyses has not been conducted for Horizon Year (2040) traffic conditions as there are no other unsignalized study area intersection from those warranted under Existing traffic conditions. Driveway 1 is proposed for right-in/right-out access only and would be unsignalized, however, a traffic signal warrant is not necessary at this location due to the proposed access restriction.

7.6 ROADWAY SEGMENT ANALYSIS

The roadway segment capacities are approximate figures only and are used at the General Plan level to assist in determining the roadway functional classification (number of through lanes) needed to meet traffic demand. Table 7-2 provides a summary of the Horizon Year (2040) Without and With Project traffic conditions roadway segment capacity analysis based on the City of Fontana Roadway Segment Capacity Thresholds. As shown on Table 7-2, the study area roadway segments are anticipated to continue to operate at an acceptable LOS based on the City's planning level daily roadway capacity thresholds, consistent with Existing (2020) traffic conditions.

EXHIBIT 7-3: HORIZON YEAR (2040) WITHOUT PROJECT SUMMARY OF LOS



LEGEND:

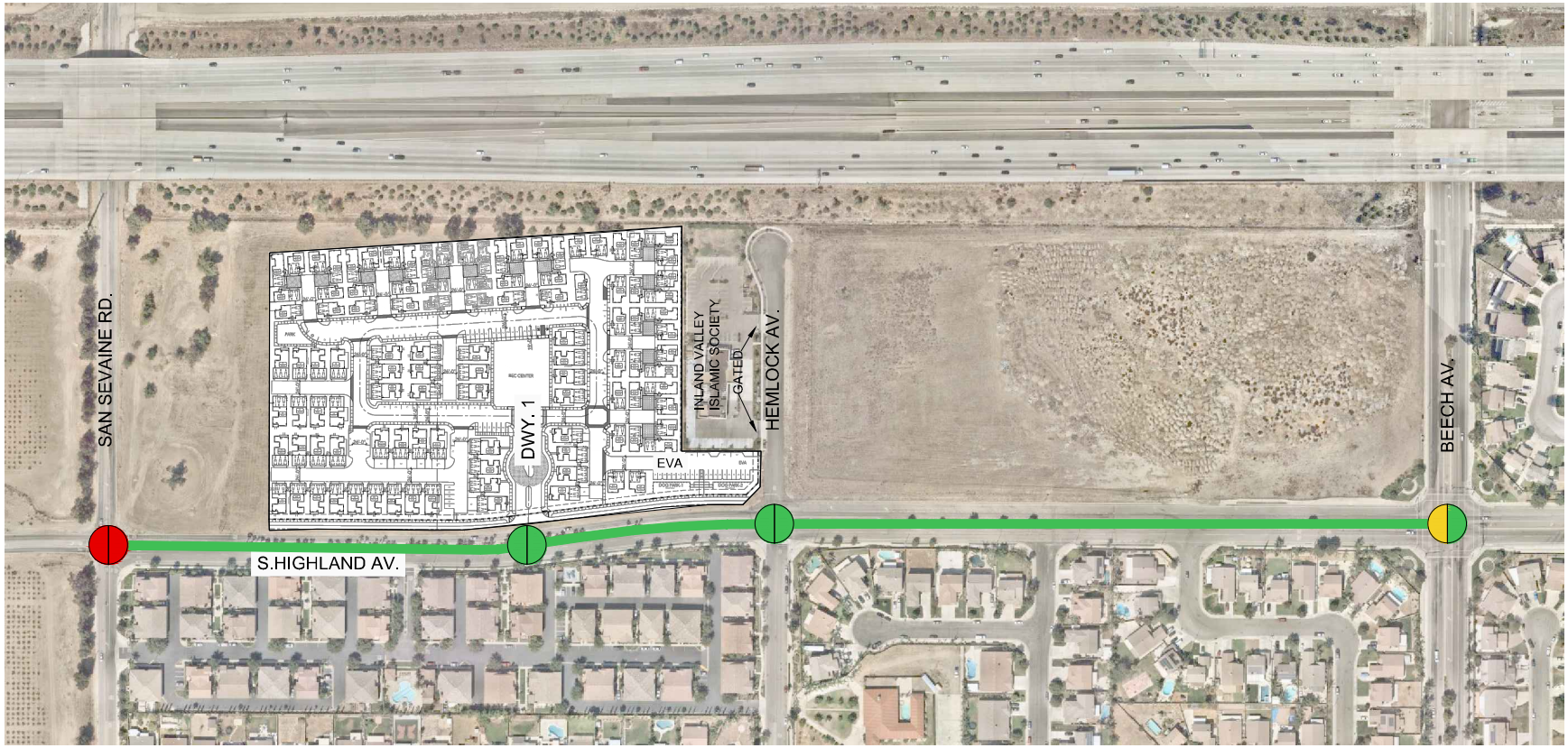
- = AM PEAK HOUR
- = PM PEAK HOUR
- = LOS A-C
- = LOS D-E
- = LOS F
- (NA) = NOT AN ANALYSIS LOCATION FOR THIS SCENARIO

LEGEND:

- = ACCEPTABLE LOS A-C
- = DEFICIENT LOS D-E
- = DEFICIENT LOS F

N

EXHIBIT 7-4: HORIZON YEAR (2040) WITH PROJECT SUMMARY OF LOS



LEGEND:

- = AM PEAK HOUR
- = PM PEAK HOUR
- = LOS A-C
- = LOS D-E
- = LOS F

LEGEND:

- = ACCEPTABLE LOS A-C
- = DEFICIENT LOS D-E
- = DEFICIENT LOS F

N

Table 7-2

Roadway Segment Capacity Analysis for Horizon Year (2040) Conditions

#	Roadway	Segment Limits	Roadway Section	LOS Capacity[1]	2040 NP	V/C[2]	LOS[3]	2040 WP	V/C[2]	LOS[3]	Acceptable LOS
1	S. Highland Av.	San Sevaine Rd. to Driveway 1	3D	27,000	14,465	0.54	A	14,970	0.55	A	C
2		Driveway 1 to Hemlock Av.	3D	27,000	10,960	0.41	A	11,465	0.42	A	C
3		Hemlock Av. to Beech Av.	4D	36,000	12,898	0.36	A	13,403	0.37	A	C

[1] These maximum roadway capacities assume 9,000 vehicles per lane per day for arterials.

[2] V/C = Volume to Capacity Ratio

[3] LOS = Level of Service

7.7 HORIZON YEAR (2040) CUMULATIVE IMPACTS AND RECOMMENDED IMPROVEMENTS

Improvement strategies have been recommended at intersections, roadway segments, and freeway facility that have been identified as impacted under Horizon Year (2040) traffic conditions in an effort to achieve an acceptable LOS.

7.7.1 RECOMMENDED IMPROVEMENTS TO ADDRESS DEFICIENCIES AT INTERSECTIONS

Based on the City of Fontana's significance criteria as discussed in Section 2.6 *Thresholds of Significance*, the following intersections are anticipated to be cumulatively impacted by the Project during one or more peak hours:

- San Sevaine Road & S. Highland Avenue (#1)
- Hemlock Avenue & S. Highland Avenue (#3)
- Beech Avenue & S. Highland Avenue (#4)

The effectiveness of the recommended improvements to address Horizon Year (2040) traffic impacts are presented on Table 7-3. Improvement strategies identified on Table 7-3 have been recommended at intersections that have been identified as cumulatively impacted to reduce each location's peak hour delay to acceptable levels.

San Sevaine Road & S. Highland Avenue (#1) – The following improvement is necessary to improve the intersection's peak hour operations to pre-project conditions or better, thus reducing the cumulative impact to less than significant:

- Contribute fair share (via payment of fees) towards the installation of a traffic signal, addition of a 2nd westbound through lane, and 2nd eastbound through lane (same as Opening Year Cumulative traffic conditions).

The intersection operations analysis worksheets for Horizon Year (2040) With Project, with improvements, traffic conditions are included in Appendix 7.3 of this TIA.

7.7.2 RECOMMENDED IMPROVEMENTS TO ADDRESS ROADWAY SEGMENTS

As shown previously on Table 7-2, there are no roadway segment deficiencies anticipated for Horizon Year (2040) traffic conditions. As such, no improvements have been recommended.

Table 7-3

Intersection Analysis for Horizon Year (2040) Conditions With Improvements

#	Intersection	Traffic Control[3]	Intersection Approach Lanes[1]												Delay[2] (secs.)		Level of Service	
			Northbound			Southbound			Eastbound			Westbound						
			L	T	R	L	T	R	L	T	R	L	T	R	AM	PM	AM	PM
1	San Sevaine Rd. & S. Highland Av.																	
	- Without Improvements	AWS	1	1	0	1	1	0	1	1	0	1	1	0	**242.6**	**179.8**	**F**	**F**
	- With Improvements	**TS**	1	1	0	1	1	0	1	**2**	0	1	**2**	0	32.0	25.1	C	C

[1] When a right turn is designated, the lane can either be striped or unstriped. To function as a right turn lane there must be sufficient width for right turning vehicles to travel outside the through lanes.

L = Left; T = Through; R = Right; **1** = Improvement

[2] Per the Highway Capacity Manual 6th Edition, overall average intersection delay and level of service are shown for intersections with a traffic signal or all way stop control. For intersections with cross street stop control, the delay and level of service for the worst individual movement (or movements sharing a single lane) are shown.

[3] AWS = All-Way Stop; TS = Traffic Signal; **TS** = Improvement

8 REFERENCES

1. **City of Fontana, Department of Engineering.** *Draft Traffic Impact Analysis (TIA) Guidelines.* City of Fontana : s.n., October 2019.
2. **San Bernardino Associated Governments.** *Congestion Management Program for County of San Bernardino.* County of San Bernardino : s.n., Updated June 2016.
3. **Institute of Transportation Engineers.** *Trip Generation.* 10th Edition. 2017.
4. **Southern California Association of Governments.** *2016 Regional Transportation Plan.* April 2016.
5. **Transportation Research Board.** *Highway Capacity Manual (HCM).* 6th Edition. s.l. : National Academy of Sciences, 2016.
6. **California Department of Transportation.** California Manual on Uniform Traffic Control Devices (CA MUTCD). [book auth.] California Department of Transportation. *California Manual on Uniform Traffic Control Devices (CA MUTCD).* 2014.

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